THE

PENNY CYCLOPAEDIA

OF

THE SOCIETY

FOR THE

DIFFUSION OF USEFUL KNOWLEDGE.

VOLUME VII.

CHARLESTON—COPYHOLD.

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

MDCCXXXVII

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The Penny Cyclopaedia
Of the Society for the Diffusion of Useful Knowledge.

Charleston

Charleston, the largest city in the state of South Carolina, is situated in the county of Charleston, upon a narrow tongue of land formed by the confluence of the rivers Ashley and Cooper, in 32° 47' N. lat. and 79° 48' W. long. The harbour, which is spacious and convenient, is formed by the estuary of the two rivers, and protected from the Atlantic by Sullivan's Island on the N. and Folly Island on the S. The entrance, which is between these islands, is obstructed by a range of sand-banks, which make three channels by which vessels of considerable burthen may enter the port, but the passage is rendered so difficult and uncertain by the tides and the shifting of the sands, that it is customary for all vessels, including even constant traders to the port, to be taken under a pilot's licence on entering.

Charleston was founded in 1680, seventeen years after the granting of the colony by Charles II. to the Earl of Clarendon. For rather more than a century it was the capital of the province, Columbia, now the seat of government, not having been founded until 1787. The town is regularly laid out in parallel streets extending between the two rivers and crossed by other streets at right angles. The houses are for the most part spacious and lofty, and furnished with balconies and verandahs, in order to protect the interior from the sun. The streets are generally narrow and unpaved, and the soil being sandy, considerable annoyance is experienced in windy weather from dust and sand. To shelter the passengers from the sun, rows of trees are planted on each side of the streets; this tree does not grow to any considerable height, but its branches are spreading and its foliage thick, and it possesses the further advantage of not harbouring insects.

The town contains a city-hall, exchange, custom-house, guard-houses, theatre, orphan-house, hospital, almshouse, two arsenals, two markets, a college, and nineteen places of public worship. The yellow fever has made frequent ravages in Charleston, but its effects have been chiefly confined to strangers, and especially those from more northern climates. The place is not considered unhealthy by natives.

The population of the city, in 1790, was 16,339, of whom 7684 were slaves. In the next forty years the number of inhabitants has nearly doubled, as appears from the following statement:

<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
<th>Males</th>
<th>Females</th>
<th>Coloured</th>
<th>Slaves</th>
</tr>
</thead>
<tbody>
<tr>
<td>1800</td>
<td>18,712</td>
<td>18,712</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1810</td>
<td>24,711</td>
<td>12,354</td>
<td>12,354</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1830</td>
<td>36,289</td>
<td>18,144</td>
<td>18,144</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1850</td>
<td>50,289</td>
<td>25,144</td>
<td>25,144</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

These numbers do not include the population of the suburbs, which in 1830 amounted to 10,664.

Charleston is a place of very considerable trade. A great part of the cotton and nearly all the rice exported from the state are shipped from this port. The amount of registered and licensed tonnage belonging to the port in 1835 was 13,759 tons, of which 7559 tons were employed in the coasting trade. The tonnage of steam-vessels in the same year was 1889. In the year ended 30th September, 1835, the vessels that entered and left the port in the prosecution of foreign trade were:

<table>
<thead>
<tr>
<th>Country</th>
<th>Inwards</th>
<th>Outwards</th>
</tr>
</thead>
<tbody>
<tr>
<td>American</td>
<td>118</td>
<td>133</td>
</tr>
<tr>
<td>Foreign</td>
<td>127</td>
<td>133</td>
</tr>
<tr>
<td>Total</td>
<td>245</td>
<td>266</td>
</tr>
</tbody>
</table>

The trade of Charleston in the two principal articles of export during the last seven years has been as follows—the season for shipping cotton and rice is considered to begin on the 1st of October, and to end on the 1st of April following:

<table>
<thead>
<tr>
<th>Years</th>
<th>Arrivals</th>
<th>Rice</th>
<th>Stocks on hand</th>
<th>Stocks on hand</th>
</tr>
</thead>
<tbody>
<tr>
<td>1832-33</td>
<td>Bales</td>
<td>Tons</td>
<td>Bales</td>
<td>Tons</td>
</tr>
<tr>
<td>1833-34</td>
<td>5,300</td>
<td>43</td>
<td>3,400</td>
<td>37</td>
</tr>
<tr>
<td>1834-35</td>
<td>5,600</td>
<td>48</td>
<td>3,800</td>
<td>40</td>
</tr>
<tr>
<td>1835-36</td>
<td>5,900</td>
<td>51</td>
<td>4,100</td>
<td>43</td>
</tr>
</tbody>
</table>

The exports of the two shipping seasons ending April 1, 1835, and 1836, were distributed as follows:

<table>
<thead>
<tr>
<th>Counties and Ports</th>
<th>Cotton</th>
<th>Rice</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Bales</td>
<td>Tons</td>
<td>Bales</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1832</td>
<td>1833</td>
<td>1834</td>
</tr>
<tr>
<td></td>
<td>4,991</td>
<td>4,496</td>
<td>4,915</td>
</tr>
<tr>
<td></td>
<td>9,491</td>
<td>7,796</td>
<td>6,915</td>
</tr>
<tr>
<td></td>
<td>16,486</td>
<td>12,291</td>
<td>11,830</td>
</tr>
<tr>
<td></td>
<td>18,486</td>
<td>15,496</td>
<td>14,550</td>
</tr>
<tr>
<td></td>
<td>35,486</td>
<td>28,496</td>
<td>26,450</td>
</tr>
</tbody>
</table>

The Ashley and Cooper rivers are not navigable to any considerable distance from their mouths. To remove this disadvantage a canal has been cut connecting the Cooper with the Santee river. The internal communication has been greatly improved by means of a railroad from Charleston.
ton to Hamburg on the Savannah, opposite to Augusta, a distance of 136 miles. This railroad was opened in 1834, and has proved very successful.

The Charleston college was chartered in 1785, but until 1824 it could be considered only as a grammar-school. In that year some alterations were made in its plans and government by means of which it was placed on a respectable footing as a college. At that time its funds had become very low, but it has since received 22,500 dollars by gift from two individuals, and its income from students has also since increased. The number of students in 1833 was 177, of whom 46 attended the scientific department, 76 the classical department, and 55 the English department. The college building is commodious: it possesses a chemical apparatus, and a library of 3,000 volumes, besides several hundred volumes belonging to the students. The medical college, which was established in 1824, is empowered to confer medical degrees. The locality is a handsome building, for which the city council of Charleston appropriated 15,000 dollars, and the establishment has been further assisted by the state legislature, which has granted to its funds the sum of 17,000 dollars.

Printing was introduced into South Carolina at Charleston in 1736, and the first newspaper was published in January of that year. There were then seven weekly papers published in the city. There are five banks established in Charleston with capitals amounting in the aggregate to 4,600,000 dollars; and two insurance companies, with a capital of 400,000 and 450,000 dollars respectively.

CHARLESTON, the principal city of the county of Charleston, is situated on a peninsula, formed by the river Cooper on the East and Ashley on the West, by which latter it is separated from both of which it is supplied with water. It is about 70 miles from the city of Charleston, and is the seat of the cloister which contains a good account of all the French establishments in Canada and North America together with a tedious confused journal of his own travels in that part of the world; it is a new edition of the work published at Calais in 1769, under the title of 'Journal of a Voyage to North America'; 4. 'History of Paraguay,' which was translated into English in 1769.

His thick quarto are a compound of travels and history, and very little written by a new writer. Charleston, being neither the order and philosophy necessary to an historian, nor the enterprise and vivacity of a traveller, he was a very industrious man, and collected many things which still render his work valuable for occasional reference.

CHARLOTTESVILLE, the county-seat of Albemarle county, the south small town about a mile from Berlin, is built on the banks of the river Steen, and is lighted by an excellent road, which contains a royal palace with a fine park, in which there is the sepulchral monument of Queen Luise, who died in 1810. There are many mansions of the nobility with the town of Malden, in the same county. [Bostw.]

CHARLESTON, a town in the department of Arideines in France, in the immediate vicinity of Mazaré, the capital of the department, and on the left bank of the Meuse, about 125 miles from Paris through the routes of Landé and Eure. This town is of modern origin, having been built in 1609 by Charles de Gonzague, Duke of Nevers, afterwards Duke of Mantua. It is very regularly laid out, and the streets are very straight; there are four principal ones, into which the others run. The houses are of uniform height, covered with slate. There is a handsome square, surrounded by a piazza, and a fountain in the middle. The town possesses a theatre, a considerable public library, and a museum of curiosities. Charlesville was originally fortified, and had a citadel, but these fortifications were destroyed about 1667, by order of Louis XIV, of France, into whose hands the town had come. A stone bridge unites this town with the neighbouring village of Eure.

The population of Charlesville, in 1832, was 2,700 for the town itself, or 7,773 for the whole commune. The inhabitants manufacture iron wares, especially nails and fire-arms, of which last there is a government manufacture at this place. Brass foundry is the manufacture most in request. There is a commodious port on the Meuse, and considerable business is transacted.

CHARLEVOIX, PIERRE FRANÇOIS XAVIER DE, born at St. Quentin in 1682, was educated by the Jesuits, and was appointed to the orders of his religion at the age of 16. In 1720 he was appointed to one of the Jesuit missions in Canada, and, embarking at Rochelle, he arrived at Quebec in the autumn of that year. He explored a large part of Canada, and examined several of the rivers and lakes, which were then not much visited by Europeans. In going from North America to St. Domingo, he suffered shipwreck; but a second voyage was more fortunate, and he reached the island in September, 1722. After two or three weeks stay in St. Domingo, he sailed for France, and arrived at Havre in the month of December. He afterwards made a journey into Italy on some business of his order, which frequently visited St. Domingo. The interesting MS. which he wrote during the voluminous works that bear his name, he wrote during twenty-two years in the 'Mémoires de Trevoux,' a literary journal conducted by the Jesuits. He died at La Rochelle in 1734.

He was a laborious compiler, and the documents and accounts of foreign countries (furnished by Jesuit missionaries, who were scattered in almost every corner of the world) upon which he principally worked, were numerous and occasionally valuable; but both he and his authorities were partial, prejudiced, credulous, and superstitious, and too much given to tedious details of the proceedings and ceremonies of their own order. To this we must add that Charlevoix's style is somewhat heavy and diffuse. His 'Voyage dans l'Amérique Septentrionale,' published at Paris in 1778, is written in a style which is taken almost entirely from Kämpfer; 2. 'History of St. Domingo,' which is derived from a MS. sent him by Father Le Peru, who lived twenty-five years in that island, and from some documents which existed in the bureaux of the French from that period. His 'Voyage dans l'Amérique Septentrionale,' which contains a good account of all the French establishments in Canada and North America, together with a tedious confused journal of his own travels in that part of the world, was translated into English at Calais in 1769, under the title of 'Journal of a Voyage to North America'; 4. 'History of Paraguay,' which was translated into English in 1769.

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The university of Virginia, which is about one mile from Charlottesville, was founded by the legislature of Virginia, for the promotion of learning, and the education of clergymen. Mr. Jefferson was the first rector and one of the visitors. The regulations for the government of this institution, and the general course of instruction, were formed by Mr. Jefferson. It is one of the few colleges in the United States which has not a clergyman for its president; no theological or religious instruction is given by the university.

The branches of instruction are the Greek, Latin, and Hebrew languages, the most important modern languages, mathematics, natural philosophy, moral philosophy and political economy, law, and chemistry. There is also a small medical school. The university possesses a well-
CHA

selected library of about 10,000 volumes, a philosophical and chemical apparatus, an anatomical and general museum, a cabinet of minerals, and an observatory.

CHAROLLES, a town in France, in the department of Saône-et-Loire. (Saône et Loire.)

CHAROLLE, a district deriving its name from the above town, which was the capital of it. Charolles was a subdivision of the duchy of Bourgogne, and Philippe le Bon and Charles the Temeraire, the two last of the great feudal dukes, took, during their father's lifetime, the names of Charolles and Charollets. It is included in the department of Saône-et-Loire, except a small part west of the Loire, which is for the most part comprised in the department of Allier.

[AUVERGNE, SAÔNE ET LOIRE.]

CHALON, the capital of the department of Saône-et-Loire, otherwise called the CANAL DU CENTRE, one of the most important canals in France. It was commenced A.D. 1783 and finished A.D. 1792, and runs through the district from which it takes its name, connecting the navigation of the Loire at Digoin with that of the Saône at Châlons. From its junction with the Loire it follows the valley of the Arroux, a feeder of the Loire, for a very short distance, and then that of the Bourbince, a feeder of the Arroux. The only town of any importance on its course, is the town of Paray (population, 2722; town, 3409; whole commune), in which the canal then passes through the etang or pool of Long Pendu, and follows the valley of the Dheune, a feeder of the Saône, to near the town of Chagny (population 2898), and then to the town of Saône-les-Bains, in which town the canal diverges and goes to Châlons. Its whole length is given in the table subjoined to Male Brun's Géog. Universelle, at 116,813 mètres, or about 72 English miles. It is the seventh of the French canals. Here is deposited the largest chart of the canal, maps of France by A. H. Brué, and by the Society for the Diffusion of Useful Knowledge, as near as can be 70 miles.

CHARON, a native of Lampsacus, on the Hellespont, one of those numerous Greek historical writers now only known by fragmentary, and often corrupt, remains. Charon lived before Herodotus, who was born B.C. 494, and he was younger than Hecataeus, who was probably in the vigour of his life about B.C. 560. Charon wrote a history of his native town, a history of Persis, a history of Crotæ, and other works. The loss of the Cretan history is to be regretted, as we possess so few materials for the ancient state of that island. (See Suidas, Χαρών; Creuzer, Historiorum Graecorum Antiquitis, Fragmenta, &c. Heidelberg, 1866, 8vo.)

Sunday writers of the seventh and eighth centuries; one of Constantinople and the other of Nauces, in Egypt.

CHARON, the fabulous boatman who conveyed the shades of the departed across the rivers which girt the infernal regions. (Eurip. Alcest. 253, 441; Aristoph. Ran. 209; Orest. 314; Apollon. Rhodius, 320.) (For other important accounts of this subject, see Sixths of a drachme), which was laid in the mouth of a person about to be buried, in order that he might have wherewith to pay the freight. (ναυλα, ναυκε, Aristoph.; J. Polliuix, ii. 62; and Juvenal, iii. 367.) Charon does not appear in Homer; his origin is referred to Egypt (Diodor. i. 190), where he had a representative in Ammon, the emblem of a future state: his name is thought to point to the joy produced by a freedom from sublunary troubles. (See Creuzer, Symbolik der Alterthümer.)

CHART, or SEA-CHART, a hydrographical map, or a projection of some part of the sea, in plaino, for the use of navigation. Fournier, in his Hydrographie, (fol. par. 1667, p. 305.) ascribes the invention of charts to Henry, son of John I of England, in 1154, and says that the first sea-chart, to appear first to have been issued from the Portuguese. Bagford says, the first step that was made toward a knowledge of our own coasts was by an almanac, with a chart of the coasting part of England, printed on vellum or parchment, by William of London in 1297, and known from the name of the compiler, being called, an being an account of the compass, elevation of the pole, latitude, sea coasts, &c., 1242, finely painted on eighteen very large skins of parchment, still preserved among the royal manuscripts in the British Museum, measured 29 E. ix. From this description also is a very curious chart, preserved in the same collection, formerly belonging to Lord Oxford, and probably of as early if not an earlier date than Rot's charts. New Holland is laid down upon it as an island, under the name of Java le Grand. The writer of the present article, many years ago, consulted the late Captain Finders for his opinion whether this portion of the chart could have been laid down by original observation. The answer was, 'most certainly'; for lines of red dots are made to border the coast exactly to the extent to which it is coral-bound, and no farther; I was wrecked upon one of these reefs, and have reason to remember them.' For this chart see also the chart of the coast of Africa and the different shores in this chart, in French; and the very spot upon it which Captain Cook afterwards named Botany Bay is designated as Côte des Herbages.

The generality of the early Portuguese charts seem to have been made about the close of the fifteenth century.

The particular species of charts most used at sea will be explained under the head Mercator's Projection. See also Map, and Stereographic, Orthographic, Gnomonic, and Conical Projections, under which last head look for Flamsteed's and the modern French projections.

CHARTA, MAGNA. [Magna Charta.]

CHARTÉ, from charta, 'paper,' was the name given to the letters of franchise granted by the kings of France during the middle ages to several towns and communities, by which they were put in possession of certain privileges or rights, such as the fee election of their local magistrates, &c. At present the word charte is used in France to signify the solemn acknowledgment made by the State to a town of the absolute independence of its nation, which is the fundamental law of the French constitutional monarchy, and the principle of which resembles that of the English constitution as founded on Magna Charta, and which is a guarantee of the rights of the people. The legislative power is vested in two chambers, peers and deputies, subject to the king's sanction. All laws are promulgated by the king. The executive power is vested solely in the king, who appoints to all the offices of administration, both civil and military, and who exercises all the powers of the national forces. He also appoints the judicial officers, who however, when once appointed, cannot be removed by him. The king makes all treaties of peace, alliance, or commerce. His person is inviolable; but the ministers are responsible. One article of the Charter, having given occasion to a false interpretation, of which the ministers of Charles X. availed themselves to issue the famous ordinances which gave rise to the revolution of July, was altered on the accession of Louis Philippe, and it was clearly explained that the King cannot give the necessary ordinances and regulations for the execution of the laws, without having the power in any case to suspend the course of the law or to delay its execution.'

The Charter, with this and one or two more modifications of it, to become law, to be signed by the King on the 9th of August, 1830. Since that date, a change has been made by the legislature in the constitution of the Chamber of Peers. The Peers are for life, and the peacage is not hereditary in their families.

The Charter consists of sixty-nine articles, and is inserted in the 'Almanach Royal et National,' which is published every year. (Louis XVIII.)

CHARTER, or CHARTA. The primary meaning of Charta, or Carta, is paper, or any material to write upon, as charta pergamen a (parchment). It then came to signify any deed or writing, in the same manner as liber (the inner bark of a tree), from which a sort of paper was made, now signifies any description of book.

The word Charter, or Charta, through being used as synonymous with deeds and writings (Co. Litt. 6a), is now applied only to those grants of the king which create corporations, or confer some privilege or exemption; in fact, the word has acquired the secondary meaning of privilege or immunity.

Many charters, of parchment antiquity, the city of London possesses two granted by William the Conqueror in 1066, and several copies of Magna Charta and the Charta de Foreste are in good preservation. Blackstone, quoting Matthew Paris, says, that an original great charter, under Henry II., was sent to the Bishop of Canterbury, and to those which had forests within them a charter of the forest also; notwithstanding which, he continues, it is surprising how few of these originals are at present extant.

CHARTER-HOUSE, London. Sir Walter de Menny, knight, a stranger born, lord of the town of Menny, in the diocese of Cambrai, in the Netherlands, who for services
rendered to King Edward III. was made one of the first knights of the order of the garter, in the year of the great plague, 1349, bought a piece of ground without the bar of West Smithfield, which he inclosed and had consecrated for the burial of the dead, and where, in that year alone, moment; Tideway Hall was thereupon called the New Church-Hawe, and a chapel was built, wherein, about the year 1360, Sir Walter de Mauny intended to found a college for a warden or dean, and twelve secular priests; but in the next year that design was altered, when Michael de Northburgh, bishop of Ely, took the don, joined with him in the building and endowing a priory in this place for double the number of Carthusian monks, which was to be called The Salutation of the Mother of God, and the foundation appears to have been finished about A.D. 1363. For its origin, see p. 39 of the Antiquities, received to King Henry VIII. June 10, 1533, amounted to £346 2s. 7d., its clear income to £42L 0s. 4d. per annum. Barcroft, in his 'Historical Account,' says the site of this house was granted June 12, 1542, to John Bridges and Thomas Hale, for their joint lives; and April 14, 1555, to Sir Edward North, who was made a baron 1st Marem: his son, Roger Lord North, sold it May 31, 1565, to the duke of Norfolk, for 2,500L., whose son, Thomas Howard, earl of Suffolk, sold it in 1613 to John Catesby, for 13,000L., who founded upon it, and largely endowed, a most magnificent hospital, consisting of a master, preacher, a head schoolmaster, and second master, with forty-four boys and eighty decayed gentlemen, who have been soldiers or gentlemen, with the provision of the servants. In 1661, it was registered by the clergy of the diocese, other officers and servants of the house. Besides the scholars upon the foundation, whose number is now limited to forty-two, the masters are allowed to receive certain others, whose sons are of certain certain persons from the dean and chapter. Charter-House is one of the first schools of the metropolis. Among the eminent persons who have received their education there, may be enumerated Dr. Isaac Barrow, the mathematician; Addison; Steele; Dr. Benson, bishop of Gloucester; Dr. Bishops, bishop of Norwich; and Bishop of Bath. The Charter-House, no doubt, derives its name from a corruption of chartreuse, a monastery of Carthusians. The possession of certain cemeteries of this house forms a striking feature in the history of the Reformation of the time of Hen. VIII. (See Dugdale's Monasticon, new edit., vol. vi. p. 6. Tanner's Notit. Monast., ed. Nashmidt, Midd., vol. iii. 3. Camden's Britannia, vol. ii. p. 52. Fawkes, Biogra. Lond., 1737. Carlisle's Deter. of the Endowed Grammar Schools in Eng. and Wales, 2 vols., Lond., 1818, vol. ii. p. 2.)

CHARTRAIN, a district in France, bounded on the N. by the Meuse, on the E. by the Franche-Comté, on the S. by the Orléans, and on the W. by the Loire. It is more extensive district of Bouoce. [BEAUX.] It takes its name immediately from its capital, Chartres, but originally from the people, Carnutes, by whom, at the time of the Roman invasion, it was peopled. This nation was mentioned by Livy as one of those which, in the time of Ariminus, the elder, king of Rome, contrived to open the way to the Alps and inundated the north of Italy. [CAU.] In the time of Caesar they extended from the Seine to the country of the Loire. It was in the territory of this people (which Caesar informs us was held to be the central region of Gaul), that the Druids held their great annual convention. It is not very easy to judge of the relations that subsisted among the people of these districts, and the manner in which they appear to have been under the protection of the Remi ('quorum erant in clientela' is Caesar's expression, de Bel. Gall. vi. 4), and their part in the struggle against the Romans is not such as to indicate pre-eminent power or valor. They saw Tarsessus, which Caesar had appointed to be their chief, and allied themselves with their neighbours, the Senones, to oppose the Romans; but the vigour and activity of Caesar, who, in his sixth campaign, B.C. 53, took the field himself and sent his legions in pursuit of the enemy without striking a blow. In the following year they were active in forming a general confederacy of the Gauls against the Romans, and offered to take the lead in the revolt. On the appointed day, therefore, under the command of Cæsar, 8,000 men took up their positions in the suburbs of the enemy. Immediately, the towns, Chartres (now Orleans), and murdered all the Roman traders whom they found there. So rapidly was the news of this stroke spread, that 'what was done at Ge-
two are so steep as to be almost inaccessible to carriages. Every thing about the place has an air of antiquity: the houses are for the most part old; many of them still have the door-way in the form of a pointed arch, with Gothise ornaments. The suburb of Bourgneuf, by which the road from Paris enters the town, is also an antiquity, and seeming for the most part the appearance of a mere village consisting of cottages with their gables towards the street. There are in Chartres four squares; one in the lower town, that of St. Pierre, bordered with two rows of trees, is an antiquity, from which it takes its name; two in the upper town, viz., the corn-market and the herb-market; and one, the hand-

somest of all, called La Place des Baricaudes, outside the walls. The honey from the beehives of the little village bordered by an obelisk, erected by the inhabitants (A.D. 1801) to the memory of their fellow townsman, General Marceau.

But the finest edifice in Chartres is the Cathedral. The first cathedral had been burnt by the Normans, A.D. 858, but it was repaired; in the 10th century it was again burnt; and a third fire, in 1026, occasioned, according to general belief, by lightning, consumed not only the Cathedra-

le, but nearly the whole city. By the zeal of the then bishop, Fulbert, liberal contributions were obtained towards the rebuilding. The work began, but not being however proceeded slowly, and it was not until 1260 that it was dedicated. Even at that period only one of the great towers was surmounted by a spire, the second spire not being added till the 16th century. The principal front is on the north, and consists of fifty French feet in breadth, and is formed by two square towers and the in-

terval between them, the towers and the intervening part of the structure being each fifty feet in breadth. The spire which is of considerable size and height, is surmounted by a cross of different heights. The old spire is a pyramid of many sides, rising to the height of three hundred and forty-two French feet from the ground; the architecture is plain and heavy; but it is cased with stone curiously carved like the sculp- tures of the 15th century. The other towers, towards the spectator wherever he may be standing. The new spire is 328 French feet high: it is of much more florid architecture than the other, and is so much admired as to have become proverbial for its beauty. That part of the front which is between the towers has a portal with three doorways, with pointed arches, and is adorned with statues, which were preserved at the destruction of the former cathedral, and are interesting as memorials of the state of art in the 13th century. After passing through an arch of twenty feet, there is an arched window with stained glass, and still higher a superb circular window, or rose. The north and south sides of the church are of equal interest with the principal front. The transepts have each a handsome portal of three doorways, but the windows are much less extensive; these are windows, and over the windows a large rose.

The interior of the church is admirable for the justness of its proportions; it has a peculiarly sombre character, which arises from the windows being so charged with colour as to exclude more light than usual. It is only in very clear weather that there is light enough to read. The choir is beautiful: it is adorned with statues and bas-reliefs of various merit; the Descent from the Cross, a bas-relief by Bridan, is a chief-d'oeuvre; and the Presentation of our Saviour in the Temple, by the same sculptor, is much admired. There is a noble group behind the high altar, of the Assumption of the Virgin, also by Bridan. A curious anachronism is preserved in the church. During the revolu-
tionary troubles, the barbarians who were besieging Chartres, were so anxious to destroy it, and were proceeding to execute their purpose, when one of those present, anxious for its pres-
servation, proposed to crown the figure of the Virgin with the bonnet de ville, and thus transform her into a goddess of liberty. The offer was accepted, and the sculpture was thus preserved. The inner dimensions of the cathedral are as follows: length, three hundred and ninety-six feet; breadth at the transept, one hundred and ninety-five feet; height above the nave, 116 feet; length of the nave, 114 feet. The above dimensions are in French feet, which exceed the English feet in the proportion of 16 to 15. Under the cathedral is a subterraneous church, with several chapels, one of which contains the tomb of the Virgin, was formerly much resorted to by pilgrims.

Chartres had formerly seven parish churches. That of St. André (St. Andrew), which was collegiate, stood on the bank of the Eure, and having to be enlarged, a bold arch was thrown over the river, and upon this arch the choir was built. The choir has since been destroyed, and the rest of the church, used as a store-house, is falling to ruin. The church of St. Pierre (St. Peter) has some fine pointed windows; this, once the church of a Bene-
dictine abbey, now converted into a barracks. There were formerly several religious houses. The office of the Prefect is a new building, with pleasant gardens round it; and there is a handsome modern theatre.

The population of Chartres, in 1832, was 13,576 for the town, or 14,439 for the whole commune. The chief trade of the place is in corn and flour; the corn-market is the first in France. Some sergees and other woolen goods are manu-
factured, and some hosiery; a good red wine, and some Welsh sugar is made. There is a museum of natural history, and a public library of 30,000 volumes and 700 manuscripts. A noble hospital or almshouse has been lately founded by M. d'Aligre, who has devoted to its erection and endowment a sum of more than 80,000l. It is intended for 100 infirm persons, of each sex, and 100 found-

child.

The arrondissement of Chartres contained in 1832 a population of 105,783. (Dulau, Histoire des Environs de Poitiers, Vayres, 1833.)

CHARTREUSE, a celebrated monastery of the Carthusians (les Chartreux) (CARThUSeS), the first established of that order, and therefore distinguished by the epithet La grande Chartreuse. It is in the department of the Loirs-et-Cher, in France, and a few miles from the Alps. Travellers who wish to visit it usually go from Grenoble on ac-

count of the better accommodation for the journey to be pro-
cured there, although the post town of les Echelles in Savoy is nearer and more convenient. Lords and dukes of Savoy travel frequently make a circuit which brings them into the road from les Echelles at the village of St. Laurent du Pont, the approach in that direction being more picturesque. From St. Laurent the road runs along the bank of the Yonne through a low and dilly vale, which is closed by a house with an arched gateway under it and a double door. This doorway is the entrance to the inclosure of the Chartreuse, which is formed by a group of mountains, so lofty, so sparsely wooded, and so wild that the traveller, covered from their base to their summit by a dark pine-
forest. In this inclosure the road runs through a thick pine-forest, a lofty mountain rising precipitously on the right, and on the left is the abyss through which the Geier river runs. After leaving the forest the road passes through a little valley, which is no longer so dense as to exclude the light, and the booch re-
places the pine, which is seen only on the summit of the rocks; at length the forest ceases, and the traveller emerges into a large meadow, at the farther end of which the mo-

nastery appears from the opposite side.

The other approach, and the more direct from Grenoble, is by a mountain, Les Sa Peye, from the summit of which is a fine view of Grenoble and the valley of the Grésivaudan, in which it is situated. The road from Les Sa Peye to the in-
iclosure of the Chartreuse lies through pine-forests with some intervals of pasture; there are even some farm-houses and a small hamlet. The inclosure of the Chartreuse is entered from this side by a narrow pass and by a house with a gateway under it, similar to that already described; and at a short distance from this entrance is the village of Chartre-

s, from which the monastery derives its name.

This awful solitude was the cradle of the Carthusian order. [Baumo.] Bruno himself did not found it himself; but turned to it to receive the Carthusian discipline to a system was the work of a remote successor. The cell of St. Bruno is now converted into a chapel, and the fountain is still shown at which he quenched his thirst.

This monastery has been burnt eight times; twice by the Calvinists in the religious wars of the sixteenth century.

Our authorities do not state when the present building was erected; it is a substantial edifice of simple architecture, but magnificent by its extent and situation. The buildings were 714 feet in length: the cells of the fathers, eighty in number, are around this cloister, with motteaux from scripture or some religious book painted outside the doors; each cell includes two rooms, besides a chamber for hostelry; and the cloister extends to a large and handsome garden, high and low, planted with every kind of fruit; and a large garden, newly inclosed. The hall is adorned with portraits of all the generals of the order; the table of the kitchen is formed of two coarse
of knowledge of the history of the several opinions, and of sound language and ideas in their discussion, which we read with surprize mingled with admiration, in the Preface to a Treatise on the Miracles of a Frenchwoman thirty years of age, written very few years after the introduction of the Newtonian philosophy into France. She takes that intermediate view between the iconoclastic and the scholastic, and the assertion of it as a primary quality of matter, from which few who consider the subject would now dissent. At the end of this work is an epistolary discussion with M. de Mairan, on the principle of vie etroite, the metaphysical part of which the reader will find much more extended in Madame du Chastelllet, and afterwards revised by her author. You are here endowed, as it were, 2. of Newton's system; 2. investigations of various points by the analysis of the continental school, to give one simple view of the exclusion of the geometry of Newton; 3. an abridgment of Clairaut's work, containing the first principles of the calculus of Daniel Bernoulli's essay on the tides. The translation itself is a close copy of the original in form and matter, but does not profess to be perfectly literal, where the Latin is concise and the French obscure, or where the French is formed by the French of D'Aron, xviii. (expressly, that he might have the sanction of Clairaut in his version of Newton. In 1804 the correspondence of Madame du Chastelllet with the Count d'Argental was published at Paris, to which was appended a treatise on the life, and a dissertation on the career of J. L. Lagrange. (See Urie; Memoires pour servir a la Vie de Voltaire, ed. par lui-même; in Vie de Voltaire, par Condorcet.)

CHATEAUBRIAND. [Loire Inferieure.]

CHATEAUBON [Nievre.]

CHATEAUBUD [toun of France, in the department of Eure et Loir, on the banks of the river Loir (which uniting with the Sarthe flows into the Loire), and on the road from Nantes to Tours. It is 68 miles in a straight line B.W. of Paris, or 81 miles by the road through Rambouillet and Chartres, and 39 miles S. by W. from the latter town, which is the capital of the department: 48° 5' N. lat., and 1° 18' E. long.

This town was formerly the capital of the Daunois, a district included in the general government of Orleans, and the diocese of Chartres. It is a town of considerable antiquity, being mentioned by Aimoin and Grégoire of Tours. In the tenth century it appears to have been subject to Thibaut le Tricheur, Count of Blois, Tours and Chartres. It was four times burned by the Normans, and has been standing. Afterwards Chateaubud had viscounts of its own until the fifteenth century, when it was united with the county of Daunois. The counts of Daunois built the rest of the castle.

Chateaubud was burnt in 1723, and rebuilt on a regular plan, which renders it one of the handsomest towns in France. The streets are broad and straight, with neat and uniformly built houses, and some good public buildings, such as the town hall, the office of the sub-procuror, formerly a convent, and the college or high school. The castle is a Gothic building, and one of the finest of the kind in France. The walls of the old tower, built by Thibaut, are about 16 feet thick. There is a good place, or square, and a bandstand, which are the scene of the annual chronicles of her day. The state of manners however, and in particular the method in which marriage was contracted among the French, are too well known to require any comment. In 1788 Madame du Chastelllet wrote, for the prize of the Academy of Sciences, on the nature of fire. In 1749 she published at Paris her 'Institutions de Physique,' addressed to her son, and a second edition appeared at Amsterdam in 1756. The principles of well-known systems of Leibnitz and of Newton (the latter then almost new in France) are explained in a familiar style, and with a degree

CHASTELLET. GABRIELLE-EMILIE LE TONNELIER DE BRETUILL, MARQUISSUE DU, the translator of Newton into French, was the daughter of Baron de Bretuill, and was born in 1706. In what manner she was led to study mathematics is not stated; she also became a proficient in Latin, English (in which Voltaire, as he tells us, was her instructor), and Italian. She married very early to the Marquis du Chastelllet, and died August 16, 1749, her death having been hastened by close application to her translation of Newton. She died in the palace of Lanuville, at the court of Stanislas, where Voltaire also was then residing. Her diarion (as the French call it) with other manuscripts of the most sacre part of her life, are the principal part of the anecdotes of her day. The state of manners however, and in particular the method in which marriage was contracted among the French, are too well known to require any comment.

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Anjou, about A.D. 1637, it would be a handsome town if its streets were not so crooked. The houses have a cheerful aspect, and several of them are handsome.

There is a pleasant promenade commanding a delightful prospect of the country through which the Mayenne flows; the banks of the river are shaded by trees, a garden of orchards, and walnut-trees, and crowned with steep slopes. One of the principal suburbs is separated from the town itself by the river.

The inhabitants amounted, in 1832, to 6143. The chief branches of trade are corn, which is made and bleached here, and in wax; serges, and other woollens, hats, and leather, are also made, and the town serves as an emporium for the wine, coal and slate of Anjou. There is a good High School, and three hospitals, or sick-houses. The arondissment of Château-Gontier had, in 1832, a population of 72,888; it is the chief grain district of the department.

CHÂTEAULIN. [FINISTERRE.]

This town owes its origin and name to Hérault, lord of the soil in the eleventh century, who built here a castle, Château d'Hérault, which is no longer in existence. The town stands on the right or east bank of the Vienne, which separates it from one of its faubourgs or suburbs. This suburb is united to the town by a bridge which was built by the celebrated duke of Sully, the approach to which on the town side is by an avenue forming a public walk; and by a gateway passing through a castle with four towers, also built by Sully. Some have confounded this with the old Château d'Hérault, which has been improved, and is now a residence. A famous racecourse has been established here, in one of the fields, and is said to be the finest in the country.

The inhabitants amounted, in 1832, to 9437. They were formerly engaged in the manufacture of clocks and watches, and cutlery. The manufacture of clocks and watches is not, however, mentioned by the more modern of our authorities; that of cutlery still continues to be the staple article of the town. Five hundred families are said to be engaged in this branch of industry, but they are supported rather than enriched by it. Their knives are particularly in repute; they are cheaply and nicely got up, but their temper wants hardness: they are stamped by appointed authorities, who are peculiar in rejecting such as are not properly finished.

The trade of the inhabitants through the town is considerable, and M. Milin (Voyage dans les Départements du Midi, Paris, 1811) gives the following account of the engenious with which the dealers in wine, oil, cheese, and oil, and the tanners and butchers, go to town. In the morning the tanners, with mats on their heads, and baskets of coarse tallow, set out on foot to visit the province. They are followed by the butchers, who are peculiar in rejecting such as are not properly finished.

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The trade of the inhabitants through the town is considerable, and M. Milin (Voyage dans les Départements du Midi, Paris, 1811) gives the following account of the engenious with which the dealers in wine, oil, cheese, and oil, and the tanners and butchers, go to town. In the morning the tanners, with mats on their heads, and baskets of coarse tallow, set out on foot to visit the province. They are followed by the butchers, who are peculiar in rejecting such as are not properly finished.
tions which inclose the naval and military establishments at Chatham, it seems probable that the Romans had a burying ground here. A number of antient graves and other excavations were opened, and Roman bricks, tiles, columns, and weapons were found. The name of the town is Saxoo, and was written Cætham or Caetham, which is supposed to signify "the village of cottages." It continued an insignificant place until the formation of the dock-yard, since which time the town has become a part of it is within the liberties of the city of Rochester. The parish church was entirely rebuilt in 1788; in addition to it there is a church, erected in 1821 by the commissioners for building new churches, the proceeds of which are held by the incumbent. The parish is in the diocese of Rochester.

The extensive naval and military establishments are at Brompton, a little distance from the town, and entirely separated from it by a line of fortifications. The dock-yard was founded by Queen Elizabeth, previous to the invasion of the Armada, on the site of what is now termed the Ordnance Wharf, and occasionally the Old Dock. It was removed to its present situation in 1622, the demands of the navy requiring the increased accommodation. Elizabeth erected Upnor Castle, on the opposite side of the Medway, for the purpose of defending the dock-yard and shipping. But this fort proved ineffectual for protection from the attempt of the Dutch, under De Ruyter, who, in 1667, having taken Sheerness, pressed on towards London. On Granta, there was seventeen sail of light ships, and eight fire ships, to destroy Chatham. He succeeded in breaking a chain stretched across the Medway, and, in spite of the fire from the castle, burnt and sunk some ships. Failing the country alarmed, the English fleet, under the command of the Royal Charles. It appears from Pepys's Diary, that this attempt of the Dutch created great alarm, and that the greatest confusion and imbecility prevailed at this time in the English fleet. The army having invested Granta and been driven off by the English, the Dutch retired, taking 3000 prisoners. After this engagement many parties connected with the admiralty strove, with characteristic meanness, to shift the blame on others. This event was the cause of stronger and additional fortifications being erected.

In the reign of Queen Anne two acts of parliament were passed for the extension of the dock-yards and arsenals of Chatham, Portsmouth, &c. But nothing very important was effected at Chatham until after 1757, when, from that period down to 1805, according as alarm respecting French invasion prevailed, or as the suddenly increased naval war required, new buildings were erected, and the extensive area occupied by the different establishments was inclosed by a strong line of fortifications on the land side, and protected on the Medway by the three forts already mentioned, by the Upnor and Gillingham Forts on the Chatham side, and other defences. Upnor Castle is at present merely a powder magazine.

The naval and military establishments consist of a dock-yard of great length, which has 2000, and capable of receiving vessels of the largest class; an extensive arsenal; barracks on a large scale for artillery and engineers, infantry and royal marines; a park of artillery; magazines and store-houses; besides a handsome dock-chapel, and a number of habitations for the civil and military officers employed. The principal mast-house is 240 feet long by 120 wide. The rope-house is 1128 feet in length, and 47 feet wide, in which cables 101 fathoms in length and 25 inches in circumference are made. The rope-makers in all the departments is of the best kind. A duplicate of Brunel's block-making machine is kept here, ready for use in case the machine at Portsmouth should get out of order. The engineer barracks are built in a plain and simple style, and are extensive and convenient. There is a school for engineers, which was established in 1812, in which young officers and recruits of the engineer service are trained to a practical knowledge of their duties. Near the dock-yard gate is a large naval hospital, which was erected in the reign of the present king (William IV.) when lord high admiral.

At Rochester Bridge, the Medway, which discharges into the same estuary with the Thames, is a large tide river. This is sighted by a splendid group of new churches at near interval, which are built at Chatham. Above Rochester the high lands approach each bank of the river, forming a kind of amphitheatre, and Chatham and Rochester on the east side, and also on the close at the river at Upnor, Castle, Below Chatham dock-yards the high lands decline, first on the right, and then on the left bank forming a flat, marshy country, to the spacious outlet of the Medway at Sheerness.

There is an establishment for convicts at Chatham, consisting of four ships, one of which is always employed for juvenile offenders, and another used as a hospital. The prisoners are employed in different departments of the dock-yard and arsenal.

The 'Chest' at Chatham was established in the reign of Elizabeth, and was originally a voluntary contribution from the monthly wages of seamen for the support of their married and superannuated brethren, but which soon settled into a compulsory payment. Several notices occur in Pepys's Diary, in which the sum of 100 guineas was the amount of this charity. On the recommendation of the Commissioners of Naval Inquiry, it was, by the 43 G. III. c. 119, removed to Greenwich. The monthly payment from the wages of seamen is now disbursed by the W. IV. c. 34, and the amount is urged annually on the consolidated fund.

An hospital for lepers was established at Chatham by bishop Gundulph, in the reign of William the Conqueror. It appears to have been incorporated. Its revenues, which were small, passed at the time of the dissolution of the monasteries, though attempts were afterwards made in the reigns of Elizabeth and James I. to wrest them from the hospital. The building does not now exist, with the exception of a small chapel, but the revenues of the hospital were granted to the dean and chapter of the new Collegiate Church of Chatham, on the north side of the High-street, or principal street of Chatham, there is an hospital for decayed mariners and shipwrights, which was founded by Sir John Hawkins in 1592, and is now incorporated by the Chatham-and-Chattowss, a genus of fishes of the herring family, [CLupeidae.]

CHATRE, LA., a town in the department of Dordogne, in France, 20 miles south-east of Cahors; governed by a magistracy. It is 159 miles S. by W. of Paris, 46° 35' N. latitude, and 1° 29' E. longitude.

This little town is situated in a pleasant country, on a gentle slope, on the left bank of the river Indre. The inhabitants number about 800. They are a quiet, industrious, peaceable and peaceful people, who form a whole commune, manufacture some serges, and trade in cattle, wool, and leather. It is the capital of an arrondissement, which contained in 1832 52,497 inhabitants.

CHATSWORTH, an extra-parochial liberty, in the hundred of High Peak, county of Derby, 3 miles W. of Bakewell, and 16 W. of Buxton, is the seat of the duke of Devonshire, who is constable of the Peak. The present mansion stands on the site of a former one, in which Mary, Queen of Scots, was confined during her captivity in England, and which, during the civil wars, was devouredly in possession of the parliamentarians and royalists, and withheld the siege of the parliamentary troops in 1645. It was taken down at the close of that century to make room for the present building, which was not completed until 1706. During the time that it was building, it was the residence of Marshal Tallard, the French general, who had been made a prisoner at the battle of Blenheim. The house is built in the Greco-Italian style, with Ionic columns, and a flat roof, with whether of the pinnacles. It is about 190 feet square, inclosing a court with a fountain in the centre. The stone was hewn out of a neighbouring hill. The park is 10 miles in circumference, through which runs the Derwent, divided into two branches by the waters, which are so ornamental to the grounds, are supplied from a reservoir on the summit of the nearest hill. Chatsworth is part of the manor of Lancaster, and within the jurisdiction of a court of pleas held at
CHAPEL en le Feith for the recovery of deits under 48s; but its population is returned with the parish of Edensor.

CHATEL (Catala). This term comprehends all property moveable or immovable, which are not freehold. Chattels are called thus, which, in the language of earlier law writers, savour of the reality; that is, relate to or are interests in land. Chattels personal are moveable goods, as horses, plate, money, &c. Chattels of each description pass to the personal representatives of the deceased property. In some other general sense, the real property is called personal property. The laws which govern this description of property are now, from the growth of the mercantile system and the change of manners, equal in importance with those relating to reality; but during the prevalence of the latter, in the chapel in Brilston, where it instantly gave rise, chattels (including even terms for years) were considered of small importance in a legal point of view, and, indeed, prior to the reign of Henry VI., were rarely mentioned in the law treatises and Reports of the day. (Reeve's Hist. Eng. Law, 362.) Many articles of property, intrinsically chattels, from their intimate connection with other property of a freehold nature, and being necessary to its enjoyment, descend therewith to the heir, and are called as in the case above stated real property. Mementoes of title to an estate of inheritance, growing trees and grass, deer in a park, and such fixtures as cannot be removed from the freehold without injury to it, are not chattels, because they pass by the heir. In the hands of a person however who holds real, which is what they become their chattels, and pass to his executor. Chattels, except so far as they may be impressed with the nature of heir-looms, cannot be entail, though they may be limited so as to vest, during years for the death of a person or persons in being. They are not within the statute of Uses, inasmuch as the proprietor of a chattel is said to be possession of it, not seized, which is the word used in that statute; nor are the same formalities required in passing a chattel as in passing a real estate. A chattel may also be at an earlier age than one which disposes of real estate; at fourteen years of age by a male, and twelve by a female. They do not go in succession to a corporation sole, except only in the cases of the king and the chamberlain of the city of London. (Co. Litt.; Bl. Comm.)

CHATTERTON, THOMAS, was born at Bristol on the 20th of November, 1752. His father (who died three months before the birth of his son) was a singeing master at the cathedral, and also master of a charity school in Pyle-street. At the age of five years he was placed under the care of Mr. Love, who succeeded his father as master; but his father's death, in 1757, had extinguished his patience in attempting to teach him, and sent him back to his mother as a 'dull boy, and incapable of further instruction.' His mother now took him under her care, and at the age of six years he first learned his letters from her. At the age of seven he began to write, which, to use her expression, he 'felt in love'; and it is probable that his passion for antiquarian pursuits received its first impulse from this circumstance. His progress was now as rapid as it had been before slow; books of all kinds, but more especially those which treated of ancient customs, were his chief companions. On the 3d August, 1760, when not quite eight years of age, he was admitted into Colston's school, Bristol, an establishment much upon the plan of a modern school. He remained here seven years, during which time he wrote some minor pieces of poetry, chiefly satirical, and the celebrated De Bergham pedigrees. On the 1st July, 1767, he left the charity school, and was bound apprentice to Mr. John Lambert, attorney, of Bristol, for seven years. While in Mr. Lambert's service he communicated to Feix Farley's Bristol Journal the article by which he first attracted attention. In the beginning of October, 1768, the new bridge at Bristol was completed. It is said to have taken five months of the year to build, and Mr. Lambert the elder, who was at first rather harshly interrogated as to the manner by which it came into his possession. After several contradictory statements, he asserted that he had received the paper in question from his father, who had found it, with many others, in some chests in Redcliff church, where they had been deposited in the monument room, in 'Canynges' cofe.' Soon after this occurrence he became acquainted with Mr. Catteot, a gentleman fond of antiquarian researches, and with Mr. Barrett, surgeon, who was engaged in writing the history of Bristol. In the autumn of the same year, at very soon after his introduction to him, some of the pretended Rowleian poems, among which were 'The Bristow Tragedy,' Rowley's Epitaph upon Mr. Caneing's Ancestor, were discovered in one of the small pieces of parchment among the old parchments. The pretended originals bore all the marks of antiquity, which he had made them assume by rubbing them with ochre, stamping on them, and blacking them in the chimney, and the flame of a candle. Mr. Barrett published these statements in his work, fully believing them to be genuine. After his introduction to these gentleman Chatterton's ambition increased daily, and he often spoke in raptures of the undoubted success of the plans he formed for his life. His MSS. were various in quality; heraldry, English antiques, metaphysics, mathematics, astronomy, music, and physics, by turns occupied his attention; but the two first were his favourite pursuits.

His attention, however, was not confined to the Rowley poems. He wrote also, essays, both in prose and verse, which he forwarded to the periodicals of the day. Most of his pieces appeared in the 'Town and Country Magazine.' Growing dissatisfied with a life of poverty and obscurity, he committed his MSS. to the care of his patron, and on being taxed by Chatterton for his assistance to release him from his profession, he neglected to answer his letters. At last, when he had received a diglified and spirited letter from Chatterton, demanding his MSS. (a letter which he termed 'singularly impertinent'), he returned the MSS. and letters in a blank cover.

Being determined to relinquish his profession, Chatterton made every effort to accomplish this object. The idea of suicide became familiar to his mind, and he often intimiated to Mr. Barrett that he would probably vest his whole fortune in the charity school. On hearing this the family of his master became alarmed; but Mr. Lambert himself could not be persuaded that his threats meant anything, until he found one day on his desk a paper entitled, 'The last Will and Testament of Thomas Chatterton of the parish of St. Mary Redcliff, in the city of Bristol, being sound in body, or it is the fault of my last surgeon; the soundness of mind the coroner and jury are to be judges of, desiring them to take notice that the most perfect masters of human nature in Bristol distinguish me by the title of the mad genius; therefore if I do a mad act it is comformable to every action of my life, which all savoured of insanity. Item. If, after my death, which is but probable before the feast of the resurrection, the coroner and jury bring it in lunacy, I will and direct,' &c. &c. This alarmed Mr. Lambert, who considered it imprudent to keep him any longer, and accordingly dismissed him after he had been in his service about two years and nine months.

Chatterton went up to London, having received liberal offers from the book-sellers. 'My first attempt,' said he, 'shall be in the literary way: the promises I have received are sufficient, and I am persuaded that I shall be able to find a publisher to my expectation, find myself deceived, I will in that case turn Methodist preacher. Credulity is as potent a decease as ever; and a new sect may easily be devised. But if that too should fail me, my last and final resource is to be to my mother and sister are full of enthusiasm. 'I am settled,' says he, 'and in such a settlement as I can desire. What a glorious prospect! Party-writing seems to have been one of his favourite employments. It was agreeable to his satirical turn,
and by raising him into immediate notice grated his pride, which was unbounded. When recommended by a relation to get into some office, he stormed like a madman, and asserted that 'he hoped, with the blessing of God, very soon to be sent prisoner to the Tower, which would make his fortune.' His writings during his imprisonment in London were numerous; but they failed to procure him a comfortable income, and he was plunged from the highest pinnacle of hope to the depths of despair. In the middle of July, 1770, he removed from Shelford, where he had lodged, to an apartment in St. Mary Redcliffe, where he died on the 24th of August following, being literally in a state of starvation, he terminated his existence by poison. He was buried on the following day in the burying-ground of Shelford workhouse.

Chaucer was not only seventeen years and nine months old when he died. The controversy as to the Rowley poans engaged numerous writers of the day; but few people now believe the Rowley poems to be anything else than the production of Chatterton himself.

No monument has yet been erected to the memory of the boy-bard of Bristol. The circumstances attending his death have hitherto prevented any such testimonial; but while the beautiful church of St. Mary Redcliffe stands, with the legend of the English poet inscribed upon it, he will not need any other monument; and in the construction of the Rowley poems, he himself built.

The person of Chatterton was, like his genius, precocious. One of his companions says he looked ‘like a spirit.’ His eyes were uncommonly piercing, and one more so than the other. His habits were domestic, and his affection for his relatives unbounded. The two following passages, one from the Rowley papers, and the other from one of his acknowledged poems, may be safely pronounced to be from his hand, notwithstanding the antedated disguise of the passage from the Rowley papers:

The wicked stars are setting on the page drops fall;
The forest melancholy smite, and drenches the rains;
The custom griefs the cattle pull.
And the full flocks are drovage over the plains;
Dashed from the cinders the water falls again;
The dust rises:
And the hot fires smoulder in the wide howling skies.

Pale rugged Winter bending o'er his head,
His grizzled hair bedewing with dew drops,
R 누구, a dusty light, a conjugal and dead;
His robe, a shade of bright everlasting blue.

His train, a mother d. sagacious, noble closed,
A bishop, the most exquisite of the remnant race.

Whilst thou wast walking, bleeding, broken, and loud,
Roll the whole story in the sounding shores.

To the Memory of Mr. Thomas Phillips.

The last edition of Chatterton’s works is in 3 vols, 1803.

CHAUER, GEFFREY, a very distinguished name in the long catalogue of eminent Englishmen. He lived much in the country in the reigns of Edward III, and in his intercourse with several members of his family. He was also employed in the public affairs of the realm. But it is as a writer, and especially as a poet, that he claims the notice of posterity. Most of those of his age were accustomed to write in Latin, but Chaucer wrote in the vernacular language of his own age and country: he refined it indeed, but neither his labours, nor those of his contemporaries, Longland, Gower, and Wycliffe, were able to fix the language. The English of Chaucer’s time, and the English of the language of persons can read it with ease, and none without the assistance of a dictionary. Yet a little pains would enable any one to master his language and versification, and the pains would be repaid, for his writings are valuable not only as illustrating the manners and habits of the time, but as the productions of a mind eminently poetical. His chief work is a collection of stories, entitled by him, ‘Cantebury Tales,’ being a series of tales told by the individuals of a party of pilgrims going from Southwark to Canterbury, to which he added such as he thought necessary to the work. A competent judge, the late Mr. Godwin, says, that after the dramas of Shakespeare there is no production of man that dazzles us so much and gives us such pleasure.

A poet of Chaucer’s was the remainder of Edward III, and Richard II, for he was born within a year or two of the accession of Edward, and he died in 1400, soon after the deposition and death of Richard. His most remarkable contemporary was Wycliffe, and it is to the honour of John of Gaunt, one of the sons of King Edward, that he was the associate, friend, and patron, of both these illustrious men.

Chaucer has himself told us that London was the place of his nativity. He was educated at Cambridge, and also at Oxford, and some of his biographers represent him to have received his university degrees at one of the most celebrated schools of the sciences in Europe. He studied the law, moreover, in the Inner Temple.

While at the university he produced two of his larger works, the ‘Legend of Good Women,’ and ‘the book of Troilus and Criseyde;’ but he wrote, in fact, nothing of importance till after he had been married before that year. The old biographers of Chaucer, with some probability, represent him to have been married some years earlier, and to have taken to wife another lady of the court of Queen Philippa, also named Philippa, a daughter of Sir Payne Roet, of Hainault, and sister of Katherine Swinford, the mistress, and afterwards the wife, of John of Gaunt, the mother of the Beauforts.

In 1358 John of Gaunt married Blanch of Lancaster. It was a serious marriage, or courtship that Chaucer wrote his ‘Parliament of Birds.’

In the next year he appears as a soldier. One of the most authentic and interesting memoirs we possess of him is given by him in a letter written to Scrope and Grosvenor, on the question of right to a particular figure in their coat armour. The depositions are preserved on the rolls at the Tower. Chaucer deposes among other things, that he was in the expedition of 1355, when Edward in the year 1337 invaded the French, and was driven out by the French, near the town of Retters. How long he remained in captivity is not known, and it is not till 1367 that we meet with him again in the national records, which are almost the only deposits of authentic information concerning the illustrious Englishman of that age. He had an annual pension of twenty marks granted to him, a sum which his biographer, Mr. Godwin, estimates as equivalent to 240l.; the grant is entered on the patent rolls there is proof of the payment of it in the issue of an Exchequer of the 44th year of Edward III., and also of the payment of ten marks a year, granted to Philippa Chaucer, his wife.

In 1369 he wrote ‘the book of the Duchesse,’ a funeral poem, on the death of Blanch, Duchess of Lancaster. It is by the light of the national records that we are enabled to trace other facts in the life of Chaucer. In 1370 he had letters of protection, being about to depart beyond sea. It was in an embassy to Genoa, to treat on some public affairs. This visit was about to be one of the most remarkable events in his life, inasmuch as it seems probable that he there saw and conversed with Petrarch, of whom he speaks in the induction to one of his tales. On his return, he had a royal grant of a piece of wine, to be kept daily at the port of London, and was soon after made comptroller of the customs in that port. He found also on the rolls as having a grant of a wardship in 1375, and another of a portion of contraband wool in 1376. About the time it is supposed that he wrote the poem which Pope afterwards modernized, called by him the ‘House of Fame.’

In 1377 he was employed in an embassy of a delicate and honourable nature. It was to negotiate a marriage between Richard II., Duke of Wales, and Mary of France, daughter of the French king.

King Edward III. died in May, 1377. To the early years of his successor are referred Chaucer’s poems entitled ‘The Black Knight,’ ‘The Legend of Good Women,’ and ‘The Flower and the Leaf.’ If Mr. Godwin’s assertions are sufficient, it would appear that he was in disgrace and misery during much of the period from 1384 to 1389. He is represented as having been implicated in the affairs of John of Gaunt, and in the struggle for the majority of the London, and to have been in consequence driven into exile, flying to Hainault, and afterwards to Zealand, and on his return to England being imprisoned in the Tower, from which he was not released but at the expense of some disbursements, and he is said not to have been at all credible to him. It is remarkable, however, and it renders somewhat doubtful what is above stated respecting him, that in 1386 he was returned a knight of the shire for Kent, and that in 1389
he was appointed clerk of the works, an office which he did not long hold.

In the last ten years of his life he seems to have lived retired from public affairs, though receiving from time to time marks of royal favour. A house at Woodstock, which had been given to him by the king, near Donnington, near Newbury, the ruins of which are visible on the right hand of the road from London to Bath, are believed to have been at this period his usual place of abode. It is certain that it was in this part of his life that he wrote his 'Canterbury Tales,' which flowed into the Marne just below the town, 139 miles E.S.E. of Paris in a straight line, or 148 miles by the road through Provins, Troyes, and Bar-sur-Aube.

Chaucer was originally an insignificant place with a castle called Haute-Fouille, which belonged first to its own lords, afterwards to the counts of Champagne, though it was in the domain of the bishops of Langres, to whom those counts paid homage. The town was walled in by Louis XII., in 1500, and some fortifications were added by his successors, Francois I. and Henry II. All these fortifications were, in the middle of the last century, falling into ruin; but in 1821 they were repaired, and Chauvont ranks again among fortified places. In 1814, Russia, Prussia, and Austria, here concluded a treaty of alliance against Napoleon.

Chauvont is a handsome town, built on the slope of a hill, the town-hall, the portico of the church or chapel attached to the high school, and the hospital are of note. The inhabitants hold an annual fair for the whole commune, manufacture druggists and other wools, gloves, which are in high repute, linen, hosiery, cutlery, and candles; and trade in corn, and in sheep fed in the neighbouring country. There is a college or high school, an agricultural society, and a theatre.

The arrendissement of Chauvont had, in 1832, a population of 84,865. Bouchardon, an eminent sculptor was a native of this town.

CHAUVA [PALMEREDEJ].

CHAUVY, a town in France, in the department of Ainse; it is on the river Oise, the navigation of which commences here, 65 miles N.E. of Paris, or 70 miles by the road through Senlis, Compiegne, and Noyon.

The town is pleasantly situated, and the inhabitants, who amount to 4,290, carry on considerable commerce, favoured by the navigation of the Oise, but also by the junction here with that river of a canal which communicates with Peronne, St. Quentin, and Cambry. The inhabitants manufacture linens, sacking, cotton-yarn, knit woollen socks, and leather. The looking-glasses of St. Michael are celebrated, for which purpose there is a hydraulic machine. Beside the above articles, the inhabitants trade in wood, grain, cider, oil, horses, &c.

CHAUSSÉE, a small island belonging to France, in the English Channel; it belongs to the department of Manche, and is the principal of a cluster of islands nearly opposite to the town and port of Granville, distant about 10 miles. Its length, measured on Brut's map of France, is about 2 miles, the breadth half as much; but those geographical dictionaries of France, and the Sterne's Universal Atlas, do not aggregate these dimensions. This island was once inhabited by hermits, who here sought retirement from the world.

At a subsequent period there was a convent of Cordeliers, containing many of those monks, but the English having twice pillaged the convent, the monks withdrew to the main land. Since their retirement the place has been inhabited only in summer, by the workmen who come from Granville to quarry granite, which is here found of good quality, but the beautiful village of Chausseé has nowhere the air of Malo. The smaller islands of the group are many of them inhabited.

CHECK, a species of chequered cloth, in which coloured lines or stripes are placed on other ground; it is a Persian cloth. This manner of beautifying wools is probably very antient. Many of the figures in Rosellini's Egyptian work are dressed in chequered cloths. Bishop Anselm's book concerning Virginitia, written about the year 1086, when
the art of weaving in this country was probably in a comparatively rude state, contains a distinct indication that chequered robes were then in fashion. 'It is not a web of one uniform colour and texture, without any variety of figures that pleases the eye and appears beautiful, but one that is woven by shuttles, filled with threads of purple, and many other colours flying from side to side, and forming a variety of figures and images in different compartments with admirable art.' These compartments, defined and bounded by coloured threads, constitute the fabric called a check. Sometimes, however, the whole web is formed, not by differently coloured threads, but by threads of different fineness and quality. Thus if the chain, warp, or longitudinal yarns of the web be composed of alternate parcels of white wool, the other yarns, and the weft also be composed of such alternate parcels, we shall have a check very distinctly brought forth without any distinction of colour, properly so called.

Cotton handkerchiefs chequed of various colours have been manufactured in India probably from time immemorial under the name of pullicites. They were first imported into this country from Madras, whence they derived the name by which this style is still known in the trade. The ground of these has usually a pale buff colour, and is woven with the minkin yellow cotton. Checks in this country are mostly manufactured for the coarser purposes of seamen's shirts, aprons, and bed-gowns of females in the lower ranks of life. The quantity required is so great as to make it a very important branch of business, and to render every mechanism which facilitates the fabrication an object of considerable consequence. Blackburn, in England, and Kirkaldy, in Scotland, are the two chief seats of the check trade, the former in cotton, and the latter, till of late years, chiefly in linen yarns.

For the decussation of woof yarns of different kinds or colours in one web, different shuttles must be in readiness for alternate use. The mode in which this is effected is shown by the figure.

Here we see the picking peg F, which the weaver seizes in his right hand, and with a dexterous jerk causes one of the shuttles lodged in the separate cells at DD, to move from the one side of the loom to the other across the line of the shed. The strings that descend from that peg to the drivers or pickers BB, seen at the end of the cells. The three shuttle boxes here shown are so constructed as to be made to slide up and down in a vertical plane, so that each box with its appropriate shuttle may at pleasure be brought on a level with the shuttle race, or open shedding of the warp, and thus be thrown across. These three boxes are suspended by cords from the cross levers G, G, which turn upon centres, in the suspending bars marked B, B, or the swords of the lay; being the levers which make it vibrate backward and forwards in the act of weaving. A represents the cross bar of wood on which the lay C oscillates upon iron guides, or pins driven into each of its ends, and resting upon the upper rails of the loom as shown in section. The under part of the lay is seen at D, and the upper part, called the lay-cap, H, is seized by the weaver's left hand in driving home each shuttle or shot of weft. The two pieces of buffalo hide called the drivers or pickers E, E, are perforated, and traverse or slide horizontally upon smoothly polished iron rods. These pieces give the immediate impulse to the shuttle. The weavers' twitches at the picking peg H must be sufficiently smart to communicate adequate velocity to the shuttle, so as to lodge it in the opposite box, and overcome its friction along the warp race, without however giving it too forcible a pull, which might do injury to its point, or throw it out of the shed. The pin H is made to slide freely from right to left upon two upper bars of the lay, and thus give such motion to the levers G, G, as may bring the proper box opposite to the shuttle driver.

As diversity of woof renders diversity of shuttles necessary, it becomes expedient to shift them rapidly, otherwise the operation would be much impeded. The above plan is not the one originally employed, but is in many respects better. The pin H being fixed by friction only, so as to slide from right to left on the upper shelf of the lay, the levers G, G, connected with it, may be readily moved, being within reach of the weaver's hand, as he works the lay. The driver, if drawn forward, would present an obstruction to the shifting of the boxes, but this may be easily avoided by some slight modification, and arrangement.

Mr. Robert Kay, of Bury, son of the most ingenious but persevering inventor of the fly shuttle, invented the above-described drop box, for making checks, by means of which, the weaver could at pleasure use any one of three shuttles without rising from his seat, each shuttle containing a differently coloured woof.

CHEDDAR, a decayed village in Somersetshire, near the stupendous chasm in the Mendip Hills, known by the name of Cheddar Cliffs. Cheddar is said to be derived from ced, a conspicuous brow, or height, and der, water. The village consists of three or four irregular streets. It was formerly a market-town. In one of the streets a beautiful old market-cross is still standing. The population of the parish in 1831 was 1869.

An extensive flat, called Cheddar Moor was, until within these few years, covered with British barrows, or tumuli; but all trace of these has been destroyed by cultivation and enclosure.

Cheddar Cliffs are the sides of a chasm, extending across one of the highest ridges of the Mendip Hills. 'The chasm across the diameter of Mendip is more than a mile in length. The opening yawns from the summit to the roots of the mountain, laying open a sublime and tremendous scene, exhibiting a combination of precipices, rocks and caverns of terrifying descent, fantastic form, and gloomy vacancy. The approach from the village is extremely picturesque.' (Rutter's Delineations of the North Western Division of Somerset.)

The entrance to one of the caves in these cliffs is nearly 100 feet above the valley; and it is stated to penetrate upwards of 300 feet beneath the rocks. A rough carriage road winds for nearly two miles through the cliffs, until it reaches the summit of the hills.

Nine springs rise from the foot of the rocks, and almost immediately uniting, form a clear and beautiful stream, called Cheddar Water, which falls into the Axe.

The grass covering the land between Axbridge and Cheddar has the appearance of a continued garden. It is sheltered by the Mendip Hills on the N. and E., and is chiefly occupied in the culture of vegetables, large quantities of which are obtained early in the season, and forwarded to Bristol.

CHEESE, caseous matter or caseum, one of the component parts of milk, which may be considered under two points of view; first as uncoagulated, and secondly in a state of coagulation, in which it resembles fibrin and albumen. Uncoagulated caseous matter exists in solution in milk. In order to obtain it, skimmed milk is to be mixed with dilute sulphuric acid, which combines with and precipitates the casein in the state of a white clot; this is to be washed on a filter to deprive it of the milk which it contains, and it is then to be mixed with water, and digested with carbonates of lime or barytes. The acid combines with
the earth, and the caseous matter separated dissolves in the water; it is to be freed by filtration from the earthy salt and buttermilk; and it is then ready for use.

The filtered solution of caseous matter is of a pale yellow colour, and rather mucilaginous, like a solution of gum. When evaporated, it exahes a smell of boiled milk, and is gradually covered with white pellicle, which may be removed by washing, and there is in it a more or less bitter taste. As it becomes dry, the caseous matter remains as a dry mass of an amber colour, which may be redissolved in water.

The aqueous solution is coagulated by acids, even by the acetic acid, especially with buttermilk. When a strong aqueous solution of caseous matter is kept, it changes, emits a smell of old cheese, soon putrefies, and yields amonia.

Acids act upon caseous matter very much in the same way as upon albumen; with a small portion of acid it forms a compound which is soluble in water, and with a larger quantity of the same acid even, the compound is but slightly soluble; but when it is deprived of the excess of acid by washing, it again becomes soluble in water. The character which principally distinguishes caseous matter from albumen is the precipitation of the former by acetic acid; this precipitate may be indeed redissolved by acetic acid, but it requires much more than albumen does. It is soluble in alcohol. Caseous matter is dissolved by cold weak solutions of alkali at 40° Fahrenheit; if they be strong and heated, the caseous matter is decomposed, ammonia is evolved, and the solution contains an alkaline sulphate; tannin decomposes both the aqueous and alcoholic solution of caseous matter.

It has been already observed that the caseous matter may exist both in an uncoagulated and in a coagulated state; what has already been mentioned relates to it in the former condition. The coagulation of caseous matter occurs in a mode which is peculiar to this substance; it is not effected by boiling, but it takes place when either the aqueous solution of caseous matter or milk itself is gently heated with the mucous membrane of the stomach of a young calf, or what is called rennet.

According to Bernoulli, the action of this substance has not been hitherto explained. In order to investigate the subject, he washed and dried the stomach of a calf, and yet he found that one part of this mixed with 1800 parts of skimmed milk, and heated to 122° Fahrenheit until the operation was complete, so perfectly coagulated the caseous matter that no trace of it remained in solution. When caseous matter coagulated by rennet is burnt, it leaves 65 per cent. of ash, which are principally磷酸 of lime, phosphoric acid and milk from the milk in combination with the caseous matter.

According to Gay-Lussac and Thénard, caseum consists of Carbon 59.781
Oxygen 11.499
Hydrogen 7.400
Asoke 21.381

Berselius, however, considers that this analysis is not correct, because the substance analysed contained, as he states, acetic acid and butter.

The poorer kinds of cheese consist almost entirely of caseum, while the better sorts contain a considerable quantity of butter mixed with it. Cheese obtained from skimmed milk, which contains but little butter, is hard, translucele, yellowish, and has a greasy lustre, owing to a small quantity of butter which it contains, and which may be separated by ether without altering its properties. When put into water, it swells and softens, but does not dissolve; when it is heated, it softens without melting, may be drawn into threads, and becomes elastic like caulochoue. At a higher temperature, it melts, swells, burns with flame, and yields amonia. Its compounds with acids and alcohols are generally similar to those of uncoagulated caseum; but when the acid is removed by carbonate of lime, the residual caseous matter, being in a coagulated state, is not dissolved by water, as the uncoagulated is under similar circumstances.

When long kept, cheese undergoes peculiar changes; when recently coagulated, it contains nearly 80 per cent. of liquid, which is removed by pressing and drying; it may then be kept for a long time, and becomes more agreeable to the taste. When cheese has not been carefully pressed, it undergoes a peculiar kind of putrefaction; and according to Proust, two substances which he calls caseous oxide and caseous acid, are produced. Bracconnet has since extended the substance that forms the oxide, obtained from skimmied milk with nearly 40 pints of water, and suffered the mixture to putrefy during a month between 62° and 77° of Fahrenheit; the greater part of the cheese dissolved, and the solution was blotted; it had a putrid smell, though the cheese was contained in a vessel; but by evaporation to the consistency of honey, it became, after some time, a granular mass, one part of which was soluble and another insoluble in alcohol; the latter was dissolved in water, and the solution, rendered colourless by animal charcoal, yielded by spontaneous evaporation small brilliant silicide crystals in the form of rings and cufflinks; but in order to render these white, it was requisite to dissolve and crystallize them several times. Instead of caseous oxide, Bracconnet called it caseous carboxylic acid, and obtained (from the oxide produced by putrefaction) it has the following properties; it is inodorous, taste rather bitter, but somewhat like that of roast meat; it is gritty between the teeth, heavier than water, easily pulverized; it burns totally; and when heated in a tube open at both ends, sputter, without suffering any change, in slender crystals; and another portion is decomposed. When heated on silver, it blanckens it, on account of the sulphur which it yields. It is soluble in 22 parts of water; it is not soluble in ether; nor does it destroy the caseous solution; but infusion of galls occasions an abundant precipitate, which an excess redissolves.

The substances contained in the decayed cheese, which the water did not dissolve, were oleic and colourless, and the caseous matter, a little margaric acid, much margaric of lime, the base of which was derived from the lime existing in the caseous matter, whilst the acids came from the butter.

It has been observed that badly prepared cheese has sometimes, though rarely, become poisonous by keeping.

The cause of this change has not been ascertained.

CHEESE. The milk of animals consists of three distinct substances, which are separated from one another by a slight change, which begins as soon as it is exposed to the air. The oily part rises to the surface by its less specific gravity; and when it is collected into a solid mass by agitation it forms butter; the curd, coagulated by the action of rennet, is pressed into cheese; and the fluid which remains is the serum or whey.

In the making of cheese there are certain general principles which are essential, but slight variations in the process produce cheeses of very different qualities; and although the most important circumstance is the nature of the pasture on which the cows are fed, yet much depends on the mode in which the different stages of the fabrication are managed; and hence the great superiority of the cheeses of particular districts or dairies over those of others without any apparent difference in the pasture. By skill and great attention excellent cheeses are made in places where the pastures are not considered so well adapted to produce milk of a proper quality; and in those countries where the cows are chiefly kept tied up in stalls, and are fed with a variety of natural and artificial grasses, roots and vegetables, superior cheese is often made.

The first process in making cheese is to separate the curd from the whey; this may be done by allowing the milk to become sour, but the cheese is inferior in quality, and it is difficult to stop the acid fermentation and prevent its running into the putrefactive. Various substances added to milk will soon separate the curd from the whey. All acids cause milk to curdle. Muratic acid is used with success for this purpose in Holland. Some vegetables contain acids which readily coagulate milk, such as the juice of the fig-tree, and the flowers of the Galium verum, or yellow lady's bed straw, hence called cheese-rennet. Where better rennet cannot be procured, they may be substituted for the most natural curdler of milk, which is the gastric juice of the stomach of a sucking calf. This juice rapidly coagulates the milk as the calf sucks; and the only difficulty is in collect the and keeping it from putrefaction by allowing the from the instant the stomach is taken from the calf. The
preparation of the remont, as it is called, is a most important part of the process of cheese-making. The following may be considered as the simplest, and perhaps the best. As soon as a sucking calf is killed, the stomach should be taken out, and if the calf has sucked lately, it is all the better. The remont should be a half of a calf, and all fat and useless membranes carefully removed. It is only the inner coat which must be preserved. The congealed milk should be taken out and examined; and any substance besides curd found in it should be carefully removed. The serum has, in an hour, or less, the curd is in a state to be replaced in the stomach with a large quantity of the best salt. Some add a little alum and sal prunella; others put various herbs and spices, with the view of giving the cheese a peculiar flavour, but the plain simple salting is sufficient. The curd is then skinned, put into a ball of about three inches in diameter, and covered with a saturated solution of salt, in which they are soaked for some hours; but there must be no more liquor than will moisten the veils. They are afterwards hung up to dry, a piece of flat wood being put crosswise into each to stretch them out. They should be perfectly dried, and look like parchment. In this state they may be kept in a dry place for any length of time, and are always ready for use. In some places, at the time of making cheese, a piece of a veal is cut off and soaked for some hours in water, or whey, and the whole is added to the warm milk. In other places, pieces of veal are put into a linen bag and soaked in warm water, until the water has acquired sufficient heat, which is procured by a kettle of hot milk, and the whole is added to the warm milk. The method employed in Switzerland is as follows: A dry veal is taken and examined; it is scraped with a knife, and where any veiny or pieces of tough membrane appear they are removed. The whole surface is examined, and washed carefully, if any dust or dirt has adhered to it; but otherwise it is only wiped with a cloth. A handful of salt is then put into it, and the edges of the veal are folded over and secured with a wooden skinner stuck through it. In this state it forms a ball of about three inches in diameter, and is laid to soak twenty-four hours in a dish containing about a quart of clear whey, which has been boiled, and all the curd taken out. The next day the veal is well squeezed, and put into fresh whey; the first infusion being put into a proper vessel, the second is afterwards mixed with it and bottled for use. Half a pint of this liquor of a proper strength is sufficient to curdle forty gallons of milk. Experience alone enables the dairyman to judge of the strength of his remont; for this purpose he takes in a flat laddle some milk which has been heated to about 95° of Fahrenheit and adds a small measure of remont. By the rapidity with which it curdles, and the form of the flakes produced, he knows its exact strength, and puts more or less into the warm milk to make it the proper degree. A proper instrument might easily be invented, by which the exact degree of strength might be ascertained, and a rule given to guide the less experienced; but as long as a man feels a strong certainty of experience alone, he is not likely to encourage any confidence which he may feel in his own level with himself. From this cause even the thermometer has not been introduced generally into any great dairy, nor have any certain rules been given to ascertain the exact heat required in the milk, when the remont is added, to form the best curd.

There are different kinds of cheese, according to the mode of preparing it: soft and rich cheeses are not intended to be keeping; hard and dry cheeses are adapted to be kept and stored. Of the former, there are French cheeses, and those soft cheeses, called Bath cheeses and Yorkshire cheeses, which are sold as soon as made, and if kept too long become soft and putrid. Silton and Gueryo cheese are intermediate; Parmesan, Dutch, Clothier, Gloucestershire, and similar cheeses, are intended for keeping. The poorer the cheese the longer it will keep; and all cheese that is well cleared from whey and sufficiently salted will keep for years. The small Dutch cheeses called Edam are generally adapted for keeping, and form an important article in the victualing of ships.

The Gueryo and Parmesan cheeses only differ in the nature of the milk, and in the degree of heat given to the curd. The cheese made from pure milk is entirely made from new milk, and Parmesan from skimmed milk. In the first nothing is added to give flavour; in the latter saffron gives both colour and flavour: the process in both is exactly similar. A large cauldron in the shape of a bell, capable of holding from 60 to 120 gallons of milk, hangs from an iron crane over a hearth where a wood fire is made. The milk, having been strained, is put into this cauldron, and heated to nearly blood-heat (95° to 100°). It is then poured into a great number of smaller cauldrons above, is intimately mixed with the warm milk by stirring it with the hand, in which is held a flat wooden skimming-dish, which is turned round in the milk while the hand and arm stir it. A cloth is then laid over the cauldron, and in about half an hour, or less, the curd is in a state to be removed. This is ascertained by pressing the skimming-dish on the surface, when the whey will appear on the part pressed. If it is longer than an hour in congeulating, the milk has been too cool, or the remont not strong enough. The weather being generally a great deal warmer than the process is much yet to be learned by accurate observations with meteorological instruments, especially electrometers. When the curd is properly formed, it is cut horizontally in thin slices by the same skimming-ledge. Each slice, as it is taken off, is poured along the side of the cauldron which is nearest to the operator; by this means every portion of the curd rises successively to the surface, and is sliced thin. The whole is then well stirred, and the cauldron is removed over a slow fire. One dish after another is put hard wood at the end, and which has smaller cross pieces or sticks passed through holes in it right angles to each other near the end, is now used to stir and break the curd, and, in a very short time, the hard portion of the curd can well bear, even when used to it. The cauldron is again swung off the fire, and the curd is stirred with the staff, which is moved round with a regular rotatory motion, the knob running along the angle formed with the side by the bottom of the cauldron, which is in the form of a bowl. After stirring in this manner nearly an hour, the curd is found divided into small dikes about the size of a pea, which feel elastic and rather tough under the finger. Experience alone can teach the exact feel they should have. The whey, of course, is removed occasionally as it now floats at top, and the curd is collected in the bottom by giving a very rapid rotatory motion to the contents of the cauldron by means of the staff. A cloth is now introduced into the bottom, and all the curd collected over it; it is raised by the four corners, and laid on an instrument like a small ladder, which is placed across the mouth of the cauldron. The whey runs out through the cloth, which is a common cheese-cloth woven with wide interstices; and the curd in the cloth is placed in a shape or hoop made of a strip of wood four inches and a half side, the two ends of which lie over each other, so that the diameter can be increased or lessened. A cord fixed to one end of the hoop is passed with a loop round or below the hoop and by this means the hoop ventilates the ring from opening more than is required. The curd is pressed into this ring with the hands, and the ends of the cloth are folded over it. A round board, two inches thick, and strengthened by cross pieces nailed on it, is placed over it with its edge below the cloth. The cheese-press is a simple long board or frame forming a lever, loaded at one end and moving in a frame at the other; it is lifted up by another lever connected with it, and let down on a strong stick, which stands with its end on the centre of the board last-mentioned. Thus the weight is easily removed or replaced. The hoop containing the cheese is placed on a similar board, and from it the table of the press slopes towards a wooden trough, which receives the whey. The whey is all drawn off. The curd is examined; the edges, which are pressed over the ring, are pared off, and the parings are put on the centre of the cheese; a fresh cloth is substituted, and the whole cheese is turned. The ring, which opens readily by unhooking the cord, allows the cheese to be remounted upon it and again tightened. This is repeated two or three times in the day. In the evening, a small portion of finely powdered salt is rubbed on each side of the cheese, and it is kept for a few days in a cool place, with the cover rubbed with salt, and placed on a shelf with a loose board under it. The wooden ring remains on the cheese for two or three days, and is then taken off. This is the whole process.

During the next six or eight weeks, the cheeses are washed and renewed every day, until the salt is sifted on the surface and rubbed in with the hand until it will take no more. The cheese-room is always very...
codd, and little light is admitted. A free circulation of air is essential. The cheeses are in perfection in about six weeks. A large proportion of the whey and fluid is disengaged in the ripening, and forms those round eyes which are a peculiar feature in these cheeses. The smaller and rounder the eyes, the better the cheese is reputed to be, and even a minute slice of the whey that contains the eyes is called the tears; when these dry up, the cheese loses its flavour. These particulars will give any one unacquainted with the dairy a tolerable notion of the process of cheese-making in general.

The production of cheese is carried on in great perfection, and the greatest pains are taken to extract every particle of whey. For this purpose, the curd is repeatedly broken and mixed, the cheeses are much pressed, and placed in wooden boxes which have holes bored in them. This ensures the removal of the whey in every direction, so that no particle of whey can remain in the curd. The elastic matter formed also escapes through these channels, and the whole cheese is a solid mass without holes, which in this cheese would be looked upon as a great defect. The salt is intimately mixed with the curd, and not merely rubbed on the outside. This checks internal fermentation, and prevents the formation of elastic matter. The whole process of cheese-making is minutely described in "The Dairy," and the reader is referred to that work for the details.

Gloucester and Somersethshire cheeses are similarly made, with this difference, that the curd is not so often broken or the cheese skived, and a portion of the cream is generally added to it, which has the effect of increasing the richness of the cheese. It is therefore mixed with the curd before it is put in the box, and is not poured over it like the Gloucester. It is a better cheese than our Suffolk skim-milk cheese, and forms an important part of the provisions usually stored for a Dutch family. In France the Roquefort cheese is compared to our Stilton, but is much inferior, although a good cheese. The little cheeses made from cream in a small bowl, folded in paper, called Neufchâtel cheeses, are imported from France as a delicacy. They can be easily imitated, being nothing more than cream thickened by heat, and mixed with creamed salt. They undergo a rapid change, first becoming sour and then mealy, in which state they must be eaten.

Stillton cheese is made by adding the cream of the preceding evening's milk to the morning's milking. The cream should be intimately mixed with the new milk for about one hour. The curd should be made in a small box, and the rennet. The cheese maker should be very pure and sweet. When the milk is coagulated, the whole curd should be taken out, dried and weighed, and every particle pressed. It is then put in a shape in the form of a cylinder, eight or nine inches in diameter, the axis of which is longer than the diameter of the base. When it is sufficient to break, it is broken and rolled into a round ball, and put on a shelf. It is occasionally powdered with flour, and plunged into hot water. This hardens the outer coat and favours the internal fermentation, which ripens it. Stillton cheese is generally preferred when a green mould appears in its texture. To accelerate this, pieces of a mouldy cheese are sometimes inserted into holes made for the purpose of the scoop, called a master, and wine or ale is poured over for the same purpose; but the best cheeses do not require this, and are in perfection when the inside becomes soft like butter, without any appearance of mouldiness. In making very rich cheeses the whey must be allowed to run off slowly, because, if it were forced rapidly, it might carry off a great portion of the fat of the cheese. This happens more or less in every mode of making cheese. To collect this superabundant butter, the whey is set in shallow pans, and is done with milk when butter is made; and an inferior kind of butter called "skey butter" is made from the cream of this skimmed off. Cheeses are frequently coloured, a practice which probably arose from the notion of making the cheese look richer; but now it deceives no one. Yet if some cheeses were not coloured, they would not be so marketable, owing to their inferiority of quality. The green, yellow, and marigold, are also used for this purpose. This last gives a more natural tint than the arnottio, which is too red.

The whole cheese is made in Somersetshire, which is highly praised, Milton, Derbies, and other counties. The other cheeses are coloured: Cheshire, yellow; but Gloucester and North-Wiltshire Foreign cheeses are only coloured very slightly, if at all; the Dutch cheeses are made in a very similar manner to the Gloucester cheeses, but the milk is generally curdled by means of rennet. The Dutch cheeses are not so valuable for exportation, and to extract the whole of the whey. For this purpose the curd is repeatedly broken and pressed; and before it is made up into the round shape in which it is usually sold, the broken curd is well soaked in a strong solution of salt; which is then well worked in with the whey throughout the whole mass, and effectually checks fermentation. When the cheeses are finally pressed, all the whey which may remain is washed out with the brine; salt is likewise rubbed over the outside, and they are set to dry on shelves in a warm dry place. The flavour of these cheeses is impaired by the stoppage of the fermentation; but it never hardens, and it acquires the valuable quality of keeping well even in warm climates. From the place where this cheese is commonly made, it is known by the name of Edam cheese. A finer cheese is made at Gouda and other places, by imitating the process in making Gruyere cheese; but this cheese is always full of small cavities, and will not keep so long as the Edam. The cheese most commonly met with in Holland is the "Rogne," and of the same kind as the Edam. This has been made very like Cheshire cheese. It grows hard and dry, and has no much flavour. To supply this defect, common seeds are mixed with the curd, which those who are accustomed to it are pleased with. This is in every respect a better cheese than our Suffolk skim-milk cheese, and forms an important part of the provisions usually stored for a Dutch family. In France the Roquefort is compared to our Stilton, but is much inferior, although a good cheese. The little cheeses made from cream in a small bowl, folded in paper, called Neufchâtel cheeses, are imported from France as a delicacy. They can be easily imitated, being nothing more than cream thickened by heat, and mixed with creamed salt. They undergo a rapid change, first becoming sour and then mealy, in which state they must be eaten.

A small cheese, much relished by all ranks, is made in the north of Germany in the simplest manner. It is usually made from milk from which the cream has been taken off to make butter,—although the entire milk is much better. This is curdled by being placed near a fire. When it has become somewhat sour, it is put into a linen bag, and all the whey well pressed out. When it is tolerably solid, it is broken by the hand in a tub, and is then very fine. It remains in this state several days, until a considerable alteration takes place, and the curd ferments, begins to be readily perceived by the colour. It is then taken out, broken, poured into a large wooden ball, and flattened balls three or four inches in diameter, by beating them in the hands. These balls are ranged on a board, and set to dry. A portion of curraway seed is generally mixed with the curd. In a few days the mellowing goes on, and the centre becomes very soft. In this state it is a great dainty for those who disregard a pungent and ftd smell. They are sometimes placed in the smoke of a chimney where the curd fermentation is checked and continues to the centre by the pyroligneous acid arising from a wood fire. They remain in the chimney a considerable time; and when they are used the outer part is peeled off like the rind of an apple. A whole cheese is a mere mouthful. It gives a relish to the sour black bread generally eaten by the lower orders.

The green Swiss cheese, commonly called Schabzieger, which is made in the canton of Glarus, and is by many persons highly esteemed, is made somewhat in the same manner. The curd is pressed in boxes, and the whey run out; and when a considerable quantity has been collected and putrefaction begins, it is worked into a paste with a large proportion of a certain dried herb reduced to powder. This herb, called in the country dialect Bieger (curd-tart) and in general use in Switzerland, is not common in most countries, and has a peculiar aromatic flavour in the mountains of Switzerland. The paste thus produced is pressed into moulds of the shape of a common cheese, and after a good dressing of aromatic herb, it dries into a solid mass, which keeps un changed for any length of time. When used it is rasped.
or scraped, and the powder mixed with fresh butter is spread upon bread. It is either much relished or much disliked, like all those substances which have a peculiar taste and smell.

A species of cheese or rather hard curd is made in the mountains of Switzerland from the whey which has run from the common cheese made of the whole milk. It is called servet. When the curd of the curd cheese, which is often sold by the same name, has been put under the press, a quantity of fermented whey, about two or three gallons, is poured into the cauldron with the new whey, and the whole is heated over the fire till a thick scum rises. This is taken off when the whey is nearly boiling, and put into a square box with holes in it; the whey which remained mixed with the curd, and which is now very blue, is allowed to run out, and a small pressure assists it. When a good whey has been added to the curd, the servet will often weigh twenty pounds. This mass of curd readily dries on the shelf, and becomes hard. It has little flavour, but it serves the people on the mountains for bread. They cut slices of it, spread some butter over, and put a thin slice of cheese upon this; washed down with a cup of fresh or of fermented whey, it forms the chief food of the mountain herdsmen. The only luxury indulged in is an occasional glass of kirsch-curaeus, a spirit distilled from cherries, or of gentian bitters, from the root of the Gentiana officinalis.

When a cheese which has been much salted and kept very dry is washed several times in soft water, and then laid in a cloth moistened with wine or vinegar, it gradually loses its saltiness, and from being hard and dry, becomes soft and mellow, provided it be a rich cheese. This simple method of improving cheese is worth knowing. It is generally practised in Switzerland, where cheeses are kept stored for many years, and if they were not very salt and dry they would soon be the prey of worms and mites. A dry Stilton cheese may thus be much improved.

The cheese trade is one of considerable importance.

CHEESE-RENNET, a wild flower with square stems, shining whorled leaves, and loose panicles of small yellow flowers. It is the Gruelurr perennii of the botanists, and derives its popular name from having been formerly employed to curdle milk.

CHEILLINUS. [Larrioides].

CHEIODOACTYLYS, a genus of fishes, of the section Acantophytyx, and family Scenichytes. Characters: — mouth small; dorsal fin with numerous spiny rays; lower rays of the pectoral fins simple and continued beyond the membrane.

Cheliodactylus monodactylus (Chedonod monodactylus, Cuvier; Linn. Transac. vol. xii.), will serve to illustrate this genus. This fish is about eighteen inches in length; the body is somewhat oval and compressed; the teeth are small and crowded; the pectoral fin is large, and has fifteen rays, the six lower of which are simple and protrude beyond the membrane; the sixth ray from the bottom is very much elongated. The colour is olive, or bronze, with six dark stripes on the back: the fins are blackish, with the exception of the pectorals, which are amber-coloured.

[Cheliodactylus monodactylus.]

This species is very common on the coast of the small island of Tristan da Cunha, and feeds upon the focus pyrifolius.

CHEILODIPITERUS (Lacépède), a genus of fishes of the section Acantophytyx, and family Pterodactylidae. Technical characters: — Body rather short; pre-operculum double edged, the edges finely serrated; scales large, easily disengaged, continuous on to the pre-operculum; the two dorsal fins widely separated.

The characters here detailed are those of the genus other Rodents, and has more relation to the Quadrupedans.

Dental formula: incisors, $2; 1$; molars, $4; 1 = 18$.

Sonnerat says that the Aye-Aye, which is found chiefly if not exclusively on the western part of the island, does not approach any genus, but that it leans towards the Maki, the Squirrel, and the Ape. Its large and flat ears, be he observes, resemble those of both a bat and states that its principal characteristic, and a very singular one it is, is the middle toe or finger of the foot, the two last joints of which are...
LEMUR PLANODACTYLOUS, a name adopted by Shaw. Our figure is reduced from that given by Sonnerat.

CHEIRONECTES, or CHIRONECTES (Mammalogy), Illiger's name for a genus of Marsupial animals. [Dromylus]

CHEIROPODA, CHEIROPEDS, a name proposed by Mr. Ogilby for all the mammiferous animals that are possessed of hands. The following is an abstract of Mr. Ogilby's arrangement of his Cheiropods.

1. CHIRO-MAMMALIA.

Order 1. Cheiropoda.

Mammals with opposable thumbs on the anterior extremities only — — — — — Bimana.

On both anterior and posterior extremities, Quadrumania. And with anthropoid teeth.

Monkeys of the Old World. — — — — — abnormal teeth.

Lemuridae.

On the posterior extremities only — — — — — Pedimana.

And with anthropoid teeth. — — — — — Monkeys of the New World.

Rodent teeth.

Cheiromys. — — — — — abnormal teeth.

Didelphidae.

Observations, commenced in 1829 and continued for more than six years, have assured this zoologist that the non-opposable character of the inner finger of the anterior extremities, which was so remarked in Aotus and Senticulus, is not confined to that genus, but extends throughout the whole of the genera of the South American monkeys, individuals of all of which have, he states, been seen by him in a living state. In none of them, consequently, he observes, does a thumb exist on the anterior limbs; and he considers that it follows as a further consequence that the whole of them have been hitherto incorrectly referred to the Quadrumania by zoologists generally. He speaks of D'Azara's remarks on the anterior extremities of some of the species observed by him had five fingers, originating on the same line with each other, as a solitary exception, and as having been either unnoticed by other authors, or to have been considered as unworthy of attention, so entirely were they at variance with the preconceived notions of all.

As Mr. Ogilby's views on this subject differ from those of other zoologists, and appear to be the result of much attentive examination, principally made on the living animals, we propose to give the substance of his observations on the opposable power of the thumb in certain mammals, considered as a zoological character; and on the natural affinities which subsist between the Bimana, Quadrumania, and Pedimana, as set forth in the abstract of that paper in the 'Proceedings of the Zoological Society of London,' read on the 8th of March, 1836.

*Of the eight natural genera which include all the known monkeys of the western hemisphere, one, Ateles, is entirely destitute of a thumb, or has that member existing only in a rudimentary form beneath the skin. In five others, Myocetes, Lagotrichs, Aotus, Pithecia, and Hapale, the anterior thumbs (using the ordinary expression for them) are placed absolutely on the same line with the other fingers, are of the same form with them, set invariably in the same direction, and are totally incapable of being opposed to them. In the two remaining genera, Cebus and Callithrix, the extremities of the anterior limbs have a greater external resemblance to the hands of man and of the monkeys of the Old World; in the normal fingers of the Old World hands the thumb is placed farther back than the general line of the other fingers, and has, on that account, when superficially noticed, the semblance of being opposed to them; but, as has been correctly observed by D'Azara, with reference to Callithrix, it is less separated than in man: it is, besides, of precisely the same slender form with the rest, is weaker than them, absolutely without power of opposition to them, and habitually acts in the same direction with them. The impression derived from contemplating the hands of the Old World monkeys might induce the belief that the extremities of the Cebi are

† Xip., a hand; wofl., a foot.
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similarly constituted; but if the knowledge that in Myostus, Pithica, &c., there are no opposable thumbs, leads to the conclusion of the anterior extremities of the Cébi, it will be found that they do not act as such, and cannot be considered as the hands of that genus. From insensible observations of many species of that genus, Mr. Ogilby states that it was very evident, notwithstanding the fallacious appearance occasioned by the backward position of the fingers, that their power of flexing the thumbs to the other fingers in the act of precaution; and, in fact, their principal power of prehension seems to be altogether independent of the thumb, for, generally speaking, that member was not brought into action at all, at least not simultaneously with the other fingers, but being loosely on one side, as Mr. Ogilby has seen it do, in like circumstances, in the Opposum, Phalanger, and other arboreal Mammals: when actually brought into play, however, it to the limit of the Old World; the Pedimana direction as the other fingers. Cebus consequently agrees in the character of non-opposability of thumb with the nearly allied genera. And in this hitherto unsuspected peculiarity zoologists obtain a far more important character by which to distinguish the monkeys of the Old and New World than that hitherto relied on, the comparative thickness of the septum narium, or than the accessory aids afforded by the absence of cheek-pouches and calliostomies. He who has seen Mr. Ogilby, and who has now been ascertained to be destitute of anterior hands, they can no longer included among the Quadrumanæ; and he proposes, in consequence, to regard them as Pedimana. He considers that the latter series, the monkeys of Australia, and the parallel to the Old World among the Quadrumanæ; and viewing the Quadrumanæ as consisting of two primary groups, that of which Simias forms the type, and the Lemuridaæ, he proceeds to analyze the Pedimana, in order to determine whether any group analogous to the Lemures exists in it. He finds such a group in the association of the genera Didelphis, Chiroptera, Phalangista, Petaurus, and Phacocepurus (together with a new genus, Pseudopygus, which he has found to necessity include a genus of remarkable peculiarity; and for this association he uses the name of Didelphidae). Aware that the modifications observable in the dentary systems of these several genera have been regarded by many zoologists as betokening a difference of regimen, which has led to their being viewed as constituting distinct families, he, in the first place, states, as the result of his observation of the habits of the numerous species of all these genera which have been, from time to time, exhibited in the Society's menageries, a great difference, little respect, between the Opposum and Phalanger, but that all are equally omnivorous; and then proceeds to discuss the modifications that exist among them in the number and form of the several kinds of teeth, whether not, or so very different in respect to the Opposum and Phalanger as they appear to be at first sight. In further support of his opinion that this association of genera forms a natural family, Mr. Ogilby refers to the gradual and uninterrupted transition from the naked-prehensile-tailed Opposum of South America, through the equally naked-tailed Cuscous, Balantia, of the Indian Isles, to the true Phalanger; and from these to the Petaurista directly on the Rodentia, and, by means of the Pseudocheles, to the Rodentia on the other.

On the prehensile power of the tail Mr. Ogilby particularly insists, as on a faculty possessed by the greater number of the Pedimana, and as one which is, in truth, almost confined to them; only three known genera belonging to other groups, Synestheria, Myrmecophaga, and Cecropiletes, being endowed with it. He remarks on this faculty as one of considerable importance, affording as it does, in some degree, a compensation for the absence of opposable thumbs or a tubercle of the same, that can be flexed in every known instance, whether among the Pedimana or in other groups, is a slowness and apparent cautiousness of motion, not observable in any of the Quadrumanæ, except in some of those.

In none of the true Quadrumanæ is the tail prehensile. Another evidence of the distinctness, as two groups, of the Quadrumanæ and the Pedimana, is furnished by their geographical distribution. The Quadrumanæ are strictly confine to the Old World; for Mr. Ogilby

considers the continent of Australia to belong more properly to America than to Asia. The very few apparent exceptions that occur to this latter position are in the presence of some species of Phalanger in the long chain of islands that connect the south-eastern shores of Asia with the north-eastern coast of Australia; islands which may, in truth, be fairly regarded as belonging partly to the one and partly to the other, and the productions of which might conveniently be divided equally between the two. 

Mr. Ogilby subsequently adverts to another Pedimana animal, the Aye-Aye of Madagascar, constituting the genus Cheirogaleus; respecting the affinities of which he speaks with hesitation, because, having never had an opportunity of examining the animal itself, he is acquainted with its characters only at second hand. He is, however, disposed to regard it as representing a third group among the Pedimana, to be placed in a station intermediate between the Monkeys of the New World and the Phalanger. From the latter he would, in fact, be disposed to associate it, were it not destitute of the marsupial character which belongs to all the other animals comprised in that group. In some of the Didelphidae, the Phalanger and Petaurista especially, there is a marked approximation to that rodent form of incisor teeth which obtains in Cheirogaleus, and which has hitherto been regarded as especially attaching to it an abnormal character.

Mr. Ogilby regards this other animal furnished with hands and however distinct he may be as regards his moral and intellectual powers, he must, zoologically, be considered on physical grounds. By his structural characters he becomes associated with all those of which mention has previously been made; and yet ma and the Phalanger, and the Aye-Aye, unquestionably constitutes among them a peculiar group, sensibly exalted above the rest, as well as above all other Mammals.

CHIROPTERA * (Zoology), the name of a natural family or division of mammiferous animals; the Bats or Flyingmice, of the English; Fledermaus of the German; Vesperpiloto of the Latin; Pipistrelli and Nottois of the Italian; Chauve-souris of the French; for we have here to do with the group of animals with the order of Vespertilionis, which, taking its organization and habits into consideration, can hardly be called a bat, should be rather referred to the Lemuridae than to this family, though its place among created beings is, as yet, hardly agreed on.

GALOPHERUS.

The animals then which we consider to belong to this wing-handed family are those which would come under the genus Vesperpilum of Linnaeus. They all have the faculty of suspending themselves by the hinder limbs, with the whole body out as a separate and well-defined group, distinguished by a folding extension of the membranous skin, which, rising from the sides of the neck, is spread between their fore-feet and their fingers.

ORGANIZATION.

Skeleton. The skull thin, and there is a marked difference between that of the true Quadrumanæ (Pieropus and Cephalotes) and the true or inoffensive Bats, Vesperpilumidae of Gray, the former being much more elongated than the latter. The bony tentorium, so strongly developed in the majority of the carnivora, is entirely absent; but there is a considerable development of the auditory portion of the temporal bone. The occipital bone is remarkably narrow. The superior maxillary is very much elongated, particularly in the so-called frugivorous order, in which term which we would change to the name of Vesperpilumidae, they have well developed sharp canines, and the structure of some of their other teeth, would seem to be more trenchant than fruit-eating habits alone would require; and indeed Cuvier, in the last edition of the 'Regne Animal', says of the group Pieropus: "If they live principally on insects which they destroy a great deal; but they know, nevertheless, how to pursue birds and small quadrupeds, and I think it highly probable that they occasionally prey on the large insects which are found in the vegetable world." All the family have four great canine teeth, but there is considerable difference between the molars of the fruit-eating section and of that of whose diet is confined entirely to insects, the crowns of the former being comparatively blunt and broadened out at the hinder end, the canals of the vein are shorter and sharper, and beset with points. The molars

* ves. a hand and v atis, a wing.
vary in number in the different genera, the smallest development being three in each jaw, and the largest five above and six, below, or vice versa. The incisors set in the small and short intermaxillary bones vary also in the different genera. The smallest number in the upper jaw is two, and the largest four; the smallest number is also two in the lower jaw, and the largest six. The ulna is of considerable size, but the dentata is not large. The greatest number of the dorsal vertebrae is twelve, the smallest eleven. The canal for the spinal chord is large in these vertebrae. The lumbar vertebrae vary in number; the smallest number is four, the largest seven. The osa coccygis are slender and elongated: their use seems only to be to assist (somewhat like a spread) in spreading the interfemoral portion of the membranes, by the aid of which the animal sails in the air; for in the majority the tail extends to the margin of the membrane, while in some it protrudes beyond it, and in others it does not reach more than half way. In Pteropus there is no trace of these bones.

The ribs are remarkably long, except the first pair, which is very short, and remarkably broad, especially in the carilage, which is ossified; and the sternum is highly developed, as might be expected from the exigencies of the animal. The anterior portion is expanded laterally into what is termed the manubrium, which seems to be largest in the Horse-shoe Bat (Rhinolophus), forming a suitable point of attachment for the strong, long, arched clavicles, which are articulated both to the sternum and scapula; the latter is very large and elongated, and the lower surface is very concave. The fossa for the strong muscles, both above and below the spine of this bone, are deeply marked. The habits of the animal required an ample development of these parts to give the shoulder the required solidity for working the mechanism of the wing, and we accordingly find the strength thrown into the sternum, clavicles, and scapula. But these same habits would have rendered the rotatory motion of the fore-arm worse than useless, for such a disposition would have weakened the power of the limb in beating the air with the extended membrane. We accordingly find that the power is absent: the ulna, indeed, is remarkably small, and in some the bone is merely rudimentary, forming a mere flat process, only partially separated from the radius: there is no os esimus (elbow). The humerus is long, slender, and cylindrical, and the head of the bone large and round. The structure of the vertes is peculiar: first come two bones next to the radius, and on these that bone rests; one of these is very large, and the other very small— the second series consists of the usual four bones; but it is in the bones of the metacarpus and of the fingers that the adaptation of the osseous parts of the animal to its necessities is, perhaps, most strongly shown. These, with the exception of the phalanges of the thumb, are greatly elongated, and run outwards and downwards to the edge of the wing-membrane, something after the fashion of the whalebones that assist in spreading an umbrella. The first finger is the shortest, and extends to the upper angle of the outer edge of the membrane; the second is generally the longest, and the third and fourth nearly of a length; the three last descend to the lower angle of the membrane. The phalae is straight and lengthened, and rather wider below than it is above, the tibia being very narrow and elongated. The osa ischis approach even to the contact of their tuberocities, and in some examples touch the osa coccygis. The osa pubis, in some species, recede from each other, the intermediate space being filled by a ligament; and in others these bones touch each other in the male, and are separated in the female. The scapulae and ilia are ankylosed early in life. The lower extremities do not offer any very striking differences from those of other mammals, excepting that the thighs being directed outwards, the bones of the leg are partially turned round as were (the fibula appearing at the inner side of the tibia, and a little posterior to that bone), and that there is a singularity about the heel. An elongated delicate bone process is given off from the back part of the foot, is inclosed in the margin of the interfemoral membrane, and proceeds about half way to the tail. Cuvier thought this a portion of the os calcis; Daubenton, that it was a distinct bone: and Meckel, that it is only a development of the tuber ossis ischii, dislocated from its body. Mr. Daniell, on the 11th November, 1834, exhibited to the Zoological Society of London skeletons of the male and female Pipistrelle and Noctule Bats, for the purpose of pointing out a peculiarity in the female, connected, as he conceives, with the mode of parturition, described under the head of Habit. This peculiarity consists of a prolongation of the os calcis along the margin of the bone between the hinder extremities and the tail, of much greater length and strength in the female than in the male. By means of this process, Mr. Daniell believes the female to be capable of giving greater tension to the pouch formed of that membrane for the reception of the young in the act of parturition.

Digestive Organs. Besides the difference of the molar teeth in the fruit-eating (or omnivorous) and the insectivorous Bats, already alluded to, the stomach presents a remarkable corresponding variance. The stomach of the former is very complicated, and the intestines very long: in Pteropus, for example, they are seven times as long as...
through the perforations of the cheek pouches to the subcutaneous spaces, and the air is prevented from returning by the action of a sphincter, which closes those openings, and by valves of considerable size on the neck and back.

Reproduction—The manner of reproduction in each of those of the quadrupeds and man in many respects. The principal organ is pendulous, but it is furnished with a small bone. The testicles are situated in the abdomen, excepting in the breeding season, when they descend and are placed on the outside; and they are not returned to the abdomen on either side of the insertion of the tail. There are vesicular seminales, a prostate gland, and Cooper's glands.

There is no greater peculiarity in the female organs. The two testicles are placed on the breast as in man and in the quadrupeds. As for those so-called testes, discovered in the groin of the Rhinolophi by Montagu and Geoffroy, Kuhl could discover no trace of mammary glands in them.

Geographical Distribution.—The bats are widely spread over the globe. They are to be found in the Old and New World and in New Holland. A tolerably temperate climate seems necessary for them, and the greatest development of the form takes place in warm countries.

Richardson (Pusona Boreali-Americana) notices two species, Vespertilio pruinosis (Saw) caught at Cumberland House, on the Saskatchewan in lat. 54, and Vespertilio suillata (Saw) which the Dr. observes is the most common of the species near the Hudson's Bay post on the upper branches of the Saskatchewan and Peace rivers.

Habits.—Generally speaking they remain in concealment during the day in caverns, ruined buildings, hollow trees, or other crevices. The female bats and many of the males in the United States take the care to go out to sea or by high land to take their prey. White, in his "Selborne," thus describes the mode of feeding of a tame bat: "It would take flies out of a person's hand; if you gave it anything to eat it brought its wings round before the mouth, lowering and hiding its head, in the manner of birds, before it fed. The adroitness it showed in steering off the wings of flies, which were always rejected, was worthy of observation and pleased me much. Insects seemed to be most acceptable to it, though it took the twigs, berries, and insects of the usual kinds." It is equally probable that the notion that bats go down chimneys and gnaw men's bacon, seems no improbable story. While I amused myself with this wonderful quadruped I saw it several times confute the vulgar opinion, that bats, when down on a flat surface, cannot get on the wing again, by raising with great ease from the floor. It ran, I observed, with more dispatch than I was aware of, but in a most ridiculous and grotesque manner. The large-eared bats, collected by Carlisle, reared by Mr. A. E. Nuttall, as did a large number which were afterwards caught and preserved in a dark box, for above a week. During the day-time they were extremely desirous of retirement and seclusion; and, while confined to the box, never moved or endeavoured to escape out of the whole stock of bats in the carpet they commonly rested some minutes, and then, beginning to look about, crawled slowly to a dark corner or crevice. At sunset the scene was quite changed; every one then endeavoured to scratch its way out of the box, continual chirping was kept up, and no sooner was the lid of their prison opened than each was active to escape; either flying away immediately, or running nibbling to a convenient place for taking wing. When these bats were first collected, several of them escaped to their breasts in the act of sucking. One of them flew with perfect ease, though two little ones were thus attached to her, which weighed nearly as much as the parent. All the young were two weeks old. The young of the Pipistrelle in the genus Nycteris there exists a power of inflation to such a degree, that when the faculty is exerted the animal looks, according to Geoffroy, like a little balloon fitted with wide openings at the top. The subcutaneous spaces are filled, and as the skin adheres to the body at particular points only, the connexion being by means of loose cellular membranes, spaces are left which can be filled with air at the will of the animal. In this way, the bats in captivity can form a cage, they exhibited much activity, progressing rapidly.
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along the bottom of the box, ascending by the bars to the top, and then throwing themselves off as if endeavouring to fly. They ate flies when offered to them, seizing with their mouth by her anterior limbs to a cross-wire of the cage, stretching her hind legs to their utmost extent, curving the tail upwards, and expanding the intermembranal membrane so as to form a perfect nest-like cavity for the reception of the young. In a few moments the snout of the young one made its appearance, and having the wings folded, it thrust its head down into the mouth of the female, which was protruded. The female then struggled considerably until the extremities of the radii had passed, after which the young one by means of a lateral motion of its fore limbs retracted the wings, and then sped off, its body being covered with hair, and blind; and was attached by an umbilical cord of about two inches in length. The female then licked it clean, turning it over in its nest, and afterwards resuming its usual position, and placing the young in the membrane of her wing, proceeding in this manner to eat the placenta. She next cleaned herself, and wrapped up the young so closely as to prevent any observation of the process of suckling. The time occupied in the birth was about fourteen minutes. At the time of its birth the young was larger than a new-born mouse, and its hind legs and claws were remarkably strong and serviceable, enabling it not only to cling to its dam, but also to the sides of the cage. On the 24th the animal took its food in the morning, and at about midday it issued occasionally from side to side to suckle it, and folding in the membranes of the tail and wings. On these occasions its usual position was reversed. In the evening it was found still alive, and destitute of hair, and was attached to the nipple, from which it ran in some difficulty. It took milk from a sponge, was kept carefully wrapped up in flannel, and survived eight days, at the end of which period its eyes were not opened, and it had acquired very little hair. From these observations and further ones the period of gestation in the Noctule exceeds thirty-eight days. We have only to add to this interesting account that the Cheir- optera hybermante.

SYSTEMATIC ARRANGEMENT.

Among the amniotes Aristotle says but little about the bat, and Pliny is considered to have placed it among the birds, none of which he observes, with the exception of the bat, have teeth. (Hist. Nat. lib. xi., c. xxvii.) Again (lib. x., c. lxi.), he notices it as the only winged animal that suckles its young, and observes on its embracing two little ones and flying about with them*. In this arrangement he was probably followed by the modern naturalists; Belon, Gesner, and Aldrovandus, for instance. The former, after expressing some doubt, places it at the end of the night birds, in his Histoire de la Nature des Oiseaux (folio, 1555), and it occupies the same position in the small 4to (1557), with the following note:

* La Sourici Chauve est un oiseau de nuit, qui point ne pond, ainsi ses petits enfant, ses laque de leur vis larme sustante, et qui vient dormir en grande vertu. (Idem.)

The bat, Attelep (bird of darkness), was one of the unclean animals of the Hebrews (Deut. xiv. 18), where it is placed among the forbidden birds.

* Under the title 'Vespertilio,' the fourth and last genus of his first order, Primates, Linnaeus arranged all the Chei- optera known to him, and the number of species recorded in the twelfth edition of the Systema Naturae amounts to only six. In the thirteenth edition (Smelius's) the number had increased to nine, and of this number the four, of which the names are given in the text, were printed in 1759, and few families afford stronger evidence of the great influx of the new species within the last five and forty years than is to be found in the numbers of Cheiropetera which have been described within that period. Of English bats alone Jervis enumerates sixteen species, and the general numbers have been increased more than six-fold. Cuvier made the Cheiropertera the first family of his third order of Mammifera, placing them next to the Lemuri- dae, of which class that order is placed in his 'Manual of British Vertebrate Animals,' places them under the order Primates, which he makes the second in his arrangement of British Mammalia, the Peris being the first.

* The index to the Leyden edition (folio, 1648), the expression used is 'Vespertilio-actis simplex,' but 'Vespertilio-bat' is the more correct expression in the text—both in book xx., and book xxxi. The tenth book begins 'Sequitur natura avium,' and the bat is placed (c. 125), at the end of the order on birds; the rest of the book being occupied with general zoological observations.
and they come immediately after the shrews and the hedgehogs.

D’Azara, Illiger, Geoffroy St. Hilaire, Desmarest, the Cuvier, Lesson, Beechstein, Kuhl, Lealiar, Natterer, Temminck, Rüppel, and Spix, are among the most distinguished foreign writers on this family; and Pennant, Montagu, Sowerby, Gray, Horsfield, and Bell, among those of our own country. Zoologists seem generally to have agreed that the teeth should be made the great groundwork of classification in this as in other mammiferous families. Temminck, however, in his sixth Monographie de Mammalogie, shows that the genus Dysops of Illiger is synonymous with the Molossus of M. Geoffroy St. Hilaire, and also with Nyctinomus. Cheirolopes torquatus of Horsfield is also regarded by Temminck as a Dysops. To establish the identity of Molossus and Nyctinomus with Dysops, the distinction of which rested only on the number of the incisor teeth of the jaw. Temminck shows that the character of these teeth varies according to the age of the individual, and that those of the upper jaw also vary in number, the dentary formula, with regard to the incisors, being either 4, 1, 1, and 1, 3, and 1. The lower incisors are disposed gradually by the development of the base of the canine teeth, and the projecting lateral points eventually perform the office of incisors, being opposed while in action on food to the incisors of the upper jaw, which are worn away by them. The author of the review on Temminck’s sixth monograph, where the latter describes the facts as they were observed by him in seven of the eleven species, thus proceeds. In order to show the mistake of proof adopted by him, we follow him through one of the instances which he has adduced, that of the Dysops mastix, described by M. Isidore Geoffroy St. Hilaire as the Nyctinomus Brasiillinae. In one young individual of this species there existed in the lower jaw six incisors, in another five, three being on one side and two on the other; in a third four only; and in the upper jaw of this specimen, three incisors, with the alveolus, partly closed, of a fourth; in about thirteen other specimens, the number of incisors in the lower jaw was four; and in two full-grown individuals there were only two. The entire absence of even these has been found in Dysops obscurus. Another observation will carry almost beyond the possibility of doubt the proof of the identity of Nyctinomus with Nyctinomus. The type of the former genus, Nyctinomus Egyptianus, Geoff., possesses in its early age the four incisor teeth, which have been made to characterize the group, but loses two of them, when arrived at its full growth, and thus becomes an undisputed Molossus. On the importance of these remarks we need not observe. The anomalies which exist in the dentary system of the Cheiroptera have been among a stumbling block to zoologists, and can only be explained by a continual and extensive series of minute examinations, similar to those to which M. Temminck has subjected them. They afford an additional proof, if such were wanting, that a system founded on any one set of organs, however important, must become in some of its parts deficient and inadequate; it must degenerate, in the more artificial method, the artificial one being attainable only by a well-directed study of the whole organization. Having drawn the attention of the reader to these observations, we proceed to a classification of the family, taken, in great measure, from the French authors, and adopted by Desmarest and Lesson. Galeopithecus, which is the type of the first tribe of Cheiroptera, according to Lesson, we have removed, in accordance with the opinions of other zoologists, from this family; and though the Vespertilionidae may be divided into two natural sections, the insectivorous bats and the fruit-eaters, we have, in consideration of the gradual shades of form when the numerous species are brought under observation, followed M. Lesson’s arrangement, with the exception above alluded to.

Vespertilionidae.

1. Sub-family, Phyllostomatina.

Bats having a membrane in form of a leaf upon the nose. Molar teeth with sharp tubercles.

1. Sub-family, Phyllostomatina.

Nose-leaf simple, solitary or unequal, the forefinger composed of two joints.

Genera. Phyllostoma, Geoff.

Four incisors above and the same number below. Canine teeth very strong. Nose supporting two nasal crests, one of the other like a horse-shoe. Ears large. Internal


b. Tail shorter than the interfemoral membrane.

Example. Phyllostoma crenulatum. The borders of the nasal leaf are dentatul, the end of the tail free. Locality unknown.

Example. Phyllostoma perspicillatus, Geoff. Vespertilio perspicillatus, Linna. The same character as in the Phyllostoma, with the exception of the dental formula, which is as follows: incisors 4, canines 1 - 1, molars 6 - 6 = 34.

Example. Vampyrisus spectrum. This is the celebrated Vampire Bat of which so many bloodthirsty stories have been told; Vampyrisus spectrum of some authors, Vampyrisus sanguineus of others, the Andina-guaco of Piso, and the Vesperitilo spectrum of Linnaeus. The nose-leaf is entire, higher than it is wide, although it becomes widened at the base. The following is Piso's account of its habits: They seek out every kind of animal and suck their blood. But in Marahan (Marahan) there is a certain kind of bats which approach by night the naked feet of men, and wound them with their rostrum, for the sake of sucking human blood. The bite is so slight and subtle that the wounded do not feel it before the bed covered with blood gives token of the wound. So great a quantity of blood flows from the envenomed bite that it can only be stopped with difficulty, and the peril is imminent unless a cure by the prescribed remedies be effected. The inhabitants first wash these wounds with hot sea-water, and afterwards apply hot sakes, or even cautery, if the blood be
not stopped.' Captain Stedman, who states that he was bitten, thus describes the operation: 'Knowing by instinct that the person they intend to attack is in a sound slumber, they generally alight near the feet, where, while the creature continues fanning with its enormous wings, which keep one cool, he bites a piece out of the tip of the great toe, so very small indeed that the head of a pin could be scarcely received into the wound, which is consequently not painful; yet through this orifice he continues to suck the blood, until he is obliged to disgorge. He then begins again, and thus continues sucking and disgorging till he is scarcely able to fly; and the sufferer has often been known to sleep from time into eternity. Little they generally bite in the ear, but always in places where the blood flows spontaneously. Having applied tobacco ashes as the best remedy, and washed the gore from myself and my hammock, I observed several small heaps of congealed blood all round the place where I had lain, upon the ground, on examining which, the surgeon judged that I had lost at least twelve or fourteen ounces during the night.' This is sufficiently circumstantial, and the narrative is assisted by Mr. Wood, who quotes the passage in his Zoography, and who informs us that it is said to perform the operation by inserting its aculeated tongue into the vein of a sleeping person with so much dexterity as not to be felt; at the same time fanning the air with its large wings, and thus producing a sensation so delightfully cool, that the sleeper is rendered still more profound, and the unfortunate person reduced almost to death before he awakes. And the same author further informs us that 'there is reason to believe that this thirst after blood is not confined to the bats of one continent, nor to one species, since in Java they seldom fail to attack those persons who lie with their feet uncovered.' The same sort of stories are to be found in most books of Natural History up to a late period. Wood's work was published in 1807, and the tales are continued in Bewick in the edition of 1820. Cuvier, in the last edition of the Regne Animal (1829), says, 'They have accused this species of having caused men and beasts to perish by sucking them, but it contents itself with making very small wounds which may sometimes become envenomed by the climate.' Lesson (1837), in his notice of the genus, says, 'The single American species is celebrated by the fables with which they have accompanied its history.' Dr. Horsfield, who paid particular attention to the Javanese bats, does not say a word of their blood-thirsty propensities. That some of the Phyllostomata suck the blood of animals as well as the juices of succulent fruits, zoologists are agreed, and we have endeavoured to describe the peculiar apparatus with which they are furnished. Dr. Horsfield translated tongue 'into the vein of a sleeping person' is to be found among the known bats, we are ignorant. The rough tongue of the genus Pteropus has been supposed to have been employed for abrading the skin to enable the animal to suck the part abraded, but zoologists are now agreed that the supposition is groundless. It is more than probable that the celebrated vampire superstition and the blood-sucking qualities attributed to the bat have some connexion with each other.

Pico describes the bodies of his Bats (Andira-guaca) as being as large as European pigeons.

\[\text{Vampyrus Spectrum.}\]

\text{Madateus, Leach.}

Characterized by four incisors in each jaw; the two intermediate upper ones are longer than the lateral; they are bifid; the lower incisors are equal, simple, and pointed. Four molar teeth in the upper and five in the lower jaw on each side. Two nasal leaves. No tail. Lips furnished with a fringed and compressed papille. Tongue bifid at the point.

\text{Example.} \text{Madateus Luniri.} \text{Nasal leaf suddenly}

\text{pointed; ears moderate and rounded. Fur blackish. Infermoral membrane notable. Expansion 16 inches. Locality, Jamaica.}

\text{Glossophas.}

Four incisors in each jaw; canines moderately strong. Tongue very long, extensile, and terminated by a sort of sucker. Nose surmounted by a crest in form of a pike-head. Tail none, or variable in length. Infermoral membrane very small, hardly any. Dental formula: incisors 4 1-1, canines 4-4, molars 3-2. Locality entirely American. The extensile tongue, says Lesson, enables the species to suck the blood of animals.

\text{Example.} \text{Glossophasa sorticina} of Geoffroy, Vesperitillo sorticina of Pallas and Gmelin. Infermoral membrane comparatively large. No tail. Locality, Surinam and Cayenne.

\text{Rhinothopa, Geoff.}

Two incisors in the upper jaw, four in the lower. Nose long, conical, cut square as it were at the end, and surmounted with a small leaf. Nostrils straight, transversal, and oculareus. Ears large, earlet (oreillon) external. Tail long, enveloped at its base in the inferior membrane, which is cut, as it were, square, and free at the extremity. Dental formula: incisors 4-4, canines 4-1, molars 5-5 = 28. There are two species only, one Afri can, the other American.

\text{Example.} \text{Rhinothopa microphylus.} This is Belon's Chauve-souris d'Egypte. The fur is sub-coloured, and the tail very long and slender. It is the species that abounds in the long and dreary galleries of the Egyptian Pyramids.

\text{Artibeus, Leach.}

Four incisors in each jaw, of which the upper ones are bifid, and the lower ones truncated. Two canines above and the same number below; the upper ones have an internal border at their base. Four molars above and five below on each side. Two nasal leaflets, one horizontal, the other vertical. No tail.

\text{Example.} \text{Artibeus Jamacensis,} the only species known. Brown above, greyish below. Flying membranes, and ears brownish. The lips are surrounded with a regular series of warts, and the mouth is provided internally with a narrow, fimbriated, cribiform membrane. Expansion about one foot, three inches. Length from the muzzle to the extremity of the inferior membrane, four inches, ten lines.

Dr. Horsfield calls it Phyllostoma Jamacense, and says that in many particulars it agrees with Phyllostoma planirostrum of Spix, though it is clearly distinguishable from it.

\text{Monophyllus, Leach.}

Four unequal incisors in the upper jaw, of which the two middle ones are longer than the lateral, and bifid, none in the lower jaw: Two canines in each jaw. Five molars above and six below on each side. A single straight leaf upon the nose. Tail short.

\text{Example.} \text{Monophyllus Redmannii,} Brown above, greyish below. Ears rounded. Nose-leaf, which is sharp, covered with small white hairs. Membranes brown. Localiti, Jamaica.

2. Sub-family, \text{Rhinothophina.}

Nasal leaf carried, membranes one. Index with a single phalanx. Wings largely developed. Females with pectoral tests often accompanied by pubic warts simulating mamillae.

\text{Vampyrus Spectrum.}

\text{Hypathia, Geoff.}

Nose at the bottom of a cavity bordered by a wide crest of a horseshoe shape, and surmounted by a leaf. Ears moderate, lateral, without an earlet (oreillon). Tail long, en-
tirely enveloped by the interfemoral membrane, which is very much developed. Dental formula: incisors, 2; canines, 1; molars, 5 = 32. Several species.

Example. Rhinolophus nobilis, a rare and fine Javanese species; Kobbé of the natives, described by Dr. Horset, who observes that it belongs to the second section of the genus. The nasal apparatus consists of a broad membrane stretching transversely across the nose in form of a shelf; the sides are bordered by several parallel folds, and inferiorly it constitutes a semicircular envelope, which has a short, obtusely-rounded point in the middle. Colour above, pure brown; beneath, brown variegated with grey. Fur remarkably long and silky, and supplied with a most delicate down at the base, so as to be throughout very soft to the touch. Body four inches in length. Expansion nineteen inches and a half.

[Image: Rhinolophus nobilis, Megaderma, Geoff.]

Ears very much developed, and brought forward on the head. Earlet internal, wide. Three nasal crests, one vertical, one horizontal, and one inferior of a horseshoe shape. No tail. Interfemoral membrane cut square. Dental formula: incisors, 0; canines, 1; molars, 5 = 32.

Example. Megaderma trivolioides. Locality, Java, where it is the Loro of the natives.

[Nycteris trichothees; B. Skull of Megaderma Fossa.]

A very deep longitudinal silon upon the chanfrein. Nostilis covered by a cartilaginous movable operculum. Ears large, united at their base. Earlet external. Interfemoral membrane very large, comprehending the tail, the last vertebrae of which is terminated by a bifurcated cartilage. Dental formula: incisors, 4; canines, 1; molars, 5 = 32.

Example. Nycteris Geoffroyi. Fur, grey-brown above; brighter below. Ears very large. A well developed wart placed upon the lower lip, between two buccal lobes having the form of a V. Locality, the Thebaid and Senegal.

[Nycteris Geoffroyi, and Skull.]

Taphozous, Geoff.

Chanfrein with a silon. Upper lip thick. Ears moderate and wide apart. Tail fine towards its point, beyond the interfemoral membrane, which is large, prolonged and angular at its external border. Dental formula: incisors, 0; canines, 1; molars, 5 = 32. Several species.


[Image: Taphozous Mauritianus, and profile of the same.]

Mormops, Leach.

Four upper unequal incisors, of which the intermediate ones are widely notched, and four below which are equal and tridib; two canines in each jaw, the upper ones twice the length of those below, almost compressed and canaliculated before; five molars above, and six below on each side. A single nasal leaf united to the ears, which are very complicated.

Example. Mormops Blainvillii, the only species; and it is remarkable for the extreme elevation of its front, the excavation of its chanfrein, the lobated, crested form of its upper lip, and the division of the lower one into three membranous lobes, the existence on the tongue of papillae, of which the anterior are bident and the posterior multifid, the folding of the nasal leaf, and the formation of the upper border of its ears into two lobes. Locality, Jamaica.

Nyctophilus, Leach.

Two upper, elongated, conical, pointed incisors; six lower ones equal and tridib with rounded lobes; two canines above and two below, the lower ones having a small point at the back part of their base. Four molars on each side of the jaws, with crowns furnished with pointed tubercles. Two nasal leaves, of which the posterior is the largest. Tail projecting a little beyond the interfemoral membrane.

Example. Nyctophilus Geoffroyi, the only species known. Fur, yellowish above, belly, breast and throat dirty white. Ears large. Membranes brownish-black.


Bats without any nasal appendage.


Genera, Vespertilio, Linn., Geoff.


Dental formula: incisors, 4; canines, 1; molars, 5 = 32.

Lesson observes that many Vespertiliones have but two incisors. The species of the genus are many in number, and their geographical distribution is very wide.

a. European species.

These are numerous. We select as an example Vesper- tilio murinus of Linnaeus. This is the Flutter-howard, Flutter-mouse and Rear-mouse of the English; La Chevreau- sureau of Buffon; and, according to Pennant, the Silemo of the ancient British; Nattola, Nodula, Sportingline, Vip- sistrello and Vigisterello of the Italians; Murcielago and Moregalo of the Spaniards; Morego of the Portuguese; Speckmaus and Fledermus of the Germans; Vliegemes of the Dutch; Laderlap and Fledermus of the Swedes; and Flagermaus and Afterbakk of the Danes. The ears are oval, of the length of the head; the ears is falciform. The
fur of the adults is ruddy-brown above, whitish-grey below; that of young individuals is grey-ash.

Locality. *Vespertilio murinus* is common in Europe. It has been supposed to exist in Asia, and even in Australia. Its haunts are caves, ruined buildings, church-towers, the roofs of houses or chudes, and hollow trees, where it hibernates during the whole winter, snugly wrapped up in the wing-membranes, and suspended by the hind feet. It have given the skeleton of this species, and below will be found a head and skull of *Vespertilio pipistrillus*, another European species.

![Head and Skull of Vespertilio Pipistrillus.]

β. African species.

Example. *Vespertilio migrata*. Adanson discovered this species at Senegal. The ears are oval, triangular, very short, one-third of the length of the head. Earlet long, and terminating in a point. Fur yellowish-brown above, and yellowish-ash below.

γ. Asiatic species.

Example. *Vespertilio pictus*. The ears are shorter than the head, oval, wider than they are high. Earlet oval-shaped. The fur is reddish, passing into bright yellow upon the back, and of a tawny yellow on the belly. Citron-coloured rays mark the course of the fingers in the wings, which are chestnut-brown. Locality, Ceylon, where the native name is *Kirinoula*.

δ. American species.

These are very numerous.

Example. *Vespertilio Naso*. This species, remarkable for the length of its nose, was first described by the Prince de Neuwied. The nasal organ is elongated in a straight line above the upper jaw, almost like a proboscis. The ears are small, and very much pointed. The fur is greyish-brown above, and yellowish-grey below. Locality, Brazil, in trees.

Plecostus, Geoff.

This genus in many of its characters agrees with *Vespertilio*, but the ears are very much developed, being larger than the head. Dental formula: incisors 4/6; canines, 1–1; molars, 5/5–36. There are several species, and the form occurs in all the four quarters of the globe.

Example. *Plecostus Timorensis*. This species was discovered by Péron and Lesueur in the island of Timor, one of the Moluccas. The ears are ample, united at their base by a small membrane. The fur is blackish-brown above, and ash-brown below.

![Plecostus Timorensis.]

![Nectilo Leporinus.]

a, profile of head; b, profile of skull; c, front view of muzzle; d, front view of teeth, &c.

Dysopes, Illiger.

We have already noticed M. Temminck's opinion of the identity of *Molossus*, *Nyctimus*, and *Chiroptera* with *Dryops*. The following is the character of the teeth, according to F. Cuvier: two incisors above and four below; two canines in each jaw; four molars on each side of the upper jaw, that is to say, two false and two normal; ten molars in the lower jaw, &c., four false and six true. Type, *Dysopes Moops*. We proceed to give the definition of *Molossus*, *Chiroptera*, and *Nyctinus*, for the assistance of the student.

*Molossus*. Head short; muzzle swollen. Ears large; earlet external. Interfermal membrane straight, with a square termination. Tail long, enveloped at its base, and most frequently free at its extremity. Dental formula: incisors, 2–5; canines, 1–1; molars, 5/5–28. The geographical distribution of this form is wide: Africa, Asia, and South America possess it; but the species which are numerous occur principally in the two last-mentioned localities.

Example. *Molossus cephus*, *Molossus gaudialis* of Spix. *Dysopes obscurus* of Temminck. *Size of the Barbate of Europe* Part of the hair of two colours,
Two upper incisors large, compressed, bily, and with rounded lobes. Two lower equal, trilobed, with rounded lobes. Two upper canines long, very short, with a short, semicircular, obtuse operculum. Axillary, pectinoid; the hind foot, according to Dr. Horsfield, constitutes the chief distinguishing character. The hind foot, or rather hand, consists of four fingers, which have the same disposition and structure as in other animals of this family, and of a distinct thumb, essentially agreeing with this member in many Quadrupedina, and in several animals of the Rodentia and Marsupialia. It is a complete anthropoid to the fingers, enables the animal to take hold of objects, and thus constitutes a perfect hand.


Nyctinomus, Geoff. Nose flat, losing itself in the lips, which are deeply slit and wrinkled. Ears large, and hanging with an external earlet. Interferial membrane obtuse and angular. Tail long, and nearly half of it enveloped. Dental formula:

\[
\begin{array}{c}
\text{incisors} & 2 \times 2 \\
\text{canines} & 2 \\
\text{molars} & 3 \times 3 = 9 \\
\end{array}
\]

Locality: Africa, Asia, and South America.


Dinops, Sav. Ears united and extended on the front. Lips pendent and plaited. Tail enveloped for half its length in the interfemoral membrane. Dental formula: incisors, 2; canines, 1; molars, 3. This form occurs in Africa, Asia, and South America.

Example. Dinops Castor, Sav. Fur thick and soft, grey-brown, tending slightly to yellowish, but a little browner on the back. Wings black-brown. Muzzle, lips, and ears black, the latter large, rounded, and a little notched on their external border. Tail long, of a brown-black. Locality, the environs of Pisa, where Sav discovered it.

Stenoderma, Geoff. Nose simple. Ears small, lateral, and isolated: earlet internal. Interferial membrane rudimentary, and bordering the legs. No tail. Dental formula: incisors, 1; canines, 4; molars, 4 - 4 = 8.

Example. Stenoderma ruf. Fur uniform, chestnut-red. Ears moderate, oval, and a little notched on their external border.

Celeno, Leach. Two upper incisors pointed and simple; four lower ones entire and cylindrical. Two canines above and below, the upper ones largest. Four molars on each side of the jaws, the first pointed and simple, and the three last with their crowns beset with points. Third and fourth finger with three phalanges, the fifth or external with two only. Interferial membrane prolonged a little below the toes of the hind foot. Ears separated; earlet simple. No tail.

Celeno Buvanara. Back fennigose; belly yellowish-fennigose. Ears pointed with the anterior border rounded and the posterior one straight. Membranes black.

Aello, Leach. Two upper incisors large, compressed, billy, and with rounded lobes. Two lower equal, trilobed, with rounded lobes. Two upper canines long, very short, with a short, semicircular, obtuse operculum. Axillary, pectinoid; the hind foot, according to Dr. Horsfield, constitutes the chief distinguishing character. The hind foot, or rather hand, consists of four fingers, which have the same disposition and structure as in other animals of this family, and of a distinct thumb, essentially agreeing with this member in many Quadrupedina, and in several species of the Rodentia and Marsupialia. It is a complete anthropoid to the fingers, enables the animal to take hold of objects, and thus constitutes a perfect hand.

Example. Aello Curvieri. Colour fennigose-Isabella. Wings obscure brown. Ears truncated, as it were, at the end.

Scotophilus, Leach. Four upper incisors unequal, pointed, the intermediate ones being largest and sample, and the lateral ones billy with equal lobes; six lower incisors indistinctly trilobed. Two canines above and below, the upper ones with a small point behind their base, and the corner ones with a similar one in front. Four molars with rows of teeth with points. Fourth and fifth fingers of the wings with three phalanges.


5. Sub-family, Pteropinae. We now come to a numerous and widely distributed family containing some of the largest forms of the Vesperidinae, and subsisting principally on vegetables and fruits. It is not improbable that the fabulously large may have had its origin in some of these enormous bats with their well-developed pectoral mammae. Molar teeth tuberculated and grooved longitudinally. Wings rounded. Interferial membrane and tail often wanting. Indic with three phalanges. Head long and hairy. Females for the most part with nursing pouches.


Example. Pteropus javanicus. Upper part of the neck smoky red, rest of the fur blackish, some white hairs mingled with the black ones of the back. Expansion five times the length of the Javanese, which, according to Dr. Horsfield, is extremely abundant in the lower parts of Java, and uniformly lives in society. The more elevated districts are not visited by it. * Numerous individuals, continue the Darp, select a large tree for their retreat, and suspending themselves with the claws of their posterior extremities to the naked branches, often in companies of several hundreds, afford to a stranger a very singular spectacle. A species of Ficus, in habit resembling the Ficus religiosa of India, which is often found near the villages of the natives, affords them a very favourite retreat, and the extended branches of one of these are sometimes covered by them. They pass the greater portion of the day in sleep.

* For the arrangement of teeth in Pteropus, see Cynomys.
hanging motionless: ranged in succession, with the head downwards, the membrane contracted about the body, and often in close contact, they have little resemblance to living beings, and by a person not accustomed to their economy are readily mistaken for a part of the tree, or for a fruit of uncommon size suspended from its branches. In general these societies preserve a perfect silence during the day: but if they are disturbed, or if a contention arises among them, they emit sharp piercing shrieks, and their awkward attempts to extricate themselves when oppressed by the light of the sun, exhibit a ludicrous spectacle. In consequence of the sharpness of their claws, their attachment is so strong, that they cannot readily leave their hold without the assistance of the expanded membrane; and if suddenly killed in the natural attitude during the day, they continue suspended after death. It is necessary therefore to oblige them to take wing by alarming them, if it be desired to obtain them during the day. Soon after sunset they gradually quit their hold, and pursue their nocturnal flight in quest of food. They direct their course, by an unerring instinct, to the forests, villages, and plantations, occasionally incalculable mischief, attacking and devouring indiscriminately every kind of fruit, from the abundant and useful cocoa-nut which surrounds the dwelling of the meanest passeyant, to the rare and most delicate productions which are cultivated with care by princes and chiefs of distinction. By the latter, as well as by the European colonists, various methods are employed to protect the orchards and gardens. Delicate fruits, such as mangos, jambos, bananas, &c., as they approach to maturity, are ingeniously secured by means of a loose net or basket, skillfully constructed of split bamboo. Without this precaution, little valuable fruit would escape the ravages of the Kalong.

There are few situations in the lower parts of Java, in which this night wanderer is not constantly observed: as soon as the light of the sun has retired, one animal is seen to follow the other at a small but irregular distance, and this succession continues uninterrupted till darkness obstructs the view. The flight of the Kalong is slow and steady, pursued in a straight line, and capable of long continuance. The chase of the Kalong forms occasionally an amusement of the colonists and inhabitants during the moonlight nights, which in the latitude of Java are uncommonly serene. He is watched in his descent to the fruit trees, and a discharge of small shot readily brings him to the ground. By this means I frequently obtained four or five individuals in the course of an hour.


γ. with wings on the back.

Cephalotes, Geoff.

A small nail on the index in one species. Head conical; ears short; tail but little apparent. Intermembranous membrane notched. Flank-membranes springing from the medial line of the back. Dental formula: incisors, 4; canines, 1; molars, 4-4 = 32.

Example. *Cephalotes Peronii*. Fur brown or red, and very short. No nail on the index. Wings springing from the middle of the back. Expansion two feet. Locality, Timor. N. B. Temminck thinks that the *Pteropus pallatus* of Geoffroy is the young of this species.

Harpy, Illiger.

Differing from Cephalotes in the extent of lower incisors and of the last small molars in both jaws. Geoffroy thinks that the difference between the system of dentition in Harpya and Cephalotes Peronii is attributable to age only.

Dental formula (Pallas): incisors 2; canines, 1-1; molars, 4-4.


[Head of Harpya Pallasi.]

Cynopterus, F. Cuvier.

Four incisors and two rudimentary false molars in each jaw, like the Pteropus. They eat the fruit which they want the last molars. The jaws are abbreviated, and the heads much resemble those of Cephalotes.

Macroglossus, F. Cuvier.

A genus approaching very closely to *Pteropus* and formed by M. F. Cuvier for the Loro-uru of the Javanese, *Pteropus minimus* of Geoffroy, *Pteropus rostratus* of Horsfield. Its character depends upon the extreme length of the head, the absence of false molars, the great development of the posterior molar and the extensile tongue. Dental formula: incisors, 4; canines, 1-1; molars, 6-6 = 34.


2. Wings placed extremely backwards.

On the 13th October, 1835, at a meeting of the Zoological Society, Mr. Bennett called attention to a *Pteropus Bat* which had recently been obtained from the neighbourhood of the river Gambia, and which was exhibited. He directed especial notice to two long tufts of white hairs placed upon its shoulders and forming a very conspicuous feature in its appearance. Those, he remarked, might probably cover cutaneous glands destined for the preparation of a secretion to defend that part of the animal in its passage through the air, or perhaps to attract the opposite sex. It could scarcely be conceived that they have any influence in increasing the buoyancy of the animal; although the backward position of the wings might seem to render necessary such a suplemental aid; their position in advance of the ordinary air membranes gives them, in fact some resemblance to supplementary wings.

He stated that on account, chiefly, of the position of the wings so far backward as almost to seem to be placed behind the centre of gravity, he was disposed to consider the bat exhibited might be regarded as the type of a new genus, to which the name of *Epomophorus* might be given. But the genus would, he conceived, rest almost entirely on this single character, and he hesitated to propose it definitively until he had an opportunity of examining a specimen preserved in spirit, and consequently not liable to that distortion to which the individual skin exhibited might have been subjected. In one of the two other species of *Pteropus* previously obtained from the same country by Mr. Rendall, and brought under the notice of the Society on July 14th ( *Pteropus Gambianus* and *Pteropus macrocephalus*), by Mr. Ogilby, the same backward position of the wings exists. In dentary character the new species agrees with those just referred to, the only exception being in the presence of a third abnormal incisor on the left of the upper jaw.

Regarding it as a form of some interest to zoologists, Mr. Bennett stated his intention to describe it more fully in a paper which he proposed to prepare on the subject. He
characterized it as the *Pteropus eomphalus*.*. Pale brown, the colour being paler posteriorly; belly white; humeral brush (or epaulette) white and large. Total length six inches, length of head and body 3 inches and a quarter. Expansion twelve inches.

On the 25th April, 1836, at a meeting of the Zoological Society of London, characters were read of *Vesperitidae* observed in the region of Bombaro, being a country being transmitted to the Society by B.H. Hodgson, Esq., Corr. Memb. Z.S. They had already been published in the *Journal of the Asiatic Society of Calcutta*.

The following are the species characterized in this communication:

- *Rhin. scaliger*, Eaj.
- *Pteropus leucocerma*, Eaj.
- *Pter. pyrrhus*, Eaj.
- *Vesperitidae*, Eaj.
- *Vesp. fuliginosa*, Eaj.
- *Vesp. labatus*, Eaj.

Mr. Hodgson's characters of these species are accompanied by remarks on the habits of the several genera of bats in the district in which they occur.

Bones of bats of existing species were found in the cavities of the gypsum at Kistiriz, mixed with the remains of other existing species, and with the bones of extinct animals. CHEIROSTEMON PLANATOIDES, a most singular plant belonging to the natural order Bombaceae, and commonly called the "hand-tree," in consequence of its stamens being so arranged as to present an appearance somewhat similar to that of a human hand. It is a lofty tree, with the habit of a plane, and a trunk about as thick as a man's body; its head divides into a number of close horizontal branches, which are of a brownish colour towards their extremities in consequence of the number of short fawn-coloured hairs that beset them. The leaves are heart-shaped, slightly seven-lobed, six or eight inches long, and a little toothed; they are a rich deep green on the upper side, and are covered with fawn-coloured hairs on the under side. The flowers are of a bright red, and appear at the ends of the branches; they consist of three external lanceolate brownish bracts, and a bell-shaped fleshy angular calyx, about an inch and a half deep, bright red inside, covered externally with a russet down; it is deeply divided into five lobes, and is marked on the outside at the base with five prominences, which correspond with an equal number of little pits filled with a slightly viscid whitish fluid. There is no corolla. There are five stamens combined into a central column-like tubule, from the apex of which proceed five long slender sharp-pointed processes, which are all curved one way, coloured red, and look very much like what one might imagine to be the claws of a demon's hand; on these processes sit the anthers. The fruit is a large woody five-valved capsule, with from fifteen to twenty seeds in each cell. The singular form of the stamens and their large size have rendered this tree an object of curiosity and veneration in Mexico from time immemorial; the native Mexicans call it by the unpronounceable name of *Margaritchoquahuithl,* which the Spaniards translate *Ibel de Mantas,* and the English *Hand tree.* What made it a greater object of admiration was that in all Mexico only one tree was known, which was near the town of Tolucu, about sixteen leagues west of the city of Mexico. The flowers of this plant were so constantly gathered by the Indians as objects of veneration, that the first never repeated, and it was not till the year 1801 that cuttings transferred to the Botanic Garden at Mexico struck root, and began to multiply this vegetable wonder. The original tree must be much more antient than the conquest of Mexico, for it has been distinctly described by the Spanish historians. The people of Tolucu in some that the tree is one and indivisible, that no other was ever created, nor any ever propagated; seeds, however, have been produced from the young plants in the Botanic Garden, Mexico, where they must now be procured without difficulty. Plants of it were thus obtained some years ago by Mr. Lambert, of Boston House, in Wiltshire, and they are not uncommon in large collections. As many Mexican plants are rare in this country, it has been hoped that this curious tree would prove so too; a plant of it, however, was not received at the Horticultural Society at Turnham Green, near London, perished. And perhaps it is not likely that other attempts will prove more fortunate; for, in the first place, it belongs to the natural order Bombaceae, which consists entirely of plants impatiant of cold; and, secondly, notwithstanding the belief of the Mexicans to the contrary, it is really found wild in Guatemala, where whole forests of it were observed near the city of that name by one of the pupils of Professor Cuvier. The hand-tree is said to form a very large tree, which preserves its leaves all the year round, and forms a fine shady canopy, flowering in November, December, and January. (See Hernandez, *Hist. Plant. Nov. Hisp.*, vol. 1, ed. 2, p. 531; Ventoureaux, *Theor. Med.*; Larenti, *Fl., Decr.*; June. 1795; Tiresius in *Act. Petrop.*, 5, 321, t. 1x; Humb. and Bonpl. *Pl. Equniqu,* 1, 85.)

CHEKE, SIR JOHN, a learned writer of the sixteenth century, descended from an ancient family in the Isle of Wight, was born at Cambridge, June 16, 1514. He was admitted into St. John's College, Cambridge, in 1531, where his early studies were chiefly directed to the Latin and Greek languages, the latter of which he was then almost universally neglected. After taking his degrees in arts, he was chosen Greek lecturer of the university, and about 1546 became the first professor of that language in the university, upon King Henry VIII.'s foundation. He was instrumental in bringing it into repute, and directed his attention more particularly to reform and restore, what he considered, the original pronunciation of it. Cheke, while professor, was at the same time head of a school in the same house, and in 1545 he was incorporated M.A. at Oxford, where he also studied for a short time; and in 1544 was sent for to court, to be made joint-tutor for the Latin tongue with Sir Anthony Cooke to Prince Edward. He seems also to have had the Lady Elizabeth for some time under his care. About 1544 too he became a canon (it is believed a lay canon), for there
Chelidonium, a small Papaveraceae genus, the only species of which is a glaucous rather hairy annual, with small yellow flowers, a siliceous capsule, and orange-coloured juice, not at all uncommon in waste places in this country; is common on calcareous soils and in Celandine, and possesses no useful properties worth naming.

Chelmon, a genus of fishes.

Chelmsford, a market-town and parish in the hundred of Chelmsford in the county of Essex, of which it is the county town, 28 miles N.E. by E. from London, on the high road to Ipswich.

Chelmsford derives its name from its situation in the vicinity of an antient ford on the river Chelmer, near its union with the river Colne. In the reign of Henry I., the Bishop of Chelmsford, and at the time of the Norman survey, it was in the possession of the bishops of London. But it was never a place of any importance till the reign of Henry I., when Maurice, then bishop of London, built a stone bridge over the river Cam, and diverting the road which previously passed through Writtle, made Chelmsford the great thoroughfare to Suffolk and Norfolk. From this time the town has gradually increased in importance. It consists principally of three streets, which are macadamized, and partially lighted with gas. The houses are generally well built. The inhabitants are well supplied with water from a spring, called Burge's Well, about one mile from the town. The church is a solid structure, but contains few monuments. It is a dome supported by six Doric columns. A handsome stone bridge was erected over the Cam in the latter part of the last century, connecting the town with the hamlet of Moulsham, and replacing the old bridge built by Bishop Maurice.

The shire hall is a handsome building, fronted with Portland stone. The basement, which is rusticated, supports four Ionic pillars; between the pillars are three figures in baso-relief, of Wisdom, Justice, and Mercy. In the upper part of the building, besides two commodious courts, are a grand-jury-room and witness-room, and an assembly-room, 86 feet by 30 feet, where public balls are held at Easter and Christmas. Over the entrance there is a fine picture by order of Philip IV., blind-folded, thrown into the dungeon, conveyed to the nearest harbour, put on board a ship under hatches, and brought again to the Tower of London. He soon found that this was an account of his religion. The desire of gaining the reconciliation of so great a man to the Church of Rome induced the queen to send not only two of her chaplains, but Dr. Feckenham, at that time dean of St. Paul's, to endeavour to convert him. The chaplains had no success with him, but the queen, and Dr. Feckenham in particular, were so convinced of the certainty of his conversion that they brought him into a narrow compass: "Either convert, or burn." Cheke could not withstand the dreadful alternative.

On July 15, after a previous negotiation with Cardinal Pole, he wrote to the queen, and declared his resolution to embrace the Catholic religion. But afterwards not only made his solemn submission before the cardinal, but on the 4th of October made a public recantation before the queen, and after that before the whole court. Upon these mortifications his lands were restored to him, but upon condition of an exchange with the queen. The papists, by way of triumph, were not merely content with watching him; they obliged him to keep company generally with Catholics, and even to be present at the examination and conviction of those that were suspected by the inquisition of devotions. He resented and vexation at last so heavy on Cheke's mind, that he pined away with shame and regret. He died Sept. 15, 1535, at the age of forty-three, and was buried in the church of St. Mary, Aug. 13, 1536. He left two books of his own composition, entitled, "Atheism Osonienses, vol. i. p. 241; Chalmers's Biogr. Dict., vol. ii. p. 225."
CHELSEA

CHELONA'TRIUM, a genus of Coleopterous insects.

CHOLONIA (Godart), a genus of Lepidopterous insects, of the section Nocturna (Latreille), and family Arctididae, contains this species. It is a large, thick, black, shiny, and smooth species, with a large, black, spiny, and smooth antennae. The hind legs are short, and the fore legs are long and slender. The wings are large and black, with a white or yellowish line along the margin. The body is flattened and elongated, with a glossy surface. The antennae are long and slender, with a club-shaped tip. The species is found in Europe, particularly in the Mediterranean region, and is known for its large size and distinctive coloration.

CHELSEA, formerly a village reclaimed about two miles from London, but now constituting a portion of the suburbs. It is on the north bank of the Thames, in the hundred of Chiswick, Middlesex. The parish of St. Luke, Chelsea, is stated in the returns of 1841 to contain 756 statute acres and 32,371 inhabitants.

Chelsea is on a slight eminence, about fifteen feet above the Thames. The etymology of the name has raised considerable discussion: in 'Domesticity' it is written Chelcheth, and Chelched, and Sir Thomas More, who had a house here, wrote it Chelcheth. In the 16th century it began to be written Chelsea. It was once a favourite place of resort, and many of the nobility and gentry had residences here, and were noted for their public buildings with gardens, which were much frequented in the 17th and 18th centuries.

The Royal Hospital for invalid soldiers is at Chelsea. In the reign of James I., Dr. Sutcliffe, dean of Exeter, projected a college for the study of polemical divinity, which met with the king's approbation. The foundation-stone of the building was laid on May 5th, 1609. In the charter of incorporation it is termed 'King James's College at Chelsea.' But though royally patronized, and also endowed with considerable revenues by Dr. Sutcliffe, the college never flourished. It was ultimately seized by the parliament during the civil wars, and appropriated to different purposes.

Charles II. gave it to the newly-established Royal Society; but not being adopted to their use, it was restored to the king for 1300l., in order that the site might be occupied by the Royal Hospital.

The architect of the Royal Hospital was Sir Christopher Wren. The foundation-stone was laid on the 16th February, 1672, by the king, and the building was completed in 1690, at an expense, it is stated, of 150,000l. It is of brick, ornamented with stone quoins, cornices, pediment, and columns. The building consists of three courts, two of which are spacious quadrangles; the third, the central one, is open on the south side next the Thames. It consists of three sides of a square, ornamented with porticos and piazzas, and has a pleasing appearance. The front a simple line, and consists of a straight line, with no other ornament than a plain portico. In the centre of the hospital is the chapel and the great dining-hall. The business of the Royal Hospital at Chelsea is managed by a committee of guardians, appointed under the great seal. The establishment consists of a governor and lieutenant-governor, with various subordinate officers. There are usually upwards of 500 invalids in the hospital, who are divided into classes, and regulated by military discipline. In the provision and clothing, they receive a weekly pay, varying, according to rank and service, from 6d. to 3s. 6d. The out-pensioners of Chelsea hospital amounted lately to upwards of 85,000, who receive from 5d. to 3s. 6d. per day.

There is also in Chelsea the Royal Military Asylum. The building is on an extensive plan; the foundation-stone was laid by the Duke of York in 1801, and it was completed in 1805. It is appropriated to the support and education of children (especially orphans) of soldiers and non-commissioned officers.

The Apothecaries' Company of London have a botanical garden at Chelsea. In the centre of it is a statue, by Rysbrack, of Sir Hans Sloane, from whom the company received the freehold of the ground, the consideration paid being an annual presentation of plants to the Royal Society.

The old parish church of Chelsea not being adapted to the wants of the rapidly-increasing population, a new church was erected, which was consecrated in 1824. It is a spacious and magnificent building, in the pointed style of architecture. The old church is now the parish chapel. The present church is built entirely of stone, being a very large and commodious building. The annual income of the rector of St. Luke's, Chelsea, in 1803, was 1100l.; he appoints the minister of the parish chapel, whose income is 300l.

In the educational returns of 1835, it was stated that there were forty daily schools (exclusive of the Royal Military Asylum) in Chelsea, in several of which there were endowments for educating children gratuitously, and thirty other schools, besides several not enumerated in the return. (Lysons's Environs of London; Faulkner's Chelsea.)

CHELTENHAM, a town and parish in the hundred of Cheltenham, eastern division of Gloucestershire, 88 miles W. by N. from London, 8 miles N.E. from Gloucester, and 394 miles N. by E. from London. The parish is 3740 acres. The town lies in the east quarter of the parish; it is rapidly increasing, particularly N.W. and S., in which directions the limits of the parish afford ample room. Cheltenham has been created a parliamentary borough under the Reform Act; the borough is co-extensive with the parish, and returns one member. The town is a polling place for the eastern division of the county.

The town of Cheltenham owes its existence to its mineral springs and its pleasant situation. The Cotswold hills form an immense amphitheatre on the N.E.; and the valley in which it lies being open on the S. and W. renders its tem-
dulgence in good living have weakened the stomach and intestines. The mucous accumulations which occur in the bowels of children subject to worms are best removed by a course of the pure saline waters, followed by the ascertained chalybeate or the sulphur bath. Concerning this subject glandular enlargements derive much benefit from those which contain iodine along with iron.

CHEMISTRY, from χημεία (cheméia). According to Suidas (in voc. χημεία) it was "the making of silver and gold," or "the art of dividing things," which is now more clearly known by the name of alchemy. [ALCHEMY.] Suidas adds that Dioscorides burnt all the ancient books of the Egyptians on chemistry (as above explained), in order that the Egyptians might no longer be enabled to acquire the art, and to practice the art, and thus be encouraged to resist the Romans. We cannot infer from this that chemia is an Egyptian word; and if so, its resemblance to Chum or Chem, the genuine name of the country, is a confirmation of this supposition as to its origin. But whatever may have been the original meaning of the word, it no longer includes the imaginary process above-mentioned. Various definitions of its present meaning have been given, which do not materially differ; there is a collection of these definitions in the Supplement to the Encyclopædia Britannica, vol. iii. p. 1. From these we shall select Dr. Black's, which is as follows: 'Chemistry is the study of the effects of heat and mixture, with a view of discovering their general and subordinate laws, and of improving useful arts.' According to Dr. Thomson, 'the object of chemistry is to discover the constituents of bodies, and the laws which regulate the combinations and separations of the elementary particles of matter.'


It would be advisable to begin an early history of chemistry: indeed it has been asserted, and perhaps truly, that it sprang from delusion and superstition, and was at its commencement on a level with magic and astrology. The knowledge possessed by the science before the times of Constantine has been thus summed up: 'its name, so called for the parish and hundred of Cheltenham, runs past the town, and falls into the Severn. There are a variety of detached houses, some of them very handsome, in the vicinity of Cheltenham, which add to the beauty of the surrounding country. Cheltenham, waters of. In all the springs which emerge from the sandy vale of Cheltenham, the sulphate of soda or chloride of sodium predominates; so that they belong to the class of saline waters. It is worthy of notice that most of the saline springs of Great Britain take their rise in the new red sandstone formation. Mr. Gaudin remarks however that those of Cheltenham rise in a stratum of blue clay abounding in iron pyrites, which is the occasion of the red sandstone substance which, according to him, furnishes an explanation of the well-known fact, that these mineral waters are strongest when first opened, and gradually decrease in strength until it looks as though they are now producing the most of their qualities at the requisite strength. The specific gravity of the water of four of the springs belonging to Thompson's Spa was observed to be diminished, and two to be increased, between 1817 and 1829, to such a degree as to excite the surprise of chemists. The number of springs at present is fourteen, each of which presents some slight difference in the amount of the saline ingredients and their concomitants. The most important differences are owing to the presence of iron in some, occasionally accompanied with carbonic acid and water. In one, the proportion of about one grain to a gallon of the water exists in most of them, except the Pittville spring, in which however bromine is found in the proportion of one grain to six gallons of the water; in the one in which no iron exists the partake much of the nature of sea-water, and resemble it in effects when used internally; while those in which it is present are of a chalybeate nature, and especially when the quantity of carbonic acid is considerable, can be borne by the system as a specific means of stimulating the system, and can likewise be used for a much longer time without incurring debility. It is sometimes advisable to change from one kind to another, according to the state or progress of the patient; all which points will be regulated by physicians on the spot.'

The persons most benefited by the Cheltenham waters are those who, after a long residence in hot climates, are affected with diseased liver; and also those who by-

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From the seventh to the seventeenth century, or what Bergman terms the middle age, many important facts were discovered, and several products were added to the meager list which has been given. We shall now notice the various processes which include some most important instruments of analysis. It has been mentioned that up to the present period, the acetic acid was the only one known; but several new acids were now added. Basil Valentine described the process of making what he called oleum, or oleum vinigerum, which is commonly yet known, though more correctly called sulphuric acid, from green vitriol, or sulphate of iron; and Dornicus describes another process for preparing the same acid, which, on account of the form of the reactants, and for making it, was called sulphuric acid per campanum. Nitric acid was obtained by Raymond Lully from nitre; his process was much improved by Glauber, who, as at the present time, sulphuric acid to decompose the nitre; by this he produced the acidum nitrum, or Glauber's spirit of nitre; from common salt the same chemist procured by means of sulphuric acid the spiritus salis Glauberi, since called marine, muriatic, or hydrochloric acid. Aqua regia was prepared by Hollandius, by distilling a mixture of nitre and brine; this fluid was so named on account of its power of dissolving gold, the king of metals.

Several salts and some alkaline bodies were also discovered, or more perfectly known, during this period. Geber describes a number of salts, including the carbonate of tartar (carbonate of potash) caustic by means of lime; he takes some notice also of the carbonate of soda, and he mentions borax. Glauber described the salt which yet bears his name, the sal acidum, or sulphurous acid; he describes also what he terms sal secretus, which is sulphate of ammonia. Raymond Lully added some important observations: he mentions the deliquescent property of potash, and the productions of the volatile alkali, or ammonia, by putrefaction; and Basa Valentine notices its evolution from sal ammoniac by the fixed alkalis.

To Crollius chemistry is indebted for the preparation, or at any rate for the description, of several saline substances: the barium salts were obtained by him, and vitriol by distilling with the alkali of tartar tartarius vitriolatus, a name not yet quite extinct; but he does not appear to have been aware that this salt, when obtained by other processes, was similar in its nature. Crollius also mentions the salt or acid of amber; and Bartholus, sugar of milk. The digestible salt of Sylvia was also discovered by the chemist whose name it bears; it has since been named muriate of potash; its present appellation is chloride of potassium.

This was a matter of general but not of little remark, and even that little, Bergman remarks, was unsupported by the principles of chemistry; clay was distinguished from sand, but not by its genuine chemical characters. Except alum, few earthy salts were known. Hollandius describes chloride of calcium, and Richter, sal ammoniac.

Among the metals, antimony was described by Basil Valentine in 1490; bismuth by Agricola in 1530; and zinc by Paracelsus also in the sixteenth century. Bergman says that Schroeder describes the metallic reductions of 1649; but Brandt first examined it with considerable accuracy in 1733. Many metallic salts were known and examined in this period. Nitrate of silver was called magisterium argentii, vel chrysalis; and chloride, and the white precipitate obtained from it by water, called mercurium vitrii by Paracelsus, and pullus angelicus by Algarotti. That important medicine, the tartrate of potash and antimony, was first used by Mynacht, and called tartarum emeticum. Basil Valentine and Paracelsus also used it. The manner of obtaining the salt by fusing it with a metal, and subliming with some metallic oxides, producing in the case of iron a compound originally called flores martiales. It has been already noticed, that the sulphates of iron and copper were known by the names of green and blue vitriol, and their nature was understood; in this period the white vitriol, or sulphate of zinc, was made, though its composition was imperfectly elucidated.

That sulphur was known before the age we are now treating of has been already mentioned; but in this period Basil Valentine and Dornicus described the spiritus nitri, or nitrous acid, slightly; but Crollius has described distinctly the art of preparing it in a more perfect form. Thaddeus, Villanovanus, and Raymond Lully describe spirit of wine, and the last calls the strongest spirit alcohol, a name which it yet retains; he mentions the se- cretum potassii, or carbonate of potash, while Basil Valentine prefers lime for the same purpose. Raymond Lully described the aëratized volatile alkali, or carbonate of ammonia. Aeriform bodies began to excite attention at this period. Van Helmont noticed some of the properties of what he calls gas sylvestre, or carbonic acid; he observes that it is invisible, but that it was fixed in bodies, and he attributes the phenomena of the Grotto del Cano to its presence.

From the middle till towards the end of the seventeenth century several learned societies were formed. The Academy of Cimento was founded at Florence in 1651, the Royal Society at London in 1660, and the Academy of Sciences at Paris in 1666; these societies greatly promoted and advanced the science of chemistry. The Paris Academy also took its rise, on the model of that of France. Before, however, these societies existed, a curious work was published in 1630 by Jean Rey, a physician of Perigord; it was entitled Traité de toutes les liqueurs vitriolées et le Plomb augmenté de points quand on les calcine. In this work, which excited little or no attention among his contemporaries, the author, without apparently making any experiments, but relying upon those of others, shows that weight which metals acquire during calculation is derived from the union of air with the metal; he supposes that air is miscible with other bodies besides metals, and states that it may be expelled from water. Rey is generally considered the father of the science of chemistry. The question whether copper is fixed in bodies during calculation; but in support of this conclusion, he quotes Libavius, Carlan, and others, as having ascertained the increase of weight in lead by its conversion into a calx.

Newton himself contributed some new and general ideas on chemical phenomena to the Royal Society; he observes that sugar dissolves in water, alkaline unite with acids, metals dissolve in acids, and he inquires whether these effects are occasioned by an attraction between their particles. Copper resolved in aquafortis is thrown down by iron. It is not this, he inquires, because the particles of the iron have a stronger attraction for the particles of the acid than those of copper; and do not different bodies attract each other with different forces?

The principal and early chemical investigators of the Royal Society were Boyle, Hooke, and Sare. The first of these was the greatest chemist and one of the most active experimenters of his age; to him the science is indebted for the introduction of tests, or re-agents, for detecting the presence of other bodies; he overturned the idea which was then commonly entertained, that the results of the operation of fire were the real elements of things. Respecting the various bodies, acids, alkalis, and combination, he ascertained several important facts. The air pump, which had been invented by Otto von Guericke of Magdeburg, was improved by Boyle and Hooke, and rendered an important instrument in chemical investigations respecting air. They concluded, also, that air was absolutely necessary to respiration and combustion, and that a portion only of the atmosphere was employed in these processes. Hooke, indeed, arrived at the sagacious conclusion, that the part of the air necessary to the above-named processes is the same as that which is used up, and that the chemical process of combustion this matter combines with the burning body.

In 1674, Mayow of Oxford published his treatise on various philosophical subjects. He seems to have been struck with the analogy subsisting between the phenomena of respiration and combustion; many of his conclusions were correct, though some of them were erroneous. He burned a candle under a bell glass, and found the residual air so deteriorated as to be incapable of continuing combustion; he then
The merits of Stahl are thus briefly stated by Sir H. Davy:—"Though inclined in his general views, as shown in some of his works, to give more credit to the discoveries of Liebig, he has at the same time been more liberal in his treatment of the works of others than the great German chemist. He has shown a true and decided sense of the importance of his discoveries, and his work is a model for the guidance of future research in this science."

George Ernest Stahl was born in the year 1660, at Ansbach. The most important of his works is his 'Fundamenta Chymiae Dogmaticæ et Experimentalis', which is divided into a theoretical and practical part. The idea that the metals were earthy substances impregnated with an inflammable principle had been advanced by Albertus Magnus. Beecher maintained the existence of this principle, not only as the cause of combustion, but also of inflammability; and Stahl much improved this view of the subject, and supported it by many experiments. He gave the discovery the name of phlogiston; the doctrine was called the Stahlian theory. It raised the reputation of the author to the highest degree, and placed him in the forefront of the chemists of his time.

In explaining the phlogistic or Stahlian theory, it is to be understood that Beecher and Stahl considered all combustible bodies as compounds; during combustion one of the principles is supposed to be dissipated, while the others remain. Thus when charcoal is burnt, it is entirely dissipated.

Stahl therefore supposed that it was phlogiston, or the inflammable principle, nearly pure; by heating charcoal with metals which had been reduced to calxes, or what were termed metallic earths, they resumed their metallic appearance and properties; therefore the metals are compounds of metallic earths and phlogiston. Again, by heating Glauber's salt, which is a compound of sulphuric acid and soda, or the fossil alkali, with charcoal, a compound of sulphur and the alkali, as is shown by his name phlogopon, is produced, and this compound is a substance of phlogiston; most of the properties of phlogiston were determined by his experiments. The influence of air in producing the phenomena on which it was founded. The first promulgation of the theory overlooked the simple fact which had been before stated, that metals, instead of becoming lighter, remained the same, and the heated air had lost nothing, actually became heavier by the operation. Those who afterwards refined upon the theory, endeavoured phlogiston with a principle of levity, and thus the difficulty was for a time removed, but only to come back under other forms, and at last when it came to be duly appreciated, profaned fatal to the theory of phlogiston.

No. 407.

[THE PENNY CYCLOPAEDIA.]
experiments on platinum, though without any very bene-
fits to results to chemistry. He was the author of a Chem-
ical Dictionary, which has been translated into many lan-
guages.

We have mentioned most of the chemists who con-
tributed valuable additions to the science before the in-
troduction of aëroform bodies; and we may observe that a
volume would require a volume. We now therefore approach, or
rather commence a most important era in the history of
chemical research and discovery. Hitherto, except what had
been done by Ray, Maydol, J. H. Mayer, and others, and
published in their works, and their relation to the phe-
nomena of chemistry, had almost entirely escaped obser-
vation; or at any rate they had been but very slightly and
 imperfectly considered, as shown with respect to the increase
of the air with the help of alcohol. But in their opinion of men
which was rather attributed to a principle of levity in the
philosophers by lost them, than the acquisition of weight
from the air.

Dr. Hales was born 1677, and died in 1761. About 1794
he recommenced the examination of aëroform bodies which
had previously engaged the above-mentioned philosophers; he
attempted to ascertain the chemical relations subsisting be-
 tween air and other bodies, and to determine the circum-
stances under which air is absorbed or extracted by natural
processe. He observed a number of substances, which he obtained
were curious and important; but, owing to a fundamental error in his ideas,
he drew but few inferences which contributed to elucidate the
intricate and hitherto imperfectly explored paths of the
operation of pneumatic chemistry, which he regarded as one element-
tary principle as constituting elastic matter modified by the
effluvia of fluid or solid bodies, greatly aided the formation of those more just views which later and more
refined experiments have since contributed to unfold. He
substituted a vast number of bodies for his ideas of heat, and
obtained gaseous products from them; thus he found that
the air which he obtained from wood was fatal to animals;
from nitre he procured nearly 200 times its volume of air,
and from the calcined lime of its weight of vitriol, when poured on iron filings, produced very little air,
but that the addition of water occasioned its evolution in
large quantity. In no case, however, were the gaseous
products thus procured examined with the attention which
might have been expected from the novelty of the results. He
also found that when phosphorus was burnt in air, the quantity
of air was diminished, and white fumes were produced;
but he neither examined the residual air, nor did he inquire
into the nature of the white fumes resulting from the com-
bustion of the phosphorus.
The experiments contained in his Statical Essays, pub-
lished in 1727, were made to prove the transpiration of
trees, and also the force with which they imbibe moisture.
Thence it appears not however immediately connected with
our present subject.

In 1718 Geoffroy published tables of affinity; and al-
though the affinity has since been discovered to be modi-
fied by a variety of circumstances, yet these tables have
certainly been of use.

Dr. Black, Professor of Chemistry in Edinburgh, pub-
lished, in 1756, his researches on calcareous, magnesia,
and alkaline substances. He showed that there existed in
these substances an aëroform body, possessing chemical and
physical properties, perfectly distinct from the air of the
atmosphere; he proved that marble and chalk contained
this body capable of an aëroform existence, and that its
presence constituted the difference between them and quick-
lime. He showed also, that it was capable of being expelled
from earthy and alkaline substances by the action of an
acid, and when the air thus set free was collected and ex-
amined, he found it to possess the properties of a weak acid.

Great opposition was offered to the new and important
conclusions which were promulgated by Dr. Black; among
others, Meyer, a German chemist, attempted to prove that limestone became caustic by combining in the
fire with a peculiar substance, and not, as Dr. Black had
proposed, by losing aëroform matter. The loss of weight
which the limestone suffered was however almost suffi-
cient proof of the accuracy of Dr. Black's views; and, in
a few years from the date of their promulgation, the opinions
of Black were universally admitted to be correct.

The great elastic fluid, different from that of the
atmosphere, greatly excited the attention of experi-
mentalsists, and they were soon led to inquire whether other
might not also exist. The various gases obtained by Hales
were now regarded with different views; and, before many
more years had elapsed, numerous and peculiar aëroform
bodies were discovered by various processes. Dr. Black's
experiments on what he termed latent heat are remarkable for
their simplicity, and the precision of the inferences drawn
from them.

Mr. Watt derived great advantage from these in his
celebrated improvements on the steam-engine.

About the year 1785, Mr. Cavendish (who was born in
1731, and who had been greatly affected by the prop-
erties of inflammable air, since called hydrogen gas;
and he invented an apparatus for collecting and examining
elastic fluids, which, although extremely simple, has been
completely set aside by the more convenient methods pro-
posed by Black, through the discovery of the densities of
fixed air, inflammable air, and common air.

Having stated the general properties of hydrogen gas,
Dr. Hales showed that different metals, when dissolved in similar
portions of the same acid, afford different quantities of this
gas; that zinc yielded more than iron, and iron more than
tin, facts which are perfectly consistent with and explained
by the doctrine of equivalents; he ascertained the exact
proportions of the constituent gases of the atmosphere.
His most celebrated discoveries were the existence of
water and nitric acid; and he first determined the
freezing point of mercury.

His character, as a philosopher, is thus sketched by Sir
H. Davy:—"Cavendish was possessed of a minute know-
ledge. He was one of the first to carry into his chemistries a
deliberation and precision which have never been exceeded; possessing depth and
extent of mathematical knowledge, he reasoned with the
calcul of a geometer upon the results of his experiments and it may be said of him that he was not
said of any other person, that whatever he accomplished
was perfect at the moment of its production. His processes
were all of a finished nature; executed by the hand of a
master, without the least indication that he was an artist, or
that the beauty of his early labours even, have remained unimpaired
against the progress of discovery, and their merits have
been illustrated by discussion, and excited by time.'

The important discoveries of Dr. Joseph Priestley next
claim attention. He was born in 1733, and died in 1804.
No person ever commenced a career of discovery under cir-
cumstances less likely to insure success than Dr. Priestley.
He was but imperfectly acquainted with chemical science,
though he had but little leisure, his apparatus was very deficient,
and the experiments which he had made were insufficient to invent new methods, or
attempt those which were extremely scanty. All these diffi-
culties he surmounted with indefatigable industry and
ingenuity, and to him we owe the most important discoveries
which have been ever made.

Pneumatic chemistry had, to a certain extent, been stud-
ed, as already shown, by Boyle, Mayow, Hales, and espe-
cially by Black and Cavendish, when Dr. Priestley began his experiments. His first memoir was published in 1772,
and was accompanied by the discovery of the pure
carbonic acid gas. This paper was the result of his accidentally
living near a brew-house, in which he had made exper-
iments on the carbamic oxide formed during fermentation.
Among the gaseous products which Dr. Hales obtained was
that now called nitric oxide, for he did not inquire into its
properties. It was again discovered, and minutely examined
by Dr. Priestley, who applied it to the purposes of eudio
metry, a branch of the science which may almost be said
to have originated with him, and in consequence of
this discovery.

Azoic gas had undoubtedly been obtained, but was not
examined by Hauksbee when he passed atmospheric air
over ignited metals; Dr. Rutherford also noticed it about
1772, and called it the pcock. The gas was generally
assigned to others. It appears however that Dr. Priestley had ob-
tained it, and noticed its properties at least as early, and
perhaps sooner, for he gives an account of it in the Phil-
esical Transactions for that year.

His gaseous discovery was what he called the
diphlogisticated air, now called oxygen gas. This important
accession to chemical science was made on the 1st of
August, 1774. He procured it by strongly heating red
oxide of mercury, formed by the action of heat and air upon the
metal, and collecting the gas which was evolved from it.
The consequence of this discovery would require a volume.
for description; it has served as the basis for all that is known respecting the nature of the atmosphere, water, acids, and alkalies; and the nature of combustion has been greatly illustrated by it.

Sulphurous acid, fumaric acid, muriatic acid, and ammonia were first made known in the gaseous state by Dr. Priestley; he discovered nitrous oxide gas, and first obtained carbonic oxide gas, the nature of which however he mistook. He did not discover hydrogen gas, but his experiments on the combustion of carbon and the existence of carburized hydrogen gas, though he did not make many experiments upon it.

The action of electricity on various compound gases was examined by Count Volta. The first experiments were made when sparks are passed through a confined portion of atmospheric air; this fact served as the basis of Cavendish's discovery of the composition of nitric acid. In the same way the increase of bulk which he found to take place by the action of the same agent on ammoniacal gas led Berthollet to determine the nature of it. His experiments on the amelioration of atmospheric air by the process of vegetation are highly curious, and have been repeated and confirmed by subsequent investigations. His work entitled "Experiments and observations on the atmosphere" contains a vast number of experiments, from which various inferences might be drawn, which he seems, in his rapid career of discovery, himself to have overlooked: such are the vast number of experiments of the nature of atmospheric air and water might be added to the list.

His additions to the means previously known for experimenting on gaseous bodies have afforded the greatest facilities to those who have followed him: such are the invention of the air pump and a large variety of means for obtaining water in those gases which are soluble in the latter fluid. To conclude with the observations of Sir H. Davy: "Chemistry owes to him some of her most important instruments of research, and many of her most useful combinations; and no single person ever discovered so many new and curious substances."

The works of Torbern Bergman (born in 1735, died in 1784) have been collected and translated into English. The first paper which is given was in 1774, the 'Air in the Air,' now called carbonic acid gas. If the contents of this paper be compared with the previous one of Cavendish on the same subject, it will be seen that the latter had anticipated Bergman on many of the more important facts. No notice however is taken of Cavendish's experiments in it.

He afterwards published papers on the 'Analyses of Mineral Waters,' and though the methods which he adopted are by no means accurate, they were preferable to any which had been previously used.

Bergman studied nitrates, of which however the discovery is said to be due to Scheele. It will be scarcely possible to enumerate even the various papers of Bergman, and much less an analysis of their contents. His 'Eclaircissante Electric Attractions' is a work of importance, and deserves a more detailed notice. The intention of the author was to point out the nature of chemical affinity, and to account for the anomalies which that complicated subject appears to present. He adopts it as a principle that chemical combination is the result of an ab- solute force. Berthollet attempted to show that this conclusion is erroneous, and though it must be admitted that there are various circumstances which modify the action of this power, we are not so nearly without a guide to just conclusions. Most of the experiments and opinions of Berthollet would lead us to admit.

Bergman published tables in fifty-nine columns, in which he showed the relative attraction of bodies, or what he terms elective affinity. As the order of decomposition often varies, according as it is made in the dry way or the moist, each of the fifty-nine columns was divided into two; the first exhibiting the order of decompositions in the moist, and the second in the dry way: he also stated various cases of double decomposition. These tables are constructed upon the now well-known principle, that any substance, whatever acid, alkali, or metallic oxide, being placed at the head of a column, and others under it, such substance has the greatest affinity for that next to it, and for the rest, according to the necessity of their proof.

It has been already observed that Bergman's processes for analyzing mineral waters were more correct than any which had been previously adopted, and although his experiments on the analysis of precious stones are far removed from perfection, yet they possess the rudiments of the methods which are now adopted. He first proposed the analyzing of minerals by combining them with the fixed alkalis, and found that they were rendered variously soluble in water, and totally or either in that fluid or in an acid.

He found fulminating gold to contain ammonia, and he explains the detonation to arise from the sudden decomposition of that gaseous body.

The discoveries to which next claim attention are those of Charles William Scheele, who was born at Stralsund in 1742, and died in 1786. Like Priestley, Scheele began his experiments under very unfavorable circumstances with respect to apparatus, and the means of procuring it.

Scheele, observing that air was required for combustion, subjected it to analysis. He found that certain substances, especially what was then termed liver of sulphur, and now sulphur of potassium, when exposed to a given bulk of air, diminished it to about four-fifths of the original quantity; he found also that the flame of burning sulphur and of hydrogen gas produced the same effect. Without any acquaintance with what Priestley had previously done, he obtained, by various processes, oxygen gas, which he named anfire, or air animating and precipitating fire and metals, was absorbed by liver of sulphur; and that upon adding fresh empyreal air to that left unacted upon by it atmospheric air was reproduced.

His experiments on the nature of air were followed by some on heat, and to read them, and he gave the name of radiant heat to that portion of it which emanates from hot bodies, and, as he found, in right lines. He observed the blacking effect which is produced by the sun's rays on chloride of silver, and he showed that this blackening was absorbed by liver of sulphur; and that upon adding fresh empyreal air to that left unacted upon by it atmospheric air was reproduced.

These papers and others contain a repetition of several facts, but he committed the error of supposing that the silex which he obtained in his operations, from the retort, was formed by the combination of water and fluoric acid. Ignoring that it involves the agency of oxalic, which had not long been discovered. He treats the subject however with his usual sagacity, and having obtained what is now called prussic or hydrocyanic acid, he has stated several of its properties. Besides the discoveries which he has enumerated, it is to Scheele that we are indebted for the first knowledge of barytes and of the characters of manganese.

Antoine Laurent Lavoisier was born in Paris in 1743, and died a victim to the revolution in 1794. Although one of the original discoverers of the laws of chemistry, none of those of Priestley and Scheele, yet his contributions to the science are numerous and important, especially as to what regards its theory. His 'Elements de Chimie' were published in 1789. In this work he points out the difference between a fluid or a material substance, which he calls caloric. He argues that the different forms of matter depend in general upon the quantity of caloric which they contain. His analysis of atmospheric air, though conducted perhaps on more purely philosophical principles than have resulted partially from the results as deducible from the very simple experiments of Priestley; but it must be admitted that they had the merit of settling the question as to the nature of the atmosphere.

Van Helmont, and after him Maquier, had employed the term of gas to denote all elastic fluids which differ from atmospheric air. This word Lavoisier also adopted; and as he found that the portion of the atmosphere which supported
animal life also entered into the composition of acids, he called it oxygen gas; the other constituent of the air he called azotic gas. The name azotic acid was thus applied to this name it is yet designated by many chemists, while others prefer that of nitrogen, derived from its forming a part of nitric acid.

Lavoisier and his coadjutors effected various improvements, and submitted to the investigations of others, even without acknowledgment, but that he made a distinct claim to the discovery of oxygen, which Dr. Priestley has most satisfactorily refuted, by ascertaining, what might have been contradicted, but which was not, that he called oxygen gas and that he procured by the table of M. Lavoisier himself. He makes scarcely any, if any, acknowledgment of the labours of his predecessors, and his friends have claimed for him the discovery of azotic gas, previously described by Priestley and Rutherford.

Antoine Francois de Foureroy was born at Paris in 1753, and died in 1806. He was the author of more than eighty memoirs on chemical subjects. His earlier papers on sulphurous acid, ammonia, and the decomposition of nitre, were published while he was yet a believer in the phlogistic theory, which he zealously defended, but afterwards renounced. One of his most important contributions to chemistry was that of demonstrating, in 1785, the nature and properties of the elements of ammonia. About the same time he made his experiments on the dephlogisticated marine acid of Scheele, which, from experiments well calculated to give rise to the opinion, he supposed to be a compound of uric acid and oxygen, and it was called oxygenized uric acid. These views, in consequence of the belief of the experiments of Davy, have been shown to be erroneous, and this gas is now called chloroform. A subject of importance, which is admitted to have hitherto resisted all attempts at decomposition. It was stated by Scheele, in his experiments on this gaseous body, that among other properties which it possessed, was that of destroying vegetable colouring matter. In consequence of this remark Berthelot applied it to the purpose of bleaching, in which it is now most extensively and almost universally used.

The experiments which Berthelot made on prussic acid and its compounds did not complete our knowledge respecting those bodies. In examining the properties of sulphuretted hydrogen, he observed that it possessed acid properties; it was not however by the French chemists adopted. This theory just adopted, that all acids must contain oxygen. But also discovered fulminating silver, and first employed alcohol as a solvent for obtaining potash and soda in pure state.

In 1803 Berthelot published a work entitled 'Chemical Statics,' the object of which was to controvert the opinions of Bergman on chemical affinity; but although he pointed out some difficulties attendant upon them, they were by no means conclusively refuted. In this work Berthelot maintained the opinion that quantity may be made to overcome the force of the chemical affinity existing between bodies. There were however several points of the argument which he neglected, or with which he was unacquainted; indeed, in his later papers on this subject (1829), he admitted that his conclusions had been promulgated,--a doctrine which will explain many of the apparent anomalies that occurred to Berthelot. Indeed, in a discussion with Proust, in which the true and contrary views were expressed, the advantage as to that bodies were capable of uniting with each other in all proportions. But whatever may have been the erroneous views of Berthelot in some particular cases, chemistry is greatly indebted to him for many valuable discoveries and minor details; and the application of the bleaching power of chlorine is a practical scientific improvement which has, for its extent and usefulness, scarcely been equalled, except in the construction of the steam-engine.

Louis Bernard Guyton de Morveau was born at Dijon in 1737, and died in 1816. Through the publications of this chemist were very numerous, and contributed much to the extension of the science, yet he was not the author of any other prominent discovery. His papers are scattered through 'Histoire de l'Academie,' 'Journal de Physique,' and 'Annales de Chimie.' There are however some communications, connected with the history of chemistry, in which his participation must not be overlooked. In 1787, in conjunction with Lavoisier, Berthelot, and Foureroy, he published a work in one volume, entitled 'Mémoires sur la nitre,' in which he has assigned the nitrate of potash to the nitric oxides; he has also attempted to give a precise definition of the terms nitre and nitrate of potash. The nitrate of potash is generally used for the same purpose. The application of these disinfectants was made in 1782, although the history of it was not given to the public till the year above mentioned. He was the author of a considerable portion of the chemical articles in the 'Encyclopédie Méthodique,' and his paper on 'Acid' has been justly commended for its accuracy, both as to experimental and historical details.

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In 1789 he discovered a new metal in a mineral called pechblende, to which he gave the name of uranium; and in the same year analyzing the zircon he found a new earth, which he called zirconia, and which has since been shown by Berzelius to be a metallic oxide. In 1795 he found the same oxide in the red schorl. In 1798 in the red schorl the same metallic oxide which Gregor had previously met with and called menachnia; Klaproth named it titantium; and this appellation is now generally employed. Apparently ignorant of the fact that strontia had been previously stated to exist in the felspar stones of the northern parts of Germany, Gregor discovered two new metals in the grains of native platinum, viz., palladium and rhodium; he showed that oxalic acid and potash combine in three different proportions, forming the oxide, carbonate, and hydrosilicate, bisulphate, and bisulphite; he pointed out the nature of some small copper-coloured crystals found in the slag of an iron furnace, proving by a series of experiments in a paper which is a perfect model of conciseness and accuracy, that they were metallic titanium. He perfected the method of rendering platinum available for the purposes of chemistry and the chemical arts, and his 'Scale of Chemical Equivalents' more effectually elucidated and extended the doctrine of definite proportions than all that had been previously done both by theory and practice. He first showed that the electricity of voltaic electricity is dependent upon chemical action, a fact which has been since amply and ably illustrated by Faraday. His 'Reflections on Goniometry' has given to crystallography all the minute accuracy which it had been before supposed incapable of exhibiting. It is probable that three substances, viz., the carbonate of iron, lime, and magnesia, which were previously supposed to crystallize in rhomboids measuring the same angles, had all different structures. Humphry Davy was born at Penzance, in Cornwall, in 1778, and died in 1829. To the researches and discoveries of this justly celebrated chemist it will be impossible to do justice in the space to which we are confined. His first contributions to chemical science were published in 1799, in a work edited by J. Boddis, entitled 'Contributions to Physical and Medical Knowledge.' The first paper is 'An Essay on Heat, Light, and the Combinations of Light,' and the second 'On the Generation of Phos-oxygen (oxygen gas), and on the Causes of the Colours of Organic Beings'; these, although stamped with the mark of genius, are of the most remarkable for the speculative than experimental nature of their contents. In 1800 he published a work, entitled 'Researches, Chemical and Philosophical; chiefly concerning Nitrous Oxide, or Diphlogisticated Nitrous Air, and its use in Respiration.' In 1807 he published a work which is a complete and complete details the effects produced by the respiration of nitrous oxide both on himself and others. The very high reputation which he had acquired by this work was greatly increased by his paper in the 'Transactions of the Royal Society,' entitled, 'On some Chemical Agencies of Electricity.' In this paper he showed that the acid and alkali which had before been observed to be developed by galvanic agency were derived from the decomposition of some previous existing salt, and were not formed by the electric action. He arrived at the conclusion, from the numerous experiments described in this paper, that all bodies possessing chemical affinity for each other are in different electrical states, and that the decomposition of the affinity is proportional to the density. He then went on to the discovery of those earths which have no alkaline properties, as alumina, silica, yttria, and zirconia, though these have since yielded to other modes of decomposition. In 1807 he also discovered a new base of boracic acid.

In 1811 Davy writes a paper to the Royal Society, in which he showed that what was called oxyammoniacic acid by Berthollet, instead of being, as he supposed, a compound of oxygen and muriatic acid, was, in fact, an undecomposed hydrochloric acid; and he gave it to the name of chlorine from its green colour. These views, though at first strongly opposed by Berthollet and Dr. Murray, are now universally adopted. In the following years he contributed various important papers to the
Royal Society, and among them on the following sub-
jects—on a compound of chlorine and oxygen; on chloride
of azote; on iodine; the combustion of the diamond; on
the salts called hyperoxynitruric; on fire-damp, and the
means of preventing accidents in mines; and his invention of
the safety lamp. In succeeding years he published that
rich series of papers on electricity, electro-magnetism, and on a
method of preventing the corrosion of copper sheathing; this
plan, though based on perfectly scientific principles, failed
in its object from the very unexpected cause of its being ren-
dersed useless. For his last paper was in 1819, on the electricity
of the torpedo.

In 1812 Davy published the first part of the ‘Elements
of Chemical Philosophy,’ a work which was never completed.
It embodied the results of his discoveries, and an account of
the works of the authors in whose writings he had been
led to the time in which they appeared. This work bears occasional marks of haste, yet
it contains evidence of its emanating from a genius of the
highest order.

In concluding this brief sketch, it is hardly necessary to
remark that the discoveries alluded to in it placed their
author at the head of the science which he illustrated, not
merely in England but in Europe; and his fame will rest
on the durable base of experimental discovery and unrivalled
talent for generalisation.

In giving a history of chemistry, it is impossible not to
notice the doctrine of definite proportions, or the atomic
theory; under which head we have entered pretty fully into
the history of its discovery, and mentioned the contributors
to its development, whether in its derivation or in its writing.
In this article the discoveries and labours of Wenzel, Dr. Higgins,
Mr. Higgins, Richter, Proust, Dalton, Wollaston, Berzelius,
Gay-Lussac, Dr. Proust, and Faraday, are detailed so amply
and in such a forcible manner as to render any further notice here
unnecessary.

There are still some other subjects which it is necessary to
mention, though we cannot allude to all the discov-
eries which their respective authors have made. In 1803,
Sir Humphry Davy, a German apothecary, discovered, in opium
the first of a new class of bodies, or the vegetable alkalies; but
this discovery excited little notice, till the author published
a second paper in 1816; this alkalie is morphia. Since
this time numerous others have been found; they are all
of them very active substances, and frequently poisonous.
Thus the different kinds of cinchona have yielded two
alkalies, quina and cinchonia, to which their virtues are
owing; these were discovered by Pelletier and Caventou,
in 1809. It has been found that many of the most active
vegetable substances, such as belladonna, ipecacuana, col-
chicum, and many others, contain an alkalie. That these
alkalies should not have been sooner discovered is readily
accounted for by their existing combined with acids, so
that they do not exhibit any alkaline properties.

In 1812, iodine, a peculiar elementary substance, was
discovered by M. Courtois, of Paris. The nature of this
body was made the subject of numerous experiments both
by Davy and Gay-Lussac. Its discovery served the purpose
of illustrating and confirming the new views of Davy as to
the simple nature of chlorine.

In 1816 Berzelius discovered a peculiar inflammable
elementary body, to which he gave the name of selenium.
In 1824 he obtained the metallic bases of silica and zir-
conia; and in 1829 he found a new metal, to which he gave
the name of thorium. In 1816 Stromeyer discovered cad-
mium, a new metal; and in the same year lithium was dis-
covered by Arfwedson; Bussy obtained magnesium from
its oxide in 1829, and in 1836 Sefstrom discovered the
metal vanadium.

In 1823 Mr. Faraday showed that various gases, which
had previously resisted condensation, might be rendered
fluid; we particularly mention this important acquisition
to chemical science, because unjustifiable attempts have
been made to transfer the honour of it to Sir H. Davy. Eight
compound gases were rendered fluid, but chlorine is the
only elementary one which yielded to the same treatment.
If our readers would be happy to give a more
extended view of the important discoveries of Mr. Faraday
in electro-chemical and electro-magnetic science, as well
as to notice his other important contributions to chemical
philosophy.

In 1835 Balard made known the new elementary body
bromine, which is remarkable as being the only elementary
and except mercury.

I cannot better conclude this slight sketch of the pro-
gress of chemistry than by adopting the words of Sir H.
Davy on a similar occasion:—'To dwell more minutely
upon the particular merits of the chemical philosophers
of the present age will be a grateful labour for some future
historian of chemistry; but for a contemporary writer it
would be idle to attempt the right of arbitrator, even
where praise only can be bestowed.'

CHEMENITZ, a town in Saxony, the capital of the
Erzgebirge circle, is situated at the foot of the Erzgebirge,
and the town which extends about ten miles in every direc-
tion. It is in 50' 50' N. lat., and 1' 55' E. long., and about 876
feet above the level of the Baltic. Chemenitz is one of the
most industrious towns in Germany. In no place indeed
have all the English improvements been introduced with
such care and skill as in Chemenitz. The number of
persons employed in weaving exceeds 2000. There are
twelve manufactories for printing cotton goods, and some in
which the yarn is dyed red like Turkish yarn. The woollen
manufactures, which were formerly very considerable, have
much decreased in the last fifty years; but in the town as
well as in its neighbourhood there are many stocking man-
ufactures. Chemenitz carries on a considerable trade,
being situated where the road between Prag in Bohemia
and Leipzig and that which unites Bavaria with Dresden
cross each other. The town contains about 16,000 inhab-
itants, and is well built; the streets are spacious and
mostly straight, and many of its houses look more like
castles than dwelling-houses. It is remarkable for
the great cleanliness of its streets, and is lighted with lamps.
The public edifices are in a good style, but none of them
particularly distinguished.

CHELNIUM, a genus of Coleopterous insects. [Par-
aphus.]

CHENOPODIA.C.E.E., a natural order of oxegons, con-
sisting of numerous species, used either for culinary purposes
or for the manufacture of soda. They are apetalous plants,
with minute green herbaceous flowers, a small number of
seeds, which are opposite the segments of the calyx, and
a one-celled membranous fruit, containing one single cero
seed or a very small number. The leaves are soft and
CHÉNOPODIUM, the genus after which the last-mentioned order has been named, consists of weedy plants, common on dungheaps and in waste places, and known by the generic names of Sal-kun (Ch. album), Good King Henry (Ch. album), etc. They are all generally insipid plants, whose leaves and young shoots may be eaten as spinach, but which have no particular merit.

In this genus is however found the celebrated Quinoa of Peru, which is said to be of so much importance to the Peruvians as the maize, potato, and wheat, is an annual weedy species, with an appearance similar to that of garden orach, to the size of which it grows. Its flowers appear in close clusters about the ends of the branches, and are succeeded by a profusion of little pink or white seeds (according to the variety) about the size of grains of millet. Its leaves are employed as spinach, and the seeds in soup or broth as rice, and in some parts of South America they are in much use as rice in the wake of the potato. They are said to yield a pleasant beer when fermented. It is chiefly upon the highest land of Southern Peru, where neither barley nor eye will ripen, as, for instance, at the height of nearly 13,000 feet on the table-land of the Sierra, and of Inca, that it is cultivated; it there forms fields, the limits of which the eye can hardly reach, of a monotonous and unpleasing aspect, scarcely mixed with a single other species, and very unlike the rich and waving greenness of our standing corn. It is also extremely common about the gardens of Trujillo.

The seeds are ripened in England, and may now be purchased at any of the seed-shops; but the plant can hardly be considered worth the attempt at cultivating it anywhere else. (Gard. Cyclopedia, vol. x., 587; and Meyen, Die Pflanzen Geographie, 361.)

CHEPESTOW, a port and market-town, on the Wye (about 21 miles from which it falls into the estuary of the Severn), in the hundred of Cadoxton, Monmouthshire, 110 miles nearly due W. from London. The parish of Chepstow contains 1920 acres; it is in the diocese of Llandaff. The population in 1831 was 3594; the average gross annual income of the incumbent of the parish was returned in 1835 at 2141. The parish then contained 21 daily and Sunday services, one day a week in school, and 13 weekly rates. The county is endowed with 72 per annum arising from land, and the interest of 100L.

The advantageous situation of Chepstow near the mouth of the Wye and Monnow, which tracts either coast of which are the junction of the Severn, makes it a populous town, and one of the principal emporiums of trade, and with the great advantage of being almost equidistant between England and Wales; it is moreover strongly fortified. The town is built on a hill gradually ascending from the river, and has a cheerful and lively appearance. From different points near the town the views are exceedingly beautiful,—the scenery not being surpassed, perhaps, by any thing similar in Britain. The ruins of Chepstow Castle occupy an extensive area; the walls on one side are almost perpendicular with the cliff which overhangs the Wye; the erection of the edifice is attributed to the Normans in the eleventh century, but the architecture bears marks of a later date. In this castle Henry Marten, one of the judges of Charles I., was confined for upwards of twenty years after the Restoration, but his imprisonment did not prevent his being a little gay and jovial, even with his death. His family was permitted to live with him.

The Wye is navigable for large vessels only to Chepstow bridge, which is a massive structure of iron, erected in 1816; but barges from eighteen to thirty tons burden can go as high as Hereford. The spring tides at Chepstow frequently rise above 50 feet.

There are no manufactories in the town or neighbourhood of Chepstow, but the town has a considerable export and import trade. It is lighted with gas, the expenditure of which is very cheap, each individual it is also well paved, and kept clean. The gross receipt of customs' duty at Chepstow, in 1834, was 902L.

CHÉR, a river of France, from which the department was named, which is about 200 miles in length, and has its principal branch in the eastern extremity of the department of Creuse, a little to the south of the town of Ausanne.

Two other branches, which rise in the same department, form a junction with it as it enters in its northward course the department of Allier. It continues the same direction through the western extremity of this department, passes by Montluçon, and enters the south-east boundary of the department of Cher. Near Saint Amand it takes a N.N.W. course, and meets the Loire at Nevers, about 20 miles from Auxerre, where it unites with the Arvon. Turning due west, it receives the Aron, passes the town of Soisils, a little below which it is joined by the Sauldre and the Fouzon, and continuing its western course past St. Aignan, Montlheraud, and Bière, it winds into the Ile de Nevers, and flows into the Loire near the town of Naux. This river is subject to great inundations. It has 29 locks to facilitate navigation; but from its source to St. Aignan, a distance of 48 leagues, it is serviceable only for the floating of timber. The navigable portion of 19 leagues, from St. Aignan to the Loire, is navigable for vessels of 50 tons; the wood, corn, charcoal, and fodder for cattle. The whole of its course is nearly 200 miles. It supplies several kinds of edible fish. The canal du Duc de Berri runs along the Cher from Chambon, on one of its upper branches, nearly as far as Ainey. A smaller river of the same name rises in the duchy of Bar, and falls into the Meuse. (Desc. Méthod. Géog. Phys., tom. iii.; Cassini's Map of France; Expilly.)

CHÉVÉ, a department nearly in the centre of France, comprehends the provinces of Beauvais, and Haut Berri, and a portion of Bourbonsais. Its northern boundary is formed by the department of Loiret; on the south it has the department of Allier; on the west that of Loir et Cher; and on the east that of Loire. It is bounded by the river Loire. It is included between 46° 25' and 47° 30' N. lat., and 3° 50' and 3° 8' E. long. The figure formed by its boundary line is very irregular. Measured north and south its greatest length is 86 British miles, and its greatest width, east and west, 56 miles. The area contains 1,455,134 acres (Diction. Universalis, by Prudhomme), or 3255 square miles. Bourges, its capital city, has a population of 18,000, and is due south of Paris, from which it is distant 193 miles by a straight line. The population of this department, in 1826, was 249,000 (Balbi, Abriéry Géog.), that is, between 109 and 110 to a square mile. The surface of the country is generally level, and the whole department is extremely well wooded. There are six forests of Allogny, d'Aubigny, of Bossin, of Haute Brune, of Vierzon, and of Yvoy. They cover 150,000 hectares, or 371,040 English acres, and furnish excellent timber for house and ship-building. Besides the Cher, there are several other considerable streams, namely, the Aaron, Arnon, and Sauldre, all of which fall into the Cher. In the southern and south-western parts the soil is only of a medium quality, and rusty ponds are numerous; in the northern and north-western portions are marshes, surrounded by thick woods of chestnut, oak, and elm. The weather is entirely barren and sandy, or covered with furze and thistles.

In the central parts, as well as on the banks of the Aaron and Cher, the land is remarkably rich, and especially on the eastern side, along the border of the Loire, where it possesses the highest productive qualities. About two-thirds of the whole surface of this department are more or less sterile and useless, and the rest exhibits the greatest fertility. Pasturage for sheep and horned cattle is abundant, and consequently great pasture is regularly reserved. The wool produced in this district is considered the best in France: the mutton also is said to be very good. Horses are generally diminutive in size. Game, poultry, and fish are abundant. All the various sorts of grain yield plentiful supplies. Still the inhabitants are not excessively prodigal in the culture; nor indeed in any other of the industrious arts. It is remarked by Malte Brun (Géog. Univers., tom. iii. p. 493, 1830) that the inflexible perseverance with which the inhabitants adhere to the clannish routine of their ancestors prevents any development of the great natural resources of this department, and accounts for the fact, that, while they have at hand a large supply of the finest wool, only a very few manufacturers of inferior woolen cloths exist among them. For the latter goods hemp and flax, they manufacture no woolen fabric; that, with a large home production of wax, the making of wax candles appears never to have been attempted, &c. One fact alleged as a cause of the want of improvement in agriculture, is, that the large number of small proprietors, who let the farms on short leases, and consequently
CHE
40

CHE
France; tom. i., p. 234, et seq. Cherbourg contains a popu-
lation of about 15,000: it has a school for navigation, a
college, a royal academy, a board of trade, a theatre, public
baths, and a promenade.

The houses are of stone, and roofed with slate, of which
there are several quarries in the neighbourhood. The
church was founded in 960. The streets are narrow, gloomy,
irregular, and very uncleasy, though water is abundantly
supplied from several public fountains. There is some trade
in corn, cattle, cheese, butter, and bacon, the produce of
which is largely exported. The manufacture of cherries is
coarse cloths and druggists. The environs furnish an ample
supply of excellent vegetables and flesh. In the
adjoining forest of Tour la Ville there is a very extensive factory
of glass, which employs about 2,000 hands. The
villagers are very mild with regard to its
climate; the thermometer being constantly five degrees higher
than at Paris. (Malte Brun.) The views of Napoleon
respecting Cherbourg, as given in the Journal of Les Cases,
are very interesting. (Dict. Universel de Géogr. 1825;
Exyphy; Encyc. Méthodique; Reichard's Road Book of
France.)

CHERMOYER, the fruit of a Peruvian downy-leaved
species of Anona, the A. Cheromolia: it is described as
the largest on earth. It was introduced into South
America, and is very like the Custard Apple of the
West Indies. (Anona.) It is a tree about twelve feet high;
the leaves are oval, pointed at both ends; the flowers soli-
dary, very fragrant, of a greenish-white color, and
star-shaped with a scallop appearance on the
outside; when ripe it is greyish-brown, or black.
The flesh is white and sweet, mixed with several seeds of the
colour of coffee. The Creoles think this fruit the best of
all they have; and as they have reason to do so, it
merits their praise, and his account is completely confirmed by the
testimony of many officers who have been in the South
American service; but Feuillée says, one European peach
or plum is worth all the cheromoyers of Peru. The
latter author has figured it in his Journal des Observations, &c.,
t. 17.

CHEROKEES, the name of one of the native tribes, in-
habiting the southern states of the North American Union.
In the 18th century, they formed a numerous and powerful nation,
which was in possession of the southern portion of the
Appalachian Mountains and the countries on both sides of the
range, so that their hunting-ground extended over a part of
the States of Tennessee, North and South Carolina, and
Alabama, and nearly half the State of Georgia.
After a British colony had been settled in Georgia (1732), the native tribes began to lose ground. The
Cherokees however maintained their footing for a long time,
even among these countries under the name of their
independence. Soon after 1790, they had sold different parts of
their territories to the government of the United States. In
1809 they consisted of 12,359 individuals. In 1816 they
ceded the country still possessed by them within the State
of Tennessee to the United States. In 1817, after having
received from the government a due share of land in
Alabama, receiving in consideration of this cession, besides
presents and annuities, a tract of country of equal extent
west of the Mississippi, to which some families emi-
gated. At the census of 1830 the Cherokees remained
only in Georgia, where they amounted to about 4000 indivi-
duals; and in Alabama, where they were about half that
number. In 1834 the State of Georgia resolved to expel
them from that extensive tract of Georgia which lies to the
northwest of the Alabama, and to remove 60 ships of
war and 6000 men; they ordered the Moravian Brethren, who had settled among them for the purpose of instructing them in
the Christian religion, to leave the country. No sooner had
the intention of the government of Georgia become evident,
than the Indians applied to Congress for protection; and
Congress declared that the decree of the legislature of
Georgia was illegal. But the State of Georgia declared
that Congress had exceeded its powers, and they enforced
their own law by sending soldiers into the territory of the
Cherokees. In 1835 the country belonging to the
Cherokees is at present the only place east of the Mississippi where
Cherokees are found: they occupy in this State the country
above the upper branches of the river Coco, and may claim
the eastern counties of North Carolina, and the
(Ansonia.) The
remains of this once powerful tribe are wandering about
west of the Mississippi, on the banks of the Arkansas and
White River.
The Cherokees are considered the most civilized of the American Indians. They have made considerable progress in agriculture and domestic manufactures, and in the raising of domestic animals. They have a written language; the alphabet, which was invented by a native Cherokee, consists of 85 characters. Their language is derived from the same source as that of the Creeks, Chickasaws, Choctaws, Pascagoula, and some other tribes of the southeastern coast. The language of the Creek nation is a dialect of the Algonquian group of the Algonquian family of the Siouan branch of the Florida languages, these languages have obtained the name of the Floridian languages. (Franklin's "First Journey to the Polar Sea"; Darby.)

Cherry, an intoxicating drug, prepared from the common hemp.

Cherry. [Cerasus] Cherry, a valuable fruit, of which great numbers of varieties are known in our gardens; they are all the product of the small peninsula between the Hellespont and the Gulf of Meis, then called the Thracean Chersones; and to the peninsula now called the Crimea, which was called by the Greeks the Taurica Chersonesus.

Chester. [Surrey.] Chester, a market town in Cheshire, England, which borders on the Catti and the Chauci, living inland or south of the latter, and near the banks of the Vairigus or Weser. The Cherusci being excited by Arminius, joined the Catti and others in the attack and defeat of Varus and his legions. Of the Cherusci, they were an important people. Their language, the Cheruscians lived in Germany, the Romans had drawn their legions back to the banks of the Rhine, the Cherusci quarreled with the Suevi and afterwards with the Catti. Under Claudius the Cherusci sent messengers to Rome, thanking a king, for one Italicus, of the race of Arminius, who was born at Rome, of German parents. Italicus, however, on his arrival in Germany, was looked upon by many of his countrymen as an alien, and a degenerate descendant of the noblest of the nation.

Cherry, a fruit which has been cultivated for a long time. It is a small tree or shrub, bearing small, red, edible fruits. The tree is native to North America and is grown for its fruit, which is used in pies, candies, and other desserts. It is also used medicinally as a remedy for colds and coughs.

Cherries. [Cerasus] Cherries, a genus of small trees or shrubs, native to temperate regions. They are known for their small, round, cherry-like fruits, which are sweet and juicy. Cherries are grown in many parts of the world, and are used in cooking, baking, and as a decorative fruit in the garden.

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Philosophical Transactions. The most remarkable of them, communicated in 1738, is an account of the sensa-
tions occasioned by a head injury, on the subject of seeing his sight by the formation of an artificial pupil. The
memor is much quoted by metaphysical writers the opera-
tion, now common, was then perfectly new; and has
added considerably and justly to Cheselden’s fame.
For a work containing a treatise which was long the
text-book of that science in England, and was fre-
quently republished both before and after his death.
The eleventh edition was printed in 1778.
On the retirement of his tutor, Mr. Ferner, Cheselden
succeeded him as surgeon to St. Thomas’s, and was afterwards
appointed consulting surgeon to St. George’s and the West-
minster hospitals. He turned these opportunities to good
account in mastering his own skill and advancing the science of
surgery, and his ingenuity and perseverance were so
nearly surmounted by dexterity and success as an
operator; his coolness never deserted him; and he is said
to have been as much distinguished for the tenderness as
for the judgment that directed his hand. We are told that
out of forty-two patients whom he cut for the stone in four
years, he lost but one; the present average being at least
six in that number. An eye-witness of many of his opera-
tions, the author of his obituary in the Memoirs of the French
Academy, has narrated how his cordiality to the most foreign
societies, assures us that he once extracted the stone in
fifty-four seconds. Too much weight, however, may be
attached to these surprising instances of success; even
if truly recorded, they must have been in part the result of
over-dosage, or of a very judicious selection of cases for
operation.
It is in lithotomy that Cheselden has most repute as an
innovator as well as an operator. In 1743 he published a
volume on this subject, recommending an improved method of
performing what is called the high operation; but after
more experience and investigation, he laid aside for the
lateral method, of which, as at present practised, he may
almost be considered the inventor. His splendid work on
the science of surgery, published by subscription in 1733,
with a dedication to Queen Caroline, to whom he held the appoint-
ment of surgeon. It consists of a series of plates of the
natural size, with short descriptions; and is unequalled in
execution, and, except in a few particulars, unsurpassed in
accuracy. It was not successful as a speculation, and was
attacked with bitterness, as had been his treatise on the
high operation, by a lithotomist of the name of Douglas,
who seems to have considered Cheselden an intruder.
In general esteem, partly by his own merit, and, it is
said, partly in disgust at the asperity to which his success
had exposed him, Cheselden retired from practice at the
age of forty-nine, and undertook the honorary duties of
surgeon to Chelsea Hospital, which he retained for the rest of
his life. In his death, he left the Science of surgery, made subse-
cuently to his retirement, consisted of a series of plates with
original remarks appended to Gataker’s translation of
Le Duc’s Surgery.
In 1751 he published an attack of apoplexy from which he
entirely recovered; but a return of the complaint caused his
sudden death at Bath, on the 10th of April, 1759, in his sixtieth year. He was married, and left one
daughter, the wife of Dr. Cotes, M.P. for Tunbridge, who
died without issue.
His reputation as a surgeon was solid, and will be lasting.
as a man, much that is good is recorded of him, and nothing
unfavorable, unless it be his fondness for picturesque ex-
hibitions, he has the reputation of being harsh, if not
an ascetic. He befriended Thomas Chubb, probably out
of a simple benevolence, as he is not said to have shared in
his opinions. He associated with Pope and other wits of
his time; but as his classical merit was certainly not con-
clusive, we may be spared a repetition of his professional
eminence and strong natural talents, rather than to
use the term in literature, and art, upon which he seems to have
prided himself with so great reason.

CHESHAM. (Buckinghamshire.)
CHESS, a country, lying on the west side of Eng-
lend. The name is derived from the ancient city of Chester,
and is an abbreviation of Chesterhame, formerly written, in
Severn, Carew. The boundary line is very irregular.
On the N.W. a tract of a peninsula form is included be-
neck; a long narrow tract, containing part of Featherbed
Moss and Holme Moss, which belong to the central high
lands of England, is included between the Thames and the
Riverside. The three rivers from which the waves of
water are said by some writers to be like the wing of an eagle
stretched forth at length. (King’s Vale Royal of Cheshire.)
The whole county was the name of Valo Royal of
England, and afterwards a fragment of it was called the
northern boundary is chiefly formed by Lancashire, and
partially by Yorkshire and the Irish Sea. The Mersey forms the
boundary between Lancashire and Cheshire.
On the east, the county has Derbysbire and Staffordshire;
on the south, Shropshire and a small portion of Flintshire;
and on the west, Denbighshire, Flintshire, and the Irish Sea.
The greatest length of the county from N. to S. is 47 miles,
in a straight line, but 58 miles by the river, and from N. to S. about 32 miles; the whole circuit is nearly 200
miles. On the N.W. extremity, a line of sea-coast exten-
s for about 8 miles from E.N. to W.S.W., besides
about 20 miles on the estuary of the Mersey, and about 14 on
the estuary of the Dee. The area of the county is
655,600 acres, or 1,040 square miles; to which may be added
10,000 acres as the sands of the Dee. (Ormerod’s Cheshire,
vol. i. p. 10.) According to Mr. Holland (Agricultural Survey
of England, vol. i., p. 10.), the pasturage is not inferior to any
portion of the kingdom, consisting of arable, meadows, and
including parks and pleasure grounds; 28,000 in waste lands,
communs, and woods; 18,000 in past bogs and moors,
and 19,000 in sea-lands on the maturities of the Dee and
Mersey.
The total population of the county, in 1821, was 770,092;
1821, 874,410. (1821, 874,410. Income, 369,500.)
Chester, the county town, is 183 miles N.W. from London.
Surface, Hydrography, and Communications.—The sur-
face of Cheshire is in general a nearly uniform level, but
there are a few undulations. There are several elevated
tracts stretching in a general north direction. One is be-
tween the Goyt and the Bollin; and a second between
the Bollin and the Weaver. A tract of high land extends
also from N. to S. across Delaware Forest, terminating in
the Welsh estuary, in the N. of the county. A tract of high
land overlooks the Mersey, and to the S. in the rock on which
Beeston Castle stands; the height of this rock is 366 feet
above the sea. Alderley Edge, a few miles N.W. of Maccles-
field, is an isolated hill which rises abruptly out of a level
land, and presents one of the richest and most extensive
prospects in the county; but Cheshire, from its general
flatness, is not in general remarkable for picturesque beauty.
In the eastern part of the hundred of Macclesfield are
several high mountains, and the surface is broken by
moors; and in the vicinity of Macclesfield are the high lands
already referred to between the Bollin and the Goyt, which
spread eastward into Derbyshire, and form on the Cheshire
side a kind of mountain-wall. These high lands appear also
in the western part of the county, where extensive moors
are extensive forests in Cheshire; one is mentioned in the Domesday Survey of
Alderhope as being ten miles in length and three in breadth.
At present there are only a few large woods. Some
ham Mosses contain many noble old oaks. Around Dela-
mere Forest, in the hundred of Eddisbury, there are several
extensive plantations, chiefly of Scotch firs and larches.
This forest, so called, is a large stern tract of whitish sand,
partially covered with heath and peat-moss. It occupies
10,000 acres; of which a considerable part has been en-
closed and brought into cultivation. The most exten-
sive plantation in the county is that of Francis Jobrell,
Esq., which covers 100 acres. The timber supplied by the
state, and serves as a pledge to the crown for the
the losses of the antient forests. It is principally oak, and
furnishes abundance of tanner’s bark. A large quantity of
fine timber is also produced on the numerous estates of
the nobility and gentry in the county, particularly the
castle of the Earl of Stamford and Warrington, and of the Mar-
quins of Cholmondley. In many parts land left to itself
becomes spontaneously covered with oak and alder.
Cheshire abounds not only with rivers and brooks, but
with brooks and water-courses, which are very common.
It contains fish. The principal are Oak mere, Pick mere,
Bulworth mere, Rosthorn mere, Mere mere, Tatton mere,
Chapel mere, Moss mere, Broad mere, Bath mere, and
Mere mere, which is three-quarters of a mile in length.
The chief rivers are the Dee and the Mersey, and the Wea-
er. The navigation of these rivers is superintended, and
has been greatly improved, by companies incorporated by
acts of parliament. The source of the Dee is in Merioneth-
shire, and flows north and west, followed by the Conwy, and
descending from the heights between Dolgely and Dinas-
mawddwy, it forms the lake Tegid, or Pimble mere, otherwise
called Balha lake, the largest in Wales. Passing Balha and
Corwen, it runs E. through Denbighshire, by Llangollen,
newly named, and then near Wrexham, where it receives
from the north-west, and near Chester, passes through
the Dee. A surface of about 2500 acres has been reclaimed
from the E. extremity of this estuary. From Chester
bridge the Dee is navigable for barges. At Chester bridge
it is about 300 feet wide, and vessels of considerable tonnage
are conveyed by the new channel to Chester. The whole length
of the course of the Dee is about 55 miles. It supplies salmon,
trot, and other kinds of common fish. This river, called, in
Latin, Deva, in British, Ffrwy ddyw, was antiently held
in great veneration, and its waters were considered sacred
for religious ablation. As such it is celebrated by Drayton,
Brown, Spenser, and Milton. (Dr. Warton’s note on
Milton’s Lycidas, Todd’s ed., vol. v.)

The river is divided into Cheshire and
Lancashire. It is formed, and first receives its name, by the
confluence (near Stockport) of the Thame and Goyt : the
 Etherow (which joins the Goyt a little above Stockport) and
the Thame rise in the central highlands, N. and N.E. of Stockport. They unite on the south side of the highlands between Macclesfield and Buxton. Leaving
Stockport the Mersey runs a general west course to Nor-
thenden and Ashton. After passing by Carrington, it
receives on the right bank the Irwell from Manchester, and
on the left, a little below Warrburton, the Bollin. It
continues with a very winding course through a low,
flat country near Warrington, and expands at its junction
with the Weaver into a broad estuary which forms the
Liverpool sound. The flat of the country is covered by layers of sand, rendered safe by the excellent system of pilotage.
The Mersey is navigable from its confluence with the Irwell.
At Warrington it is 40 yards in width; opposite Liverpool
the width is a mile and a quarter, with a considerable
depth at low water. The greatest width of the estuary
above Liverpool is between Eastham and Frodsham, where
it is above three miles wide. Its whole course from Stock-
port to the outlet of the estuary is about 55 miles. A
number of the salmon-bearing rivers, which enter the
Mersey above Bollin and Helsby and Frodsham, is subject to occasional inundations. The river and estuary contain congers, plaice, flounders, and shrimps; with annual shoals of smelts, called sparlings, remar-
kalable for size and flavour. Some remarks are made in Owen’s account of the broken off at all times by the oscillations of the S.E. extremities of the meres of the Mersey and the Dee; by which the present peninsula of Wirral was
made an island.

The Weaver traverses the central parts of Cheshire from
S. to N. It rises in the north of Shropshire, near the vil-
gen of Stych, and after receiving several considerable
brooks and rivulets, runs by Nantwich, Minshull, and Wins-
ford, to Northwich, where it forms a confluence on the right
bank with the Dane, which rises in the same swamp as the
Goyt, and, a little farther north, with the Peover. It then
winds W.N.W. and falls into the Mersey below Frodsham.
From Winsford to Frodsham it has been rendered navigable
ten locks; the total fall being 50 feet. About 120 ves-
sels, from 20 to 100 tons, convey rock-salt down the river,
and return with coal. The whole course of the Weaver
is about 40 miles. Among the less important rivers is the
Dane, which is joined by the Wheelock above Northwich.
The course of the Bollin is in Macclesfield forest, near that
of the Dane. It passes Macclesfield and Wilmslow, is
crossed by the Bridgewater Canal, and enters the Mersey near
Warr
burton, after a course of about 23 miles. The Peover rises
S. of Macclesfield, near Gawsworth, and flows W.N.W.
to its confluence with the Dane, which is covered by a bridge
beneath the north edge of the forest. The first stratum is of 15 to 25 yards in thickness, extremely solid and hard,
and resembling brown sugar-candy. Many tons at a time
are loosen by blasting with gunpowder. The second
stratum is 6 to 10 feet thick, and has a similar character.
The salt lies beneath this stratum, in a bed above forty yards
thick, generally perfectly white and clear as crystal. The ex-
The term "arable" is often used to describe land that is suitable for growing crops. This can include land that is ploughed, tilled, or otherwise prepared for planting. In the context of farming, arable land is typically characterized by its fertility, soil type, and accessibility. The text discusses the adaptation of crops and farming techniques to different regions and climates, highlighting the importance of soil quality and management in agricultural productivity.

Agriculture in Cheshire is described as being well adapted for the growth of grass, with the soil being mostly composed of loams of various degrees of fertility. The region is noted for its excellent grassland and pasture, which support a diverse range of agricultural activities. The text mentions the cultivation of potatoes, which are a staple crop in the area, and highlights the importance of soil management in ensuring successful harvests.

The text also touches on the practical aspects of farming, such as the use of farm machinery like harrows and rollers, to improve the quality of the land. It notes the importance of land management practices, such as the use of fertilizers and irrigation, to enhance crop yields and soil health. The overall message is one of the dedication and hard work involved in maintaining and improving agricultural land, which is crucial for the sustainability of farming practices.

In summary, the passage provides a detailed account of the agricultural landscape in Cheshire, emphasizing the adaptability of the land to various crops and the importance of meticulous land management to ensure successful and sustainable farming.
have little or no arable land attached to them. A soil which is rather stiff is considered the best for grass, espe-
cially where there is a subsoil of marl, which is prevalent in many parts of the county. The marl, when spread over the surface, materially improves the herbage. A very rich loam is not considered so good for pastures where cheese is made as those where butter is produced. \(\text{[Agricultural Report]}\)

The natural grasses found in the good pastures are of those kinds which have been most improved by man for sowing, when arable land is laid down to grass; viz., Poa pratensis, Poa trivialis, Festuca pratensis, or, on sandy loams, Anthoxanthum odoratum. In the Report it is stated that Rhihannicus Crata galli, commonly called yellow rattle, is a weed which is very fatal to grass, and readily eaten by the cattle. It is in most places considered a sign of poor land, and lessens the value of the hay. The Cheshire farmers often defer mowing the grass for hay in a dry summer, in the hope of having a greater crop by waiting for showers; but this is a mistake, since it is much more profitable to cut the grass, however light the crop may be, as soon as the principal grasses are in flower, when the stalk contains the most nutritious juice. Cheshire is well suited for fruit-trees, orchards are not common: the marly substratum is not well adapted for the roots of trees; deep, allu-
vial, and loose soils, are the best. The hedge-rows are in general machine cut, the future will and must depend upon what can be seen from an elevation, the appearance of a continued forest. The forest of Delamere, as it is called, although, like many other ancient forests, a great part of it is a mere wilderness without any woods, formerly contained 10,000 acres. It is now much reduced by enclosures, but a great portion is still waste.

Draining has been introduced extensively, and with the best effect, in order to carry off the superfluous surface water, which is common in many parts of the county. The shoulder drain is common in stiff soils. Paring and burning are not much practised, and this mode of preparing land for crops is in general repudiated by landlords as destructive of the soil; but when old worn-out pastures are overrun with bad grasses and weeds, there is no improvement more effectual.

The abundance of marl found in Cheshire is one of the chief means of improving poor soils; 130 solid yards, or tumulur loads, of marl are put on an acre in the summer months, and left on the surface all the winter. In spring it is ploughed in, and makes the manure put on afterwards go much further. Marling is a permanent improvement. Lime, and also sand, are put upon strong heavy lands to a much smaller extent than marl, sometimes in the proportions of 1 to 3, or 1 to 4; the latter must be put in considerable quantities, and not ploughed in deep. It is a great improver of cold wet pastures, especially after they have been drained.

In the neighbourhood of the salt mines, refuse salt has been used for manure, and with success; but whether it owes its virtue to the salt, or to the earthy ingredients mixed with it, is still doubtful.

The number of rivulets in Cheshire might naturally suggest the applying of them to the purpose of irrigation; but this has been done in a few instances only.

In some places, where a rivulet could be turned, so as to flow through a farm-yard, and afterwards irrigate meadows situated lower down, advantage has been taken of this, and the land on the higher part is now irrigated; but this they have imitated the common practice in most farms in Switzerland.

From the great number of dairy-farms in Cheshire, one would naturally expect to see considerable attention paid to the breed of cows; but, till lately, this was not the case; there were cows of all breeds, and crossed in every possible way. The great superiority of the improved short-horn breed has however made them more generally sought after. Sculptured dairies are very fine beasts, or packs, as they are called there, of short-horned cows, and some of Ayr-
shire cows; but this is by no means yet general; purity of blood is not much thought of. When a cow is a good mother, her offspring is said to be of good stock; what is raised on the farm is thought to produce the most thriving cows. A cow is considered in her prime at four or five years old, and continues so till she is ten or

twelve, after which she falls off, and should be fattened for the butcher. A good milker has a capacious and thinudder, tests about much the same as the fat cow, and is a great deal too large; a deep belly, with very prominent milk veins; a light fore-quarter, wide loins, thin thigh, white horn, thin head, clean about the chaps and throat, and a full lively expression. \(\text{[Agricultural Report]}\) A cow that gives much milk is never fat, and her lip-bones project: her ribs appear distinctly under the skin. It is estimated that there are about 100,000 cows in the county, each of which gives on an average 25 cwt. of cheese in the year; that is, altogether, 2,500,000 cwt., equal to about 2,500 tons. Each cwt. cheese is made upon an average of a pound of milk per day; some few give much more, and even as much as 24 quarts per day; but this is extraordinary, and only for a short time. Four quarts of milk make one pound of cheese; it takes from 12 to 15 quarts to make a pound of butter. A cow of good milk that makes butter, will make in three months half milk, and three months dry. A plentiful supply of good fresh food, such as clover or tares, cut and carried to the stall, will often double the average of milk; but this is seldom practised in dairy counties. The cows are generally housed in November, or kept in yards, which is better. During the winter they are let out for a few hours each day into a paddock, or small meadow, near the homestead; they find nothing to eat there, but it gives them an appetite for hay. Good work is insisted on. Still-feeding cows has been attempted, and with success; but this occasions too much trouble for the dairy-farmer, although the produce may be much increased, and the time saved for the examination of the milkers, the daily cutting and carrying of the fodder. Cow-calves which drop in Feb-
uary and March are usually reared: they are left three weeks to suck the cow, after this they have warm whey given them to drink, and are grubbed up as soon as they are dry. Flax-seed, steeped in water until a jelly is formed, is also given them by some. For the first winter they have hay, in the next only straw. The heifers take the bull at two years old.

The making of Cheshire cheese is described minutely in the Agricultural Report for the county, to which we refer, as well as to the Article [Cheese].

Butter is made from the cream or from the whole milk allowed to coagulate and become sour. Good butter may be obtained in either way; but that made from fresh cream is always the best. An inferior butter is made from the cream which rises on the whey. \(\text{[Butter]}\)

A considerable part of the profit of a well-managed dairy arises from the feeding and selling of pigs; but fewer pigs are kept in Cheshire than the dairies would warrant. The fatting of calves for the butcher is probably not so profitable, from the want of demand for veal in the country, as it would be nearer the metropolis.

The wages of the farm labourers are good on the whole, and they are in general laborious and provident. The neigh-
bourhood of manufactures tends to raise the wages.

The sheep husbandry, which is so profitable to the farmer in other counties, is scarcely known in Cheshire. Sheep do not go well with pigs, as they pick out the finest herbi-
age before it is long enough for the cow to graze. Some few are kept to consume the grasses which the cows refuse; they are seldom kept over the year, and are sold as soon as a profit is realized.

On the whole Cheshire is inferior to many other counties in agriculture, but it contains more means of improved hus-
bandry than most. It wants only the application of capital, and the superintendence of men of taste, to become one of the finest agricultural counties in England. \(\text{[Farms]}\)

Altrincham, April 29, August 5, November 22; Budworth, February 13, April 5, October 2; Congleton, May 12, July 5, November 32; Chester, February 25, April 27, July 5, October 2, last Monday in May 15, August 21, December 13; Knutsford, Whits-
Tuesday, July 10, November 8; Macclesfield, May 6, June 22, July 11, October 4, November 11; Malpas, April 5, July 25, December 8; Middlewich, Holy Thursday, August 6; Nantwich, February 25, April 27, July 5, October 2; Northwich, April 10, August 2, December 6; Over, May 16, September 25; Sandbach, Easter Monday, Tuesday after September 10; Stockport, March 4—29, May 1, October 2, last Monday in August, December 11; Winsford, May 8, November 25.

\[\text{[Divisions, Towns, &c.]}\] When the Domesday survey was taken, this county, exclusively of the lands between the
Ribble and the Mersey, now a part of Lancashire, though then considered a part of Cheshire, was divided into twelve hundreds. Except a few townships, the two ancient hundreds of Atcham and Externall have also been taken from Cheshire, and added to the counties of Flint and Denbigh. The present hundred is supposed to have been made in the reign of Edward III.; and Lysons gives the proportion or relative size of old and new hundreds under the following table:—

<table>
<thead>
<tr>
<th>New Hundreds</th>
<th>Old Hundreds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wirral</td>
<td>Wilaston</td>
</tr>
<tr>
<td>Broxton</td>
<td>Duxet and Castra</td>
</tr>
<tr>
<td>Eddisbury</td>
<td>Russet and Roellan</td>
</tr>
<tr>
<td>Northwich</td>
<td>Mildestre</td>
</tr>
<tr>
<td>Nantwich</td>
<td>Warmondonster</td>
</tr>
<tr>
<td>Macclesfield</td>
<td>Hamestan</td>
</tr>
<tr>
<td>Bucklow</td>
<td>Bothin and Tunendon</td>
</tr>
</tbody>
</table>

It is to be observed that several of the townships which were in Duxet are now in Eddisbury, and other variations have taken place; but the general arrangement of the hundreds of Cheshire is exhibited by the table.

Lysons states the number of market-towns to be twelve, excluding Chester:—namely, Altringham, Congleton, Frodsham, Knutsford, Macclesfield, Malpas, Middlewich, Nantwich, Northwich, Sandbach, Stockport, and Tarporley. Of the less important of these places we subjoin some account; those which are large enough to be noticed, are listed elsewhere. (Altrington, Congleton, Macclesfield, Nantwich, and Stockport.)

Tarporley, in the hundred of Eddisbury and deanery of Chester, is a small market-town, near Beeston Castle, on the London to Chester road, from which it is distant ten miles south-east. It was antiently governed by a mayor, but at present by a constable. In 1642 a battle was fought at this place between Sir Wm. Brereton's forces and the Royalists from Chester, who, on this occasion, were victorious. Tarporley is pleasantly situated, cleanly, and neatly built, and is chiefly known as the scene of an annual fox-hunt in November, which is numerously attended by the county gentry, the neighbouring gentry being particularly favourable for their amusement. The church is an ancient structure of the red sandstone, which abounds in this county: its interior contains several monuments, with inscriptions interesting to the antiquary, and some armorial bearings in windows of coloured glass. The living is a rectory, of which the net annual income is £444. The inhabitants are chiefly employed in the manufacture of stockings and leather breeches. The market is on Thursday. There is an alms-house and Wesleyan chapel.

Sandbach, a market-town in the hundred of Nantwich and deanery of Middlewich, was formerly celebrated for its ale. It occupies a pleasant eminence near the river Wheelock, and commands several extensive and picturesque views. The church is ancient, by Ely; the Stagpool Well, an extraordinary abbess, and the distant mountains of Wales. The worsd trade and manufacture of shoes, which formerly prevailed, have been succeeded by the silk manufacture, by which the town has risen to greater importance. It has some brim springs in the vicinity. In the market-place are two ancient crosses, with sculptured images of the crucifixion. The living is a vicarage, of which the net annual income is £135.

Frodsham, on the London to Chester road; the population is 1745. This township is pleasantly situated on a raised ground at the foot of the hills which border on Delamere Forest, near the junction of the Weaver and the Mersey. Salt works and cotton manufactures are the chief employments of the inhabitants. The town is formed chiefly by two streets which intersect each other, and there is a graving-doek and yard for building and repairing vessels. The living is a vicarage, in the archdeaconry and diocese of Chester, of which the incumbent is Christ. The net annual value is £500. It is the annual value of 590l. The church is a fine ancient structure. Beacon Hill has some pleasant walks and views. On a site now occupied by a handsome modern mansion are ancient remains of the castle of the town a castle which Edward I. gave to David Llewyel, son of the last sovereign of Wales, which was afterwards held by the earls of Rivers, and was consumed by fire in 1642. The parish of Frodsham is about thirty miles in circumference, and it contains eight townships. It abounds in springs, and produces large quantities of potatoes, which are used chiefly by the manufacturers of Lancashire. The Wesleyan Methodists have a meeting-house in Frodsham. There is a free-school, the salary of which is 100l., and the teacher is maintained by contributions. The town has a grammar school and a charity for the relief of the orphans and widows of the clergy.

Knutsford, situated on the great road from London to Liverpool, is 174 miles north-west by north from London. The population is 1940. The market-day is Saturday. The name is said to be derived from Canute, the Dane, who passed with his army over the small branch of the Bollin, which runs past the town. The town is in the hundred of Bucklow, and divided into High and Low Knutsford, by a bend of the river Bollin, which rises about half a mile to the south, and passing the turnpike road falls into Tatton mere. In Lower or Nether Knutsford there are a spacious county prison, a handsome town-hall, and a market-place. Knutsford was formerly the seat of the parish of Rostherne, but was made a distinct parish in 1741. The living is a vicarage, in the archdeaconry and diocese of Chester, of the annual value of 233l. The church is built of brick and stone, with a square tower. Dissenters have three meeting-houses and two charity schools. Thread, worsted, and leather are the principal manufactures. Races are held every July near the town.

Malpas, situated on an elevation near the river Dee, is a small market-town, about a mile and a half north-east of unbewn stone, and consists of a nave and chancel, without either aisle or steeple: it is highly ornamented, and some of its decorations have been supposed to be of Saxon origin. Courts leet are held here for the recovery of debts under 40s. Besides three meeting-houses, there are here two chapels of ease: an endowed grammar school for 12 boys and 12 girls, and also many charitable institutions. Malpas is the birth place of Matthew Henry, the commentator on the Bible. Middlewich, on the Manchester and North West Counties Union and the Manchester and Shrewsbury lines, is 167 miles north-west of London; the population of the parish is 4785, of the town 1325. Market-day is Tuesday. This town derives its name from its position between thewiches or the salt towns. Great quantities of salt are manufactured here, and cotton fabrics are also made. The Grand Trunk Canal runs through the town on its course to the Mersey. The living is a distinct vicarage, in the archdeaconry and diocese of Chester, of the net annual value £100; and is large, and on the south side of it are a college and an oratory; the latter founded by the Leigh family of Lyme by the former by Thomas Savage, archbishop of York. The Dissenters have three meeting-houses; and there is a free school. The market-day is Friday. Courts leet and bars are held here. The market is said to be the hundred of Eddisbury. The Rev. Thophelm Lonsdale, a Unitarian divine of some note, was born here.

Northwich, in the parochial chapelry of Witton, is 17 miles east-northeast of Chester, and 173 miles north-west of London; the population is 1496. Camden states that it was called by the Britons Hellath, or Hellah Du, that is the Black Salt Town. It is in the line of the northern Watling Street. The town was fortified and garrisoned by the parliamentarians, and was afterwards retaken by their enemies. The principal manufactures are salt. The Weaver runs through the town. Vessels of small burden are built here in the ship-yards. The market-day is Friday. Courts leet and bars are held here. The general quarter-sessions were removed to Knutsford in 1784. The Independents and Wesleyan Methodists have three meeting-houses in Northwich, and there has been a charity school for 12 poor children, with a small endowed pension. The living is a vicarage, in the archdeaconry and diocese of Chester. The church, which is spacious, has a semicircular choir, and the roof of the nave is decorated with numerous figures of wicker baskets, such as are used in salt-making.

Over is 8 miles west of Middlewich, and is governed by a mayor; but the commissioners appointed to make the recent inquiry into Municipal Corporations say that it does not appear under what warrant or authority the borough of Over is governed by a mayor who is also a
justice of the peace within the limits of the borough and
lordship. The population in 1631 was 2601.

Ecclesiastical and Legal Jurisdiction.—This county, in
antient times, was subject to the ecclesiastical juris-
diction of the bishops of Mercia, who had their seat at Chester. In
the time of William the Conqueror, and during three suc-
cessive centuries, this diocese was styled the bishopric of
Chester. (For further historical accounts, see Lyons and
Ormerod.) Of these 86 parishes 46 are rectories, 23
vicarages, and 18 donates, or perpetual curacies; many of
these are of great extent, and those of Prestwich, Withall,
townships and 14 chapels. The county is in the diocese
of Chester, and of county of York; it forms an archdeaconry,
and comprises the seven deaneries of Chester, Frodsham,
Middlewich, Northwich, Prestwich, Wirral, Middlewick,
and Bucklow, and the south division contains the
remaining hundreds.

The boroughs of Chester, Macclesfield, and Stockport,
each return two members to parliament. The places of
electoral importance, and south divisions respectively are
Knutsford and Chester.

Manufactures.—The cotton and silk manufacture is ex-
tensively carried on in and around Stockport, Macclesfield,
Middlewich, Northwich, Prestwich, Wirral, and Bucklow,
and a large manufacture of thread at Nantwich, and the
places just named, are manufactories of hats for exportation,
and of shoes at Sandbach. Some woollen cloths are also
made in the same district. weaving is very extensively
 carried on with 4000 looms in the county. (Holland's Agri-
ultural Survey.) The prime cheese is made chiefly in the districts
where the salt abounds; that is, along the banks of the
Weaver. Potatoes are raised in very large quantities,
especially in the western portion of the county, including
the peninsula of Wirral. In the parish of Frodsham alone
about 100,000 bushels are annually produced. Besides a
prodigious home consumption, they are exported in great
quantity by the Mersey to Liverpool and Manchester.

The county was not reformed out of the diocese of
the Roman invasion this county formed part of the territory
occupied by the Cornavari or Carnabi, a name which Whit-
taker conjectures the inhabitants of this district derived
from the peculiar form of the peninsula between the estu-
aries of the Dee and Mersey. The territory, never under
division of the land. By the Romans it was included in Britannia Su-
peior; and in their subsequent subdivision, it became part of
Flavia Caesaris. The towns possessed by the Cornavi were Derva or Chester, Condate or Kinderton, Bauchorum,
Banchor, or Bangor, Bosworth, or Boll, and Uriconium or
Wroxeter; the last of which seems to have been their
metropolis. Bangor, Ectostrum, and Uriconium are not
within the limits of Cheshire. Ormerod mentions a recent
discovery near Boll, which was rendered more
important by the find of a sarcophagus of the city of Rome to certain troops serving in Britain in
the reign of Trajan, A.D. 98—117, some of whom at least
may have been stationed near Bickly, where the tablets were
found. From inscriptions which have been found, the
twentieth legion appears to have continued at Chester as
late as the third century, but to have withdrawn long before
the final abandonment of the island in the fifth.

On the departure of the Romans, the Britons continued
to hold their own, and the parliamentarian gentry in
hundred of Wirral, were deposed by the Britons with their prayers. Several of the British
princes, however, having collected an army and marched to
Chester, Euthelfrith was defeated in turn, and this district
was not again subjected to the Anglo-Saxon power until
about the year 825, when it was taken by King Egbert, and
made a part of the kingdom of Mercia. According to Peter
Langtoft, Athelwold held his parliament at Chester after
the death of Egbert, and there received the homage of his
subordinate kings into his hands. In the latter part of
894, an army of Danes advancing from Northumberland
took possession of Chester, and seized the fortress: the
Saxons under Alfred, however, having arrived in the
vicinity, by destroying the cattle and corn, and intercepting the
provisions of the Danes, drove them from the town. In the
famine, that they quitted the city and retreated to North
Wales. Upon the division of England into three districts by
Alfred, Cheshire was included in the Mercian jurisdiction.

Cheshire acquired the privileges of a county palatine in the
reign of William the Conqueror. His son, the
nephew, Hugh d'Avranches, commonly called Hugh
Lupus, to hold it as freely by the sword as he himself
held the kingdom of England by the crown. Lupus
created eight barons as soon as he felt himself established
in his new dignity, who were bound to attend on him at his
court and to furnish him with horses in war. In return for
these services, they were invested with the right of holding
courts on all pleas, suits, and plaints, and with the power of
death and life. One of these barons, who was to have
a great inheritance 'among distaffs': the county he
possessed on his son Edward, who did not assume the title, but
conferred it on his son Edward of Caernarvon, since
which time the eldest sons of the kings of England have always
held the title of earls of Chester. The inhabitants of Cheshire
took part in the rebellion of the Perreis, and the greater
part of the knights and esquires of the whole county,
to the number of 200, with many of their retainers, fell in the
battle of Shrewsbury, on the 3rd of July, 1403, to the
great dates to an important military transactions. From the time of Henry III,
to the reign of Henry VIII, the palatinate was governed as
independently as it had been by the Norman earls. Henry
VIII, however, made it subordinate to the crown of England
'yet,' says Gough, in his 'Additions to Camden,' 'all pleas
of lands and tenements and all contracts within the county
are to be heard and determined within it; and all deter-
mines trove, escheat, and curial, except in cases of error, foreign plea, and foreign voucher;
and for no crime but treason can an inhabitant of this
county be tried out of it.' The county being solely under a
distinct jurisdiction, and to a certain extent like a separate
kingdom, never entered into the government, either for city or shire, until the reign of Edward VI, when,
in the year 1549, on the petition of the inhabitants,
two members were summoned from each. On the out-
breaking of the civil war, as this county was nearly
equally divided between the king and the people, the
principal persons attempted to preserve its internal peace
by a treaty of pacification, which was entered into at
Bunbury under the sanction of the commissioners of army,
which was signed by an order of the Lords of the
Coun-
T. 1.
T. 1.
Rupert took Stockport without resistance on the 23rd of May; but the royalists were defeated after a severe battle at Castle-heath, near Muxpaw, on the 22nd of August. Next year they were defeated again at Chester, near the town of Chester, with a large force, the parliament abandoned all their garrisons, except Tarvin and Nantwich, and, on the 27th of September, the battle of Rowton and Helsheath was fought near Chester, in which the royalists were defeated. An event which led to the garrison of Chester, in February 1646, and the subjugation of the whole county to the parliament.

In August, 1645, Sir George Booth, having a secret command from Charles II., appointed a commander-in-chief of all his forces in Cheshire, Lancashire, and North Wales, and being accompanied by several noblemen and gentlemen, appeared in Cheshire at the head of an army of upwards of 3000 men. They mustered at Rowton Heath, and published the desistance of the whole up arms to obey the nation from slavery and obtain a free parliament. The army of the parliament, under General Lambert, met them at Winnington Bridge, near Northwich, on the 16th of August, and soon defeated them. Booth himself, after making his escape from the field in disguise, was taken at Newport Pagnell and sent to the Tower; and Chester, which had been held by Colonel Croxton, surrendered immediately on the approach of the victorious army. The son of Sir George Booth, and Sir Peregrine, on the approach of the revolution, was sooner heard of the landing of the prince of Orange than he raised a considerable force in Cheshire and Lancashire, declared in his favour, and marched to join him; the Lords Montague and Whiston, with equal promptitude, seized Chester for the king; but these warlike preparations were fortunately rendered useless by the abdication.

The Roman roads in the country are found in detached parts; one road, called the Walling-street, was probably more ancient than the roman times. This road enters Cheshire from the north by the ford over the Mersey at Stratford; the marks of the elevated crest, peculiar to the military roads of the Romans, are still visible. A little south of Congleton Hill the road begins to have divided the Roman continuing towards Kidlington, and the British pursuing its old direction by Northwich over Delamere Forest, and by Chester to the coast of Caernarvonshire. The Roman road from Manchester to Kidlington crossed the ford of the Mersey, and proceeds to the village of Cross-street. It is seen in the enclosures about Oldfield Hall, and in a field beyond it is still raised several yards. In crossing the adjoining moor it is known by the name of Upwood by Dunham Town, to a field called the Harbour-field, in the parish of Kidlington, which is the supposed station of Condate. Part of the Via Devana crossed the county from the S.E. to Chester. Besides these, antiquaries conjecture has pointed out several other Roman roads, but the evidence which is in their favour is as in the cases of the roads we have traced. That there was a Roman station at Chester is universally admitted—the sites of the others are uncertain.

Beside Chester, which was built by William the Conqueror, and is now converted into the county-hall, jail, and barracks, there are several others. Beeston Castle, built in 1290, by Randle Blundeville, Earl of Chester, is upon the slope and summit of a sandstone rock, which forms on one side an almost perpendicular precipice of great height. The outer court is irregular in form, inclosing an area of about five acres. The walls are prodigiously thick, and have several round towers. A deep ditch, sunk in the side of the keep; a moat entered by a drawbridge, opposite two circular watch-towers, still remaining. The approach within the great gateway between these towers is by rugged steps cut in the natural rock. Camden speaks of a draw-well, bored to the base of the rock, a depth of 90 yards, and communicating with a brook in the ground below. This castle has been in ruins since the civil war of Charles I., when it was dismantled. The others are Halton Castle, of which very few traces now remain; Aldford Castle, of which the foundations are still traced; Shoulderby Castle, which alone and only a high mound are now to be seen; and Shotwick, which appears from the sketch of it in the British Museum to have had a pentagonal wall, with several circular towers inclosing a curtain, and having a tower at each of the ancient mansions. Smith, in his Treatise on Cheshire, calls this county 'the mother and the nurse of the gentility of Eng-
The population of Cheshire at each of the four enumerations was:

<table>
<thead>
<tr>
<th>Year</th>
<th>Males</th>
<th>Females</th>
<th>Total</th>
<th>Inc. per Cent.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1801</td>
<td>92,759</td>
<td>98,992</td>
<td>191,751</td>
<td>102.1%</td>
</tr>
<tr>
<td>1811</td>
<td>110,841</td>
<td>116,190</td>
<td>227,031</td>
<td>118.9%</td>
</tr>
<tr>
<td>1821</td>
<td>132,922</td>
<td>137,146</td>
<td>270,068</td>
<td>139.1%</td>
</tr>
<tr>
<td>1831</td>
<td>164,133</td>
<td>170,258</td>
<td>334,391</td>
<td>171.6%</td>
</tr>
</tbody>
</table>

The population increased at the first and last periods of 124,620 persons, or 74 per cent., which is 17 per cent. beyond the general rate of increase throughout England.

The sums expended for the relief of the poor at the four dates of 1801 were £66,627, which was 6s. 11d.

1811 | 114,370 | 10s. 6d. for each inhabitant
1821 | 104,081 | 7s. 6d. ant.
1831 | 102,572 | 6s. 2d.

The sum raised in Cheshire for poor’s-rate, county rate, and other local purposes in the year ending 25th March, 1833, was 141,492l. 19s., and was levied upon the various descriptions of property as follows:

- £  s.  d.
- On land 99,808 18 0
- Dwelling-houses 29,416 13 0
- Mills, factories, &c. 7,837 18 0
- Manorial profits, navigation, &c. 4,429 10 0

£141,492 19 0

The amount expended was:
- For the relief of the poor 98,572 3
- In suits of law, removal of paupers, &c. 7,490 17
- For other purposes 37,687 10

£143,740 10

The returns made up for the year ending March, 1834, the descriptions of property assessed for local purposes are not distinguished; 138,226l. 16s. was raised in that year, and the expenditure was as follows:

- £  s.
- For the relief of the poor 92,640 0
- In suits of law, removal of paupers, &c. 8,569 12
- For other purposes 37,105 18

£138,315 10

The saving effected in the sums expended for the relief of the poor in 1834, as compared with the expenditure of 1833, is therefore rather more than 6 per cent.; the second item is, however, greater than that of the preceding year, reducing the whole amount of saving to about £4 per cent.

The number of turnpike-trusts in Cheshire, as ascertained in 1829, was 27; the number of miles of road under their charge was 349; the annual income arising from the tolls and parish composition was £16,925l.; and the annual expenditure 15,334l.

The county expenditure in 1834, exclusive of the relief for the poor, was £14,092. 6s. 9d., disbursed as follows:

- £  s.
- Bridges, buildings, and repairs, &c. 5,179 2 6
- Gaols, houses of correction, &c. and maintaining prisoners, &c. 14,037 6 7
- Coroners 488 13 0
- Lunatic asylums 225 0 0
- Expenses of prosecutions 9,570 3 2
- Clerks of the peace 737 14 3
- Conveyance of prisoners before trial 1,141 6 11
- Conveyance of transports 817 10 0
- Apprehending and conveying vagrants 395 19 4
- High and special commissions of oyer and terminer 628 5 2
- Debt—payment of principal and interest 5,614 9 7
- Miscellaneous 1,946 19 3

The number of persons charged with criminal offences in the three septennial periods ending with 1820, 1827, and 1834, were 1675, 2443, and 3862; making an average of 239 annually in the first period, of 349 in the second period, and of 552 in the third period. The numbers of persons tried at quarter-sessions in each of the years 1831, 1832, and 1833, in respect to which any costs were paid out of the county rates, were 377, 356, 398, respectively. Among the persons charged with offences, there were committed for

- 1831 1832 1833
- Felonies 343 339 375
- Misdemeanors 58 39 34

The total number of commitments in each of the same years was 399,409, and 431 respectively of whom

- The number convicted was 332 330 367
- Acquitted 50 48 48
- Discharged by proclamation 17 25 18

At the assizes and sessions (in 1833), 533 persons were...
charged with crimes in Cheshire: out of which number, 24 were charged with offences against the person, 10 of which were common assaults; 49 for offences against property committed with violence; and 22 for offences against property committed without violence. Of the remaining 61, there were 26 committed for riot, 21 for poaching, 2 for arson, 3 for uttering false money, 6 for pejury and unlawful oath, 1 for killing and maiming cattle, 1 for forgery, and 2 for keeping disorderly houses. Of those committed, 411 were convicted, and 122 acquitted, or no bills were found against them. The greater part of the punishments awarded to those convicted was very slight: 231 were sentenced to imprisonment for six months or under; 86 for one year or under; 17 for two years, and 1 for three years; 4 were fined, and 7 were discharged on sureties. Of the remaining 93, 18 were sentenced to death, which sentence was commuted to transportation or imprisonment; and 77 were sentenced to transportation for various periods. Of the offenders, 461 were males, and 72 females. Among the whole number, 205 could read and write, 155 could read only, 167 could neither read nor write, and the degree of instruction of 8 could not be ascertained. The proportion of the offenders to the population in 1835 was 1 in 627.

The number of persons qualified to vote for the county members of Cheshire is 10,235, being 1 in 23 of the whole population, and 1 in 5 of the male population above 20 years of age. The expenses of the last election of county members to parliament, were to the inhabitants of the county, 4155. 15s. 6d., and were paid out of the general county rate.

There are ten savings banks in this county. The number of depositors and amount of deposits on the 20th November, 1832, 1833, 1834, and 1835 respectively, were:

<table>
<thead>
<tr>
<th>Year</th>
<th>Depositors</th>
<th>Deposits</th>
</tr>
</thead>
<tbody>
<tr>
<td>1832</td>
<td>105</td>
<td>5602</td>
</tr>
<tr>
<td>1833</td>
<td>89</td>
<td>5612</td>
</tr>
<tr>
<td>1834</td>
<td>95</td>
<td>5612</td>
</tr>
<tr>
<td>1835</td>
<td>95</td>
<td>5612</td>
</tr>
</tbody>
</table>

The various sums placed in the savings-banks in 1834 and 1835 were distributed as under:

<table>
<thead>
<tr>
<th>Year</th>
<th>Depositors</th>
<th>Deposits</th>
</tr>
</thead>
<tbody>
<tr>
<td>1834</td>
<td>47,174</td>
<td>£35,631</td>
</tr>
<tr>
<td>1835</td>
<td>48,307</td>
<td>£36,597</td>
</tr>
</tbody>
</table>

Education.—The following particulars are obtained from the parliamentary inquiry on education made in the session of 1835:

Infant Schools

<table>
<thead>
<tr>
<th>Age</th>
<th>Number of Infants</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-7</td>
<td>541</td>
<td></td>
</tr>
</tbody>
</table>

Daily Schools

<table>
<thead>
<tr>
<th>Age</th>
<th>Number of Children</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-14</td>
<td>815</td>
<td></td>
</tr>
</tbody>
</table>

Number of children at schools, ages from 2 to 7 years:

<table>
<thead>
<tr>
<th>Age</th>
<th>Males</th>
<th>Females</th>
<th>Sex not specified</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-7</td>
<td>547</td>
<td>629</td>
<td>342</td>
</tr>
</tbody>
</table>

Number of children at schools, ages from 4 to 14 years:

<table>
<thead>
<tr>
<th>Age</th>
<th>Males</th>
<th>Females</th>
<th>Sex not specified</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-14</td>
<td>14,210</td>
<td>11,096</td>
<td>4,193</td>
</tr>
</tbody>
</table>

Total of children under daily instruction:

<table>
<thead>
<tr>
<th>Number</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infants</td>
<td>541</td>
</tr>
<tr>
<td>Daily</td>
<td>32,199</td>
</tr>
</tbody>
</table>

Assuming that the population between 2 and 13 years increased in the same ratio as the whole of the population between 1821 and 1841, and has continued to increase in the same ratio since, we find that there must have been living in Cheshire in 1841 about 17,000 persons between those ages. A very large number of the scholars attend both daily and Sunday schools: thirty-nine schools, containing 8,573 children, are returned from various places as attending both daily and Sunday schools, and there are still greater numbers not specified; in what proportion the duplicate entry of children is thus produced to the great uncertainty, we can only conclude that not two-thirds of the children receive instruction.

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

<table>
<thead>
<tr>
<th>School Type</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infant Schools</td>
<td>531</td>
</tr>
<tr>
<td>Sunday Schools</td>
<td>48,894</td>
</tr>
</tbody>
</table>

Forty-eight boarding-schools are included in the number of daily schools as given above.

No school in this county appears to be confined exclusively to the children of parents of the established church, or of any other religious denomination. Such exclusion is disclaimed in almost every instance, especially in schools established by Dissenters, together with schools for the children of Roman Catholic parents.

Lending libraries of books are attached to eighty-three schools in this county.

CHESNE, ANDRE DU, born in 1834 in the province of Touraine, became distinguished for his historical and philological erudition, and was one of the most learned men of France in his age. The work for which he is best known is his valuable collection of the oldest French chronicles. 1. "Histoire de France" by the"Antiquitates," by Genius Oryneque ad Philippus IV. temporum, of which he edited 4 vol. fol., and his son, Francois du Chesne, edited the 5th after his father's death. He also published: 2. "Histoire des Rois, Ducs, et Comtes de Bourgogne et d'Arles. 4 vol. fol. 3. 'Histoire des Cardinaux Français.' 4. 'Bibliothèque Chamemaris.' 5. 'Bibliothèque des Auteurs qui ont écrit l'Histoire et Topographie de la France.' 6. "Histoire des Papitres, etc.' 7. "Histoire générale des Monarchies de de Luxembourg, de Montmorency, Vergny, Guiscrais, Chalons, Béthune, etc. 7 vol. fol., besides a History of England in 4 vol. fol., Paris, 1674. Duchesne died in 1640 near Paris. He left a work called the French historian. The first is that, though every pawn may be moved two squares at its first move, it may be taken by any pawn which has taken it, 1856 by one square; and the pawn in such case is said to have been "en prise." The second is that, if suppose the white queen's bishop's pawn has advanced to the adversary's queen's bishop's square, and the black queen's knight's pawn to a square 8. The board is supposed to be divided into two equal parts, one of which belongs to the white, the other to the black player. The square on which the king stands is called the king's square; the one in front of
of its king's second square, the next in front of that the king's third square; then the next the king's fourth square; the next again is called the king's fifth square, or the adversary's king's fourth square, and so on. In like manner, a black king's rook's square, the queen's bishop's square, the rook's bishop's square, a rook's rook's square, the queen's square, the king's bishop's square, the rook's king's square, and the king's queen's square; and each master-piece gives its name to the other squares on its file. The pawns too take their names from the pieces before which they stand, and are called the king's pawn, the queen's pawn, the king's bishop's pawn, the king's rook's pawn, &c. Suppose we wished to describe a situation in which the queen's pawn was in its original position; the queen's pawn, the queen's bishop's pawn, the king's rook's pawn, &c.; Q. Kt. stands for queen's knight, Q. P. for queen's king's pawn, and so on.

There is another method of notation frequently employed by continental writers, which consists in using the first eight letters of the alphabet to designate the eight files, and the first eight figures to designate the squares of those files; thus P. E. 4 means that the player of the white pieces has moved his king's pawn two squares, and P. E. 5 denotes the black move for the file. This notation is shorter than even the most abbreviated form of the first-mentioned one; but it is perplexing and difficult to follow, from its being based on a less natural division of the board.

We may observe that the ranges of squares running from right to left is called ranks; and those running from one player to the other are called files; the lines sloping obliquely across the board are termed diagonals.

**Technical Terms. Castling.** This is a combined move of the king and rook, which is allowed once in the game. The method of casting is as follows: first, with the K. R. to the R. the R. must be placed on the K. B. square, and the K. at Kt. Kt. square; secondly, with the Q. R., the R. must be placed on the Q. Square, and the K. on Q. B. square. The space between the rook must be unoccupied; neither the king nor the rook must have moved; and the squares over which the king moves must not be attacked at the time by any adverse piece.

A check signifies a direct attack on the king by a piece or pawn. A check by discovery is when the king is attacked not by the piece that moves, but by one which is behind it; for example, place the white king at his own square, black queen at her king's square, and a black knight at adv. king's third square; by playing the knight to adv. king's knight's fourth square, you give check by discovery with the queen; if you play the knight to adv. queen's bishop's second square, or king's knight's second square, you give double check.

A perpetual check consists in an alternation of checks, from each of which the adverse king escapes only to be subjected to the other. Thus suppose the pieces to be in the following situation:

**Black.**

1. K. P. 2 sq.
2. K. B. P. 2 sq.
3. K. Kt. to K. B. 3 sq.
4. K. B. to Q. B. 4 sq.
5. Castles.

**White.**

1. Q. P. 2 sq.
2. Q. B. 2 sq.
3. Q. to K. 2 sq.
4. K. B. 2 sq.

**In the Bishop's Gambit, the first player moves K. B. to Q. B. 4th square at his third move, instead of K. Kt. to K. B. 3rd square.**

**Minor Piece** is an appellation common to the bishop and knight.

**Passed Pawn.** A pawn is called passed when it is no longer obstructed by any adverse pawn on its own file, or either of the adjoining ones.

**Stalemate.** This name is given to the termination of the game, when the player whose turn it is to move has his king so placed, that though not in check he cannot move without going into check, and there is nothing else to play. The game is then drawn. It was formerly the law among English players, that the player whose king was stalemated won the game, and many uninstructed players imagined this to be the case still; but the rule has long since been altered, with great propriety. The following is an example of a stalemate:

*Of the checkmates mentioned in the text, that with the bishop and knight is remarkably different from that with the rook and knight; and that with rook and bishop against rook uncertain. Philidor asserted that it could never be forced; but succeeding writers, among whom are Maury and Lewis (Chess Lessons, vol. ii. p. 360), believe that in any insufficient position the game is drawn.*
White has the move, and is consequently stalemated.
This is the case likewise in the following position:

White.

1. K. at K. R. sq.
2. Q. at adv. K. B. 2 sq.

Black.

1. K. at K. R. sq.
2. B. at K. R. 2 sq.

White is to move; he cannot move the king without exposing himself to check of the rook; he is consequently stalemated. The student who is desirous of seeing remarkable positions where the game is drawn by stalemate, will find them in Lewis’s edition of Sarratt, pp. 108, 111, 152, 154, 172; in Lewis’s Stamma, situations 97, 98, 99, 100; and in Lewis’s Chess Problems, situations 89 and 95.

The following games will exemplify many of the preceding laws and definitions; the fourth is one of the match games played between the London and Edinburgh clubs, in the years 1824–28:

**Game 1 (Fool’s Mate).**

Black.

1. K. B. P. 1 sq.
2. K. Kt. P. 2 sq.

White.

1. K. P. 2 sq.
2. Q. to adv. K. R. 4 sq.

Checkmating.

**Game 2 (Scholar’s Mate).**

Black.

1. K. P. 2 sq.
2. K. B. to Q. B. 4 sq.
3. Q. to adv. K. R. 4 sq.
4. Q. takes K. B. P.

White.

1. K. P. 2 sq.
2. K. P. 2 sq.
3. K. Kt. to K. B. 3 sq.
4. K. B. to Q. B. 4 sq.
5. Q. to adv. K. Kt. P.
6. Q. takes K. B. P.

Checkmate.

Black’s third move ought to have been Q. to K. second square.

**Game 3 (A Gambit from Crete).**

White.

1. K. P. 2 sq.
2. K. B. P. takes P.
3. K. to K. B. 3 sq.
4. K. B. to Q. B. 4 sq.
5. Q. to adv. K. R. 4 sq.

Black.

1. K. P. 2 sq.
2. K. P. 2 sq.
3. K. Kt. to K. B. 3 sq.
4. K. B. to Q. B. 4 sq.
5. Q. to adv. K. R. 4 sq.
6. K. to his 2 sq.

Checkmate.

Black’s fourth move was a very bad one; he ought to have played either K. B. to K. Kt. 2 square, or K. Kt. P. 1 square; having committed this mistake, he either should have played K. R. P. 2 squares at his fifth move, instead of taking the Kt. The pawn which White takes at his 7th move, having been just before on the bishop’s file, retains the name of K. B. though it might also be called K. Kt. P. If black at his 7th move were to interpose K. Kt. white would checkmate on the move by playing Q. to adv. K. 4th sq.

**Game 4.**

London.

White.

1. K. P. 2 sq.
2. Q. to K. B. 3 sq.
3. Q. P. 2 sq.
4. K. B. to Q. B. 4 sq.
5. Q. B. 1 sq.
6. K. castles.
7. Q. Kt. takes P.
8. Q. Kt. to adv. Q. 4 sq.
10. K. takes Kt.
11. K. Kt. to adv. K. Kt. 4 sq.
12. Q. B. to Q. Kt. 2 sq.
13. Q. to Q. Kt. 3 sq.
14. K. Kt. takes Kt.
15. Q. Kt. K. B.
16. K. B. 2 sq.
17. Q. takes Kt.
18. Q. to Q. B. 3 sq.
21. P. takes P.
22. Q. takes P.
24. K. B. P. 1 sq.
26. Q. to adv. K. B. 4 sq.
28. Q. takes P. ch.
29. R. K. P. 1 sq.
30. Q. to Q. Kt. 3 sq.
31. Q. to adv. K. Kt. 4 sq.
32. Q. B. checks.
33. Q. to adv. Q. 4 sq.
34. Q. to adv. K. Kt. sq.
35. Q. to adv. K. Kt. sq.
36. R. to K. B. sq.
37. Q. to K. sq.
38. Q. to adv. K. sq.
39. Q. to adv. K. Kt. sq.
40. K. Kt. P. 2 sq.
41. Q. takes Q. R.
42. K. K. R.
43. B. to Q. B. 2 sq.
44. Q. to adv. Q. B. 3 sq.
45. Q. takes K. Kt. P.
46. K. to K. Kt. sq.
47. Q. to K. Kt. 2 sq.
48. Q. Kt. K. P.
49. K. Kt. P.
50. K. takes B.
51. B. to adv. K. K. 4 sq.
52. Q. R. 1 sq.

Edinburgh.

White.

1. Q. B. to K. 3 sq.
2. Q. B. to adv. Q. 4 sq.
3. Q. P. 2 sq.
4. Q. Kt. P. 3 sq.
5. K. takes P.
8. K. R. K. R.
12. Q. B. to Q. Kt. 2 sq.
13. Q. to Q. Kt. 3 sq.
14. K. Kt. takes Kt.
15. K. Kt. K. B.
16. K. B. P. 2 sq.
17. Q. takes Kt.
18. Q. to K. B. 3 sq.
19. Q. P. 2 sq.
20. P. takes P.
23. K. R. K. R.
24. K. P. 2 sq.
27. P. takes R.
29. K. K. P. 2 sq.
32. K. K. P. 2 sq.
33. K. K. P. 2 sq.
34. K. K. P. 2 sq.
35. K. K. P. 2 sq.
36. K. K. P. 2 sq.
37. K. K. P. 2 sq.
38. K. K. P. 2 sq.
40. K. K. P. 2 sq.
41. Q. takes P. ch.
42. R. to Q. 2 sq.
43. R. to Q. 2 sq.
44. R. to adv. Q. 3 sq.
45. Q. takes K. Kt. P.
46. K. K. K. 1 sq.
47. Q. to Q. Kt. 3 sq.
48. Q. Kt. K. P.
49. B. to adv. K. K. 3 sq.
50. R. takes R.
51. Q. R. 1 sq.
52. B. to adv. K. B. 4 sq.

Historically, the literature of the game of chess is of great antiquity, and appears to have been invented in China or Hindostan. Sir William Jones inclines to the latter supposition. In the second volume of the Asiatic Researches, he says, ‘We may be satisfied with the testimony of the Persians: who, though as much inclined by other nations to appropriate the ingenious inventions of a foreign people, unanimously agree that the game was imported from the west of India in the sixth century of our era. It seems to have been immemorially known in Hindostan by the name of Chaturanga, i.e. the four angles, or members of an army; which are these, elephants, horses, chariots, and foot-soldiers; and in this sense the word is frequently met with in epic poets in their descriptions of real armies. By a natural corruption of the pure Sanscrit word, it was changed by the old Persians into chaturang; but the Arabs, who soon after took possession of their country, had neither the initial nor the final letter of that word in their alphabet, and consequently altered it further into shatranj, which found its way presently into the modern Persian, and at length into the dialects of India, where the true derivation of the word is known only to the learned. Thus a very significant word in the sacred language of the Brahmins has been transformed by process of time into arz-tras-scacchi, echec, chess; and by a whimsical concurrence of circumstances has given birth to the English word check, and even a name to the extremer of Great Britain. He speaks of the word roth, or rath, as being pronounced roth, and which the Persians changed into rokh, whence came the root of some European nations;
as the energy and ful of the French are supposed to be corrupted of "Jeroes and fil, the prime minister and elephant of
the Puissance. It is perfectly clear that chess was not known to the Greeks or Romans; indeed it is commonly supposed not to
have been introduced into Europe till the time of the Crusaders; though there is a set of Latin verses in Hyde, describing
the following are the peculiarities of the Hindoostane game, as given by a native player:
1. In the Hindostane game the king is placed to the right hand, so that the king of one party is opposite the
queen of the other.
2. In three modes of winning the game. The first called Boorj, when the losing party has no piece left on the
board—the game is then discontinued. This mode of winning
is reckoned the least creditable, and in many parts it is
deemed a drawn game. The second is by checkmate with a piece, when the losing party must have one or more pieces
remaining. The third is by checkmate with a pawn (pied-
mâni), the losing party having one or more pieces remaining.
This last shows the greatest superiority of the chess in the Hindostane game; if one party get into that position the adversary must make
room for him to move. In some part of India he that is
put in this predicament has a right to remove from the
rooks and other pieces one of the king's pieces. The game
4. No party can make a drawn game by a universal
[perpetual] check; he that has the option must adopt some
other move.
5. The game, on reaching the last square of the board,
are transformed into the master piece of that file, except the
king's pawn, which becomes a queen. If the pawn be on
the knight's file, the knight immediately on being made
takes one move in addition to the last move of the pawn,
unless some other piece command the square to which the
pawn was advancing.

— ‘Il Puttino, ossia il cavaliere errante sopra il giuoco de’ Scacchi,’ etc. N.p. 1634. 4to.

— ‘Osservazioni sopra il Gioco degli Scacchi.’ 4to. 1638. (This book was written by the duke of Brunswick.)

Greco (Gioachino). ‘Trattato di nobilissimo e militare esercizio de’ Scacchi.’ (Wei, I do not know the date of this work, but the earliest French translation is 1615.)

Carrera (Pietro). ‘Del giuoco degli Scacchi,’ etc. Mil- litoli, 1617. 4to.

Berton (Capt.). ‘Il nobile giame de’ Croci.’ London, 1735, 12mo.


Rao (Riccardo). ‘Osservazioni pratiche sopra il giuoco degli Scacchi.’ 4to. Moderna, 1750. (This is the celebrated anonymous Modernene.)

Loi (Giacomo). ‘Osservazioni teoriche pratiche sopra il giuoco degli Scacchi.’ Bologna, 1763, 8vo.


Ponziani (Domenico Canonico). ‘Il giuoco incomparabile degli Scacchi,’ etc. Moderna, 1769. 4to. There is an English translation of this work by Bingham.


An X. ‘There is an English translation of this work by Kenny.


Koch (J. F. W.). ‘Codex der Schachspielkunst,’ etc. 8vo. Magdeburg, 1813.


3. ‘Translation of the works of Gianfio and Gustavus Solcnsi,’ etc. 8vo. Lond., 1817.

4. ‘New Treatise on the game of Chess, upon a plan of progressive improvement inthe untasted 2500. 8vo. Lond., 1821.

5. ‘Treatise on the game of Chess, adapted to the European mode of play,’ etc. Bombay, 1814.

6. ‘A selection of fifty games, played by the automaton chess-player, in which move and move are given by the automaton in all these games.’

Cochrane. ‘A Treatise on the game of Chess; containing the games of odds, from the “trist des Amateurs;” the celebrated anonymous Modernene; a variety of games actually played; and a catalogue of writers on Chess.’ Lond. 8vo. 1822.

Silberhelm. ‘Das Gambit, oder Angriff und Vertheidigung gegen Gambitbisse,’ etc. Brunswick, 1829, 8vo.

Mauvillon. 1. ‘Anweisung zur Erleichterung des Schachspiels,’ etc. Essen, 1827. 8vo.

2. ‘Belehrende Unterhaltung fur junge angehende Schachspieler,’ etc. Essen, 1831 and 1832. 12mo.

3. ‘Original Unterhaltung der Hindostanee in the Specimen of Hindostanee excellence in that celebrated game.’ 8vo. Lond., 1817.

4. ‘Stamma on Chess,’ with notes. 8vo. Lond., 1818.

5. ‘Greco on Chess,’ with notes. 8vo. Lond., 1819.

6. ‘Sarratt on Chess,’ with notes. 8vo. Lond., 1822.


Mr. Lewis has likewise published a very valuable translation of Carrera’s ‘The Games of the Match at Chess, &c., as reported by the Committee of the Edinburgh Chess Club.’ "Edinburgh and London, 1832. 8vo.


4. ‘A Selection of Games at Chess, actually played by Philidor and his contemporaries, now first published from the original MSS., with notes, &c. London, 1855, small 8vo.

5. ‘Chess made Easy.’ London, 1836.


CHESTER, an ancient and celebrated city of England, on the River Dee, near to where it falls into an estuary of the Irish Channel.

In nothing is the impressiveness of the Roman possession of this island more observable than in the names of so many considerable places, into which this word Chester, which is the Latin Castrum or Castra, enters; Manchester, Ribchester, Chester, Carlisle, etc.

It was sometimes much contracted, as in Manchester, Exeter, Wroxeter, it occurs here without any prefix, but antiently this city was often called West Chester. There are other Chester and Castors.

It might be inferred from the name alone that these were originally military stations. But Chester does not depend on etymology alone for proof of its Roman origin, or of its having been the station of a part of the Roman army. The distribution of the streets, the two main thoroughfares cutting one another at right angles in the centre of the city, is Roman. There is reason to conclude that the fortifications of the city are on a Roman basis. Some remains of Roman masonry have been discovered; and Chester has produced innumerable coins, fibulae, engraved tiles, engraved stones and altars, the usual vestiges of the Romans. The most important discovery of this kind was made in 1863, when a votive altar to Jupiter Tanarus was dug up, which had been raised by an officer of the twentieth Legion of the Victorians. Other traces of this particular Legion have been found at Chester, confirming what we find in Antonine’s Itinerary, that at Deva (which is evidently the Dee, meaning the station on the Dee, as Doncaster is in the same Itinerary mentioned as Danum, the Don, the river on which it is situated) the twentieth Legion had its station. The Welsh name of Chester has reference to the same fact, being, when rendered into English, the City of the Legion on the waters of the Dee.”
own annalists have delighted to record that King Edwin was one day rowed by six kings (no doubt small Welsh princes) on the back of a relaxing Salmon of Wolphers, king of Me- cias, which had been preserved as a sacred relic, was re- moved for security to Chester. This was in A.D. 875. These relics remained at Chester. No doubt some kind of Christian community existed at Chester before this circum- stance, but it is not known to what extent this was due to associations of the monks of particular monasteries which have flourished longer at Chester than in most other places, had their origin in Saxon times, and that even some of the public processions and the sports with which the inhabitants of Chester have been from time immemorial entertained, may be continuations of Saxon usages. Chester had also in Saxon times a large shrine attached to it, which in form has been aptly compared to an eagle's wing, the tip of it touching the ground. This was called Chester-le-Street (originally Chester-le-Street), situated in Cheshire. The bishop of Lichfield was also in remote times not unfrequently called bishop of Chester.

At the Conquest this city was given by one sweeping grant (with the exception only of what belonged to the bishop) to Hugh of Aran, commonly called Hugh Lupus, or Hugh Wolf, who had for his favourite device the Wolf's Head. Hugh was a near relation of the Conqueror, and possessed this portion of the conquered country with the Saxon title of Earl, but with some privileges which did not always accompany such concessions. Cheshire became what is called a County Palatine, having courts peculiar to itself and the custody of its own records. Hugh resided in the castle and the estates are managed by the constable, which sat the superiors of the religious houses of the county, together with the eight great subinfeudatories, among whom he distributed the greater portion of his territory. The suc- ceeding earls of his family, of whom there were six, maintain the same state. The series terminated in the reign of Henry III, and from that time the Earlom of Chester has been in the crown or in the hands of members of the royal house. Most of the large tenures created by the Conqueror reverted sooner or later to the crown by forfeiture or marriage.

The period from the Conquest to the reformation of religion, forms another great era in the history of English cities. In that period Chester was often visited by the king, and was the scene of many religious and secular events. It has had a series of charters, by which valuable privileges were granted or confirmed, from the beginning to the close of that period, viz., from Hugh Lupus and some other of the successors, and when they were extinct, from the Kings Edward the First and Third, Richard the Second, and Henry the Seventh. As early as 1242 there is found a person with the title of mayor, who presided over a guild mer- chant. The number of those in trade was of considerable trade. Beside the great monastery of Saint Werburgh, there was a religious community of women established within its walls: the black, the white, and the grey nuns. With this establishment in Chester, the College of the Holy Cross is mentioned, and that of Saint Alkmund, and of Saint John the Baptist, of which the latter escaped suppression at the Reformation, and continues to this day.

besides numerous parish churches, all of which were founded before the close of the period of which we are speaking.

Chester had its fair, with one of its forms among its inhabitants, some whose names are connected with the early history of England; we have already mentioned three such persons, and it may be added, that Higden, the most celebrated of the three, whose arm was the reign of Edward III., is supposed to have been born. The house of Saint Werburgh was dissolved by Henne, which became the cathedral of the new see. A dean and six prebendaries were placed in it, Thomas Clark, the last abbot of Saint Werburgh, in Chester, being made the first dean. The revenue of the dissolved monastery furnished a provision for the prebendaries, dean, and bishop. The diocese assigned to him was the diocese of Chester, which had previously been under the superin- tendence of the bishop of Lichfield, and the dean of Chester, with the archdeaconry of Richmond, part of the see of York. At the same time, in 1544, a grammar school was founded, and Chester was appointed, about the same time, one of the sanctuary places.

From the period of the Reformation to the present time there was no very striking events in the history of Chester, nothing which in any eminent degree affected the character of the place. It occasionally received royal visits, and in the civil wars it had to endure a protracted siege. King Charles I. was for a time in the city, and from one of the towers, on the walls, is said to have personally witnessed the defeat of his army on Rowton Heath. The three earliest charters in the possession of the corporation were granted by Ranulph or Randle, earl of Chester, early in the thirteenth century. Charters were granted or renewed by several monarchs, and its corporation and parishes exhibit the usual amount of party struggles and disputed rights; so that the Reform Act, and the Municipal Corporation Reform Act, may be regarded as what more than any thing else in its more recent history will influence the future character and condition of the place. Previously to the passing of the reform Act, the election of members of parliament was in the freemen, who were usually about 1200. The city was divided into twelve wards and nine parishes.

The modern history of the town of Chester is rather the history of its decay, to which the prosperity of the port of Liverpool has in some degree contributed; but this decline is partly owing to the bad navigation of the Dee. A few years ago it was found that the city could not place a revived protection for the navigation of tobacco-pipes. Its fair, of which there were two of very early date, and one by a charter of King Charles II., were long amongst the most celebrated of that species of mart, as long as the inland con- sumption was chiefly supplied in that way. King Williams established a mint at Chester, which had however no long continuation. A canal, which was cut in 1722, had no success till after many years the company united themselves to the pro- motors of the Ellesmere canal. When the Act of Toleration gave liberty to the non-conforming Protestants to meet publicly for worship, they erected a spacious meeting-house in Chester, one of the earliest ministers in which was Matthew Henry, who afterwards wrote in great esteem under the name of the renowned Pupil. The Broad Street, or the Conformation of the Independent, is still of considerable consequence; there are also a Roman Catholic and five Metho- dst chapels. The grammar-school of Chester, called the King's School, was converted into a grammar-school, and when the direction of the dean and chapter; there is also the marquis of Westminster's school, for 400 or 450 boys and girls, who are educated at the expense of the marquis; a diocesan school, and three infant schools. Chester has many public houses, and is still a place of considerable trade. In 1700 a blue-coat school was founded, and in 1750 another for girls. The General Infirmary was opened in 1761. In 1763 an act of parliament was passed for the regulation of a hospital for this small town; there is also a poor's cy, and sundy-schools established when first the idea was suggested.

Chester has always been the residence of many families
of gentry. It has its theatre, its assembly, and its race. Several persons of literary repute have resided here in recent times, as Dr. Haygarth and Mr. Falconer. In the seventeenth century Chester was the residence of a remarkable family named Holme. A taste for accumulating local and historical information appeared in four successive generations of the family, and the nucleus of all the bearing of the name of Randal. The last Randall Holme being poor sold the whole collection to the earl of Oxford, who was then forming his great library. These manuscripts came with the snapshot collection of the British Museum, where they form 267 volumes, numbered in the catalogue 1920–2187; they abound in minute information, especially respecting Chester and the whole county.

The population of Chester, in 1774, was 14,713 persons; in 1811, it was 23,670. The number of houses inhabited was 4996; uninhabited, 388; building, 43. The number of families, 4628; of which 355 were chiefly employed in agriculture; 2665 in trade, manufactories, and handicraft; and 1468 not comprised in either of those classes: the number of marriages in 1830 was 396.

Chester is one of the few places in England which have maintained in a tolerable state of completeness the walls which were erected for their defence in remote ages; so no place are they so entire as at Chester. But now, instead of contributing to the defence of the inhabitants, they afford only an agreeable promenade, with pleasant views, at various points, of the surrounding country; they are open to the public circuit. There are two of the most striking objects in Chester to a stranger. The rows are species of wide foot-path, raised above the level of the street, at the height of the first story of a house, and continue over the whole extent of the third story of the house; it is as if the room in a series of houses was thrown open, or rather taken away, which would otherwise be what is usually called the front room of the first floor. The two great intersecting streets are, for the most part, constructed on this plan: Perrins supposes that this mode of construction may have existed from the Roman times. The corporate officers of Chester, previously to the late Act, were a mayor, recorder, two sheriffs, twenty-four aldermen, and forty common-councillors.

(King's Vale Royal; Lysons's Magna Britannia; the Chester Guide; the Stranger in Chester, &c.; Municipal Corporations' Report.)

CHESTERFIELD, Durham.

CHESTERFIELD, a parish, municipal borough, and market-town in the hundred of Scarisbruck, Derbyshire, 132 miles N. by W. from London. The parish of Chesterfield, which contains several chapels, hamlets, and townships, has an area of 26,943 acres, with an estimated population of 10,688, which is an increase of 1498 on the census of 1821. This is attributed, principally, to an increase of collieries and iron works. The population of the borough of Chesterfield in 1851, was 4587; in 1811, 4765; in 1821, 5077; in 1831, 5773. Two rivulets, the Eyper and Rother, run past the town.

Chesterfield is conjectured, from its name, to have been a Roman station. At the Norman survey it was an insignificant place. The town received various privileges from King John, but was not incorporated till the reign of Elizabeth. Under the Municipal Corporations' Act, it is governed by four aldermen and twelve councillors, but is not divided into wards. The limits of the borough are co-extensive with the township, which is about four miles in circumference.

The town is lighted under an act passed in 1825. In and near the town there are silk, lace, and pipe manufactories, potteries, and iron foundries.

Chesterfield, the seat of the Duke of Devonshire, was directed during the thirteenth century, is a beautiful and spacious edifice. The spire is remarkable from being crooked. This crookedness, which was supposed to be merely apparent, has been ascertained to be real, by actual measurement. The bulging out of a portion of the middle of the spire causes it to deviate from the perpendicular six feet towards the south, and four feet four inches towards the west. The spire is 230 feet high. Its crookedness may be the result of some accident (perhaps that of one of the stones which is not recorded).

There were in 1835 twenty-six daily and Sunday schools in the town of Chesterfield. A grammar or free-school, founded in the reign of Elizabeth, and formerly well attended, has been closed since 1832. It was under the management of the corporation. There are various public and benevolent institutions, and a literary and philosophical society, and the town has a theatre.

The Chesterfield Canal, which commences in the tideway of the Trent, after a course of forty-six miles, terminates at Chesterfield. This canal was planned by Brindley. It has sixty-five locks, and is carried through two tunnels, one of forty-two, and the other of fifty-one yards; both of which are bored through the hill. The distance between Derby and Leeds, will be carried past Chesterfield. (Woolhead's Account of the Borough of Chesterfield for 1835.)

CHESTERFIELD, Philip Dormer Stanhope, fourth earl of, was born in London on the 22d of September, 1694. He was educated by a private tutor, and at the age of 18 sent to Trinity College, Cambridge, where he studied the Greek and Roman writers with unusual diligence. In 1716 he told as tradition relates, the character which for him he had the greatest contempt in after life; and that he drank and smoked at college notwithstanding his aversion to wine and tobacco, because he thought such practices were genteel, and made him look like a man. In 1714 he left the University to make the usual grand tour of Europe. He passed the summer at the Hague, where his fashionable associates not only laughed him out of his pedantry, but initiated him into a love of play which he never forsook. Many years after he tells his son in one of his letters that at the Hague he thought gambling an accomplishment, and as he aimed at fashionable perfection he adopted cards and dice as a necessary appendage to his toilet; and the young earl was patronised by the fashionable ladies and titled courtiers of Paris, who, as he was accustomed to boast, completed his education and gave him his 'final polish.' He was at Venice, when the accession of George I. in 1715, induced him to return with wealth, failure, and disgraced a violonist, but not at all consistent with his smooth silken code. The speech was otherwise unfortunate, for it attracted attention to the fact that he was not quite of age, and consequently liable not only to expulsion from theCompanies, but also to a fine of 200L. An opponent mentioned this to him privately as a good mode of silencing his zeal: Chesterfield took the hint, and withdrew for some months to Paris, where, as it was always suspected, he was engaged in some secret court intrigue. He returned in 1717, when the Duke of Marlborough spoke in favour of the Septennial Act. In the invertebrate quail which broke out between George I. and his heir, he adhered to the Prince of Wales, nor could his uncle, General Stanhope (the 'ace of 'Ace' of Stanhope, who was then at the height of favour, with plenty of places at his disposal, but to him to change sides. Being much with the heir apparent, he undertook the difficult task of transforming a German prince into a British king, and of making a fashionable and a most refined man (as he understood it) of the rough and homely George.

His first division in parliament against the ministry was on a motion for the repeal of the Schism Bills, where he declared for the biliberal side of the question, "supposing," as he lived to express with shame to the last moment for the honestest man in the world to be saved out of the pale of the church; not considering that matters of belief do not depend upon the will; that it is as natural and as allowable that another man should differ in opinion from me, as that I should differ from him; and that if we are both sincere, we are both blameless, and should consequently have mutual indulgence for each other;"

In 1722 he was removed by the death of his father to the House of Lords, where, accorded by his father, Dr. Maty, his manner of speaking was much more admired than it had been in the Commons. He was constitutionally weak, and devoid of strong passions, and as a speaker had few qualities; but he was a very plausible man, and when he was brilliant, witty, and perspicuous—a great master of irony, and was allowed by all his contemporaries to be a very effective debater. On the accession of George II., whom, as prince, he had steadily served for thirteen years,
CHESTNUT.

ASCLEPIAS; CASTANTIA.

CHEVAL DE FRIZE, a square or octagonal beam of wood, from six to nine feet in length, and pierced by iron rods or wooden pickets six feet long, which are pointed at each end and shod with iron; the pickets are placed six inches apart, and pass through two opposite faces of the beam in direction. The beam is used to support the cheval resting on the ground at the lower extremities of the pickets. A series of these, disposed in lines and connected together by chains, is placed in the ditch, on the berm, at the entrances or behind the glacis of a field fort; or it may be used in the rampart of a town in order to impede the enemy at the time of making an attack.

Chevau de frize, on account of their portability and the facility with which they can be put together or taken to pieces, were much esteemed formerly, and were employed in the open field as a protection against charges of cavalry; but they are now seldom used for this purpose, being easily deranged by the enemy's artillery.

When Badajoz was invested in 1812, chevaux de frize, formed by fixing sword blades in beams of wood, were planted by the defenders on the breaches in the Trinidad bastion and in the adjoining curtain, where they proved a fatal obstacle to the troops engaged in the memorable assault on that fort.

CHEVIOT HILLS, THE, constitute the most easterly portion of the extensive mountain-range which begins on the west at Loch Ryan and traverses the whole breadth of South Scotland till it terminates on the boundary line between England and Scotland. Peel Fell, 55° 17' N. lat. and 2° 35' W. long., may be considered as the most western part of the Cheviot Hills. From this point the ridge runs N.B., for about 20 miles, and terminates in Cheviot Hill, the highest of all the mountains of Scotland, and the point which terminates at no great distance from the junction of these two rivers, which form the Till. To the E. of Cheviot Hill, but separated from the range by a valley, is Hedgehope 2252 feet above the sea. The highest parts of this range are covered with peat, and the lower activities with alluvial earth. The whole mountain-tract, especially towards the S., presents to the eye a great number of green hills, differing in form, and inclosing numerous deep, narrow, and sequestered valleys. The formation of the rocks is primitive, consisting of porphyry, especially east of Carter Fell. On Carter Fell, which is at a short distance from Peel Fell, limestone is quarried.

CHEVY CHASE, the name of an old English ballad, founded upon the history of a hunting encounter which took place in 1388 at Atterburn, upon the south of the Cheviot hills, between the martial families of Percy and Douglas. The older version of this ballad was first printed by Cotton, from a manuscript in the Ashmolean Museum at Oxford, and afterwards by Bishop Percy in the 'Reliques of ancient English Poetry.' It begins

CHESTERFIELD expected a rich harvest of honours and places; but having mistaken the relative amount of the influence exercised by his master's friends, he paid his court to Mrs. Howard (afterwards Lady Suffolk), and neglected Queen Caroline, who eventually proving to be more powerful than the mistress, checked his aspiring hopes. He was not alone in this error: Lord Harland suspected her, and was at the mercy of a syndicate of less fame, shared in it, and in the consequent disappointment. Pope's villa at Twickenham was the place of rendezvous, where the royal mistress used to receive the incense of Chesterfield, Doctor Swift, Hon. Mr. Pelham, and others, not unfrequently to the annoyance of poor girls. When he afterwards acknowledged the greatest obligation, calling him his 'friend, master, and guide,' and adding, 'for I was then quite new in business, and he instructed me, he loved me, he trusted me,' Chesterfield had the merit of averting a war from Hanover, for which service George II. made him High Steward of the Household and Knight of the Garter. Under the plea of ill health he obtained his recall from Hanover in 1739, and returning to court, where he enjoyed unrestricted access, he again indulged the hope of rising. A curious anecdote is told by Horace Walpole, to account for the renewed displeasure and animosity of the queen, and for Chesterfield's sudden secession from them. He took his office almost as his own prerogative, and his Lordship shown his decided opposition to Sir Robert Walpole, than he was deprived of the High-Stewardship, and so badly received at court, that he soon ceased visiting the union of the elector of Sir Roth the king's brother in England, and by proposing that they should be separated from each other, and allotted to different branches of the reigning family. At the beginning of 1745, the year of the Pretender's last war in Scotland, and a time of intrigue and difficulties, he was again dispatched as ambassador to Holland. In the course of the same year he was named while in Holland, Lord Lieutenant of Ireland, and immediately repaired to his post, where he distinguished himself, in a season of party strife and intrigue, by his conciliating popular manners. His short government in Ireland was perhaps the most valuable part of his public life. George II., whose prejudices were removed or weakened by his government, the union of the Elector of Hanover, and the title of King of Great Britain, which he had bestowed on the king of Hanover, and the title of Principal Secretary of State. In consequence of being obstructed in some measures which he considered important, and of his now really declining health, he resigned his office in January, 1746, much, it is said, to the regret of the king. He was kept from the House of Lords by his giddiness and deafness, but in 1751 he delivered an elegant speech in favour of adopting the New Style. His declining years, though now and then brightened by flashes of wit and memory, were clouded by sickness and despondency. He died on the 24th of March, 1773, in the 79th year of his age. His natural son, to whom his well-known Letters were addressed, died five years before him.

By his life, Dr. Jonas Schublenberg, C. M. Walsingham, and George the First's mistress, the Duchess of Kendal, he had no issue. After much opposition from George II., who pretended to find no objection on Chesterfield's incessant gambling, this German lady married his Lordship, who always had a very great reputation for literature and a partiality for the society of literary men; at different times of his life he associated with Addison, Pope, Swift, Gay, Arbuthnot, Voltaire, Montesquieu, and Addison, at one time or another, and was himself called to the Bar on one occasion. He was a belated merit, but an unfortunate amiable man, and procured him a seat in parliament. In his intercourse with Samuel Johnson he gave himself lordly airs, and the sturdly doctor, thinking himself slighted, avenged himself in the celebrated letter which was prefixed to the first edition of his Dic-
unearth, and it is written in the very coarsest and broadest
northern dialect. There seems the best reason for believing
that its composition may be dated about or soon after
1540.

The more modern ballad of Chevy Chace, that of which
Addison has criticized the beauties in the "Spectator" (No.
76, 74), begins:

"God prosper long our noble king!"

Bishop Percy ascribes this version to the time of Queen
Elizabeth, and it was probably late in her reign when it was
written down. It is possible that it may have no original
lament to that the ballad of Chevy Chace, in his time, was
so 'evil-apparelled in the rugged garb of antiquity.'

Bishop Percy has printed both ballads in his "Reliques,"
was once very popular, in Scotland, in the year
1670. He was at first intended for the church, but after
attending the lectures of Dr. Archibald Patcarn, he de
terminated to practise medicine. Having taken his doctor's
degree, he came to London about 1700, and soon after pub-
lished his 'Theory of Fevers,' in which he attempts to explain
the doctrine of secretion on mechanical principles. His next
work, 'On Fluxions,' was published in 1705, and procured
his admission into the Royal Society. At a mature age he
called this a juvenile production, and acknowledged that it
was justly censured by De Moivre, to whom and to Dr. Ol-
phant he makes an apology in the preface to his 'Essay on
Health and Long Life,' for having treated their criticisms
with levity. But his "Philosophical Institutes of Natural
Religion," containing the elements of natural philosophy,
and the evidence of natural religion to be deduced from
them, was dedicated to the Earl of Roxburgh, for whose use
it was written. A second edition of the third edition makes mention of a second part, 'containing
the nature of infinities, together with the philosophic principles
of revealed religion; but we do not know if this part was
then first added.

Cheyne's natural disposition to corpulency was so in-
creased by full living in London, that in a few years he be-
came 'fat, short-breathed, lethargic, and listless.' His
health gradually sank, and, after trying a variety of treat-
ments, he found that he could recover himself to health
by 'seeds, bread, mealy roots, and fruit.' The experiment
succeeded, and he was soon relieved of his distressing
symptoms. During his illness, being deserted by his
'sounding, painstaking, and undertaking' companions, who
could not bear to see him in such misery and distress, he
began to look to religion for consolation, and at last 'came
to this firm and settled resolution in the main, viz., to
neglect nothing to secure my eternal peace, more than if I had
been in the fullness of youth; nor to mind any thing that
my secular obligations and duties demanded of me, less than if I had been ensured to live fifty years more.
This, though with infinite weakness and imperfection, has
become my settled intention in the main since.'

The 'English Malady.'

In 1722 he published an 'Essay on the true Nature and
due Method of treating the Gout,' together with the virtues
of the Bath waters, and the nature and cure of most chronic
diseases. His book was accounted "the best method of a strict regimen, particularly in diet, both in preventing and curing diseases." It was dedicat
ed to Sir Joseph Jekyll, Master of the Rolls, who had been
under the author's care. In the preface he gives an
account of his former works, which he censures where faulty, but praises where he had treated either writers with levity or disrespect. In 1733 he brought out his 'English Malady,' a treatise on the spleen and
vapours, as well as hysteric and hypochondriacal diseases in
women. The work, once very popular, contains a very
minute account of the author's own experience. It appears that on his recovery he gradually returned to a more generous
diet. However, for near twenty years I continued sober,
moderate, and plain in my diet, and in my greatest health
drank not above a quart, or three parts at most, of the
bulk and stovage, though certainly by far an over-dose,
and that at dinner only, one half with my meat, with water,
the other half, none more than that day, never tasting
anything, and my breakfast nothing but green tea, without
any eatable; but by these means every dinner necessarily
became a surfeit and a debauch; and in ten or twelve years
I swelled to such an enormous size, that upon my last
weighing I exceeded 32 stone. My breath became so
short, that upon stepping into my chamber quietly, and
with some effort, I was ready to faint away for want of breath,
and my face turned black.' (The English Malady, 2nd
ed., Lond., 1734, p. 342.)

He now returned to his low diet, and with the same
success as before, though it required a longer time to
recover his health. Thus he arrived at the proposal of a milk diet, which he has found to have affected much diversion to contemporary wise, some of whose gibes and sarcasms rather ruffled our author's
complacency; but if it were worthy while to refute epigrams, it
would be too much to think that a man of a Fynes- 
way sobriety could mean zealot: this was the very title of our author's book, 'English Malady,' is 'Of necessary cases, requiring a mixed or
trimming regimen of diet, via. tender young animal
food, and a little wine and water one day, and the other
only milk, seeds, and vegetables.' Dr. Cheyne died at
Bath, in 1742, at the age of 79.

CHIA'NA, VAL DI, a valley in Tuscany, in the province of
Arezzo, running N. and S. 36 miles in length, from
Arezzo to Chiuro, and between two chains of hills, of
which the western divides it from the valley of the Ombro-
so to the E. from the Thayresyme lake and the valley of
the Tiber. The Chiaia was once hardly anything but a vast
marsh, and its air was pestilential, until the draining began
under the order of Ferdinando I., under the name of Chiaia,
der his son Ferdinand. By this operation above 36 square
miles of ground are become now one of the most fertile
districts of Tuscany. (Manenti, Carte stradali delle stato
d'Italia, p. 160; Malaspina, Di Chiana; Fossombroni; Cor-
sine, &c.) The waters of the N. now flow into the Arno.
In ancient times they all flowed S. into the Tiber. [ANNO.]

CHIAROSCURO is a branch of painting, the object of
which is to combine and arrange the light and dark parts
of a picture to the best advantage. The term is derived
from two Italian words, chiaro, light, and oscuro, dark,
and includes the treatment of bright and dark colours or
tints, as well as simple light and shade. It is by chiaro-
scura that relief and depth, and what is termed the effect
of a picture, are produced; by a judicious contrast of bright
colours with dark, or a combination of the two, or by their
gradual blending; by including one part of the picture in
shade, while another is bathed in full light; or by making
the light gradually die away into the shadows. Leonardo da Vinci was the first who reduced the art
of chiaroscuro to any thing like a system. It was afterwards
practically improved by Correggio and by Titian, under
whose influence in the use of chiaroscuro, the student
should study the properties of light and shade, with which
it is diffused, collected, reflected, and separated into colours.
He should refer to the works of the best masters, and
observe the means which they have employed to imitate
nature; and, above all, he should constantly watch and
note down the effects of light and shade as exhibited in the
objects around him under various modifications. The
most powerful effects in painting will always be the nearest
to nature; and the most pleasing will be those which are best
selected out of the infinite variety which she presents for our
choice.

CHI'AVARI, a province and town of the Sardinian
States, in that part of the old Genoese territories called
Riviera of Levante or the E. coast. The province of
Chiavari is bounded W. by that of Genoa, S. by the Mediterranean,
N. by the province of Bobbio, E. and S.E. by that of La
Spzia, and N.E. by the State of Parma. It is about 26
miles in length, and about 15 miles in its greatest
breadth. The Apennines appear on the E. side, and on
their summits divide it from the valley of the Trebosc,
in the province of Bobbio, and from that of the Toro, in
the State of Parma, the waters of which flow N. into the
Po. In the S. part of the province, the river Varzo crosses
Rapallo, which runs into the Mediterranean, and the Vera,
also a mountain stream, which flows E. into the Magra,
which comes down from Pontremoli. The strip of land
along the coast has a mild climate, in which the vine, olive,
CHI

orange, and lemon thrive. The mountains abound with chestnut-trees. The inhabitants are chiefly employed on the sea. Castiglione, under the Muniziers, and the small harbour, is the residence of the intendante and of the courts of justice and commercial court: it has a college kept by the brothers Scholaram Piamun, besides the public elementary schools. Sesta di Levante has 7000 inhabitants, and the last points of the coast, with fine gardens and country-houses in the neighbourhood, and 9000 inhabitants; Santa Margherita, 6000; Laragne, 5000; Varese, 5000; Bonzona, 4700; and S. Stefano d’Avo, 5700, with about 15000 inhabitants, are on the coast itself, 61 feet long, and 34 feet wide; the nave and aisles 97 feet wide; and the tower and spire 300 feet high. The north transept is now used as a parish church. In the interior there are nine monuments by Fiamma, one of them to the memory of William Collins, the bishop of Chichester. It also contains several ancient monuments, which are curious, and some of more recent date that are not unworthy of notice. The best of the latter is in the memory of Mary, 2d wife of Lord North, who was for some time member for this city. It is the work of Carew, and was raised by subscription. At a short distance from the north-west angle of the cathedral is an insalated bell-tower, traditionally known as Ryman’s tower, which is used for its most impressive use. The church of Chichester, whose diocese comprehends nearly the entire county of Sussex, is within the city. There is a neat antique chapel attached to the palace, which has been repaired by the late bishop, Dr. Malby. Chichester stood a siege during the civil wars.

The average gross annual income of seven incumbents of the parishes of Chichester amounts to £664.4, but in six of the cases other preferments are held. (Ecc. Stat. 1835.) The various schools, daily and Sunday, are held in the school of Chichester, which is under the direction of five trustees (who must be members of the church of England, and ‘not parliament men’), is admirably managed; and the boys in the increased number for the last year have been reconstituted and the boys behave properly receive a sum of money on leaving the school, to enable them to settle in business, or otherwise to promote their interests. The boys wear the ancient blue dress of similar foundations. The revenue is about £3004. per annum, and is yearly increasing. It is by the Foundation Charter restricted to members of the church of England. Another, termed a grammar-school, was founded in 1497 by bishop Story, the revenues of which are stated in the Education Returns to be in the possession of the city. It is the parochial churches in Chichester are remarkable for their smallness and the poverty of their appearance. During the present year, 1836, the largest parish (the Subdeanery) was divided, and a handsome Gothic church, capable of containing a thousand people, erected without expense. This church, which is surrounded with an extensive cemetery, is named St. Paul’s.

The chief public buildings of Chichester are the guildhall, town or custom-house, and corn exchange, market cross, jail, theatre, infirmary, and the philosophical society’s and mechanics’ institutions. The town-hall is a rude inconvenient building, the re-
CHICKPEAS, an Indian tribe in the United States of America. They cultivate cotton, corn, and sweet potatoes, and have herds of cattle, sheep, and swine. They live in comfortable cabins, and have erected a school at their own expense. A few missionaries are among the settlers, and the Indians are beginning to adopt Christianity. They cultivate corn, cotton, sweet potatoes, and have herds of cattle, sheep, and swine. They live in comfortable cabins, and have erected a school at their own expense. A few missionaries are among the settlers, and the Indians are beginning to adopt Christianity.

CHICKWEED, an annual, with soft light green opposite ovate leaves, a bristle stem, and minute white petals, almost split into two parts. It and groundsel are two plants which are to be found in flower on any day in the spring.

CHICKEN is a perennial plant bearing a composite flower, which gives the name to the subfamily or section of the Ageraceae, which belongs to the family Compositae. It has a fusiform root like a carrot, which is of great value in succulent leaves spread out, with deep, indented edges. The whole plant is bitter and aromatic; and the leaves as well as the root have been used in medicine, in the form of a decoction, as a tonic bitter and diuretic. It is frequently used as an salad, especially when blended. For this purpose, the roots are taken up in the end of autumn; they are then placed in sand or light mould, in a cellar from which the light is excluded, the leaves having to be cut off previously. They are then kept in a cool place in a box. Fresh slender leaves soon grow out of the root, and, being deprived of light, they are much more delicate and tender than those which grow in the open ground. The bitterness also is thus lessened, and they form a very pleasant addition to under-cast or to mixed matted state of the leaves, the French call barbe de coquin (monk's beard). It is pleasant to the taste than common under-cast, and stimulates the stomach by its bitter and aromatic qualities.

The luxuriant growth of the leaves of the chicory, and their speedy reproduction after they have been cut, suggested the more extensive cultivation of this plant as food for cattle and sheep, who are fond of the leaves. Mr. Creté de Panuel, who cultivated it near Paris in 1832, introduced extraordinary crops. The first year he cut it only twice, but afterwards four and five times in a year: it produced more green food than any other plant cultivated for this purpose. Arthur Young was so struck with it that he strongly recommended it to the notice of British agriculturists; and in the queries sent to various parts of the country by the Board of Agriculture, one was, whether chicory was cultivated in the district as green food for cattle. But notwithstanding its abundant produce, it has not been found so much superior to other green food as to make its cultivation general. Some accurate experiments on a large scale were made in France at the national farm of Ramhille, near Paris, and with very encouraging results. They were exposed to the warm and cold, and were kept with lucerne and other green food. The chicory was declared superior, giving a disagreeable taste to milk and butter when cows are kept upon it. For sheep it is very good, and a small portion mixed with their other food may probably be a present cure for the rot.

Chicory is now chiefly cultivated in Belgium and Germany, for the purpose of preparing from the root a powder which can be substituted for coffee. This has become a very considerable article of commerce. It was first introduced into Britain, and the consumption of it, and consequent demand, increased so rapidly, that the government thought proper to put a check on its importation by a duty of 2s. 6d. per ton on the dried root.

To be in perfection, the seed should be sown or rather drilled, in April, like that of the carrot. If sown sooner, they are apt to run to seed. The land should be rich, deep, and light. The plants should be thinned out to some distance from each other, and carefully weeded. In September the leaves should be finely crushed and all the roots taken up, which may be done with a common potato-fork. They are then cleaned by scraping and washing, split where they are thickest, and cut across in pieces about two or three inches long, when they are dried in the sun. The pieces are dried or boiled, and used either as a coffee or ailk. Some nicety is required in drying, to prevent the root from being scorched and to keep the proper flavour. In this state it is sold to the merchants, packed in bags. It is afterward cooked or chopped into small pieces, and roasted exactly as coffee, ground in a mortar and sifted into pounds and half pounds for retail sale. When coffee, as well as all colonial produce, became too dear for the labouring classes.
in France and Germany, chicory was almost universally used as the best substitute, and the taste is by many thought so grateful, that they prefer the coffee with which a fourth or a fifth of its weight is intermixed, and which is not intended to exhaust the soil, and to require fresh ground to prevent its degenerating. Unless the soil is rich and light, the roots will not come to a good size in one season, and old roots become hard as wood. The growth takes place along the lateral roots that are fit to be prepared for commerce. They lose a great portion of their weight in drying. The best preparation of the land for chicory is grass or clover. The manure should be laid on before it is ploughed up in autumn, which will accelerate the growth. The land should be ploughed very deep in spring, and laid light; the surface harrowed fine, and the chicory seed drilled in rows twelve inches apart, and rolled. Liquid manure spread over the ground increases the growth of the plants, which must be thinned out like turnips or carrots to six or eight inches from plant to plant.

CHIMARRON [BAYARIA, p. 51]

CHILHUACHU [MEXICO]

CHILLBLAIN, a local but peculiar inflammation of the skin, commonly appearing under one of three forms. The mildest form is attended with redness, swelling, and a sense of heat and itching, often quite intolerable. In the second or severe form the violence of the swollen part is of a deeper red, sometimes of a dark blue colour, and at other times even of a purple hue. In the third or the severest form, small vesicles rise on the surface of the reddened and swollen skin, which are soon converted into sores, from which a thin irritating liquid exudes, the nature of which is very difficult to alter, or to bring the sores into a state of healthy suppuration.

That the inflammation of which this troublesome complaint is the consequence is of a peculiar kind, not very well understood, surgeons conclude because they find that it is not relieved by the applications which are most beneficial in ordinary inflammation.

The existing cause of chillblain is always cold, and more especially cold applied after the part had been previously much heated. Hence those persons are most subject to the complaint who have contracted the bad habit of going immediately to the fire when they come home in winter with their fingers and toes very cold. Hence also the chief seats of the disease are those parts of the body which are most exposed to sudden alternations of heat and cold, as the nose, ears, lips, toes, heels, and fingers. Young persons are more subject to it than adults, females than males, and it seems most frequently to attack persons of a fair skin.

The painful itching, which is perhaps the most troublesome part of this complaint, is best relieved by active and long-continued friction with camphorated spirits of wine, or with at least distances of from an inch to an inch and a half of Goulard's extract. Some surgeons speak highly of the efficacy of one part of the tincture of cantharides to six of the common soap liniment as a lotion. But one of the best remedies is to foment the part, either with snow or ice-cold water, or to bathe them in ice-water several times a day, keeping them immersed each time until the pain and itching abate. After the parts have been rubbed or bathed in this way, they should be well dried with a towel and covered with a flannel or leather socks.

The stimulating applications, only in a more diluted form, appear also to be the best remedies when vesications arise. In this case the application of heat to the part affected should be avoided, as inflammation must be produced, and the vesicles terminate in sores, they require stimulating dressings.

But prevention is better than cure, and the most effectual mode of guarding against the annoyance of this irritating and often exceedingly protracted disease is to accustom the skin to moderate frictions, and rubbing the parts too warmly, to avoid still more carefully sudden and great alterations of heat and cold; and accordingly to take particular care not to go immediately into a warm room or near a fire out of doors, when the skin is slightly cold, and be equally frequent with cold water. (Cooper's Surgical Dictionary.)

CHILE, one of the new republics on the continent of South America, lies along the shores of the Pacific between 25° and 42° S. lat.; but the archipelago of Chiloé, which separates the two degrees, is not considered in it. The republic of Chile considers the whole coast to the Strait of Magalhaens, and likewise a portion of Patagonia, as belonging to its territories; but as no settlements have been formed in these countries, we shall limit our description to the tract, between 25° and 42° N. lat., which extends from the chain of the Andes, forming its eastern boundary (between 26° and 42° S. lat.), to the coast of the Pacific Ocean (between 71°, 70°, and 74° W. long.).

Chile is bounded on the east by the republic of La Plata, from which it is divided by the Andes. On the north it is bounded by the sea, and a long chain of islands and coral reefs which extend down to the Straits of Magalhaens, and separate the land from the western ocean. On the west it is washed by the Pacific; and on the south it is separated from the island of Chiloé by the Strait of Chacao, and bounded by the Bay of Ancud. Its extent from north to south is about 1175 miles; its breadth varies from 100 to 200 miles, and its mean may be taken at 150 miles. This would give it a surface of 176,250 square miles, which does not differ much from the calculation of Humboldt, who assigns to it an area of 120,240 Spanish square miles (20° - 1 degree) or 124,880 square miles. It is therefore about 60,000 square miles larger than the British islands.

The Andes, which from the Strait of Magalhaens as far north as the Bay of Ancud press close on the shores of the Pacific, appear to rise east at the northern extremity of that bay, but soon resume their northern direction, in which with some slight bends to the east and west they continue along the boundary line of Chile. So far as we yet know, they do not exceed 40° S. lat., but there is an indefinite range of 100 miles or more in width. Between 35° and 34° S. lat. they divide into two ranges, which unite again north of 34°, and inclose the elevated longitudinal valley of Tunuyan, the most southern of those valleys by which the Andes are distinguished from all others. Near the town of Coquimbo the chain divides again, and incloses the longitudinal valley of Uspallata, which extends northward to 30° S. lat., the elevation of this valley at the post-house of Uspallata was found by Dr. Gillies to be 5927 feet above the sea. It belongs to the state of La Plata. No part of the Chilian Andes has been measured, except three mountain passes; but some of the numerous peaks in the chain have been estimated to rise to 15,000 and 16,000 feet. The highest estimate is 15,000 feet, and it is certain that in these latitudes the snow-line is found at about 14,000 feet above the sea. The summits, which are covered with perpetual snow, are the Peak of Aconcagua (south of 32°), the Peak of Tepopango (south of 35°), the Volcano Penque-ques (near 34°), the Peak of Desabezado (north of 38°), and the Volcano of Antuco (north of 37°). The mean height of the whole range seems to be lower south of 35° than north of it, though the summits in the whole range seem to attain nearly the same elevation. This part of the Andes contains many volcanoes. They are extremely numerous to the south of 35°, where nearly twenty are known to exist, and it is supposed that many are still unknown. Between 32° and 35° only a few occur, and at the same time, the whole line of coast from 32° to 35° is the southern extremity of the valley of Tunuyan, near the volcano Penqueques, is another pass, which, according to Dr. Gillies, rises to 15,210 feet. The Pasa del Plancheau traverses the range between the valleys of Aconcagua and Tepopango, traverses the valley of Uspallata, and unites Santiago de Chile with Mendoza in La Plata. Its highest point, called Llano Cumber, is, according to the calculation of Penland, 12,454 feet above the sea. The passes of the Portillo traverses the Andes south of the peak of Tepopango, passing through the northern part of the valley of Tunuyan. It seems to be the same road that Dr. Gillies measured, whose highest elevation he found most above, exactly the same. South of this southern extremity of the valley of Tunuyan, near the volcano Penqueques, is another pass, which, according to Dr. Gillies, rises to 13,210 feet. The Pasa del Plancheau traverses the range between the volcanos of Pelero and the Peak of Desabezado, and is less elevated than the others, since vegetation extends to its summit. The pass of Antuco, which crosses the range near the foot of the volcano of that name, probably does not rise to a great height. As it traverses the country without the independence of the Pampas of La Plata, it is not much used. Besides these passes there are others over the Andes, but all of them are impracticable for miles in winter (from June to September). The districts of Coquimbo, which on the north (south) coast resemble the coast of Peru, and the whole of that country may be considered as the western declivity of the Andes. Near the high range the country is still between 6000 and 9000 feet above the sea, and it lowers gradually to the west.
till it terminates near the sea in an extensive plain, about twenty miles in breadth, and from sixty to eighty feet above the sea. The surface is uneven, exhibiting numerous ridges of low hills, which in some parts, especially near the Andes, and near the plain along the shores, run parallel to the great chain and the Pacific; but in the intermediate country they curve. The surface of the country presents either bare rocks, or is covered with sand, and nearly without vegetation, except a few stunted shrubs, which generally occur in the narrow glens and ravines, with which it is sparsely intersected. The rivers rise in the beds through this country, but most of them have only water in the spring (September till December), when the snow is melting in the upper region of the Andes, and they are dry during eight or nine months of the year. The Chupas, Chucucho, Yacu, and Curanapi, have water all the year round. On their banks are the few cultivated spots, which are irrigated by water drawn from the rivers. But all the small level tracts along the watercourses are not fit for cultivation; the greater part of them are covered with incrustations of salt, which in some places are five or six inches thick, and occupy the whole surface, covering even the low grasses. The few spots which are cultivated produce only Indian corn, potatoes, a small quantity of wheat, and considerable quantities of fruits. Few counties of equal extent possess greater metallic wealth, especially gold, silver, and copper, but the extreme sterility of the country prevents the working of these mines, except in the vicinity of the large towns. In these district resemble Peru. It never rains, but sometimes a pretty strong dew falls in the morning, which refreshes the plants. This extreme dryness of the air is accompanied with a very moderate degree of heat; the thermometer in summer rarely attains more than 70°, and in winter the temperature is sometimes so low, that the morning dew is changed into snow. This general description applies only to the country north of 36°, south of which line the cultivated spots are more extensive and more numerous, and the country is annually refreshed by a few showers of rain.

From the snow-capped peak of Aconcagua a mountain-ridge runs directly west, and terminates at a short distance from the sea. It is called Cuesta (ridge) de los Angeles, and attains a considerable height, which however greatly decreases as it proceeds westward. Another ridge, branching off from the Andes at the peak of Tupungato, runs first north-west, and is called Cuesta de la Delma. It then turns west, and may be said to terminate at the Campana de Quilota, a mountain which rises to about 2500 feet above the sea, from which it is about twelve miles distant. A much lower ridge extends farther west, terminating not far from the shore and the mouth of the Rio de Aconcagua. This westward-extended ridge is called Cordillera de los Bambus, traversed by the road which runs from the mountain-pass of the Cumbre, and attains in this place an elevation of 2896 feet above the sea. The country enclosed by the Cuesta de los Angeles and the Delma, is divided into three parts by the Rio de Aconcagua. This river rises on the north-west declivity of the peak of Tupungato, and runs more than one-third of its course in a narrow and elevated glen, nearly parallel to the chain of the Andes in a N.W. direction; it then gradually turns west, but the valley through which it flows is still narrow, till it has terminated another third of its course, when it enters the valley or plain of Aconcagua, a beautiful level tract, extending from E.S.E. to W.N.W. fifteen miles in breadth of thirty miles in width. The plain is about 2500 feet above the sea, but as the river has water enough to irrigate the whole, it is well cultivated, and perhaps the most populous portion of Chile. At its western extremity it lies nearly contiguous to the valley of Putueno, which is smaller, but also fertile and well cultivated, and extends northward to the Cuesta de los Angeles. After the junction of the Rio de Aconcagua with the River Putueno, the mountains again approach its bank, but soon receding, leave a fine level plain, and hence the Rio de Aconcagua extends the valley of Quilota, which is not much inferior in fertility to the others, and is about three or four miles wide. South of the Cuesta de Chacabuco the level country begins to occupy a much larger portion of the surface. The plain of the Rio Biobio, which has the foot of the mountains, is open to the banks of the Rio Mayp`h. Towards the north it is from six to eight miles wide, but farther south it grows wider, and on the bank of the Mayp`h, from east to west, it is about twenty miles. Its soil is stony and dry, and it cannot be cultivated where it is not irrigated. Cultivation is therefore restricted to the numerous irrigated valleys and the plain of the valleys of Aconcagua, Cachapoal, and the del Plata, and of the canal, by which the water of the Mayp`h has been brought upon it. Miers thought that not one-tenth of the plain was under cultivation, but in this respect there has doubtless been some improvement of late years. The country between the Mayp`h and the Pacific is traversed by some ranges of hills, which rise to no great height above the adjacent plains, and are southern offsets from the Cuesta of Chacabuco. The plains between these ranges are extremely extensive: the soil is dry and stony, without water and trees.

The Rio Mayp`h has its sources in the Andes, between the Peak of Tupungato and that of Cauquenes, and one-third of its course lies between the high offsets of the Andes in narrow valleys. Towards the plain of Santiago it enters the valley of Cachapoal. When the river has entered the plain, the canal of Mayp`h conducts a portion of its waters to the centre of the plain, while the river, continuing its western course, traverses its southern portion. The Rio Cachapoal, which drains the plain of Santiago, has water only in the rainy season, the Mayp`h enters the valley of Melipilli, from four to six miles wide, which contains large extent of fertile land. The whole course of the Mayp`h is about 160 miles.

The country south of the Rio Mayp`h has a different character. Towards the Andes it is covered with the high elevated forests and valleys. But about two-thirds of the country is a vast range of gentle undulations, and contain comparatively few steep and high hills. Here also the rains are by no means abundant, nor do they last for any length of time: agriculture therefore cannot be carried on without irrigation, and the tracts of ground under cultivation are not extensive. To this want of moisture the naked face of the country must be attributed. No trees of large size are found in Chile north of the Rio Cachapoal, but their number increases farther south, till on the banks of the Rio Maule the forests of high timber trees become very extensive. The Rio Maule rises in the Andes at the foot of the Peak of Descabezado, near 36°, and runs first nearly due west. When it has arrived at the level country it turns north-west, and flowing in a diagonal line, falls into the sea about 34° 47′. It is the most northern of the navigable rivers of Chile. At high tides, vessels, not drawing more than six feet water, may enter its mouth, and proceed some small distance up it. The Rio Biobio rises south of the Rio Maule near 37°, and runs up and down the country. These favourable circumstances, united to the fertility of the country on the banks, and the extensive forests of timber trees, will probably soon render this river of as much importance. The country between the Rio Maule and the Rio Biobio is a succession of undulating country: but since the expulsion of the Spaniards it has been nearly deserted, on account of the frequent incursions of the neighbouring Indian tribes. This tract contains much more level ground than any other portion of Chile. The Andes here terminate by a steep descent, and without other features; and at their foot begins, in the northern districts, an undulating country, intersected with small plains. In the southern districts the level country begins immediately at the foot of the Andes, and extends inland towards the Pacific. The Travesia (heath) of Yumbel, a plain sixty miles long, and nearly as wide, between the towns of Yumbel and Tacapal, is covered with sand and small pieces of volcanic matter; it is without trees, water, and vegetation, except at a few spots. Pooping thinks it probable that it was once covered with water, and formed a lake. A chain of low hills divides it on the south from the plain of the Ila de Laxa, which is nearly as large, and contains only a few low hills, and on the north from the plain of the Laxa del Plata, which is of great fertility. The country between this plain and the sea is covered with high but gently-sloping hills, which are partly clothed with wood, and partly bare and sterile. Along these western parts, the plains are extremely fertile. The Rio Biobio rises in the Andes at 37°, and runs in a W.N.W. course to the Pacific, which it enters N. of 37° N. lat., after a course of about 150 miles. In its upper
course it is deep and rapid. It becomes navigable for canoes and small vessels only about forty miles below a mouth, which Captain B. Hall found two miles wide, though too shallow for large vessels. This river may be considered as the southern boundary-line of Chile. To the S. of it, the republic possesses only the fortress of Valdivia, and a few small fortress-like forts, but no extended system of defences, which were erected by the Spaniards to prevent the incursions of the Araucanians, having fallen into decay during the war of independence. The Indians were expelled from the coast in 1819, and that part of the territory is, with the exception of a few small tracts, entirely in possession of the independent tribes, called Araucanos. This country, so far as it is known, is nearly covered with high trees, which frequently form impenetrable forests. The surface rises to be nearly a level up to the foot of the Andes, with the exception of a range of hills running N. and S., and the soil very fertile, as may be inferred from the great number of warriors that the Indians can send into the field.

The Rio Calclacalla (also called the spring, is crossed with deep canals and filled with water, and is one of the most fertile spots in the country: sixty-gun ships can enter its mouth without danger but it is not known how far it is navigable. Some of the smaller rivers are said not to have a bar at their mouths, and to form pretty safe harbours for vessels of middling size.

The climate of the central portion of Chile, of which alone we have more particular information, may be compared in some degree with that of Italy. The greatest number of months in which the thermometer on the coast frequently rises to 85° during the day, and to 70° to 75° during the night. The hottest part of the day is before ten o'clock in the morning, about which time wind rises in the S., which often blows with great violence. In the interior, even in the elevated valley of Aconcagua, the thermometer frequently rises to 90° and 95° in the shade; and as the southern wind is not strong here, the days are shorter, but the nights are longer than in the valleys in which the thermometer rises to 100°. The months of April and March are much more temperate, especially in the interior, and at the end of the latter months the rains generally set in. Rains fall only between May and August, and then the Andes are covered with snow, which generally lies for four or five months on the higher parts of the range. Snow and also some ice occur in the elevated valleys, but it soon melts, and the atmosphere is only chilly while the rain is falling. Strong storms however sometimes occur, and when six or seven days in the northern districts is commonly fourteen, and seldom more than twenty throughout the year. This rain, which is very heavy, seldom falls for more than three days continuously. In the southern districts, where the number of miles to a degree of longitude, is raised to about seventy, the rain sometimes continues ten days without interruption. After the rainy season, in September the spring begins, which is frequently more chilly than the winter itself, and ice is sometimes observed on the coast. Whenever an easterly wind brings down the cold air from the snow-covered Andes, the thermometer sinks in a short time 15° or 18°, but soon rises again. Summer begins towards the commencement of November, and lasts several weeks, which, though nearly cloudless, is extremely free from them. The heat gradually increases, and in the northern districts vegetation begins to die away in December, but in the southern districts the country is always clothed in the most verdant green. The plants are occasionally freshened by rain, and the dews are frequent and heavy. The mean temperature at the mouth of the Rio Aconcagua in July and August is 70°, and at Talcahuana, near Chiloé, 72°.

Chile is subject to strong periodic gales. In the beginning of the rainy season (May and June) the north and north-western winds prevail, and frequently blow with great violence. As all the harbours of this coast are open to that quarter, vessels abandon them, and weather the storm in the open sea. During eight or nine months the wind blows from the S., and frequently with great force, especially in autumn (from February to April). At the same time a current runs along the coast to the N., both which circumstances favour navigation northward, but the return to the S. is rendered very tedious and difficult. Easterly winds are rare, except in winter; they blow from the S. or S.E., and lower the thermometer, and in February and March. In the latter season they blow only in the valleys of the Andes, and raise the thermometer from 77° to 80° even in valleys which are upwards of 5000 feet above the sea. S. They blow with such a force, that they throw down the strongest trees.

Probably no country is more subject to earthquakes than Chile; they occur, however, much more frequently along the coast than in the interior. In the northern districts slight shocks are felt most every day, and occasionally several times in a day. Sometimes they destroy the towns and lay waste a great extent of country. In 1819 the town of Copiapó was levelled to the ground, and in 1822 the town of La Serena was destroyed by an earthquake, but not much lost. In the last earthquake the rocks inclosing the harbour of Quintero, which is some miles N. of the mouth of the Rio Aconcagua, were raised four or five feet above their former level.

The climate of Chile varies much in the different districts; but it is everywhere so healthy, that it is difficult to determine what kind of diseases are prevalent.

Intertropical plants do not succeed; for though the heat is great, the great excess of the northern portion of the air is unfavourable to the growth of plants which require a long time for coming to maturity. The sugar-cane was tried some years ago, but it has been abandoned. Agriculture is limited to the production of potatoes, grapes, corn grown everywhere, but not to a great amount. Wheat is the staple; it is raised all over the country, and gives in many places very abundant crops, especially S. of the Rio Maule, where there is a considerable number of estates. Grapes are exported in large quantities, and are exported to the harbours along the western coast of S. America, where it enters into competition with the flour brought from the United States. Large quantities are from time to time shipped to Cook's Land or New South Wales. Barley is grown in the southern provinces to some extent, but very little N. of the Rio Maule; oats only on a few estates, and rye is not known. Leguminous vegetables are grown abundantly, especially different kinds of beans, and supply an important article of export. In the southern districts, potatoes grown by the Araucanos, and various vegetables are raised. Cotton and tobacco are raised in the northern districts. Capsicum is raised in the valley of Aconcagua, and forms a considerable article in the internal commerce of the country. The quinoa (Chenopodium quinoa) is peculiar to Chile, which, in the southern provinces, is raised in vast quantities, constituting the staple article of diet. Millet; a pleasant beverage is made of it. Melons and water-melons, as well as pumpkins, succeed very well in the northern provinces, where they are raised in great quantities, and attain a surprising size.

Vegetables are not much cultivated, except in the countries about the capital and the most frequented parts. Hemp is grown in the southern provinces to some extent, but very little N. of the Rio Maule; oats only on a few estates, and rye is not known. Leguminous vegetables are grown abundantly, especially different kinds of beans, and supply an important article of export. In the southern districts, potatoes grown by the Araucanos, and various vegetables are raised. Cotton and tobacco are raised in the northern districts. Capsicum is raised in the valley of Aconcagua, and forms a considerable article in the internal commerce of the country. The quinoa (Chenopodium quinoa) is peculiar to Chile, which, in the southern provinces, is raised in vast quantities, constituting the staple article of diet. Millet; a pleasant beverage is made of it. Melons and water-melons, as well as pumpkins, succeed very well in the northern provinces, where they are raised in great quantities, and attain a surprising size.

Figs, grapes, pomegranates, oranges, and peaches succeed best in the most northern districts, whence they are exported to the other parts of the state. Wine is made at different places, but not yet with any great success. The best is grown in the vicinity of Santiago, and is raised in large quantities. Figs, grapes, pomegranates, oranges, and peaches succeed best in the most northern districts, whence they are exported to the other parts of the state. Wine is made at different places, but not yet with any great success. The best is grown in the vicinity of Santiago, and is raised in large quantities.

The volcano of Antuco, many valleys are covered with forests of the Araucaria, whose fruits contain a great number of nuts twice as large as an almond, which are very palatable, and constitute the principal food of the Indian tribes of the Pehuenches. (Pehuenches.)

Cattle are very abundant north of the Rio Maule, the de
crivities of the mountains and high hills affording copious pasture for four or five months, and some low tracts which are sown with lucerne, for the remainder of the year. Single the proprietors sometimes possess from 10,000 to 20,000 head of
castle. Live stock, jerked beef, tallow, and hides, are large articles of export. Cheese is made on the banks of the Rio Maule and sent to Peru; and butter in the neighbourhood of the larger towns. Horses have greatly decreased in number during the last twenty years. They are of a middle size, and less productive than those of Chile, where horses are exported to Cook's Land and the Cape of Good Hope. Sheep are not numerous, and their wool is bad. Goats are kept by the lower classes, but are not numerous. Swine are found in abundance in the ancho rio north of Chiloé, where they have been exported to Cook's Land and the Cape of Good Hope. The island of Mocha, between Concepcion and Valdivia, is overrun with wild horses and pigs, both of which are used for stock by the whaling and sealing ships in the Pacific.

Gold is found in the sand of nearly all the rivers which come down from the Andes, as in the Rio de Aconcagua, Rio Maule, and Biobio. Some twenty years ago, many of the inhabitants on the banks of these streams were employed in washing the gold sand, but it is now only done in a few places. Some gold mines occur in the northern districts, where they are worked, but the product is insignificant. The southern provinces are much richer in the southern provinces, but none are worked. Silver is still more abundant, but the average is only from 9 to 10 moles (one mole = 8 ounces) in the cargo, or 5000 lbs. of ore. In 1832 however, 100,000 moles were worked and dispersed about sixty miles south of the town of Copiapó, where the ore was found so rich as frequently to contain 60 or 70 per cent. of pure metal. Their working has commenced with great activity, and all the other provinces have been discovered. People think that the produce of all the silver mines, even including the rich one discovered in that year, did not exceed 120,000 or 130,000 moles. The copper mines are very numerous in the northern districts, especially about Talcahuano, Coquimbo, Copiapó, and Coquimbo; copper is also found farther south in the Andes, but is not worked. The copper of Copiapó is most valuable. Miers estimated the quantity of copper exported in 1824 at 40,000 cwt.; in 1829 it rose to 60,000. Copper may be found along the coast as far as the 45th parallel. A majority comes to Europe, but by far the largest part goes to India and the United States. Ores of lead, tin, and iron, are said to exist, but they are not worked.

The coal formation extends under a considerable part of the southern provinces. The coal is at present bad, and it is hoped that it will improve in quality as the mines are sunk deeper. Salt does not exist in sufficient quantity. A good deal is collected in the lakes of Bucarelum, south of the town of Maipú, in which the salt-water and the sea is subjected to evaporation. A great quantity of salt is imported from Peru and Patagonia. The latter is collected by the Indians, partly from lakes, and partly from the sides of volcanoes on the eastern sides of the Andes between 36° and 40° south latitude.

The population of Chile, north of the Rio Biobio, is entirely composed of descendants of Europeans. If there has been any mixture with the copper-coloured race, it must have been very small. There are no Indians north of the Biobio, except in the valleys of the Andes south of 34° 8' lat. Negroes are few in number. The population is differently stated by travellers. Miers thought that it did not exceed 500,000, but the partial census of some provinces shows that he has much underrated it. Many who have seen the country are of opinion that 1,500,000 can hardly be too small. The most recent estimates carry it even higher. The Indians inhabit the eastern and southern part of the country and the coast of the Pacific. The interior is inhabited by small and scattered tribes, who speak different dialects of the same language, and are divided by the Chilenos into Indians costumos, or Indians inhabiting the coast, and into Molochos, who inhabit the coast and six miles inland at the foot of the Andes. It is the latter Indians who have resisted all attempts to conquer them, and have at last destroyed nearly all the settlements established south of the Biobio. Their chief resource is their principio of resistance from agriculture, cultivating Indian corn, potatoes, beans, and sweetcorn, and other articles. In the valleys of the Andes between 34° and 37° 8' lat. are the Pehuenches, who seem rather to be ad-

dicted to a wandering life. All these tribes still enjoy complete independence, and frequently ravage the southern districts between the Biobio and Maule in their incursions.

The country north of the Biobio is politically divided into six provinces, to which are added the province of Concepcion, the European settlements south of that river, and the province of Chiloé, which consists of the archipelago of that name.

I. The province of Coquimbo comprehends the most northern coast of the republic; and has the Rio Chupas for its boundary on the south. It exports gold, silver, and copper, and dried fruits. Its mines, which are the richest in Chile, are worked chiefly in the neighbourhood of the town of Coquimbo. The capital is Coquimbo.

II. The province of Aconcagua contains the valley of the Rio Aconcagua, and the countries north of it to the Rio Chupas. It exports cattle and wheat, and has some rich mines of gold and copper. The capital, S. Felipe, or Villa Vieja de Aconcagua, contains about 10,000 souls. In the valley there are also Quilota, with 8000 inhabitants, and S. Rosa, or Villa Nueva de Aconcagua, of nearly equal size. Near Petorca there are rich mines of silver.

III. The province of Santiago comprehends the plains along the foot of the Andes on both sides of the Rio Maule, and the country between the Andes and the Pacific. It contains few mines, and their produce is small. Its wealth consists in wheat and cattle. It contains the capital of the republic, Santiago, the most frequented harbour. Valparaiso, Rancagua, towards its southern boundary, is a place of some importance.

IV. The province of Colchagua contains the valleys of the rivers Cachapoal and Maule, and comprehends a country partly level and partly hilly, and of great fertility, and produces corn in abundance; cattle are also very numerous. It does not appear that there are any precious metals. In this province the immense forests begin which divide the country into two distinct parts, and give to the country the name of the two great forests. It is remarkable that there are no forests. The capital, San Fernando, apparently one of the most considerable towns of the republic, is situated in a very fertile country. Talca is also a place of some note.

V. The province of Maule extends from the Rio Maule to the Rio Itata, and is generally hilly and productive. It produces corn, wine, and tobacco, and is partly covered with lofty forest trees. It is probably the most fertile part of Chile, and consists mostly of an undulating country and fertile valleys, which are inhabited by very industrious and hardy farmers. A great part of the province is covered with forests, and there are no forests. The chief town is Villa de Quemquenes.

VI. The province of Concepcion lies between the rivers Itata and Biobio, and comprehends the sandy plain of Yambel and the fertile plain of Isla de Laxa, with the hilly country extending between the plains and the sea. It is less fertile than Maule, a great part of its surface being occupied by the Valdivia and the sandy hills between the sea and the plains; but the remainder is very fertile, especially the plain of Laxa. Corn and timber are the principal exports. The capital is Concepcion. Chillan, in the interior, was formerly of some importance, but has been much reduced of late years by repeated invasions of the Indians.

VII. The province of Valdivia comprehends the countries by the name of Valdivia and the Bay of Ancud, but nearly all this tract is occupied by independent Indian tribes. Except the towns of Valdivia and Osorno, the European settlements are limited to a small number of fortifications along the coast of the biobio, among which Valparaiso is the most important. The copper and other minerals are exported. The capital is Valdivia. Osorno, a small town, lies in 40° 20' 8' lat.

VIII. The province of Chiloé. [CHILOR]. The island of Chiloé is the largest of the Chilenos, and is inhabited by the Chilotes, a people formerly subject to Spain whose commerce has increased since the separation from the mother country. The importations in 1832 amounted, according to a rough estimate of the merchants of Valparaiso, to about 1,000,000, and the exportations, including the transit commerce, did not fall much short of 1,500,000. In Poeppeil's 'Travels' the following table is given:

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CHILIAD (from χιλιάς) is (or rather was) used to mean a thousand consecutive numbers. Thus from 1 to 1000 forms the first chilid, from 1001 to 2000 the second, and so on.

CHILINA, a genus of testaceous mollusks, separated by Mr. Gray from *Auricula*, and including *Auricula Domestica* of Lamarck, and *Auricula flavivittata* of Less. Its locality, South America, has fresh-water streams, with most of the habits of the *Limneus*.

CHILLIES. [CAPSICUM]

CHILLINGWORTH, WILLIAM, was the son of William Chillingworth, mayor of Oxford, where he was born in October, 1692. He was educated at 1628 college, of Trinity College in that University. Some curious memoirs of him are preserved by Ann. Wood (*Atken. Oxon. c. 20*), who says, he would often walk in the college grove, and dispute with any scholar he met, purposely to facilitate and make the way of his own coming to win him. University was a fashion used in those days, especially among the disputing theologians, or those who set themselves apart purposely for divinity. The comparative merits of the English and Romish churches were at this time a subject of zealous and incessant disputation among the university students; and several learned Jesuits succeeded in making distinguishing proselytes among the Protestant clergy and nobility. Chillingworth, being an able disputant, was singled out by the famous Jesuit, the Rev. Mr. association, *S. Joc. Soc. Jesu,* by whom he was convinced of the necessity for an infallible living Rule of Faith. On this he at once adopted the Catholic institution, wrote out his reasons for abjuring Protestantism, and joined the Jesuits in their college at Douay.

After the lapse of a few months, the arguments addressed to him by his godfather, Dr. Laud, then bishop of London, induced him to abandon Catholicism, and he returned to Oxford in 1631, where he passed about four years in considering the Protestant tenets. The great work of Daille on the Fathers, which then first appeared, is said to have finally determined him.

In 1635 he published his *Religion of Protestants, a Safe way to Salvation.* It excited great attention, and passed through two editions in less than five months. For an account of the circumstances which occasioned this work, and for a list of the publications connected with the controversy, see Kippis's "Biog. Brit., vol. iii., p. 511." The principle of Chillingworth's, that the volume of Divine Scriptures, ascertained to be such by the ordinary rules of historical and critical investigation, is to be considered the sole authority of Christians, the utter exclusion of the ecclesiastical sentiments sent to convert him. The University of D. Sheldon (afterwards archbishop of Canterbury), a most interesting document, is given in his Life, by Des Maizeaux, p. 86, and in Kippis's "Biog. Brit." Nothing can be stronger proof of the lack of a subjection of the church. His long letter on the subject to Dr. Sheldon (afterwards archbishop of Canterbury), a most interesting document, is given in his Life, by Des Maizeaux, p. 86, and in Kippis's "Biog. Brit." Nothing can be stronger proof of the lack of a subjection of the church. His long letter on the subject to Dr. Sheldon (afterwards archbishop of Canterbury), a most interesting document, is given in his Life, by Des Maizeaux, p. 86, and in Kippis's "Biog. Brit." Nothing can be stronger proof of the lack of a subjection of the church.
Chillingworth, omnibus hisae articularis, et singulis in isdem contentis volens, et ex anno, subscripsit; et consensuum meum isdem praebo, Jul. 20th, 1636. Chillingworth, in 1640, was deputed by the chapter of Salisbury as their proctor to the Convocation in London. He was attached very zealously to the party, and wrote a treatise (unpublished) "De Universo," in imitation of the Roman festum cum plateis, to assault the rebels and take the city by storm. Having accompanied the king's forces under Lord Hopton to Arundel castle, he was there with his comrades taken prisoner by the parliament army under Sir William Wall. He was then conducted to the remote palace at Chichester, where lie dead and was buried in Jan. 1644. In his epitaph (Gent. Mag., vol. xiv., p. 597), on the mural monument in that cathedral, he is styled Propugnator invictissimi Ecclesiae Angliae. A singular scene occurred at his funeral. Dr. Cheynell, then rector of Petworth, appeared at the grave, with the work of Chillingworth (Relig. of Protes. in his hand, and after an admonitory oration on the dangerous tendency of its rationalism, he proceeded to declare the same passages gone out of his work, by F. Cheynell, Fell. Mert. Coll. Ox., 1644 and 1725. In this singular production the object of the author's enmity is jeered at as 'this man of reason whose head was as a hard and dry walnut;' the various modes of argument, the abilities of Chillingworth have been greatly and justly excoriated by many of our most distinguished writers. 'The incomparable Chillingworth,' says Dr. Tillotson, 'is the glory of his age and nation.' If you would be reason well, says Locke (on Educat.), 'let him read Chillingworth;' again on Study. For retaining right reasoning I propose the constant reading of Chillingworth: for this purpose he deserves to be read over and over again. Anth. Wood says that, having spent all his youth in disputations and disputations, he was a most subtle and quick disputant, and would often put the king's professor to a push. Hobbes observes that he was like a lusty fighting fellow driving his enemies before him, and often giving his own party smart back blows.' Those, says Mosheim, 'who desire to know the doctrines of the Church of England, must read especially Chillingworth's admirable book, The Religion of Protestants.' Gibbon observes that Chillingworth most ably maintains that the gospel is the sole judge of the Bible, and its sole interpreter, private judgment. Dr. Reid considers him the best reasoner and most acute logician of his age; but Anth. Wood's opinion is not outdone by any, for he declares that 'Chillingworth had such extraordinary powers that if Adam had lived a thousand years, the Devil could be converted, &c. was able to do it.' 'A great excellence consisted,' says Dr. Barlow, 'in his acquired logic, the syllogisms of Aristotle and Cratennophor having been a principal part of his studies.' The result of this efficiency in "wringing" is stated by his intimate friend Lord Chel- rendon, who says (Hist. Rebel.) that 'Chillingworth had contradicted such an illusion and habit of doubting, that at last he was confounded of nothing.' This fact is abduced by Dr. Price (Philos., vol. ii., p. 361, and p. 318) as an instance of the ruinous effects of the scholastic logic. It is said by Clarendon that 'Chillingworth was a man of little stature, and that was 'an age in which many great and wonderful men were of that size.' The 16th and best ed. of the Life of Chillingworth, is that of J. T. Monro, 1742, with sermons, &c. and a life of the author by Dr. Birch. An edition of Chillingworth's whole works has been recently published in 11 vol. J. For evidence that Chillingworth was not a Trinitarian, and the Origin of the precise list of his miscellaneous controversial works is given in Kippis's Bib. Brit., vol. iii., p. 515, and in the Life of Chillingworth, by Des Maiziers, 8vo., 1725. 611. 36° 49.3'. 37° 26'. 73° 26'. 74° 30'. W. long. It is one of the most northerly of these large and smaller islands which skirt the western coast of South America from Cape Horn northwards. It is divided from the continent by a wide strait, called the Gulf of Ancud, and at its northern extremity by the much narrower strait of Chacao. It extends from north to south about 120 miles, and from east to west sixty, where widest; but its eastern coast being deeply indented, the average width probably does not exceed forty miles. This gives an area of 4600 square miles. It is connected with the continent by a chain larger than Corsica, about 1000 square miles less than Yorkshire, or about double the area of Devonshire. The whole island is one mass of rock, in which no part rises to a great height, and is clothed with earth and clothed with wood, chiefly consisting of a species of bastard cedar, very durable, and affording excellent timber, which is exported in great quantities to Chile and Peru. In the island itself it is used for building vessels. The northern and eastern coasts, however, abound with game, and in all the inhabitants there are not a few fine sheep and swine. Some hides are exported, and also nearly 8000 hams annually, of excellent quality. These with about 260,000 planks constitute all the articles that are sent out. Sometimes grain is exported. The soil being of excellent quality, they cultivate it with potatoes in great quantities of potatoes. A good deal of butter is made, but it does not yet form an article of commerce. Fish, as well as oysters and other shell-fish, are very abundant, and in some places in the chief food of the inhabitants. All these islands form together the Chiloe archipelago. They constitute the most southern of the provinces of Chile. This province includes also the small fortress of Maullin. It is situated on the mainland near the western entrance of the strait of Chacao, and is the most southern European settlement in America. The province of Chiloe contained in 1852 a population of 43,362, and 31 schools, in which 1271 boys received instruction. It formed a small town with about 200 inhabitants, and Castro, which is somewhat larger. The Gulf of Ancud contains a great number of smaller islands, of which about thirty-two are inhabited. The most remarkable are Quinchau, Lemuy, Calbuco, and Llancha. On Lemuy very good ponies are made from the wool of the country. All these islands form together the Chiloe archipelago. They constitute the most southern of the provinces of Chile. This province includes also the small fortress of Maullin. 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seventh pair of legs, and those of the female behind the second pair.

The respiratory orifices are situated on the sternal part of each segment of the body; they communicate internally with a pair of sacs which form the whole length of the body, and from which the tracheal branches spring, and spread over the other organs; these sacs are not connected with each other, as is usually the case, by a principal trachea.

Cherities of pores on each side of the body have been mistaken for the stigmata, but their orifices give vent to an acid liquid secretion which has a very disagreeable odour, and probably serves as a means of defence.

The chilognathæ crawl slowly and appear to glide over the earth, in the Republic of Ecuador, mainly at night, if at all roll themselves up spirally. They feed upon decaying animal and vegetable substances, and constitute the genus Julis of Linnaeus. [Julus]

CHROMANAS. [Phytozoraria.]

CHILYPODA, according to Latreille, a family of insects of the order Myriopoda. This family is synonymous with the Synnygathæ, Leach, and the genus Scopolendra of Linnaeus. The characters are—antennæ thick at the base, and gradually growing slender towards the apex, composed of fourteen or more joints; the mouth consists of two mandibles, which are furnished with a pilaform process, and provided with the apex with numerous little denticleations; consisting of four joints, an upper lip and an under lip; the latter is composed of four parts. In forty years it has become evident that the largest parts are the largest, and transversely jointed: above this part (viewing the head from beneath) are two palpi, which resemble legs in being terminated by a pointed claw: covering the elytra, there is a second lip, an organ furnished with two lateral processes, each of which is terminated by a large bent claw, which is said to be perforated beneath by a hole through which a poisonous liquid is ejected. The body is depressed, composed of numerous segments, which are covered above and beneath with plates of a horny substance, and each segment is generally furnished with a pair of legs; the last pair are thrown back. The sexual organs are placed at the posterior extremity of the body. The organs of respiration consist wholly or partly of tubular tracheæ. The stigmata are placed on the sides of the body.

These insects are carnivorous, and crawl about by night. Most of them are very active in their movements, and some emit a phosphoric light. They conceal themselves under stones and fallen trees, and are all found in rotten wood. Hot climates some of the species grow to an immense size (especially those of the genus Scopolendra, as it is now restricted), and in the case of the former, it is said that the huge size is due to a very hot, are much dreaded by the inhabitants of those parts.

The animals commonly known by the name of centipedes belong to this family. [Scopolendra.]

CHILTERN HUNDREDs. A portion of the high land of England, between the Thames and the Ouse; one of the Chiltern hills.· Formerly these hills abounded in timber, especially beech, and afforded shelter to numerous banditti. To put these down, and to protect the inhabitants of the neighboring parts from their depredations, an officer was appointed under the crown, called the steward of the Chiltern Hundreds; (Geography of Great Britain, by the Society for the Diffusion of Useful Knowledge.) The duties have long since ceased, but the nominal office is retained to serve a patriotic purpose. A member of the House of Commons, not in any respect disqualified, cannot resign his seat. A member therefore who wishes to resign, accomplishes his object by accepting the stewardship of the Chiltern Hundreds, which is held to be a place of honour and profit under the crown vacates the seat. This nominal place is in the gift of the chancellor of the exchequer.

CHIMEERA, a genus of cartilaginous fishes allied to the sturgeon and shark sections. [Squalonideæ.]

CHIMBALANO. The wild Goeldi's monkey, Pyrola umbellata of Linnæus, Corcythis Wintergreen, a small evergreen woody plant, common in the pine-forests of the north of Europe, also found in Asia, and in North America, to the Indian inhabitants of which its virtues have been long known. The leaves possess diuretic properties possessed to a tonic power, and they impart strength and comfort to the stomach while they increase the action of the kidneys. Applied externally, they cause redness and vesication of the skin. Chemical analysis shows them to consist of tannin, resin, and an acid extractive. The taste is at first sweet, afterwards bitter. Their tonic and diuretic properties render them valuable remedial agents in dropsies, especially such as follow acute diseases. They have also been given advantageously in intermittent, and even typhus, fever. Dr. Chapman ascribes a curative power to them. In fusion, decoction, and extract are the forms in which they have been given: decoction is preferable, of which some ounces may be given repeatedly during the day. (See Treatise of Medicinal Plants, Society, vol. v.)

CHIMAY. [Hainault.]

CHIMBORAZO, a mountain mass, forming one of the highest summits of the Andes. It is situated between 1st and 2nd S. lat. and between 79° and 80° W. long., in the province of Chuquisaca at an elevation of 21,750 feet above the level of the sea. The snow-line in the neighbourhood of the equator being about 15,750 feet, the summit of the mountain is 5850 feet, or more than one-fourth of its height elevated above it. Since the visit of the French mathematicians to Peru to measure a degree of the meridian, Chimborazo has been considered the highest summit in America, and generally on the globe. But towards the close of the last century it was ascertained that some of the summits of the Himalayas mountains rose to a greater height; and within the last twenty years it was proved that some of the Andes does not lie near the equator, but between 14° and 17° S. lat., where at least four summits rise higher than Chimborazo: the highest of them, the Nevado de Sorato, rises 22,250 feet above the level of the sea. The snow-line is 18,000 feet higher than Chimborazo. (Humboldt; Pentland, in London Geographical Journal, vol. v.)

CHIMCES, a set of bells tuned to the modern musical scale, and struck by hammers acted upon by a pinched cylinder or barrel, which revolves by means of a goad. The term is also applied to the music, the tune, produced by mechanical means from the bells of a steeple, tower, or common clock.

Chimes differ from Carillons (as the last word is commonly understood in England), inasmuch as the bells of the former are acted on by clock-work, those of the latter by keys struck by the hand. But the French apply the term carillon to the tune played, and, generally, to the series of bells, whether sounded by machinery or by hand; though the most accurate writers distinguish the latter kind as le carillon à clavier. The carillons à clavier comprise three octaves of bells, sounded by means of keys, similar to the keys of an organ. In the carillons à clavier, the hands clench and sideways, the little fingers being guarded by a thick covering of leather. These key-carillons are found in many towns of Holland and the Netherlands. At Ghent they are remarkable; but the best specimen is at Utrecht, where the instrument (an instrument in that city) used to display an extraordinary command of the instrument, on which he executed pieces in three parts—the base by means of pedals—w ith a rapidity rarely exceeded by judicious performers on the organ.

CHINEM. [House.]

CHINEM-SWEEPER, a person whose trade it is to cleanse foul chimney-sweeps from soot. The actual sweepers are boys, formerly of very tender age, who are taught to climb up the flues, and thus to reach the soot by being taught to climb up the flues by their masters, have, for the last half century, become objects of particular care with the legislature. The first and chief act by which regulations concerning them were enforced was the 28th Geo. III, c. 42, which was followed by the Act 4 & 5 Will. IV., for the better regulation of Chimney-sweepers and their Apprentices, and for the safer Construction of Chimneys and Flues, passed 25th July, 1834. From that date no child who is under ten years of age is allowed to serve as a chimney-sweeper. The law is so tender with regard to these generally friendless children, that it has appointed a particular form of indenture for them. About the beginning of the present century, a number of public-spirited individuals had begun offering considerable premiums to any one who would invent a method of cleansing chimneys by mechanical means, so as to supersede the necessity of climbing-boys. Various inventions were in consequence produced, of which the most successful was that by Mr. George Stuart. The principal
parts of the machine are a brush, some hollow tubes which fasten into each other by means of brass sockets, and a cord for connecting the whole together. The unskilful use of it is, however, dangerous to the neighbouring plants, as the opposite pale-green, sharp-pointed, rather rough leaves, of an ovate-lanceolate figure. About the end of November these fall from the bushes, and are succeeded by the flowers, which appear at Christmas-time upon the whitish, roundish, calyx-like, formed of a considerable number of roundish scale-like sepals, the outermost of which are pale brown, the innermost semi-transparent, with some tinge of yellow. The petals are yellowish ovate leaves, standing with chestnut red veins, and surrounding a small number of stamens. The fruit is a bright brown leathery calyx-tube, enclosing three or four oblong bright-brown polished nuts. There is probably no plant more deliciously fragrant than this, the orange and violet not excepted. This is protected by a wall of petals by palings. Three varieties are known in the gardens; the common kind with small pale-yellow flowers; the grandiflora with large bright-yellow flowers; and another with downy orange leaves of the former kind, though much smaller. The last is not worth cultivating; both the former should be found in every garden, however small; nothing can be more elegant as room ornaments than handful of their round plates placed on little porcelain trays.

CHIMPANZEE, the name by which one of those forms which approach nearest to man is most generally known. The term has been applied to the Simia Satyrus of Linnaeus, the orang or orang-outang, which agreed in its proper application to the Black or African Orang or Pygmy. (Troglothytes niger of Geoffroy, Simia Troglothytes of Blumenbach.) Linnaeus placed the form under the genus Homo, with the specific name Troglothytes, next to Homo Sapiente, arranging, as we have seen above, the Asiatic orang under the Simia; but he seems to have confounded the two species of orangs, which differ very considerably; for he refers to the figure given by Bonnianus which was intended for the Asiatic, and yet he gives, quoting Piny, the borders of Ethiopia as its habitat, as well as Java, Ambonaya, Ternate, and Mount Ophir in Malacca. That the Chimpanzee, though much of its organization bears a striking resemblance to that of man, is separated from his own family is, from the relative development, the complete skeleton, and in derm anathomists sufficiently proved. Tyson, Camper, Blumenbach, Cooper, Lawrence, and Owen, have set forth at rest, though Bory de St. Vincent struggled hard to maintain and the oranges as members of the same zoological family. Before we refer to the arguments of the last-named zoologist, it will be necessary to apprise the reader that, to say nothing of the difference in other parts of the body and foot, the heel-bone (calcis) of man does not project backwards so far in proportion as that of the Chimpanzee, and Lawrence notes this as an inadmissible human characteristic; 'ex calcis hominem.' Bory de St. Vincent, and those who support the theory of gradual development, however, contend to the contrary. They show that the position of the great toe, upon which its conversion into an opposable organ, or thumb, and the consequent transmutation of the foot into a hand, principally depends, is a character subject to the same variations as are the same between the orangs and man, points the whole strength of his argument against its value as a zoological character; and by this process of reasoning, endeavouring to support his views by giving an index where much under certain circumstances, obtains a prehensile power of foot. Calling in aid the Remains of the land of Aquitaine, he holds them as having acquired a power of oppos-
proportional breadth of the scapula, and the more lateral aspect of the glenoid cavity. 16. In the less proportional breadth and greater length of the sacrum. 17. In the less proportional breadth of the ilium, and greater expansion of theischium. 18. In the comparative shortness of the upper extremities, more especially of the forearm and hand. 19. In the non-division of the pisiform bone of the wrist. 20. In the greater proportional length of the femur and tibia, and the less proportional length of the foot. 21. In the presence of a ligamentum teres, and consequent depression in the head of the femur. 22. In the greater proportional size of the tarso as compared with the phalanges of the toes. 23. In having constantly two phalanges in the halluc or great toe with a nail, while the ungual phalanges and nail are often wanting in the halluc of the orang, especially in that of the female.

The Chimpanzee approximates more nearly to the human structure in those deviations which are numbered 4, 5, 6, 7, 8, 9, 10, 12, 13, 17, 18, 19, 20, 21, 22, 23.

The Orang has a nearer resemblance to Man: 1. In the junction of the sphenoid with the parietal bones. 2. In having 12 pairs of ribs. 3. In the form of the scapula, especially in its greater breadth.

Mr. Owen well observes, that it is a result of the preceding comparison, that the Chimpanzees ought to rank above the Orang in a descending series, and not below it as in the Régne Animal of Cuvier. Linnaeus, as we have seen, gave the Chimpanzee that superiority of rank, but cried as much on the other side by placing it under the genus Homo, for both the Chimpanzee and Orang, according to Owen, differ in structure from the human subject.

1. In the diastema, or interval between the cuspidate and incisors in the upper jaw, and between the cuspidate and bicuspides of the lower jaw. 2. In the greater magnitude of the intermaxillary bones, indicated in the adult by the distance of the foramina incisivi from the incisive teeth, both of which differences result from the greater proportional development and different forms of the cuspidate and incisors. These, as the author observes, are differences of generic value. 3. In the more backward position and oblique plane of the occipital foramen. 4. In the smaller proportional size of the occipital condyles. 5. In the larger proportional size of the petrous bones. 6. In the greater proportional development of the jaws. 7. In the flatness of the nasal bone, which is rarely divided in the mesial line, while in Man the nasal bones are as rarely consolidated into one. 8. In the presence of the anguilliform process of the temporal bone, and the absence of the mastoid and styloid processes. 9. In the absence of the process of the ethmoid, called crista galli. 10. In the shortness and comparative weakness of the lumbar region of the spinal column, which is also composed of four instead of five vertebrae. 11. In the narrowness and proportional length of the sacrum. 12. In the flatness of the ilia, and the larger development and outward curvature of the ischia. 13. In the position of the pelvis in relation to the spine. 14. In the larger proportional development of the chest. 15. In the greater length of the upper extremities. 16. In the wider interval between the ulna and radius. 17. In the shortness and weakness of the thumb, and narrowness of the hand in relation to its length. 18. In the shortness of the lower extremities. 19. In the greater proportional length and narrowness of the foot. 20. In the small size of the os calcis. 21. In the shortness and opposable condition of the halluc.

'These differences,' adds Mr. Owen, 'result from original formation, and are not liable to be weakened in any material degree, either on the one hand by a degradation of the human species, or, on the other hand, by the highest cultivation of which the anthropoid apes are susceptible.'
The following summation is much better than anything we could present to the reader, that we give it in Mr. Owen’s words.

“Certain modifications in the form of the human pelvis have been observed to accompany the different forms of the cranium which characterize the different races of mankind; but there is nothing in the form of the pelvis of the Australian or Negro which tends to diminish the wide hiatus that separates the bimanous from the quadrumanous type of structure in regard to this part of the skeleton. Observation has not yet shown that the pelvis of the orang, in the state of captivity, undergoes any change approximating it towards the peculiar form which the same part presents in the human subject. The idea that the iliac bones would become expanded and curved forwards, from the pressure of the superincumbent viscera, conflict on hand with attempts at progression upon the lower extremities, is merely speculative. Those features of the cranium of the orang which stamp the character of the irrational brute most strongly upon their frame, are, however, of a kind, and the result of a law originally impressed upon the species, which cannot be supposed to be modified under any circumstances, or during any lapse of time; for what external influence operating upon and around the animal can possibly modify in its offspring the forms, or alter the size of the developing germ of the permanent teeth? They exist before the animal is born; and let him improve his thinking faculties as he may, they must, in obedience to an irresistible law, pass through the phases of their development, and induce those remarkable changes in the maxillary portion of the skull which give to the adult orang a more bestial form and expression of head than many of the inferior simiae present. It is true that in the human subject the cranium varies in its relative proportions to the face in different tribes, according to the degree of civilization and cerebral development which they attain; and that in the more debased Aethiopian varieties, and Papuans, the skull makes some approximation to the quadrumanous proportions; but in these cases, as well as when the cranium is distorted by artificial means or by congenital malformation, it is always accompanied by a form of the jaws, and by a disposition and proportions of the teeth, which afford unfailing and impassable generic distinctions between Man and the Ape. To place this proposition in the most unexceptionable light, I have selected the cranium of a human idiot, in whom nature may be said to have performed for us the experiment of arresting the development of the brain almost exactly at the size which it attains in the Chimpanzee, and where the intellectual faculties were scarcely more developed; yet no anatomist would hesitate in at once referring this cranium to the human species. A detailed comparison with the cranium of the Chimpanzee or orang shows that all those characters are retained in the idiot’s skull which constitute the differential features of the human structure. The cranial cavity extends downwards below the level of the glenoid articulatory surfaces. The nasal bones are two in number, and prominent. The jaws and teeth exhibit the bimanous characters as strongly as in the most elevated of the human race. The cuspidals do not project beyond the contiguous teeth, and consequently there are no interruptions in the dental series, as in the orangs, where they are required to lodge the disproportionate crowns of the canine teeth.”

M. Geoffrey St. Hilaire characterized the subgenus Troglohyoides from immature Chimpanzees; and as Mr. Owen’s observations were made upon the cranium of an adult individual, he has consequently altered the zoological characters given by Geoffrey, we follow Mr. Owen’s definition.

Subgenus Troglohyoides.

Dental formula, the same as in the human subject; viz.,

\[
\text{incisors } 4 \quad \text{canines } 2 \quad \text{bicuspids } 4 \quad \text{molars } 6. \\
\text{(N.B. The teeth approximate in their proportionate size much more nearly than those of the orang to the human teeth; but they manifest in their relative position the absence of a fourth character, which, with one anomalous exception—that of the fossil genus anomolotherium—is peculiar, among mammals, to man; viz., unbroken proximity.)}
\]

Muzzle long, truncated anteriorly; strong supraorbital ridges, behind which the forehead recedes directly backwards; no cranial ridges.

Facial angle 35°, excluding the supraorbital ridges.
Armed, large. Thirteen pairs of ribs; bones of the sternum in a single row. Arms reaching below the knee-joint.

Feet wide; halluc extending to the second joint of the adjacent digit.

Canales large, overlapping each other; the apices lodged in intervals of the opposite teeth.

Intermaxillary bones anched to the maxillaries during the first or deciduous dentition.

Upper premolars of the Gambia come either in the type of a species, or in others, as in the specimens from Gaboon. The mineralogist in the Egyptian Hall, Piccadilly, in 1823, was first obtained by a trading vessel on the river Gambia, and that exhibited at the garden of the Zoological Society was brought from the island of Gorée. The Guinea and Congo are its localities. The subject of Mr. Owen's paper was shot by a European at Sierra Leone.

Habit. The habits of the Chimpanzee in a state of nature are but imperfectly known. It is stated that the Chimpanzees live in troops, construct themselves huts of leaves, arm themselves with sticks and stones, and employ these weapons to drive man and the elephant from their dwellings. He also repeats the story of their pursuit of the negroes and carrying them off into the woods. This report is, as we shall presently see, still credited in the country where they are found. Speaking of Captain Payne, Dr. Traill, in his interesting paper in the Wernerian Transactions, says, 'The natives of Gaboon informed him that this species attains the height of five or six feet; that it is a formidable antagonist to the elephant; and that several of them will not scruple to attack the lion and other beasts of prey, with clubs and stones. It is dangerous for solitary individuals to travel by night in the wood, and instances were related to Captain Payne of negro girls being carried off by this animal, who have sometimes escaped to human society after having been for years in captivity in a frightful state. The reports confirm the narrations of the early voyagers, who have often been suspected of exaggeration, and similar facts have been recently stated, very circumstantially, by gentlemen who have lived in western Africa.'

In a state of captivity its manners have been the theme of many a tale, and much admiration; and as most of the individuals described have died very young, conjecture has been busy as to the progress the animal might make if its education were continued to the adult period. Mr. Owen says Mr. Owen in his paper above referred to, 'in favour of the anthropomorphous character of the orangs have been derived from observation of the living habits of young orangs; but these cannot be regarded as affording a type of the nature of the adults, since it is well known that the docility and gentle manners of the young ape rapidly give way to an unteachable obstinacy and untameable ferocity in the adult; at least of those species to which, as I shall shortly show, the nearest resemblance in the form of the head.'

Captain Payne thus describes the manners of the animal which formed the subject of Dr. Traill's paper. 'When our animal came on board,' says Captain Payne, 'it shook hands with us, but refused to approach, and expressed a strong feeling of anger, to others, without any apparent cause. It speedily however became familiar with the crew, except one boy, to whom it never was reconciled. When the seaman's mess was brought on deck it was a constant attendant. It would go round and embrace each person, while it uttered loud yells, and then seat itself among them to share the repast.' It sometimes expressed its anger by a barking noise like a dog; at others it would cry like a foward mule, and scratch itself in a manner to induce a feeling of anger, to others, without any apparent cause. It speedily however became familiar with the crew, except one boy, to whom it never was reconciled. When the seaman's mess was brought on deck it was a constant attendant. It would go round and embrace each person, while it uttered loud yells, and then seat itself among them to share the repast.'

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Dutch naval service stationed at Surman. This gentleman found him exactly similar to one which he had brought from Gunung Serai in size, but as he was a half high, and very strong and powerful. Mr. May had seen him take up his master, a stout man, by the middle, and fling him from him for a pace or two; and one day he was taken up by the same man, who reappeared for a tree to which he was chained, and, if his master had not been present, he would actually have carried the man into the tree. It is further stated that the age of this animal, when Mr. May saw it, was about twenty-one years. In the evening it was said to have been killed, but it was seen to stand at a considerable height during the interval. The mother of that exhibited in the menagerie of the Zoological Society was reported to have stood four feet six inches in height: but Mr. Owen says that the skin of the specimen, when put on the adult chimpanzee skeleton, from the vertebra to the base of the os calcis, and four feet as the height of the adult at the end of his subgeneric character.

CHINA is an extensive country in Eastern Asia, constituting the principal portion of the Chinese empire. It is situated on the borders of the Pacific, and extends from 20° N. lat., or, if the island of Hainan is included, from 18° to 41° N. lat., and if the tract of land projecting on the south-eastern coast be included, to 46° N. lat. Its eastern extremity, where it borders on Corea, is by 124° E. long., and its western, where it borders on the Birman empire, by 98° E. long.; but if the projecting tract be added, it reaches to 119° E. long. Its greatest length, from the north-east to the south-west, is 2,994,000 square miles, a computation which does not differ much from that of Sir George Staunton, who assigns to it 1,297,999 square miles, or an area more than eleven times as large as that of the British island of Great Britain. The north-western projecting tract is not included in both calculations.

China is surrounded by countries dependent upon it, except at its south-western and southern side, where it borders on the Birman empire, the kingdom of Siam, and that of Cochin China, of which the last only seems to be nominally dependent on China. On the west of it extend Tibet and the country of Kho-ko-nor, or Ching-Hai. The projecting tract is mostly surrounded by Eastern Turkistan, lately called Grand Tartaria, and by Mongolia. Mongolia occupies the greatest part of its northern boundary except in the extreme east, where it is bounded by Manchuria or Ching-King and by Corea. Its eastern side is washed by the Pacific, which forms a deep gulf between China and Corea, called the Hoang-Hai or Yellow Sea; it assumes the name of Tung-Hai or Eastern Sea, between Corea and the island of Formosa, and that of Nan-Hay or Southern Sea, between Formosa and Hainan.

Its coast being about 2440 miles, there is only one mile of coast for every 532 square miles. Where China borders on Corea its coast is high and bold, and full of rocky islets. This coast continues on both sides of the Peninsula of Leoa-tung, or about 240 miles. It is followed by a sandy coast, which in most places is so low that it cannot be seen at a short distance from the shore: this coast extends from the innermost corner of the bay of Leoa-tung for about 360 miles to the neighbourhood of the Straits of Mea-toa, which form the entrance of the bay of Fe-tsche-li. The coast of the Peninsula of Chau-tung is rocky and bold, but not high, except in a few places. It extends from the Straits of Mea-toa to Cape Macartney, and hence to 35° N. lat., about 350 miles. The shores, as far as the Chusan Islands and Cape of 30° N. lat., are low and sandy, indeed in many places very swampy, and extend from 420 to 450 miles. From the Chusan Islands to the bay of Canton the coast is rocky, bold, and high, except in the recesses of the numerous bays and harbours. At some places it rises to a considerable height.
ton to the peninsula of Lu-chou, about 120 miles, the coast is again rocky and bold, but it does not appear to be high. The shores of the peninsula itself are about 100 miles long, sandy, flat, and low; the remainder of the coast of China, which is washed by the Gulf of Tonkin (about 100 miles), is more diversified, but is not high.

A considerable portion of China is covered with mountains. Its western boundary extends to the chains which constitute the eastern edge of the high table-land of Eastern Asia (Asia and Bayan Kanra); but only the most eastern of these chains rises to the height of a mountain. It may be considered as beginning in the most southern bend of the Yang-tse-kiang, between 101° and 103° E. long., and as extending hence in a N.W.E. direction, and terminating in the north at the town of Kien-tse in the Hoang-ho basin between 111° and 111° E. long. This mountain-range, which is called Siue-lung (Snow-range), or Yung-lung, contains a considerable number of snow-capped summits. The snowy mountains are numerous between 30° and 36° N. lat., and more especially between 32° and 34°. But even south of the great southern bend of the Yang-tse-kiang, and at a short distance from its banks, are some snow-covered summits, whence Ritter rightly concludes, that the river breaks through the southern portion of the range. The four mountain-chains which traverse China from west to east, may be considered as offsets of this range. South of the snowy mountains, which are situated on the south of the great bend of the Yang-tse-kiang, is the hilly table-land of Yung-nan-ho-kiang, and its elevation above the sea, if we may judge from its temperature in summer. From the eastern edge of this table-land two mountain-ranges branch off, the Yü-lung and the Nan-lung. The Yü-lung, which is northern of the Nan-lung, branches off from the table-land in 24° N. lat. and 102° E. long., and runs nearly east to the neighbourhood of the bay of Canton, dividing the river Ta-Si-kiang from the Hoang-ho. It does not seem to approach the shores of the sea in any point, nor to rise to a great elevation. The Nan-lung (or southern range), which constitutes the most extensive mountain-system in China, branches off from the northern edge of the table-land of Yunnan, where the snowy mountains are situated (36° N. lat. and 103° E. long.), and runs eastwards, passing about 150 miles to the north of Canton as far as 116° E. long.; it then inclines to the north-east, in which direction it continues with a slight bend to the west to its termination on the sea near the harbour of Ning-p'o, opposite the islands of Chusan. Several summits of this range rise above the snow-line, west of 110° E. long., where also it extends to a great width. An aboriginal nation, the Miao-tze, have maintained their independence in its fastnesses. A lateral range, which separates the Yang-tse-kiang from its tributary the Yung-nan, and extends to the centre of China, is also said to contain some summits which rise above the snow-line. East of 110° no snow-capped mountains occur, though some rise to a great elevation; but even here the range does not keep its steep rugged character. Its continuation branches running towards the Formosa Strait and the Tung-Hai, are also steep and craggy, but those extending northward are of inconsiderable elevation. Three mountain-passes are known to traverse the Nan-lung. The most frequented is to the north of Canton, where the range is called Mei-lung (the chain of the wild plum-trees, according to Klaperoth), and hence the pass is called Mei-lung pass. By this pass goods are transported from the south of the Tappan-lung to the south of the Yang-tsekiang; many of the vessels, which are brought in boats on the river Pe-kang to the town of Nan-yong-foo. Between this town and that of Nan-gan-foo is the pass where goods are carried on the backs of men, for about 24 miles over rocky mountains. This is the only place, between Canton and Peking, where no water communication exists; for at Nan-gan-foo the goods are again shipped and descend the Kan-kiang and afterwards the Yang-tse-kiang till they come to the great canal. The elevation of the Mei-lung mountain-pass is 3,500 feet. The summit of the mountain is 4,000 feet. The second pass which is known occurs near 28° N. lat. and 118° E. long., between Kien-nong-foo on the east and Kian-tchung-foo on the west of the range, and though the mountains are very steep and rugged, the summit of the sides are occasionally employed for the transport of goods. The third road, which is a little farther north, connects the town of Kien-tin-foo with the town of Kin-tcheou-foo, which lies on the west of the range. Though difficult to pass it is much used.

The two other mountain-ranges, the Tapa-lung and the Pe-lung, are immediately connected with the Yung-foo, the Tapa-lung branching off south of 33° N. lat. and Pe-lung about 35°. The Tapa-lung runs south of east nearly in a straight line, and terminates near 112° E. long. north-east of the town of Kien-tse in the Hoang-ho. It drains the valley of the Hanka from that of the Yang-tse-kiang, and rises to a great height; several of its summits exceed the snow-line, and so, for instance, the Kianku Shan, with which it terminates. The Pe-lung, which runs nearly parallel to the Tapa-lung, separates the valley of the Hanka from that of the Hoang-ho, and is an affluent of the Hoang-ho, and consequently the two great river-systems of China from one another. It terminates in its eastern direction to 113° E. long., and so the portion of the range is high, rugged, and steep. At 113° it declines to the sea, diminishing in elevation and ruggedness. Having attained 32° N. lat. it turns again to the east, and soon subsides into a chain of hills, which terminates on the western shores of the lake Tsino-foo, a considerable distance east of Nankin. The western part this range contains several snowy mountains, though fewer than the Tapa-lung. The obstacles opposed by these two chains to the communication between the provinces which they traverse have been overcome by an artificial road, much more extensive than those which traverse the Alp. Beginning at the ancient capital of Siniang-foo on the banks of the Hoai-ho it runs in the valley of that river west past Fong-tsiang-foo to a place named Tchac-ho-nan. This is followed by a country, which is conducted over deep cliffs by long bridges, and is often deep cut through high mountains. It then descends from the Pe-lung to the valley of the Hanka, which it crosses about 30 miles west of the town of Hwang-chung. It then turns south, and by Tapan-foo, it terminates on one of the branches of the Kiang-kiang at Tchao-foo, north of Khan-techou-foo. This artificial mountain-road is said to be 420 li or nearly 150 miles long. Its continuation through a less mountainous part of the country, traverses the town of Pos-foo-king-foo, and terminates at the ancient capital of Tching-tu-foo.

These ranges traverse that part of China which lies south of the Hoang-ho. But even the western, and greater part of the countries north of them are almost entirely covered with high and rugged mountains. These mountains belong partly to the northern portion of the Yung-foo, which joins the Hoang-ho at its great bend, and partly are ramifications of the Inhah, a range which surrounds the bend of the river on the west and north, and whose effects enter China between that bend and the town of Peking in several ridges.

The whole surface of China may be divided into the mountainous country, the hilly country, and the great plain. The mountainous country comprehends more than half of the whole, and the meridian of 112° may be considered its eastern boundary, but to the north of the Hoang-ho it extends as in many other countries, its sides being occasionally traversed by mountains and valleys. The mountains are commonly too steep and rugged to admit much cultivation, but a great part of them is covered with high trees. Towards the north they are mostly bare, and the considerable beds of coal. The valleys are often narrow, but being watered by numerous streams, their fertile soil maintains a numerous population. This general description, however, applies properly, in all its extent, only to the districts north of the Yung-foo. The mountainous country traverses a great part of the country, between these two ranges the mountains are less steep, and their sides are commonly cultivated to a considerable height. The valleys, too, are much wider, and the level land sometimes extends to plains of considerable width, as, for instance, the plains of Tching-tu-foo, which is perhaps 20 miles in every direction.

Among the mountainous districts must be included the tract of land which lies between the Nan-lung and the sea, and with the interior of the mountains of the north part of the range, it rather resembles the countries between the Nan-lung and Tapa-lung than those farther north, its valleys being generally wide, and sometimes expanding into plains, as, for instance, the plain of Canton. The hills, too, are also fit for cultivation. If this tract is added to the other mountainous country, it may be said, that rather more than two-thirds of the surface of China are of this character.

The hilly country lies to the east of 112° E. long., and
between this meridian and the eastern part of the Nen-ling, and extends north to the banks of the Yang-tse-kiang. The northern slopes in most places have a gentle ascent; and, as they do not attain a great elevation, their sides are cultivated, and planted with rice on the terrace system. Their tops are covered with forest trees, generally of the pine kind, which are cut down and planted. To the north of the present cultivated level are some hills narrowed into valleys, in other places they expand into plains. They have generally abundance of water in their rivers, and there are some lakes, of which the largest are the Tung-ting near the confluence of the Tsing-ho with the Yang-tse-kiang, and the Po-yang, not far from the mouth of the Kan-kiang. The greatest portion of the surface is in a very high state of cultivation.

The great plain occupies the north-eastern part of China. It extends 2000 miles from the Great Wall, north of Peking, to the confluence of the rivers Yang-tse-kiang and Kan-kiang (30° N. lat.). The Yang-tse-kiang may be considered as its southern boundary, as far down as Nanking, whence to the sea it is formed by a line drawn from Nanking to the sea, through Hang-chou-foo. The western boundary-line may be marked by a line drawn from King-tcheou-foo, a town situated on the Yang-tse-kiang, to Hsiing-king-foo, on the Hoang-ho, and hence to the Great Wall, about 200 miles north of Peking. The breadth of the plain is various. North of 35° N. lat., where it partly extends to the shores of the Hoang-hai, and partly borders on the western side of the mountain range of Chang-tung, which occupies the peninsula of that name, its width varies between 100 and 200 miles. If we assume that the width is breadth to 500 miles, this portion of the plain covers an area of 70,000 square miles. Between 35° and 34° N. lat. the plain enlarges, and in the parallel of the Hoang-ho it extends more than 300 miles east and west. It grows still wider to the south, and reaches nearly 500 miles inland in the parallel of the embouchure of the Yang-tse-kiang. If we suppose the mean breadth of this portion of the plain to be 400 miles, it occupies a surface of 140,000 square miles. This number is not very greatly exceeded, and may be compared in many respects.

The northern part of the plain has a dry sandy soil, impregnated in many parts with saline matter, and destitute of trees, but it produces millet and wheat in abundance. South of 33° N. lat. the whole tract along the coast is very low and swampy, being partly covered with numerous lakes and lagoons, and intersected by numerous water-courses, both arched and natural. It produces rice, cotton, hemp, and other products. Farther inland the soil is more firm and dry, and of great fertility, which is increased by the abundance of water drawn from the rivers and small lakes. It produces rice, cotton, wheat, and tobacco. The southern districts bordering on the Yang-tse-kiang differ in some respects from the other in not being a flat level, but having a surface slightly undulating, on which even a range of hills rises, as the eastern prolongation of the Pe-ling. It is not, however, less fertile than the other districts. Among its most valuable branches of agriculture is tea, which is extensively cultivated on those low hills (between 30° and 32° N. lat.).

The eastern portion of this plain is traversed by the Great or Imperial Canal, which begins on the south at the town of Hang-tcheou-foo (30° N. lat.), and extends to the town of Lin-tchin-foo, where it falls into the river Eu-foo or Wei-foo. Its length considerably exceeds 500 miles in a straight line, whereas it may be 1500. Some portions of it have been made merely for the purpose of internal navigation, but in others the design of draining and irrigating the adjacent country has been connected with it; hence it differs widely from all the canals made in Europe. Its breadth is considerably greater, and town waters are in few places altogether without a current. At a few points it is cut through rocks; it often traverses lakes and swamps of considerable extent, running on an artificial elevated bed. It is also ruled along the surface of the country, its flow-gates, bridges, and locks. By means of navigable water from the flat of the Mei-kiang Tong-tcheou-foo, a few miles distant from Peking. That portion of the canal which lies south of the Hon-ho was made in the seventh century, or soon after; but the portion north of it was made under Kublai Khan and his successors, when the Tartar dynasty had removed the imperial residence from Nanking to Peking.

The fertility of its soil and the advantages resulting from the internal navigation afforded by the Great Canal and its numerous branches, have rendered this plain the most populous spot on the earth. According to the census of 1813, the provinces which it comprises contained a population of 177,926,000, including the provinces of Honan 25, Honan 23, An-hoa, or Ngnan-hoi, 34, Kiang-su 37, and Che-kiang 26. Here then, as Ritter observes, lives a population more than two-thirds of the whole population of Europe. To protect this rich plain the Great Wall was constructed, which rises meanly from all provinces and extends over mountains and rivers for about 1400 miles. This great work was constructed rather more than 2000 years since, or about 200 years before the Christian era, by the first universal monarch of China, as a defense against the nomadic tribes of Tartars, who have never ceased to infest the country to the south, as long as it has been subject to a separate dominion. The main substance of the wall is earthen or masonry, retained on each side by a ditch or fosse, and defended at each interval of one mile by a watch house. It is strengthened at the base by a wall of square tiles. It bounds the whole north of China, extending along the frontiers of three provinces, a distance of nearly 19° of longitude. From its eastern extremity there is an extensive stockade of wooden piles, enclosing the country in a sort of a cordon. The wall has been erroneously represented as a continuation of the solid barrier. The total height of the wall, as observed by an engineer officer in Lord Macartney's embassy, is 20 feet. on a base of stone projecting 2 feet under the brickwork, and about the same in height. The thickness of the entire wall at the base is 25 feet, diminishing to 23 at the platform. The towers are 40 feet square at the base, diminishing to 30 at the top, and about 37 feet in height. The thickness of the wall is proportionate to its height, and it is the conclusion that it was not intended to resist cannon; and it appears certain that the use of fire-arms is comparatively modern in China, however antient the invention of gunpowder.

Numerous rivers drain and water China, but by far the greater number flow into the Hoang-ho and Yang-tse-kiang, which are among the greatest rivers of the globe. Among the rivers which do not belong to the systems of those two great rivers are the Pei-ho and the Ta-si-kiang. The Pei-ho or White River rises in the mountains northwest of Peking, near the Great Wall, and flows in a south-eastern direction to the town of Tung-tcheou-foo, a few miles east of Peking, where it becomes a river of considerable size, and running in a south-west direction, it unites with the Eu-ho, a much larger river than the Pei-ho itself, which rises near the banks of the Hoang-ho, and running in a north-east direction is connected with the Great Canal at the town of Lin-tchin-foo; the remainder of its course may be considered the continuation of the canal. The tides come up nearly to the place where the Eu-ho meets the Pei-ho, a distance of more than eighty miles. Hence to the sea the Pei-ho runs nearly due east, and at its mouth has a bar which at low tides has only two or three feet water upon it; but at high tides, which here rise five or six feet, the bar does not prevent the flat-bottomed Chinese junks from entering the river. There is perhaps no river in the world which is navigated by so many vessels as the Pei-ho.

The Ta-si-kiang, or the river of Canton, rises east of the town of Yunnan (103° E. long.), and runs the first half of its course in a narrow valley between high mountains, and the other half in plains, fertile, and well cultivated one: towards its mouth it drains a vast district into the South Sea. It receives the Pe-kiang. The general direction of its course is from west to east, and it seems to be navigated to a considerable distance.

Climate.—The climate of the province is peculiar and distinguishing feature of the Chinese is the unusual excess in which heat and cold prevail in some parts of the empire at opposite seasons of the year; as well as the low average of the thermometer in comparison with the latitude. Although Peking is nearly a degree south of the latitude of the former place being 39° 54', of the latter, 46° 50', the mean tempera
The nature of Peking is only 56° of Fahrenheit, while that of Naples is 63°. But as the thermometer at the Chinese capital sinks much lower during the winter than at Naples, so in summer it rises somewhat higher. The rivers are said to be frozen for three or four months together, from December to March; while, during the last embassy in September, 1816, a river of course required to be stored on the ice. As a shade. It is well known that Naples and other countries in the extreme south of Europe are strangers to such a degree of long-continued cold, and are not often visited by such facts. Europe, observe, must be con-

considered altogether as the western part of a great continent, and therefore subject to all the influence which causes the western sides of continents to be warmer than the eastern; and at the same time more temperate, or less subject to extreme heat, than the interior. The mean annual temperature of Canton and Macao, which lie nearly under the tropic, is what commonly prevails in the 50th parallel; and it is surprising to contrast their meteorological averages with those of Calcutta, which stands very nearly in the same latitude. The total fall of rain varies greatly from one year to another; the average annual quantity is about 70 inches, but it has been known to reach 90 inches and upwards. Vegetation is checked in the interior, and the interior continents to be in a state of dryness than by the coldness of the atmosphere; the three winter months being known sometimes to elapse with scarcely a drop of rain. The north-east monsoon, which commences at Canton and in the adjacent seas to the south-west of a country so warmed and enlivened by the climate as the case of Yunnan, to the south-west, the Bengal tiger is said to exist, and the animal is well known to the Chinese; but at Canton, so nearly in the latitude of Calcutta, it is quite a stranger. Lions are almost a fabulous animal to them. The woods of the south abound in a small but fierce description of wild cat, which is fattened in cages for the table. The domestic dog of China is uniformly one variety, about the size of a moderate spaniel, of a pale yellow and black colour, and a coarse bristly hair on the back; sharp upright ears and peaked head, not unlike a fox's, with a tail curled over the rump. Bears are common in the hilly wooded parts of Chany, west of Peking. Of the common ruminant animals, China possesses several varieties of deer, particularly a spotted kind kept by their residences. Gerbillons describes a species of antelope abounding on the borders of Mongol Tartary, but called by the Chinese häng-yang, 'yellow goat.' The sheep of China are the large-tailed kind; and, as the people never use milk, cows are rare and of a peculiarly small kind. The buffalo used in ploughing is also very small, with a skin of slate colour, thinly covered with hairs. Dromedaries are much used as beasts of burden between Peking and the Tien Shan. Properly the difficulties of human labour to supplant every other have prevented their being adopted. Chinese horses are not numerous, and of a poor and stunted breed, being very ill fed and kept. The pheasants and mules are very common, and the mules are generally of a good size, and said to bear a higher price than horses, as being capable of more labour on less food. Of pachydermatous animals, the domestic pig of China is well known in England, and has been freely introduced into our yard. The wild bear may be found in the half-reclaimed countries on the western borders, but not in Central China, nor on the east coast, where tillage and population have reached their present height. The elephant is not at present an inhabitant of China, unless it be in Yunnan, nor is he used for purposes of either peace or war. The one-horned rhinoceros is found in the forests of the extreme west and south. Of rodent animals, the common rat attains to an unusual size, and is well known to be eaten by the lowest orders of the Chinese. Mr. Gray has described a giraffe animal discovered by Mr. Reeves, being closely allied to the bamboo rat of Sumatra, as a new genus, in teeth and general appearance; most nearly allied to a certain species of woodpecker for the overwhelming seas which are so much dreaded by ships encountering the typhoons. In addition to the prognostics already noticed, the storms are preceded by a thick muggy atmosphere, and accompanied with a peculiar dis-

In the winter of 1830, a fall of snow occurred at Canton, two and a half inches in depth.
is called the modulation pleasant, from a beautiful membrane of resplendent feathers which is displayed or contracted according as the animal is affected. China abounds in wild fowl of all kinds, and particularly in immense flocks of geese, observed during the winter around Canton. The elegant and splendid plumage of the mandarin duck, is remarkable for the attachment of the male and female. The fishing corrant, employed on the shallow lakes of the country in capturing fish, is armed with a large sharp point; body whitish beneath, spotted with brown; tail rounded; iris blue, and bill yellow. Among the miscellaneous birds of China may be enumerated quails which are often trained to fight; the common ring-dove, of which great numbers feed among the woods about Canton, and the black crow of the country, marked with white about the neck.

Of reptiles, it is remarkable that the largest kinds of saurians, as the crocodile and alligator, are unknown even as far south as Canton, probably in consequence of the vast population and traffic that exists on the rivers. Great numbers of the small lizard tribes are visible during the hot months, some of them infesting trees and shrubs, while others inhabit holes in rocks or old walls. Several fresh-water tortoises have been lately sent home, and two new genera of batrachians, or the frog kind, are described by Mr. Gray. Notwithstanding its situation under the tropic, Canton is little infested by the venomous kinds of serpents; the most dangerous is a snake, which is a slender black one, between two and three feet in length, called by the Chinese 'the black and white,' from being surrounded from head to tail with alternate rings of those colours.

Of fishes, a large collection of Chinese specimens has been made for the last year at the museum. The golden carp is one of the most distinguished kinds, and has long been bred in Europe from the original specimen which were carried by the Dutch first to Java and thence to Holland. The edible sea fish, the best kinds near Canton, are a sort of rock-cod, and a flat fish called Tsang-yu by the Chinese, and pomfret by Europeans. Soles are good and pleasant, but the fish most valued by native epicures is the sturgeon.

In Chinaman's paradise, the locust commits great ravages occasionally in particular districts, and rewards are given for its destruction. Some of the most poisonous tribes, as scorpions, are not met with at Canton; but the centipede, which the Chinese call by exactly the same name of pê-tso, 'hundred feet,' is common. A monstrous spider has been seen, inhabiting trees, and attaining to a size and strength that enable it to devour small birds entangled in its webs. The valuable and salutary Chilli also has its cactus, a species of Euphorbia, called by the Chinese the balsam, or salafaster, an insect which is supposed to belong to the Coccois tribe, but which has never yet been correctly ascertained.

At the head of Chinese botany may properly be placed the tea-plant. The specimens from the black and green tea countries differ slightly in the leaf, the latter being a thinner leaf, rather lighter in colour, and longer in shape, than the other; though the Chinese themselves acknowledge that either black or green tea may be prepared from any tea-plant. The Camellia bears the same name in China with the tea-shrub, and possesses most of its botanical characters; they in fact constitute two genera very closely allied. The Laurus camphora, one of the most remarkable productions of China as well as Japan, is a fine timber-tree, growing in the southern provinces to the height of fifty feet. From the seeds of the Driedunculodora the Chinese extract a varnish for boats, and for the interior implements of domestic use. The fine Japan yam is so much admired, and so much esteemed in Canton, that a single shrub of the same kind comes from the sands of the rivers in Yin-nan, near the borders of the Burman country, well known for its richness in that metal; in Yin-nan also silver mines are worked. Ordinary copper comes from Yin-nan and Kwei-chow, and an abundance of malachite, or green copper-ore, is obtained near the great lake in Hoo-kwang. The famous pê-tung, or white copper, which takes a polish not unlike silver, comes from Yin-nan: a considerable quantity of quicksilver is obtained in Kuei-ho, and there is a rich mine of tutenamia or zinc in Hoo-pê.

Government.—The government of China is in principle absolute despotism, and the succession depends on the will and nomination of the reigning emperor. The authorities are a father over his family well known to be the emperor and type of political rule in the country. It is the object of the first of the 'Four Books' of Confucius to incline that from the knowledge and government of oneself, succeed the respective economy and government of a state and of a kingdom. The emperor is called the father of the empire; the viceroy of the province over whom presides; and the mandarin, or magistrate, of the country over which he presides, and the absolute ruler of his own household. There is a thing more remarkable, observes Mr. Davis, on it, in Europe, and in its criminal code, than the exact parcel which is studiously kept up between the relationships which every person stands to his own parent, and to —
emperor. For similar offences against both he suffers similar punishments; and at the death of both he mourns the same time, and goes the same period unshaven; and both possess nearly the same power over his person. Thus he is bred up to civil obedience tenero et ob singuli, with but every chance of proving a quiet subject at least. Such institutions lead to other pursuits. The first emperor died without a successor, but if peaceful obedience and universal order be the sole objects in view, they argue on the part of the governors some knowledge of human nature, and an adaptation of the means to the end. The emperor is head of the state religion, and, as high-priest of the empire, can alone, with his immediate representatives, sacrifice in the government temples. No hierarchy is maintained at the public expense, nor any priesthood attached to the Confucian or state religion, but five-pence, without the rice and without the bow and arrow. The principal arms of the cavalry are bows and arrows, the bow being of elastic wood and horn combined, with a string of silk. Their swords are generally ill made, and their matchlocks are considered by them as inferior weapons to the bow and arrow. Some are provided with shields, composed of rattans turned spirally round a centre.

The residence of the emperor and his court for some hundreds of years past has been Peking, a city whose population has been stated at double that of London; but various reasons conduct to render this altogether improbable. Notwithstanding the great extent of the area enclosed within the walls, there are so many open spaces of great extent that it is difficult to estimate the number of the one-storied buildings into consideration, to imagine how such an immense number can exist within its precincts. A large portion of the Northern or Tartarian city is occupied by the empress dowager, containing the residence grounds of the emperor; the remainder is studded over at intervals with official or religious buildings, all of them surrounded by large open courts; and the Chinese city to the south has some very extensive spaces occupied by imperials' establishments. In Peking itself there are, besides, large sheets of water, and gardens devoted to the growth of vegetables for the city. The streets of Canton and of most of the cities are extremely narrow, admitting only three or four foot passengers abreast; but the principal thoroughfares of Peking, connecting its different gates, are fully one hundred feet in width. These are unpaved, probably in consequence of the difficulty and expense of procuring stone in the flat that surrounds the city. In rainy weather the principal ways are said to be in a dreadful state, from the want of proper drains, and in consequence of the perfect level of the ground not allowing the water to run off.

Population.—The population of the empire has naturally been a subject of investigation with those persons who hold the best opportunities of pushing the inquiry with success. A number of natural, social, and political causes no doubt combine to explain the very dense population which the plains of China possesses from nature have been improved to the utmost by its industrious inhabitants: agriculture, the source of food, has been honoured and encouraged beyond every other species of industry. There is no monop-}

of the ceremoniakl habit; together with a collar or neck-
which those families live and are maintained. It is a universal system of clubbing on the most economical plan, and the claims of kindred being universally admitted and enforced, the property of families is made to maintain the greatest number possible. Another political cause is the observation of the Chinese people in the emperor's decision. Besides the statute in the penal code, which punishes this offence according to 'the law against communica-
ting with rebels and enemies,' the abandonment of his native place, and of the tombs of his ancestors, is always abhorred. To be deprived of China, he is capable of causing tending to produce the excessive population of China, must be added the uninterrupted peace which has been en-
joyed by that country since the complete establishment of the Manchow dynasty, a period now considerably exceeding a century.

Under the circumstances above briefly enumerated, there is less difficulty in admitting the extraordinary amount of population which has been given from various authorities, involving, however, statements occasionally so contradictory that it seems not altogether easy to come to any satisfactory result as to the actual number. Groser made the population in 1743 amount to 198 or 200 millions. There is nothing incredible in this, considering that the area of China is one-third that of the United States. But on comparing it with the 333 millions of Lord Macar-
trey's authority, just fifty years afterwards, an increase of considerably more than half within that period seems very large. This was taken at a time before Lord Macartrey's embassy, that emperor issued a proclamation addressed to the whole of his subjects, calling on all ranks and conditions of men to economize the gifts of heaven, and by industry to increase the quantity; for, observed he, 'a country that has no conqueror, he looks forward with deep concern to the future, when the numbers of the people shall have exceeded the means of subsistence. According to this highest authority then, a very great increase had resulted; but when we come to the particulars, they seem to stagger all belief.

The emperor goes on to say, that in the 49th year of Kang-hi, the second sovereign of his family (and under the old system of the poll-tax), the population of the empire was rated at about 23,319,000; and that by the late census, according to returns from all the provinces, it amounted to 307,467,000.

Unless some way can be found of reconciling such an account with bare possibility, it seems unworthy of serious acceptance. But we must remember that a great portion of the country was actually unexplored by independent Chinese rulers. These then for the time must have been derived from a subject of the Manchow dynasty. We again must call to mind that the census so remarkable for its small amount under Kang-hi was with reference to a poll-tax, and to military service, two objects which were of all others the least calculated, during the first half of the 18th century, to produce a correct or full return. The Manchow conquest was, by the combined effects of war and flight, to have reduced the population of China to less than half its amount under the Ming race; but the conquest has since been followed by almost unexampled peace and prosperity during a period considerably exceeding a century. A census, said, on the authority of a Chinese statistical work, to have been taken in 1912, goes beyond the amount given to Lord Macar-
trey's authority, and the population 360,279,897. Our faith in this must of course be determined by the degree of credit to be attached to the Chinese census. The account is said to be made up from the returns received in detail from every village in the empire, in which the houses are provided with seals and stamps. There is no doubt, however, that the total amount of China at 1,200,000 square miles, in round numbers, we should have the latest estimate, 300 inhabitants on a square mile, much more than England or Holland possess. Revenue.—The government is supported principally by a land-tax, and the monopoly of salt, to which are to be added something for customs and transit-duty. At the Manchow conquest a capitation or poll-tax was imposed, but this was soon taken off again; and the second emperor of the dynasty ordained that the land-tax, which under the Chinese had been taken from the cultivators, should ever after be taken from the land-owners. The subject of the Chinese revenues seems never before to have been very clearly understood. For the provinces, the treasurer of that province deducts the civil and military expenses, and all outlays, whether for public works or otherwise, remitting the surplus to Peking either in money or kind. This surplus has been the only point clearly understood. Very few, however, above the expenses, has been taken for the gross amount of the revenue. The difficulty of ascertaining the real expense that attends the administra-
tion of the empire arises from a considerable portion of the provinces being used in commerce and money, as grain, salt, silk, and stores of different sorts. A part of the allowances of public servants, especially at Peking, as well as of the stipends of imperial relatives, is paid in the shape of rations and supplies. Du Halde states the total revenue of the empire, including the provinces, at about 260 millions of taels (or upwards of 60 millions sterling), of which only 12 millions sterling are transmitted to Peking. The accuracy of the latter amount seems pretty nearly con-
formed by what appeared in a Peking gazette of 1683. A slight calculation of the annual revenue of the Tartar-Chinese empire, not including the poll tax, amounts to 263 millions of taels. The Peking do not exceed 40 millions of taels, which is 12 or 13 millions sterling; again, it appears from a statement trans-
lated by Dr. Morrison, that the surplus from land-tax, poll tax, and customs, amounting by two provinces, was 5 millions of taels, which, taken as an annual average, would give 45 millions; but one or two of them supply much below that average, and the true total may therefore be 40 millions, as above.

Legislature.—The principle of the Tartar-Chinese penal code, from Sir George Staunton, and of this specimen of leg-
islation a very advantageous comparison with other Asiatic systems has been made by an able critic in the 'Edinburgh Review.' When (says he) we turn from the ravings of the Zendavesta to the Pyramids, from the Egyptians to business of this Chinese collection, we seem to be passing from darkness to light; from the drivelings of dogmatists to the exercise of an improved understanding; and redundant and minute as these laws are, in many parts of them, we scarcely know any European code that is at once so concise and so consistent, or that is nearly so free from intricacy, and fiction. In everything relating to political freedom or individual independence, it is, indeed, wofully defective; but for the repression of disorder, and the gentle coercion of a vast population, it appears to us to be, in general, equally mild and efficacious.

If we estimate Chinese legislation by its result, we shall find it (as Sir George Staunton observes) wholly inconsistent with the expectations of the philosophers and enlightened governments of Europe. Mr. Ellis, who had long been in Persia and India, pronounced China superior to the other countries of Asia, both in the art of government and the general spirit of the people, and has been, generally known, and more equally administered; than those examples of oppression, accompanied with infliction of bar-
barous punishment, which offend the eye and distress the feelings of the most hurried traveller in other Asiatic countries, are scarcely to be met with in China; that the proportion which the middling orders bear to the other classes of the community appeared to be considerable; that, compared with Turkey, Persia, and other parts of India, the improvement was produced highly favourable to the comparative state of the lower classes, and was a friendly feeling with the Chinese, that to violate the law is the same crime in the emperor as in a subject. 'This plainly intimate (observes Mr. Davis) that there are certain sanctions which the people in general look up to as that of the sovereign himself:', these are contained in their sacred books, whose principle is literally, salus populi suprema lex; and however much this principle may at times be violated under the pressure of a foreign Tartar dominion, it nevertheless continues, and is recognized, and is considered more or less influence on the conduct of the government.'

Moral Character, 44.—The moral character of the Chi-
ese people is a compound of bad and good traits, which, as Dr. M'Kenzie remarks, may be used to show the influence of their political and social system. The late Dr. M'Kenzie has formed a fair estimate of a nation with whom he was better acquainted than most Europeans. 'In China (he ob-
serves) there is much to blame, but something to learn; and moral instruction is ranked above physical. The carrying of the goods, and a large part of the porters, are unusually prevalent in the bulk of the population. Notwithstanding his power is absolute, the emperor himself always endeavours to prove that his conduct is becoming, and the object is well understood. In external form, of course, a distinct affair. From the habits in which they are brought up, the people are more ready to reason with each other than to resort to violence. The advantageous features of their character, as mildness, docility, and docility, make the capital of the Kiang-nan, is considered as the capital of the world, because the Chinese, at any time, do not attach the same degree of disgrace to deceit, and least of all when it is practised towards a European. It would however be as unreasonable to infer the character of the whole nation from the unanswerable aspect in which it appears at Canton, a trading seaport, as to form an estimate of our national character in England from an experience equally limited and disadvantageous. It has, in fact, been considered as a matter for surprise, that the Chinese at Canton should be, with the rest of the nation, so assuaged with the magnificence of their government, by which it professes to rule barbarians like beasts, and not like native subjects; and they are continually supplied by the local authorities with every motive to behave towards strangers as if they were in the same island, in a different style to Europeans therefore is different from their conduct among themselves.

In their physical characteristics, the Chinese have been recognized as a race, and it is supposed that a finer shape and more powerful race of men exist nowise than the coolies or porters of Canton; and as sailors, they have been found stronger and more efficient than natives of India on board of English ships, but it has always been born in the Yang-te-kiang, and a very remarkable point. The Chinese are allied to the Mongols in the general cast of their features, the broader points of the latter are softened down in the former considerably: in the thickness of the lips, the Chinese in some degree approaches, but by no means equals, the Negro, nor is that feature at all so prominent in the latter; the nose is flattened, and the nostril expanded in the Chinese, but not to the same extent as in the African: there is the same dimple, black, and shining hair in the case of the Chinese, as in the case of the African. It is a well known fact that the Chinese appear to be the same obliquity of the eyes and eyebrows, turned upwards at the outer extremities, and a corresponding thinness and tufty growth of beard. The Chinese too is distinguished by a nearly total absence of hair from the surface of the body, and the few that appear are mere tracery. The bones of the body, compared with Europeans, he resembles the generality of Asians. The features of the people in the South have perhaps less of the harsh angularity of the Tartar countenance than at Peking. Among those who are not exposed to the climate the complexion is as fair as that of the Portuguese; but the sun has a powerful effect on their skins, and that upper portion of a man's person which is habitually exposed in the summer above his loose trowsers is often so different from the remainder, that when stripped he looks like the lower half of a European joined on to the upper moiety of an Asiatic. Up to the age of twenty; or a little more, they are often very good looking; but soon after that time the prominent cheek bones generally give a harshness to the features as the roundness of youth wears off. With the progress of age the old men in most cases become very ugly, and the old women, if possible, still more so.

China is now politically divided into provinces, of which seven extend in extent, 150 miles on the great plain, two confine the hilly districts, two others the mountainous country along the sea, and the others the mountainous country in the interior.

1. Fe-teh-li extends over the most northern and less fertile part of the country, is well cultivated, and produces, besides vegetables for the supply of the capital, large quantities of millet and wheat. It is situated at Peking, the capital of the whole empire; the capital of the province is Pao-ting-foo, a very large and populous town in which the governor resides. 2. Chang-tung comprehends a part of the plain and the peninsula of Chang-tung, on which an isolated mountain range rises to a moderate height. It produces wheat, rice, cotton, and hemp. 3. Hoo-nan, is one of the richest parts of Thung-chow, and produces large quantities of tea, and is the seat of a great commercial city; it is situated on the great river, is well watered with silk and cotton goods. Its capital, Kiang-nan, comprehends the low and swampy country on both sides of the Great Canal. It chiefly produces rice and pulse, and has extensive fisheries.

Hoo-nan is chiefly a country of large and populous towns. It is situated in the south-eastern districts are extensive plantations of tea, and also some mines of gold, silver, and copper. The capital is Ngn-king-foo, on the Yang-tse-kiang.

Hoo-nan is chiefly the plain, but its western districts are traversed by the Peking mountain-range and its tributaries, the IS, and streams. At Hoo-nan, the farmers have a difficulty in finding a place to contain some mines. In its south-eastern districts tea is cultivated. The capital, Khiang-foo, is not far from the bank of the Hoang-ho; but the most populous town appears to be Ho-foo-foo, on a river which falls into the sea, and is situated in the cultivated valleys of the Hoo-nan.

Hoo-foo comprehends part of the undulating portion of the plain, and the wide valleys of the Han-kiang and Yang-tang, with some mountainous districts. It lies in the centre of the country, and formerly constituted, with the whole southern province of Hoo-nan, one province called Hou-quang. Its fertility is very great: its products are grain, cotton, silk, and tea, which are cultivated on its northern and eastern borders. In its capital, Wuu-tchou, situated on the bank of the Hoang-ho, and its junction with the Yen-kiang, is considered as one of the largest of the inland towns of China, and carries on an extensive commerce. King-tee fou, farther to the west, likewise on the banks of the Yang-tse-kiang, has also a very extensive trade.

Hoo-chiang comprehends the south-eastern corner of the plain, and the northern portion of the mountainous country extending along the sea. It produces more green oranges and other plants, and also silk, rice, grain, and pulse, which are sent to the capital of Hou-quang. Its capital, Tien-kiang, is situated on the southern bank of the Tsien-tong-kiang, at the southern termination of the Great Canal, in a very pleasant situation. According to Staunton, its population was thought not to be more than that of Peking, and the missionaries estimated it at about 400,000. The height of the houses is not great; and the height: the streets are well paved. It has extensive manufactures of silk and cotton goods, especially in flowered and embroidered satins, and a very active commerce, as well by means of the canals as by the river, which is navigable for large vessels up to the town. The principal part of this province is Ning-po.

Kiang-si extends over the eastern portion of the hilly country, along the western side of the Nan-lung range, and produces in its well-cultivated valleys and plain, grain, rice, silk, cotton, indigo, and sugar. It has some plantations of tea. The capital, Nan-tchou-foo, on the Kiang-kang, not far from the place where it falls into the lake Poyang; is a large town, and carries on a great trade. As the hills begin at some distance from the lake of Poyang on the east, is the borough of King-te-foo, which is said to contain one million of inhabitants, who are occupied exclusively in the fabrication of china-ware, which is here made in the greatest perfection. The number of furnaces is said to amount to five hundred. King-tee-foo, on the Kiang-kang, not far from its source and the Mei-lung Pass, is a large town, in which Indian ink and varnish are made on an extensive scale.

Hoo-foo, on the Han-kiang, is one of the richest parts of the antient province of Hou-quang, contains the remainder of the hilly country. Its productions are like those of Kiang-si. It is said to be rich in minerals. The capital, Teichang-foo, on the Heng-kiang, is the seat of a great commercial city, and the channel connecting the great lake of Tung-tang with the Yang-tse-kiang, also carries on a very active trade.
10. Fo-chan, or Fochan, extends over the mountainous country on the south parts of the sea opposite the island of Formosa. Some of the summits of the Nan-lang range here rise to a great height, but do not attain the perpetual snow-line. The higher parts of some of the mountain-ridges are bare; others are covered with trees, but in its extensive and fine valleys all the commercial productions of China are found, with, except perhaps varnish. Its plantations of tea are extensive, and the greatest quantity of black tea is grown here. The inhabitants of this province are noted for their industry, and still more for their love of simplicity and their love of education. The numerous settlements of Chinese in the islands of India and the countries without the Ganges have been formed by them, and are continually increasing by new adventurers from Fo-chan. The capital in the river Min-kiang, which is a backwater of the Yang-tse-foo, is built of thirty-three arches of fine white stone. The largest Chinese vessels can come up almost to the wall of the city, the maritime commerce of which is very considerable; and its population is greater than that of Canton. Tenen-tcheou-foo, between Fu-chou-foo and Amoy, is likewise a large town. A great number of vessels sail hence to the neighbouring countries. It has a bridge built over an arm of the sea, on 300 piers of black stone. Here is also the heathen temple of Amoy, which was formerly visited by Europeans. [Amoy.]

11. Quang-tun, or Canton, extends over the whole southern coast from 117° E. long, to the very boundary of Cochín-China, and is likewise mountainous, but it does not extend very far inland. Fo-chan has a great number of fine and wide valleys, and the plain about Canton is of considerable extent: it produces all the commercial commodities of China, except tea and varnish. The number of Chinese is considerable; it has been visited by Europeans. This town is the capital of the province. [Canton.] Canton, lying south-west of Canton, at a distance of about 20 miles, is said to contain a population of 500,000 souls, and to have numerous manufactures of silk, cotton, china, and other productions. Canton has also a large number of vessels which are built of white sandstone, and are used for transport. Canton is an important seat of Chinese commerce and manufacture; it is visited by Europeans.

12. Quang-si, extending on both sides of the Ta-si-kiang, is covered with mountains: the valleys, which are generally narrow, occupy a small portion of its surface. The mountains belong to the Nan-lang range, enclosing the northern side of the province, rise to a great height, and some summits above the perpetual snow-line. The forests on the declivities of the hills are extensive. Its productions are rice, silk, and timber, and it is supposed to contain gold and other metals. A mountainous district, towards the northern boundary of this province, is inhabited by the Tsiang-Coles, an aboriginal and independent tribe, differing from the Chinese in language and manners. The capital of the province, Kuei-lang-foo, lies in a narrow but fine valley.

13. Kuei-tcheou-foo, to the north of Quang-si, is one of the most mountainous provinces of China, being traversed in all its length by the highest portion of the Nan-lang range, some of which spurs reach to the sea, and are washed by the waters of the Yang-tso-foo. In these mountains live the Seng Miao-foo, an aboriginal tribe, who differ in language and manners from the Chinese, and often make war on them. Many fortresses have been erected in the mountainous parts of the valleys to stop their incursions. Its productions are timber and metals, gold, silver, &c., but especially copper and quicksilver. The capital is Kuei-yang-foo, a comparatively small town, its curvai being not much more than two miles. The river Tsiang-foo, a pretty affluent of the Yang-tso-foo, is the principal river of the province, and is navigable by small boats as far as the capital. It is said that it is infested by tigers, which contain timber trees, and several kinds of rare wood. The capital, Yun-nan-foo, situated on the lowest mountain part of the table-land, is a considerable town, and is a barrier to the trade of Birman empire.

14. Tcheou-tcheou-foo, between the Yang-tso-foo and the interior provinces of China, is visited by Europeans. This is a most frequented road, running mostly between the mountains of China, and another passes another considerable town, perhaps larger than Yun-nan. From this place the road continues to the Irrawaddy river, and to Bhamo, in the Birman empire. A considerable trade is carried on by this route. [Birma.]...
style of the Hindoo chronology, reigned for thousands of years, until the appearance of Fohy, who is said to have invented the arts of music and numbers, and taught his subjects to live in a civilized state. At length came Yaou and Shun, who are stated to have been the patterns of all Chinese emperors. To the age of Shun they give their tradition of an extensive flooding of the lands, which by some has been identified with the Mosaic deluge. It was for his merit in draining the country, or drawing off the water of the great inundation, in which he was employed eight years, that 'Yu the Great' was chosen by Sin to be his successor. He commenced the period called Hess, upwards of 2100 years before Christ; and the whole of the long space of time included under Hess and Shang is full of traditions, from which they had contended to depose a tyrannical emperor, the last of the Shang, about 1100 years n.e. With him began the period of Chow, which may be considered as the commencement of authentic history, and the name of Konuncus himself lived. Though it might be going too far to condemn all the Soong dynasty period as absolutely fabulous, it is still so much mixed up with fable as hardly to deserve the name of history. The race of Chow filled the long period of 800 years, during which China appears to have been divided into a number of petty independent states, engaged in perpetual disputes with each other. The king of Tsin had long been growing powerful at the expense of the other states: he fought against six nations, and at length compelled them all to acknowledge him as a vassal. He next added to his dominion an empire now to assume the aspect of an empire, which comprehended that half of modern China lying to the north of the great river Kiang, but which was doomed, after the lapse of centuries, to be divided into two or three great jealous states: the first emperor of the Tsin dynasty rendered himself famous by the erection of the Great Wall, which has now stood for 2000 years; as well as by ordering all the books of the learned (including the writings of Confucius), to be cast into the flames. About the year 400 B.C. the race of Tsin was succeeded by that of Han, which filled one of the most celebrated periods of Chinese history. It was now that the Tartars became the cause of endless disquiet to their more civilized neighbours. And in the latter part of the period of the 'Three States,' a kind of salic law was passed, that 'queens should not reign, nor assist in public matters,' and accordingly we meet with no female sovereigns in their history. On the conclusion of this race of massacre, the Chinese people were divided into several principal kingdoms, Nanking being the capital of the southern one, and Honan of the northern. For about 200 years afterwards, five successive races (Woo-taes) rapidly followed each other, and the salutary rule of hereditary succession being constantly violated by the strongest, the whole history of the interval is a mere record of contests and crimes. At length, in A.D. 585, the north and south of modern China were united for the first time into one empire, the capital of which was Peihsen. The contending races was soon after deposed by Ly-yuen, who in A.D. 627 founded the dynasty of Tang. There is reason to believe that certain Christians of the Nestorian church first brought ashes of powder, in which the forefathers of the foreigners arrived, having had fair hair and blue eyes. According to the Jesuits, whom Du Halde has quoted, a stone monument was found by them in Shen-sy, with the cross, an abstract of the Christian law, and the emblems of torture, bearing the date of A.D. 640. The dynasty of Tang was put an end to by a powerful leader in the year 897, and the whole country was thrown into a state of war and confusion, with several aspirants to the sovereignty. This time, however, being the eleventh year, is principally distinguished by the incursions of the Tartar people at the eastern extremity of the Great Wall, who, being encouraged by the unsettled and divided state of the country, gave great trouble by their inroads. After a succession of civil war, Ta-soo, the first emperor of the

Soong dynasty, was raised to the throne by the military leaders, A.D. 950. The art of printing having been previously invented (about 500 years before it was known to us), the multiplication of books became a principal cause of the literary character of the age of Soong. The Chinese emperors, however being the partakers of the Tartar advanced space; they took possession of a part of northern China, and threatened the whole country. They were destined soon to be checked, not by the Chinese, but by the Mongols, who inhabited the countries which extend from the Caspian to the sea of Japan, and Samarkand. They had already conquered India, and being now called against the Chin or eastern Tartars, they soon subdued both them and the enervated Chinese, and were destined to protect China, and to be said to be masters of the northern part of modern China from the middle of the thirteenth century. Kublai Khan, finding himself possessed of the provinces bordering on the Wall, with Peking for his capital, sent his army against the Mongol sovereign, and the magnetic compulsion. To these may be added, as third emperor of his family, the capital was finally transferred (A.D. 1409) to Peking; a principal reason perhaps being the necessity of keeping in check the Eastern Tartars, who had been joined by some of the refugees among the Tartars, and enabled by the march of ages compelled to look to China for protection: they had the sagacity to adopt the political and social system of a nation which so greatly outnumbered themselves.

Arts. &c.—With respect to the vegetable productions, no doubt seems now to exist of their having been the authors of what are justly considered in Europe as three of the most important inventions or discoveries of modern times: the art of printing, the composition of gunpowder, and the magnetic compass. To these may be added two very remarkable manufacturies, of which they were unquestionably the first inventors, those of silk and of porcelain. There cannot be the least doubt of the art of printing having been practised in China during the tenth century. The precise mode in which they operate is certainly different from ours, but the main principle, that of multiplying and cheapening books, by saving the time and labour of transcription, is altogether the same. The composition of 'sulphur, saltpetre, and willow-charcoal,' is carried back by the Chinese to a very remote date; but its particular application to fire-arms seems to have been European. The Chinese name has no reference whatever to firearms, or anything similar, which seems to show that the composition was applied by them merely to fire-works (in which they excel at present) and other harmless or useful purposes, long before their unwarlike spirit could have suggested to them the idea of using it as a weapon of war. It has been suggested that the Chinese have borrowed the notion of fire-arms from Europe. With regard to the compass, the attractive power of the lodestone had been known to them from remote antiquity, but its property of communicating polarity to iron is for the first time explicitly noticed in China. The invention was finished in A.D. 1211. Under the head of 'Lodstone' appears

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these diversities are precisely analogous to the different
provinces of the same country, or to the same general character
of the various countries of Europe. To adduce the foregoing
example, the number 22, which an Italian calls vint-deux, a
Frenchman pronounces vingt-deux, and an Englishman
twenty-two, though all three write them just alike. It is
evident that in the old days there was no other way to
make all the numbers of a language extend only to the written character, and that the
natives of the two extremities of the empire, who read
the same books, and understand each other perfectly on paper,
are all but mutually unintelligible in speech. The roots, or
original words, in the spoken language of these two
end of 22, and might indeed be reduced to a much smaller amount by
a little dissection and analysis. These are combined with
each other to form other words, or express other ideas, very
much in the same way that the individual Arabic numerals
form the various names of numbers. By a species of analogy they may be called the alphabet
of the language; with the difference that exists between an
alphabet of ideas, and an alphabet of sounds. To assert
that there are so many thousand characters in the Chinese,
is much the same thing as to say that there are so many
thousand words in Johnson's Dictionary; nor is a knowl-
edge of the whole at all more necessary for every practical
purpose than it is to get all Johnson's Dictionary by heart.
According to the Chinese writers, there is nobody who
is not a master of the elements of numbers, so
that the learned persons in the empire, more than a century since,
by order of the enlightened monarch Käng-hy. So in-
gerious and lucid is the arrangement, that to a practised
reader there is little more difficulty in turning to a
word than, among ourselves, in consulting Johnson from
the principle on which the written language has been
constructed, there has accrued to it a remarkable property
noticed by the late professor Rémusat, in his paper "On
The Chinese Characters of Eastern Asia." As the 214 roots, or radical characters,
whose combinations with each other form the whole lan-
guage, singly express or represent the principal objects or
ideas that men have occasion to communicate in the
infancy of their knowledge, they comprise within their
number the heads of genera and classes in nature, and thus
afford the elements and means of a philosophical system
of arrangement. As their acquaintance increased, a fortunate
instinct (M. Rémusat observes) guided the framers of the
written language, and led them to unite the 214 character
letters altogether new, to express new objects by the ince-
rous combination of those elementary symbols which they
already possessed. Among the roots, for instance, we find
many that denote the employment of certain inorganic sub-
stances or metal—silver: the words, horse, dog, metal, being those under which the
compounds are arranged in the Dictionary. Much con-
ideration is attached by the Chinese to the graphic beauty
of their characters; for a character is essentially
simpley constitues the merit of our alphabetical writing; but then
that of variety and picturesque effect must fairly be claimed by the
Chinese; as well as the peculiar characteristics of a
universal medium of communication. The two most usual
characters are those which express numbers; besides which, there are the seal, or engraved form, and
een or two others. The printed form (analogous to our
Roman type) lays claim only to clearness and accuracy;
but the brush mode combines correctness with elegance. It
may suffice to observe generally that the Chinese language is extremely limited. In the absence of all
inflection, of which their characters are utterly incapable, the
relation of words to each other in a sentence can only be
known by their position. The verb, for instance, must
always precede its object, and follow its agent. The plural
number is denoted by the suffix of mun to nouns—jin-mun, men; ch'a-mun, they; or by repeating the noun, as jin-jin, men. Either of these is rendered unnecessarily when a specific number is prefixed, as san jin, three men. The genitive or possessive case is commonly marked by an affix placed before, attached to, or by prefixing the noun. The cases of nouns and pronouns are determined by prepositions, as tsong-ch'a, from heaven. The comparison of adjectives is marked by affixes, as hao, good; keng hao, more good; ting hao, most good. The tenses of verbs are denoted by auxiliaries, or expletive particle, closely connected with the subject. The cases of nouns and pronouns are determined by prepositions, as tsong-ch'a, from heaven. The collocation of words in a sentence must of course be a matter of more consequence in Chinese than in English, for there are the relations of different words to each other are marked by the distinctions of number, gender, case, and person, as shown by declension and conjugation. The Notitia Lingua Sinice of the Jesuit Père Marére may be recommended as the best Chinese Grammar ever written.

As before the arrival of the Europeans China was frequently divided into two or three states, the northern portion of it was called by the adjacent nations of Central Asia Cathay, and under this name it became known to the Russians and Mongols, whilst the inhabitants of India called the southern part Chin, under which name the Portuguese and other Europeans became acquainted with it. In the seventeenth century, and not before, it was ascertained that Cathay consisted of two parts, so that both Cathay and the southern part was identical with Peking. (Du Halde; Staunton; Lindsay; Davis's China; Ritter's Asia.)

CHINA-WARE. [Porcelain.]

CHICHILLIDAE (Zoology), a small natural family of Rodent (guinea) animals, of which attention of English naturalists was first called by Mr. Bennett, from whose writings the principal part of this article is compiled.


Molar teeth with broad roots, growing throughout life by means of a persistent pulp.


Upper incisors simple; molars, 4-4, consisting of two or three talon or riband-like bony lamellae or plates, parallel with each other, entirely surrounded with a vitreous substance; the canines exactly opposite to each other and flattened by attrition. The posterior limbs nearly twice as long as the anterior. The tail produced with long and somewhat bristly hairs above and at the tip. The chinchilla are gregarious and subterranean in their habits, and mild in disposition.

Genera. Lagota.

Dental formula: incisors, 2-2; molars, 4-4. The incisors are sharpened, and each molar consists of three conical plates, the outer pair being posteriorly and above the superior collesus of the tympanic inconspicuous. All the teeth four-toed, the great toe being entirely absent; nails long and subfalcular. Ears very long. Tail long. Fur soft; but rufous.

Example. Lagota Caviari. Size, and much of the general form of the rabbit. Posterior limbs twice the length of the anterior; tail about equal in length to the body, excluding the head. Whiskers very numerous, closely set, jet black, ten or twelve of the length of a horse's fore foot, exceedingly thick and rigid, and seven inches long. Ears nearly like a long parallelogram, rounded at the tip, three inches long and one broad, with the margina rolled in below, so sparingly furnished with short scattered hairs, that they appear to be bare from their tips to the two white just described; those of the middle of the sides measure, when their natural waves are not interfered with, three-quarters of an inch in Lagota Caviari, and an inch and a quarter in Lagota Caviari. In neither of these species, however, is the quality of the fur at all comparable to that of Chinchillina languera.

We have already observed that Mr. Bennett is of opinion that this species, and the Peruvian variety, have alluded to. The following is the English version (1799) of the passage in Pedro de Cieza's 'Chronica del Peru' (1554), descriptive of the habits of that animal:—

'There is another sort of creature they call viscaela, about the bigness and resembling a hare, but that it has a long tail like a fox. These breed in stony places and among rocks, and many of them are shot with guns and crossbows, and taken by the Indians in guns (with the lasso), they being good to eat after hanging to tender; and of their hair they intermingle with the large men to make their caps, as soft as silk, and very valuable.' Ullón's account (Noticias Americanos, 1772) is, in the opinion of Mr. Bennett (whose translation we adopt), the best history that has been given of its habits and similar observances. 'The only change in the habitat, which is wanting in Peru, there is another kind of animal called viscaela, which is not found in Quito. In form, and in the colour of its fur, it is similar to the rabbit, but differs from it in having a long tail furnished with tufted hair (like that of the squirrel), which is very thick and

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the root, but thick and long as it approaches the tip. It
does not carry its tail turned over the head like the squirrel,
but stretched out, as it were, in a horizontal direction; its
joints are slender and scaly. These animals conceal them-
selves in holes of the rocks, in which they make their re-
trates, not forming burrows in the earth like rabbits. There
they congregate in considerable numbers, and are mostly
seen in a sitting posture, but not eating; they feed on the
herbs and shrubs that grow among the rocks, and are very
active. Their means of escape do not consist in the velocity
of their flight, but in the promptitude with which they run
to the shelter of their holes. This they commonly do when
wounded; for which reason the mode of killing them is by
shooting them in the head; as if they receive the charge in
any other part, although much injured, they do not fail to
and die in the interior of their burrows. They have this peculiarity, that as soon as they die their hair falls off, and
on this account, although it is softer and somewhat longer
and finer than that of the rabbit, the skin cannot be made
use of for common purposes. The flesh is white but not
well flavoured, being especially distasteful at certain sea-
sons, when it is altogether repugnant to the palate." The
author (supposed by some to be the Abbé Vidaure) of an
anonymous Italian work on the natural history of Chile,
events from which are given in the 'Journal de Physique'
for 1779, has evidently confounded the eastern and western
species; and his account, as Mr. Bennett well observes, is
in several particulars apocryphal. Molina speaks of the
employment of its wool among the ancient Peruvians, add-
ing, that the Chilians of the present day (his work was or-
iginally published in 1782, and reprinted with additions in
1810) use it in the manufacture of hats. Its burrows, ac-
cording to the report of eye-witnesses, have two flats, com-
unicating by a spiral staircase; in the lower it deposits its
food, while it lives in the upper, which it seldom quits, ex-
cept at night. It collects round the mouth of its burrow
whatever has been left behind or lost by travellers; and its
flesh, which is white and tender, is preferred to that of the
rabbit or hare. But this account is liable to the same ob-
jections as that in the 'Journal de Physique'.

Chinchilla.

Dental formula: incisors, $\frac{2}{2}$; molars, $\frac{3}{1} - \frac{4}{4} = 20$, the
molars generally consisting of three complete oblique plates,

* From Mr. Bennett's figure.
subcular. The ears ample. The tail rather long. In addition to *Chinchilla lanigera*, which we select as an example, Mr. Bennett gives a second species, *Chinchilla aurea*, *Callomys aureus* of Laid. Geoff. St. Hilaire.

The length of the body of *Chinchilla lanigera* is about nine inches, and that of the tail nearly five. Its proportions are close-set, and its limbs comparatively short, the posterior being considerably longer than the anterior. The fur is long, thick, close, woolly, somewhat crisped, and entangled together, greyish, or ash-coloured above, and paler beneath. The form of the head resembles that of the rabbit; the eyes are full, large and black; and the ears broad, naked, rounded at the tips, and nearly as long as the head. The moustaches are plentiful and very long, the longest being twice the length of the head, some of them black and others white. Four short toes, with a distinct rudiment of a thumb, terminate the anterior feet; and the posterior are furnished with the same number, three of them long, the middle more produced than the two lateral ones, and the fourth, external to the others, very short and placed far behind. On all these toes the claws are short, and nearly hidden by tufts of bristly hairs. The tail is about half the length of the body, of equal thickness throughout, and covered with long bushy hairs; it is usually kept turned upwards towards the back, but not reverted, as in the squirrels.' Such is the minute description of Mr. Bennett, who, in 1820, described the animal as the type of a distinct genus under its common name. Mr. Gray, in August, 1830, also described and gave an interesting account of its domesticated habits obtained from Mr. Hennah.*

Organisation.—Mr. Yarrell, in February, 1831, gave to the Zoological Society of London the following account of the skeleton and parts of the visera of one which died in the menagerie of the Society, premising that at the time of examination all the visera had been preserved some months in a weak solution of spirit. "The lungs are composed of three small lobes on each side. The heart is flattened in form from behind forwards, measuring 6ths of an inch across its base, and but 4ths in depth; the want of apex gives it a round and muscular appearance. The liver exhibits two large and equally sized lobes, and two smaller lobes. The stomach, a single cavity, measures from the entrance of the oesophagus round the great curve to the pyloric contraction five inches 4ths, the greatest breadth 2 inches 6ths, the depth, 1 inch 5ths; the spleen is small and elongated. The length of the small intestines from the pylorus to the end of the ilium, 3 feet 10 inches; the cecum and first portion of the colon are of large size; made up of three half circular convolutions, one central, with one of smaller dimensions on each outer side, containing numerous cells and divisions, strengthened by muscular bands and septa, the whole length of cecum, colon, and rectum, measures 4 feet 10 inches. With the exception of the cecum and commencement of the colon, which are voluminous, all the intestines are of very small calibre. The kidneys vary somewhat in shape; one measures 4ths of an inch in length, and 3ths in breadth; that on the opposite side is much more spherical. The specimen is female, and the uterine cornua measure each 1 3ths in length."

'Of the skeleton when mounted, the whole length, from the nose to the end of the tail, is 13 inches 5ths; the upper surface of the cranium from the occiput to the inter-orbital space is triangular and flat, the width at the occiput 1 inch 4ths; of the inter-orbital space, 4ths, the whole length of the head, 2 inches 3ths; the mastoid processes and auditory cells of very large size; the external meatus also large, oval, directed upwards and backwards; the zygoma narrow and slender posteriorly, but deep and stronger at its junction with the molar bone, which has an ascending bony division between the orbits and temporal fossa, the nasal bones narrow, convex, and of parallel diameter; the lower jaw is curved, broad, and strong; the course of the incisor teeth is visible, and the alveolar cavities of the molar teeth are well defined externally; the coronoid processes are wanting, apparently as if broken off during the preparation of the skeleton, but have obviously been of very small size; the condyle elongated from before backwards; the plate deep, and the posterior angle of considerable length. The exposed portion of the incisors measures 4ths of an inch in length; the molar teeth are all made-up of three parallel portions, or bony laminæ, each portion invested with a thin coat of enamel, and closely united; the base of a molar tooth presenting six lines of enamel and three cavities; the anterior third of the first molar tooth on each side, above and below, is smaller than the other two portions, and gives to these teeth a triangular shaped crown; the posterior third portion of the last molar tooth on each side above, is nearly round, and gives an increase of surface to these also; in the molar teeth of the lower jaw the fold of enamel between the first and second portions of the bony laminæ of each tooth does not reach quite to the outer edge, and the two portions of bone appear therefore to be only partially separated. The direction of the parallel laminæ of all the molar teeth is not at right angles with the line of the maxillary bones, but inclining obliquely from without backwards. The length, from the atlas to the end of the tail, is 11 inches 5ths; cervical...

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* From Mr. Bennett's figure.

† From Mr. Bennett's figure.
porebrach, 7; dorsal, 13; lunular, 6; sacral 2, and caudal, 33.

The scapulars are small, measuring 1 inch from the external angle to the articulation with the humerus, the spine is but little elevated, the acromion ample, the clavicles perfect; length of the humerus, 1 inch 8ths; the bone strong and furnished with an elongated crest descending from the head; from the olecranon to the carpal articulation, 1 inch 8ths; the scapula and radius firmly anchylosed throughout the distal half of their length; thence to the longest of the five toes 8ths of an inch. The ribs, 13 pairs, are placed in the form of an elongated fan, from the crest of the ilium, which is but little produced, to the inferior edge of the ischium is 1 inch 8ths; the osa pubis slight in structure, advancing but little; the symphysis elongated, and the obturator foramen large, with a large femur, which is 2 1/2 inches 8ths; the tibia 2 inches 8ths; the tibiae complete, and forms the external malleolus; from the os calcis to the end of the longest toe, 2 inches 8ths; the toes, four in number, of which the outer one is the shortest, the third from the outside, the longest; the second and fourth equal.

Yarrell remarks that in some previously published observations, he had stated that the Chinchilla appeared to belong to the family of the Chinchillidae. Mr. Bennett, however, contends that the more complicated structure of the teeth, and the existence of an additional toe on each of the feet, require for the Chinchilla the generic distinction claimed for it. He further states that the Chinchilla is a smaller animal than the true chinchillas, which are composed of different species, and that its characteristics differ from those of the true chinchillas in several important particulars. It is remarkable, in particular, in the form of the head, in the excessive development of the auditory cavities, and in the small size of the anterior extremities compared with the hind legs; and thus, the true characteristics of the Chinchilla seem now even to be unknown to the French authors above referred to, who appear to be acquainted with its skin alone, and never to have examined either its teeth, or the number of its toes. The Chinchilla is a curious animal, differing in many respects from the characters of their proposed genus Callomys; a genus which cannot be adopted, inasmuch as it is composed of heterogeneous materials, and as the two types included in it have both previously been described and designated as distinct genera.

We now go back to Mr. Bennett's interesting account, in the Garden and Menagerie of the Zoological Society described, of this animal, which that author observes, notwithstanding the extensive trade carried on in its skins, might have been regarded until the last year almost as an unknown animal.

The earliest account cited by Mr. Bennett is an English translation (London, 1641) of Father Joseph Cortes's 'Relation of the Discovery of the Chinchilla,' published at Barcelona, in Spanish, in 1591. 'The Chinchillas are another kind of small beasts, like squirrels; they have a wonderfull smooth and soft skin, which they (the natives) wear as a heathfylth thing to comfort the winter, and to keep that parts that are most subject to be beaten.' Sir John Hawkins, in his Voyage into the South Sea, a.D. 1593, (London, small folio, 1622, reprinted in Purchas his Pilgrimes,) says: 'Amongst others they have but little beasses, like unto a squirrel, but that he is grey; his skin is the most delicate, soft and curious fur that I have seen, and of much estimation (as is reason) in Peru; few of them come into Spaine, because difficult to be come by, for that the princes and nobles bait it for them; they can serve all sorts, and of great abundance.' Alonso de Oviedo, in his 'Historical Relation of the Kingdom of Chili,' (Rome, 1616), calls them squirrels. 'The Squirrels (Arbidos) which are found only in the valley of Quemah, are shag-coloured, and their skins are in great esteem for the fineness and softness of the fur. An anonymous Italian author, supposed by some bibliographers — erroneously, as Mr. Bennett thinks,—to be the Abbé Voltaire, who published at Bologna, in 1716, a Compendium Historiae Nat. Hist. of Chili, speaks of the Ardis (Spanish for a squirrel) as a species of rat, or canapezil, of the size of a cat, found only in the province of Copao, moderately docile, and covered with shag-coloured wool, as close and dense as that of a cat. Before, quoting Feulles's excellent description, confounded it with the Chincas, the most stinking of beasts. D'Azares corrected this error, but falls into another himself, in regarding the chincas of Feulles and Buffon as his Yaguarac. Moline (Natural History of Chili;—Italian, Bologna, 1717) describes the Chinchilla as a species of Lunnezus Mas, under the name of Minas latus, and adopted the application, but M. Geoffroy St. Hilaire considered that it ought to be regarded as one of his Hamsters. Zoologists generally took up this opinion, and Molina, in a second edition of his essay (1810), seems to have entertained the same opinion. Mr. Collie says Molina, in his Natural History of Chili, for several species of field-rat, in great estimation for the extreme fineness of its wool, if a rich fur as delicate as the silken webs of the garden spiders may be so termed. It is of an ash-grey, and sufficiently long for thefinishing of almost all kinds of work. It is pulled out long from the nose to the root of the tail, with small pointed ears, a short muzzle, teeth like the house rat, and a tail of moderate length, clothed with a delicate fur. It lives in burrows underground, in the open country of the northern provinces of Chili, and is very fond of being in company with others of its species. It feeds upon the roots of various bulbous plants which grow abundantly in those parts; and produces twice a year five or six young ones. It is so docile and mild in temper, that, if taken into a barn or into the house, it will not run away or take a pleasure in being cared for. If placed in the box, it remains there as still and quiet as if it were in its own nest. This extraordinary placidity may possibly be rather a disadvantage to it, for it is easily caught. As it is itself peculiarly clean, there can be no fear of its soiling the clothes of those who handle it, or of its communicating any bad smell to them, for it is entirely free from that ill odour which characterizes the other species of rats. For this reason it might be very useful to Mr. Bennett, with no annoyance, and at a trifling expense, which would be abundantly repaid by the profits on its wool. The ancient Peruvians, who were far more industrious than the present inhabitants, knew the use of it, and made many valuable things out of it. With the skins of the Cusco and with no annoyance, and at a trifling expense, which would be abundantly repaid by the profits on its wool. The ancient Peruvians, who were far more industrious than the present inhabitants, knew the use of it, and made many valuable things out of it. They used it in its raw state, and after it had been worked upon, as a kind of cloth, and also for the production of many articles. There is found in the same northern provinces another little animal with fine wool, called the Hardilla, which is variously described by those who have seen it, but as I have never observed it myself, I cannot determine what it is, and what it belongs to. Upon this translation we have given, remarks that there can be little doubt that this animal is identical with the Chinchilla, the latter being frequently spoken of by the name of Arda, the same with Hardilla, the diminutive of which is Hardilla Schmittdymer (Travels into Chili over the Andes, London, 4to, 1824) thus describes the animal. "The Chinchilla is a woolly field-mouse, which lives underground, and chiefly feeds on wild onions. Its fine fur is well known in Europe, but is not so fine as that of the New World squirrel, which is finer than the Chinchilla of Chile, but not always so beautiful in its colour. Great numbers of these animals are caught in the neighbourhood of Coquimbo and Copiapo, generally by boys with dogs, and sold to traders who bring them to Sanfincvic, the port, and thence for the production of many articles. Peruvian skins are either brought to Buenos-Ayres from the eastern parts of the Andes, or sent to Lima. The extensive use of this fur has lately occasioned a very considerable destruction of the animals. Captain Becheby, R.N., on his return from his expedition to the north-west coast of America, presented a living specimen to the Zoological Society; and an entire skin, rendered particularly valuable in consequence of its having the skull and other parts of the body kept whole three years and a half, by Mr. Collie, the surgeon of Captain Becheby's ship, and deposited in the British Museum.

'To the account of its habits given by Molina,' says Mr. Bennett, 'we can only add, that it usually sits upon its haunches, and is even occasionally thrown upon its hinder foot. It feeds in a sitting posture, grasping its food, and convoying it to its mouth by means of its forepaws. In its temper it is generally mild and tractable, but when frightened it is apt to be handled without resistance, and sometimes bites the thumb with which it is fondled when it not in a humour to be played with. Although a native of the Alpine valleys of Chili, and consequently subjected in its own country to the effects of a low temperature, it is perfectly adapted by that load, however, to afford an admirable protection, it was thought necessary to keep it, during the winter, in a moderately warm room, and a piece of flannel was even introduced into its sleeping.
altogether deficient, the nails small and scalare. Posterior feet three-toed, the nails produced, straight, and robust. Ears moderate. Tail moderate. Example. Lagostomus trichodactylus, Brookes.

In 1814 there was a living specimen of this animal at Exeter Change, where it was observed by M. de Blainville and M. F. Cuvier. The former described it in the 'Nouveau Dictionnaire d'Histoire Naturelle,' and the latter in the 'Dictionnaire des Sciences Naturelles,' under the name of Dipus maximus, Blainv., erroneously referring it to the Jerboa, and not suspecting its identity with the Eastern Viscacha, or Biscacho, an identity overlooked also by Mr. Brookes, who obtained the specimen after its death, and prepared from it a stuffed skin and skeleton, which, on the breaking up of his museum, passed, according to Mr. Bennett's belief, into the hands of M. Temminck, who purchased them for the Leyden Museum. It had been figured, while living, in Mr. Griffith's 'Translation of the Regno Animal,' under the name of Marmota Diana, as before observed. M.M. D'Orbigny, fils, and M. Isidore Geoffroy St. Hilaire, published in the 'Annales des Sciences' for November, 1830, a paper on the Viscacha and the Chinchilla, regarded as the types of a genus named Calomys, together with the description of a new species. But M. Isidore Geoffroy has since seen reason to abandon his opinion of the generic identity of the two animals. In August, 1831, M. Lesueur gave, in the 'Bulletin des Sciences Naturelives,' an extract from his 'Illustrations de Zoologie,' containing a new description of the Viscacha, under its original name of Lagostomus trichodactylus, which M. Kuhn had previously restored to the animal. The 'Illustrations' give a figure of the animal, and representations of its feet and of its muzzle.

Mr. Bennett is clearly of opinion that it is the Viscacha, described by so many travellers as colonizing the vast plains eastward of the great chain of the Andes. Dobrizhofer, Jolit, D'Azara, Proctor, Head, Miers, and Haigh, all mention it. Capt. (now Sir Francis Head) gives a picture of these animals, sitting solemnly at the entrance of their burrows, quite in his peculiar style. Biscacho is the name he assigns to them, and, according to his account, the Biscacho.

Lagostomus

Dental formula, incisors, 2 molars, 2 = 20. The incisors sharpened. The molars each consisting of two complete oblique lamellae, the upper posterior one being trilamellar. Anterior feet four-toed, the thumb being

* Goldman has figured it in his 'Naturhistorische Atlas,' under the name of Lagostomus lagurus of Wagler, referring it as a synonym of Arvicantha Chinchilla of the Frankfurt Museum.
food, and hundreds may be observed sporting round their holes, and making a noise very similar to the grunting of pigs. Their flesh is much liked by the people, and they are remarkably fat, and on that account, when caught at any distance from their holes, are easily run down; they will however defend themselves from a dog a considerable time, before his bite. The holes of these animals are inhabited by vast numbers of small owls, which sit, during the day, gazing at the passing travellers, and making a very ludicrous appearance. The parts of the road most frequented by the bicaoco are generally devoided of any; and are as little to the taste, whether it thrives particularly on the mawt or the animal, or whether the bicaoco chooses his hole nearer this running plant, does not seem to have been ascertained.

Mr. D. Meyer, in 1833, Dr. Meyen sent to the Imperial Academy Naturae Curiosorum, the second part of a series of zoological observations, made during a voyage round the world, containing a revision of this family, for which he adopts from Wiegmann the name of Lagotomus, and enumerates three distinct species of Lagotomus. His paper was published towards the end of 1833, in the 'Nova Acta Acad. Genn. Nat. Cur.' His views differ widely from those of Mr. Bennett, which however we have retained, under the conviction that they are well founded, or, at least, unshaken by the observations of Dr. Meyen. As however confusion may arise from the discrepancy, we think it due to the general reader to give the following note, in the original work, volume of the 'Zoological Journal.' As regards the South African genus Pedetes, ill. (or Helomyx of M. F. Cuvier), sir. Mr. Bennett, 'I can by no means concur with the classification of this interesting animal,' he declare, it to the South American family of Chinchillidae, although, as I have already stated in my paper in the Zoological Society's Transactions, p. 62, it seems in many of its characters to approach Lagotomus. I am still uncertain as to its true position in the groups of the Mammalia, and as to the extent of the species with sufficient materials to determine; but I am convinced that its relation to the Chinchillidae is not one of near affinity. The differences in the relative proportion of the limbs, in the elongated claws of its anterior extremities, in the character of its fur, and above all, in the structure of its teeth, forbid, as I have there stated, a close approximation.

The genus Lagidium of Dr. Meyen is synonymous with my Lagotus; and the species Peruviana appears to be identical with Lagotis Cuveiri. The ascertainment of its habitat on the elevated plateaux of Peru confirms the accuracy of my decision, unassisted by any evidence as to locality, regarding its identity with the Lagotomus. The reader is referred to the notes of Mr. Bennett, by himself in its native country, Dr. Meyen gives some interesting particulars. He states that it is most abundant just below the limits of perpetual snow, and does not form part of the permanent snow covered mountains. As is well known as the work of the Viscacha of Buenos Ayres it was invariably found among the rocks, and never on the level ground. On several occasions it was shot during the day, but was seen most frequently at sunset, being excessively abundant, although pursued with avidity on account of its good flavour of its flesh, which, however, is not so tender as that of the hare. The fabrication of stuffs from its wool, so general in the time of the Incas, has now entirely ceased; and such stuffs are only to be met with among the various ruins of that country. In the work of the author, he further adds, that the skins of these Visacchpas are brought to us through Buenos Ayres as an article of commerce, but are not so highly prized as those of the Chinchilla. He gives a figure of the animal, with an exact representation of its skull and teeth.' Mr. Bennett then proceeds to show that Dr. Meyen, as he had before observed, enumerates three species.

Of Lagotomus, the two first of these represent animals comparatively figured by the late Mr. Broderip and by M. Lesson, under the name of Lagotomus triechodactylus, which Dr. Meyen considers as distinct on account of the differences observable between the two figures. These animals are of about the same size, and with the small hooked claws of the hinder foot in the formation of the habit, and the bands of the same organs in the latter; in the habit; and in the shape of the tail. The misapprehension may serve
show how dangerous it is to rely on figures only in the
discrimination of species. As regards the first presumed
discrimination, Mr. Bennett has observed (p. 57 of his paper),
that "in this particular the figures given by Mr. Brooke's
are defective, as exhibiting the claws far smaller and more
curved than is natural." A reference to the descriptions of
M. F. Cuvier and M. de Blainville, both taken from Mr.
Brooke's specimen while living, will confirm the accuracy of
his characterisation; in that particular (Cuvier's Cat.-No. 509),
the description of the middle toe of the hinder foot as
furnished with a very strong claw. On the second point, the
habit, it need only be observed, that both figures were
taken from stuffed skins by artists who had never seen the
living specimens, are not necessarily true to nature; thy own conjetural ideas of its natural appearance when in a
living state. On the third, it may be observed, that some
obscenity is to be feared, M. de Blainville having described
the tail, so well as the mode of parturition in, Mr. Bennett's
 rats, and Mr. Brooke's skin and skeleton being both
provided with perfect tails. A fine skin, now in the pos-
session of the Zoological Society, agrees in all essential
particulars with the animal figured by M. Lesson; and as far
as Mr. Bennett's recollection goes, with that which once
formed a part of Mr. Brooke's Museum. The figure given
by the latter should only be considered as correct in so far
as it is borne out by the descriptions of MM. F. Cuvier and
M. de Blainville, which should be referred to in connexion
with it.

The third species of Lagostomus, enumerated by Dr.
Meyer, is the Eriomys Chinchilla of Dr. Lichtenstein,
figured and described in the 'Darstellung neuer oder
wesentlich vermehrter Tiere,' 1832. They made a marked
impression on Mr. Bennett when his paper was published; and Mr. Bennett acknowledges that the figure there given so closely re-
sembles the true Chinchilla laniger in all its prominent features, that he should not have hesitated to refer it to
that species, had it not been accompanied by separate re-
presentations of the feet, which offer only four toes on the
anterior, and three on the posterior extremities. Dr. Meyer,
however, quotes as a synonym Calomys laniger of M.
Lesson, from a description of Dr. Geoffroy. Dr. Geoffroy,
therefore, observes, that there can be little doubt that
they overlooked the small and almost rudimental inner toe
both of the fore and hind feet; the identity of this animal with the Chinchilla lanigera of Dr. Rousseau being unques-
tioned by the Parisian zoologists, who have ample opportuni-
ties of comparing them, and Mr. Geoffroy himself
having subsequently admitted the generic distinction of the
Chinchilla (his Calomys laniger) from his genus Cal-
omys, as related to Desmodus. Dr. Geoffroy, as the fourth genus of the family, according to Dr. Meyer,
being beyond question the only Chinchilla yet noticed by
English zoologists, and consequently identical with that
figured in Mr. Griffith's edition of Cuvier's Animal King-
dom, has been included into a new combination. The author last named sees no reason for doubting that the Eriomys of Vander
Hooven, Dr. Meyer's fifth genus, is founded on the same
species.

Galer, Dr. Meyer's sixth genus, is founded on a skull
discovered at the entrance of a burrow belonging, according
to Mr. Bennett, in all probability to a yet undescribed
species of the family Chinchilidae; as the character of the
animal inhabiting the burrow, which was only seen at a
distance, and not close enough to be accurately described.
The skull and teeth, however, observes Mr. Bennett, according
to the figures, belong to the Castoridae, with none of the
known genera of which do they altogether agree, although they
are nearly related.

Mr. Bennett concludes by stating that Dr. Meyer's Den-
drobius Degus is his (Mr. Bennett's) Octodon Cumingii,
described in March, 1832; and he observes that Molina's
description of his Setara Degus differed so greatly from
this animal, that he is of opinion both authors were
wrong, and which were living in the garden at the Regent's
Park, in September, 1834, that he hesitated to quote that name
as a synonym, adding that he is not quite sure whether Dr.
Meyer states his own knowledge or on Dr. Geoffroy's,
rather. In this (Dr. Geoffroy's) case the Degus of the
natives of Chile. If the former, the synonym, he remarks,
can be of course no longer doubtful.

As dates are of consequence in an investigation of this
nature, it is much to be regretted that Mr. Bennett's paper on Lagosto-
palpis is given:—Dr. Meyer's paper was communicated
to the Imperial Academy in March, 1833: mine was com-
}municated to the Zoological Society in May of the same
year. But the genus Lagostoma had been characterized by
me, so far as its external characters could be ascertained
from the living specimens, at a meeting of the Committee
of Science and Correspondence, in June, 1832; and the
name then given was affixed, throughout the life of the
animal, to the cage in which the Society's animals was
seen.

CHINESE ARCHITECTURE. The architecture of the
Chinese may be considered unique in its style. Their
buildings differ also in construction from those of Europe
and the rest of Asia. The peculiar character of Chinese
architecture is displayed in their royal palaces, in their
bridges, triumphal arches, and also in their houses and
sepulchres. The materials employed are wood, of which
that most in use is the nan-mon, a kind of cedar: stone,
brick, tiles, bamboo, and glazed or porcelain tiles are also
employed. The construction of bricks is directed by a
public functionary, whom we may not inaptly designate
a district surveyor. Every one is obliged to build his
house according to his rank, and for every house a certain
size and details are fixed. The ordinary habitations have
one floor, and we may presume the houses of the com-
mon people in the towns to be crowded, and badly venti-
lated, since the police force the people to sleep in the open
air during the dog-days, lest they should be suffocated.
The houses call attention to that is of much importance.
They are very much the fashion, and some were built about 211 feet
high. Wooden columns, so placed as to support the roof,
are common, and are from eight to ten diameters in
length. The columns and beams are often made of precious
woods, and are inlaid with ivory, copper, and mother-of-pearl.
Not the least singular appearance in a Chinese house is the door, which is often a complete circle; the window frames and sashes are formed of small
pannels of various forms moulded out of clay, and neatly
joined together. The sills of doors are of stone. The
wood of the nan-mon is said to last more than a thousand
years. Stone and marble, though in abundance, are more
costely used than wood, the latter, and tiles and
bricks. The bridges and houses are often built on large masses of alabastron as a foundation. The palace of Pekin is on an immense scale, 2513 feet by
2323 feet. It is spoken of by the missionaries as present-
ing a very imposing appearance. The palace, which is
provided with courts, innumerable rooms, large and small;
architectural, palaces, halls, and immense buildings: each
court is more superb than the other as you approach
towards the last court, the residence of the king, which is
the richest of all. In Pekin, and in the environs, there
are said to be 10,000 temples: those which are within
the walls of the palace are beautiful, and some are
magnificent.

Almost all the temples differ in their plan. That of
Houning presents as you enter, first, a very extensive court
with three rows of trees which lead to an open vestibule,
the ascent to which is by a step; this vestibule leads to
another, in which are four colossal seated figures, formed
of stone; this last court leads to a third, a court surrounded with colonnades and rooms behind them
for the priests. The court contains three square temples,
equidistant, and set upon a plinth along the centre of the
court; they are two stories high, and surrounded with
rooms. From behind the chief priests resident. Under
the roof of each of the rooms of the ordinary priests, there are four
chambers occupied by idols. Two smaller courts are
placed on each side of the centre of the large court; these
are surrounded by the kitchens, refectories, and hospital-
al, the buildings are covered with green varnished
tiles.
The towers which we call pagodas are very common in China. The most celebrated is at Nanking, and is commonly called the Porcelain Tower. The plan is octagonal, with 60 feet on each face being 12 feet wide; it has nine stories. There are others of round, square, and hexagonal forms, built of stone, brick, porcelain, and wood: each story has a roof and a elaborate balcony railing; at the angles there are hibiscus bushes. There is a poor representation of a pagoda, having neither the colours nor brilliant decoration of the Chinese. It was built by Sir William Chambers.

Triumphal arches, erected to the honour of women as well as men, are very common; and there is a great rage for them in China. In the smaller towns they are built of wood, and the workmanship of many is as coarse. At Ming-po the triumphal arches have three gates, two small and one large, the latter one being in the centre. The door-posts are of stone. The entablature consists of three or four faces, and the architrave is morticed and tenoned, although it is of stone. Mouldings are seldom used in these faces, except in the highest or the highest but one; instead of a cornice there is a projecting roof which crowns the whole. The ornaments of some of these arches consist of men, birds, and flowers, and the ground is cut away so that the day-light is admitted. There are occasional Grecian arches.

The towns have extensive walls, high enough to hide the buildings, except the pagodas or towers, and wide enough to ride on horseback. The walls of Peking, which are built of brick, are 42 feet 6 inches high, and they have small ascents at every 200 feet. On them are placed long inclined planes for the cavalry to ascend. The isolated castle of Tien-sing-foo, at the confluence of the Pei-ho and Ku-ho rivers, is of a square form and built of slate-coloured bricks; the walls are ramped in double ascent; just above the semicircular arches to let the rain run off the terrace. The parapets between the battlements are each pierced with two small holes, and a small guard-house with the roof having the usual turned-up eaves is built on the top of the terrace.

The Chinese varnish their columns, colour their roofs, and plaster their walls with stained substances of brilliant colours. Ornaments in China are little more than mere filigree. The laced rambler is used. The Chinese roofs, which for their form are unique, are considered by some to have been derived from the tents of the people in their nomadic state.

The tombs and monuments of China exhibit a variety of arches, which often resemble the familiar forms of their buildings; even the double roof is carved on some mausoleums. The common people have only a cone of earth with trees on the summit, not unlike the barrows in Wiltshire. Several forms of tombs are given in Alexander's 'Costume of China.' The roofs are round, square, hexagonal, and octagonal, and the form of the coffin is also varied.

The Chinese architecture does not appear to be founded on the best principles. As in all sembarbarous nations, a show is the great object, and thus the brightest coloured houses are thought the most beautiful.

For a general account of Chinese bridges, see Bridges; and for the Great Wall, see China, p. 74 (Alexander's Costume of China, and his drawings in the museum of the East India House; Sir William Chambers' Architecture; Il Costume Antico e Moderno, plates; the Encyclopaedia). (For extent of course see China.)

CHINESE PAGODAS

grants obtained by the East India Company in 1750 and 1763, from the Nabob of Arcot, and known in the annals of the Indian government as the Company's Jaghire. This tract is bounded on the N. by Nellore district; on the W. by the districts of northern and southern Arcot; on the S. by the southern division of Arcot; and on the E. by the bay of Bengaile; it therefore forms part of the province of the Carnatic, and is included in the presidency of

CHINESE PAGODAS

latched rocks of granite are continually met with in the fields, and interfere with the processes of cultivation. The district was invaded by Hyder Ali in 1768 and 1780; in the latter of these invasions the country was so ravaged that many parts were wholly depopulated, and for some years after presented to the view of the traveller only the ruins of houses and temples, and the bones of people who had been slain. Soon after the invasion the inhabitants of the less depopulated parts, expecting that the famine which caused so considerable an emigration that nearly the whole country was deserted. In 1794 the district was formed into a collectorate under Mr. Place, and a gradual improvement took place, so that the returns made by the collector to the Madras government, the population amounted to 363,129 persons, of whom 190,243 were males, and 172,886 females. The principal towns in the collectorate are Chingleput and Conjeeveram. Chingleput is situated in 12° 46' N. lat., and 80° 40' E. on a stream which at a short distance west from the town falls into the Palur. The town is distant 38 miles S.S.W. from Madras; it is irregularly built, and the houses are of mean appearance. The fort is of considerable extent, and has been of great strength; of late years it has been allowed to go into decay, and is garrisoned by a few invalids.

In 1751 it was taken by the French under Duplex, and in the following year was retaken by a small detachment under Major Collon.

Conjeeveram, called by the natives Kunji, is situated in a fertile valley watered by the small river Wogawutty, in 12° 49' N. lat., and 79° 48' E. long. The town is built in a straggling manner, and resembles a series of villages. The walls are 900 feet in length, and the gates are in the shape of a barbican.

The streets, which are wide and regularly laid out, are planted on each side with cocoa-nut trees and banyan cedars. The houses are only one story high; they have mud walls and are roofed with tiles. Each house is built in the form of a square, with a small court.

The buildings extend between for five and six miles; round the whole is a hedge of the Agave Americana, which has been found useful as a defence against irregular troops. A considerable number of these plants are cultivated for their leaves, and the natives employ themselves in making red handkerchiefs, turbans, and cloths adapted for the dresses of the natives. Conjeeveram is also the residence of numerous Brahmins belonging to temples dedicated to Siva and Vishnu, which are much frequented. The pagoda of Siva is a large building said to contain 1000 pillars, many of them elaborately sculptured. The pagoda dedicated to Vishnu Conjee is not so large, but is more highly venerated. It was from this builidng that the Nandyal, or 'Horse,' was obtained in 1751. Conjeeveram, and many other pagodas, dedicated to the Brahmins' deities. There are large tanks near to the different pagodas; for one of these, lying on the west side of the great pagoda, it is said the gods collected water from three miles away. Every Brahmin on the first day of the month must perform his ablutions in this tank, and spend money in charity; the sums thus raised being fact applied to the support of the Brahmins belonging to the temple.

(Mr. History of British India; Buchanan's Journey through Myrore, Canara, and Malabar; Heyne's Historie and Statistical Tracts on India; Report of Committee on Commons of Affairs in India 1823.)

CHINESE PAGODAS

This is a Diplostomous insect belonging to the section Tipulidea tericocce.

Only one species is yet discovered of this genus, but this is remarkable both in its structure and habits. It is less than half an inch in length: the head is of a brownish-yellow colour; the thorax and abdomen are ash-brown; the latter is of an oval form and rather hairy; the legs are very long, rather thick and covered with hairs, not unlike the legs of a spider, and of a yellowish colour. It is perfectly determined of degree, and is found upon the flowers in the woods of Spain throughout the year. The general characters are:—Body aperitous; joints of the palpini nearly equal; antenna setaceous, ten-jointed, and covered with fine hairs at the extremity; the abdomen of the male terminated by a hairy cap, and the female by an oral jointed processes, and that of the female is terminated by a boring instrument, or ovipositor, consisting of two valves, placed one upon the other, of which the upper one is the longer, and composed of two plates.
Upturning to the article Boaz, it will be found that there is another insect which, though it belongs to a different order (Neuroptera), resembles this species in its habits of appearing during the winter, and crawling upon the snow, as well as in being aperous, a character which is of rare occurrence in either tribe.

Boaz is inhabited by the Greeks, Khio, and by the Italians, Scio, an island of Asiatic Greece, near the W. coast of Asia Minor. It faces the peninsula of Clazomenae and Erythra, which is formed by the gulfs of Smyrna on the N., and that of Samos on the S., Clazomenae lies at the entrance of the Gulf of Smyrna, and is separated from the main land by a channel about 8 miles wide. Its length from N. to S. is about 30 miles, and its greatest breadth about 10. It is mountainous, especially in the N. part, and consists of two districts, the Areus, which suffers in nearly the same way that it has again suffered in our own time: the cities and temples were burnt, and all the handsome young females carried off.

The island is estimated at 4,000 square miles, of which were Chios, Pessidium, Phane, which had a good port and a temple of Apollo, Notium, Eleus, and Leuconium. Ion, the dramatic writer, the historian Thopompos, and the sophist Thessurus, were natives of this island. Chios was the first town, for which a name is given.

After the close of the Persian war, a. c. 480, the island passed successively under the dominion of the Athenians, the Macedonians, the Romans, and the Byzantines. The Genoese took it in 1346, and it was governed for a long time by the Genoese family of Giustiniani. Solymans the Great took it in 1566. In 1694 it was taken by the Venetians, but was soon after retaken by the Turks, by whom it was treated with especial favour, being allotted as a kind of dowry to the Sultana mother, who sent her officers to collect the mastic gum which is found in great abundance in the S. district of the island, and which constitutes a valuable commodity, being much used at Constantinople, and especially by the Chinese for their saucers for chewing.

The island is now divided into two districts, the S. district of the Sultana mother, the market town of Chios being safe from the vexations of the pashas and other arbitrary chiefs; they had their own magistrates, and lived in comparative freedom and security. The island accordingly produces a considerable trade, principally in cotton, and carries on a flourishing trade in the East, and is a great port for the corn trade. Under the Genoese and the Venetians the houses are generally well built, either with freestone or brick.

There are two manufactories, one for woollens, and the other for silks, at present at work; the latter is of recent establishment, but the former has been for many years the staple fabric of the town; the number of manufactories in that branch was formerly considerable, but for several years their number declined, and has been now reduced to one.

A savings' bank was established in 1822, which, on the 20th of November, 1835, held the sum of 22,521L. A literary and scientific institution has recently been set on foot.

A court of requests, for the recovery of debts not exceeding 40s., is held here every six weeks; its jurisdiction extends over the hundreds of Chippenden, Damerham North, and Cane. The living of Chippenden is a vicarage, held by the vicar of Luton. Its church is a new Gothic edifice, designed by Sir George Gilbert Scott, of Christ Church, Oxford. In addition to the church, a venerable Gothic edifice, almost in the centre of the town, Chippenden contains four chapels, not connected with the establishment.

A bridge over the Avon, and certain causeways in the neighbourhood, are kept in repair by the corporation, who some years since widened the bridge at a considerable expense; it is well paved and lighted.
A free school, for the education of twelve poor children, is (with other charities) under the management of the corporation; the stipend allowed to the master by the foundation is £1. 15s. per annum, with a residence. There is a day school and Sunday school, held by a religious body (which well attended), in connexion with the National School Society, and there are also Sunday schools in connexion with the various dissenting chapels. A trifling endowment for a Sunday school for the instruction of girls in the Lichfield church of England was erected in the year 1724, by the Rev. Robert Cock, vicar of the parish, who, by his will, gave the whole of his property to trustees for that purpose. A monument is erected to his memory in the church of the church. There are several other charities.

Some mineral springs have been found in the vicinity of Chippenham.

The ancient abbey of Stanway and Lacock are within the miles of Chippenham; the former is converted into a farm-house, but the latter has fallen into the hands of the Talbot family, who have preserved, and made it their family seat.

The ancient forest of Chippenham and Pewsham is destroyed, although the latter place is still provisionally called 'the Forest,' and the roads leading from it to the town retain the names of Wood Lane and Timber Street.

A union, under the Poor Law Amendment Act, has been established for Chippenham and twelve other parishes, comprising a population, according to the census of 1831, of 19,265 persons, and an area of 56,371 acres. (Communication from Chippenham, &c.)

CHIROBRYX. [CRAEX.

CHIROCEPHALUS. [BRACHIOPODA.]

CHIRONOMUS, a genus of Diptera insects of the family Tipulidae. This genus was established by Meigen, and is principally distinguished by the following characters:—Fourth joint of the palpus longer than the rest; antennae thirteen-jointed, in the male, and furnished with long hairs; the antennae of the female are six-jointed, and the insertion of the anterior joint is inserted at much greater distance from the others, and the anterior tarsi are generally very long; the wings, when closed lie parallel and they have three posterior cells; the body is long, slender and hairy.

Mr. Stephens, in his catalogue of British insects, enumerates upwards of eighty species of this genus: they are all of small size, frequent marshy situations, and very much resemble grubs. The worm known to anglers by the name of blood-worm is the larva of one of these species of this genus—the Chironomus plumosus. This worm is about half an inch in length; the body consists of numerous segments, and is furnished at the tail with several appendages which constitute the breathing apparatus. It is seen during the summer in the mud near the edges of ponds and ditches; when seen however it is only shifting from one place to another, its natural locality being in the mud, where it may generally be found in great numbers, living for the most part under water. This larva is much sought after and devoured by birds and fishes; but during this last summer (1836) we discovered that it had a very formidable enemy in an insect of its own order. A fly, which closely resembled the house-fly, was observed in great abundance on the mud which had just been left by the retiring water, and we found them assembled in little groups of five or six, in the act of extracting the blood-worms from their holes, using the probosces for this purpose. It was clear that the worm fancied dislodged itself in battle ensued, for each apparently wished to have the worm to itself; those that kept possession sucked out the fluids from the worm.

The pupa is of a brownish colour; the body is cylindrical, the head, thorax, wings, and legs are inclosed in separate sheaths, and, with the exception of the two fore-legs, lie in a close and compact mass; the fore-legs, covered by their sheaths, project from each side of the thorax. In this state, the pupa is buoyant, and, when thrown into the water, the breathing apparatus consists of two appendages, one on each side of the thorax, and each is composed of five branches which spring from a common stem.

When the insect is ready to quit its pupa case, it gains the surface of the water, and there remains suspended for some little time with the disc of the thorax slightly protruded; this part bursts down the middle, and the insect, which is hairy, and hence does not easily wet, places its feet upon the surface of the water, where it floats (if the weather be fair) for some time, rising and falling as if taking one upon our finger, that the wings are at first opaque and white, and filled with a fluid; but in a minute this fluid is expelled, and the sides of the wings collapsed and became transparent. The insect is not necessarily killed by breathing the air, but could not ascend from what part of the wing or body it made its escape.

The perfect insect is of a pale sah colour, and is a little larger than the pupa, with a common gnathostome. Thus, as well as others of the genus, is remarkable for its habit of carrying the two fore-legs in a horizontal position: they project in front, and must be mistaken for antennae; these latter organs however are very beautiful, and in the males resemble little plumes.

CHIROaptergus, a genus of Sawarians separated by Cuvier, and, according to him, resembling the Chalcides in their verticillated scales, and the Amphibienor, more still, in the obtuse form of their head; but distinguished from the first by their want of posterior feet, and from the last by their possession of anterior limbs. The same author adds, in a note to the last edition of 'Régne Animal,' that the genera which terminate this chapter resemble in structure and habit the ordinary Saurians and the genera which are placed at the head of the order Ophidians to such a point, that many naturalists are now of opinion that the two orders ought no longer to be separated, or rather that one should be established, comprising all the Saurians, with the exception of the Crocodilides, and on the other the Ophidian of the family Anguidae; but he observes that there exist among the fossil forms of the ancient caelarous beds, two very interesting genera (Ichthyosaurus and Plesiosaurus), which, with the head and trunk of a Saurian, have feet attached to short limbs and formed of a multitude of small articulations conjoined so as to form a kind of paddle or fin, like the anterior paddles or fin-feet which we have described. This is the case, he adds, to form a very ancient family. In their osteology they approach the Saurians, properly so called, much nearer than the crocodiles, with which Cuvier associates them in his family Loricata, though in the fossiles there is no trace either of scales or of the tongue, the two parts on which the characters of the Loricata rest.

These Bimammi reptiles, as Cuvier terms them, include, according to him, but one species, which is a native of the earth, the Bismanthus termed Bimana canaliculatus, of Cuvier, Bipède canaliculé de Lacqèpède, Chamaæsaurus propus of Schneider, and Lacerta lumbrioides of Shaw. The animal has two short feet with four toes on each (and the fifth) sufficiently organized internally, and attached by means of a scapula, clasper, and bones; but the head, the vertebrae, and, in short, all the rest of the skeleton resemble that of the Amphibienor.

Choristes canaliculatus is about the size of a human little finger, and from eight to ten inches long (French). It is of a flesh-colour and covered with about 220 demi-rings on the back, and as many under the belly, which is erect, alternating, on the side. The tongue is but little extended and is terminated by two small horny points. The eye is very minute. The tympanum is a very visible externally. Above the vent are two lines of pores.

Discussions have arisen on the means by which this animal possesses of suspending itself at the surface of the water without motion, its specific gravity being supposed to be greater than water.

It has been attempted to account for this by a kind of propelling power which the centre of the thorax possesses, and state that this part being then depressed and not making the attraction of the animal on the water, it is sufficient to overcome the slight difference in the specific gravity between the animal and the element; but it is further stated that if a drop of water fall upon the surface when this time is with it may receive a conclusive account for this fact they caused all motion and rose to the surface again. We imagine that at the time of falling within the water, and the difference of specific gravity of the fluid and water, and that there would most probably be more air in the gills of the fish than elsewhere; and hence this part is protruded from the water.
CHIRUS, a genus of fishes of the section Acanthopterygi, and family Gobioides. The species of this genus have the body considerably elongated, furnished with ciliated scales, and the mouth not deeply eft; the teeth are small and conical, but the most remarkable character consists in the body being furnished with several longitudinal lines of pores, similar to the ordinary lateral line. Some of the species have appendages over the eyes, as observed in the Blennies; their ventral fins have each five soft rays: the spines of the dorsal fin are slender, and this fin extends nearly the whole length of the back.

Cuvier says that it is with hesitation that he places this genus with the family above-mentioned, and that it will probably one day form the type of a separate family. All the species as yet discovered inhabit the seas of Kamtschatka—they are included in the genus Labrax by Pallas, who describes several of the species in the 'Memoirs of the Academy of St. Petersburgh,' vol. ii., 1810.

CHISMOBRANCHIATA (Zoology), De Blainville's second order of his second sub-class, Paracraniophora Monocera. The following is his definition of the order. Organs of respiration aquatic, branchial or pectinated, situated at the anterior part of the back, in a large cavity communicating with the ambient fluid by a wide oblique anterior slit. Mouth toothless, but provided with a long lingual riband-like organ. Shell either none, or internal, or external, very much depressed, with a very large entire aperture, and without any pillar (columella).

This definition is incorrect, in so far as it states that in some instances there is no shell; for Coriscella, the only genus described by De Blainville as being without any shell, has a bony one, as Cuvier observes, though it is very delicate and flexible, and nearly membranous. Cuvier, who places three of the genera, Sigaretus, Coriscella, and Cryptonome, under his Capuloides, a family of his other Gasteropoda pectinibranchiata, observes that De Blainville places the greater part of the Capuloides under his non-symmetrical Hermaphrodite Paracraniophora, or Calyptraeans; but that they appear to him (Cuvier) to be all Dienceous.

The geographical distribution of this order, which, according to De Blainville, is marine and probably herbivorous, is wide.

Genera.—Coriscella.

Body elliptical, very much depressed, having the borders of the mantle very delicate, notched in front, and spreading out very largely on all sides. Foot oval, very small. Head scarcely distinct; two tentacula, hidden under the shield, of some size, but short and contractile. Eyel at the external base of the tentacula. Back somewhat rounded, and according to De Blainville—but this, as we have already seen, is an error—without any shell, external or internal.

Example.—Coriscella nigra, Blainv. The only species of the genus, and described by De Blainville from a specimen in his collection. Locality, Seas of the Isle of France. Cuvier places this and the two following genera under his Gasteropoda pectinibranchiata.

**Sigaretus.**

Shell more or less thick, flattened, with an ample and round aperture and but little spire, the whorls of which increase very suddenly; and enveloped during life in a spongy shield, which considerably encompasses its borders as well as the foot, and which is the true mantle. In front of this mantle there is a notch and a semi-canal, which serve to conduct the water into the branchial cavity. The tentacula are conical, and the eyes are placed at their external base. The male organ, according to Cuvier, is very large.

De Blainville thus subdivides the genus:

1. Species with a very delicate and smooth shell. Example.—*Sigaretus convexus.*
2. Species with a thick and solid shell. Example.—*Sigaretus halaeoides.*

De Blainville observes that only a few living species of this genus are known. Mr. G. B. Sowerby, admitting that he has but a slight acquaintance with it, judges it to belong to the same family with Lamarck's *Bulinus Apodyta*, and Dolabella, though Lamarck has placed it among his *Macrostomata*, near to *Haliope*, evidently on account of its general form and its dilated aperture. G. B. Sowerby further observes, that he knows not why Lamarck has arranged *Nerita cancelata* of Chemnitz with *Sigaretus* rather than with *Natica*, and remarks that much confusion seems to reign in Lamarck's synonymy of his *Sigaretus halaeoides*, inasmuch as he quotes figures of several very distinct shells for it.

*Sigaretus* has been found at depths varying from five to fifteen fathoms on sandy bottoms.

Fossil Sigareti.

Defrance enumerates three fossil species, one from the
Placetinus, one from Grignon, and another from the environs of Bourdeaux. G. B. Sowerby says that the fossil species are few and rare, and that they occur in the London clay at Barton, and in the contemporaneous formations in France and Italy. The species in the Calcarien grossier at Grignon, he adds, has a small umbilicus. Deshayes in his 'Tables' gives eleven living species, and four fossil (tertiary); one, Sigaretus depressus, living in the seas of the Molucca islands. The fossils occur in the Pliocene, Miocene, and Eocene periods of Lyell. Cryptostoma. Shell very like that of Sigaretus, carried with the head and abdomen, which it covers, upon a foot four times its size, cut almost squarely behind, and which produces anteriorly a fleshy and oblong part, which makes nearly one-half of the mass. The animal itself has a flat head, two tentacles, and a large pectinated branchia on the pedal of its dorsal cavity. The male organ is placed under the right tentacle. 

Example.—Cryptostoma Leachii.

De Blainville, who separated the genus, says that he knows two species, both from India, and adds, that perhaps some species of Lamarck's Sigaretus belong to them. G. B. Sowerby, who identifies Cryptostoma with Sigaretus, states that as far as the differences in the shells themselves warrant it, his opinion is decidedly against the separation of De Blainville's Cryptostoma from the latter genus; and adds, that he does not think the animals sufficiently different to render the propriety of separating them very clear. He afterwards says, 'Upon examination of the specimens in the British Museum, we are convinced that De Blainville's Cryptostoma Leachii is the same as one of the two shells which Adamson calls Sigaretus; his Crypt. brevicolium is probably the other; but this we cannot ascertain, because the shell has been taken away from the specimen in the British Museum. We have no doubt, however, that the Crypt. brevicolium of De Blainville is a female specimen of Cuvier's Sigaretus, given by him to Dr. Leach. It is to be regretted that Cuvier has not given any description of the shell of his Sigaretus, so that it is impossible to ascertain whether or not it is identical with either of Adamson's shells; it is perhaps needless to add, that unless it can be identified with one of them, it ought not to be considered as a Sigaretus. Its animal is certainly very different from that of Cryptostoma Leachii, which we believe to be identical with one of Adamson's.' Cuvier, in the last edition of the 'Règne Animal,' retains De Blainville's genus Cryptostoma, and places it next to Coriicella. He adds in a note, that besides the species in the British Museum (Cryptostoma Leachii, Blainv.), he possesses another (Cryptostoma Carolinum, Cuv.), sent from Carolina by M. L'Herminier. The genus does not appear in Deshayes's list.

Oxyne. 

Body gastropod, with a large dorsal shell, anterior, bulliform, and with a simple spine. Foot narrow. Branchiae marginal, striated transversely. Mantle widened into two lateral wings. Tentacula two, not retractile.

Example.—Oxyne olivacea. De Blainville, who seems to consider this genus somewhat apochryphal, observes that he only knows it from the little that Rafinesque, who described it in the 'Journal de Physique,' says of it; and adds, that he only places it in the position given to it, because M. Rafinesque states that it only differs from Sigaretus, because the shell is external; adding that, nevertheless, if the branchiae are disposed, as Rafinesque describes them, the difference must be much greater. Rang, who speaks with approbation of this remark by De Blainville, places it under his unclassified genera. Cuvier does not notice it.

The next genus in De Blainville's arrangement is Stomatella, but as he places Stomata with the sea-earns, and as we agree with G. B. Sowerby that Stomata and Stomatella differ sufficiently for generic distinction, the reader will find their description under Haliothidae.

Velutina. 

Animal oval, sufficiently protuberant (bombe), hardly spiral; border of the mantle simple anteriorly, and double for the whole of its circumference; the internal lip thickest and tentacular. Foot thick. Tentacula large, oblongal, distant, with a small frontal veil between them. Eyes black, sessile at the external side of the base of the tentacula. Mouth large, at the extremity of a sort of muzzle. Respiratory cavity large, without any tube, and containing two unequal pectinated branchiae; orifice of the ovary at the base of the male organ, situated at the root of the right tentacular. Muscular attachment of a bony shape, very slight behind and open before.

Shell, externally, with an oblongal patina, with a small lateral spire, and without a columella. Aperture large, the edges almost continuous, and sharp; the right border united to the left by a lamellar calcareous deposit.

Example.—Velutina capulicula, Lamarck. De Blainville observes that he established this genus from an individual provided with its shell, which he owed to the generosity of Defrance. He adds that he knows but one species from the coast of England, which is very probably the same of which Müller speaks under the name of Bulla velutina, and which Lamarck erroneously regarded as the analogue of his Sigaretus halicostodus; and that Mr. Gray has also proposed the genus under the same name.

[Velutina capulicula]

CHITONS. CHITON TRIBE. CHITONIDE. A natural family of Gastropods, Ocrobionts of the French, affording the only known instance of a protecting shell forsoed of many portions, or, as they have been somewhat incorrectly termed, valves, often in contact and overlappp each other, but never truly articulated. This anomalous structure is the probable cause of the various wanderings of those who have, each according to his own view, assigned the Chitonides their place, upon the faith of a too great value for this multiplication of shelly plates, composing a shield, or coat of scale armour for the soft parts. The following cut will give some idea of the structure of this shell.

[Chiton capulicula]
These plates are bound together by a coriaceous border, which, as we shall presently see, is either plain, or beset with bristles, spines, &c.

The early naturalists took these shells for the peculiar armour of certain serpents, a conclusion to which they were doubtless helped by the love of the marvellous, so strongly shown in the accounts of the older travellers. By degrees the true condition of these mollusks became better known; and the opposite opinions of Linneaus and Adamson divided the naturalists of their age. The former arranged these shells among his multivalves, a class entirely artificial, and like all artificial classifications comprising the most heterogeneous forms. Adamson, on the contrary, took nature for his guide, and could not behold the animal itself, while he regarded the shell as of comparatively small importance, placed Patella and Chiton side by side in his method. But the Linnean school long reigned paramount; and Adamson's labours were comparatively forgotten, when Cuvier began to form his great work in which he found the Mollusca, and Lamarck and others sided in the work. Cuvier, who made astronomical investigation the basis of his opinions, at once pronounced in favour of Adamson. Lamarck afterwards adopted the same conclusion, but not till he had previously placed the Chitons at the end of the Acrophalous Mollusks, between Pictulana and Balanus. Poli, in his magnificent work on the Testacea utrinsque Siciliae, in giving the anatomy of a Mediterranean species, became a valuable ally; for, although he still retained Linnae's class of Multivalves, and although in his anatomical details he said nothing of the nervous system, a branch of animal organization essentially necessary to be known for assigning an animal its true place, he demonstrated enough clearly to show that Chiton bore no relation to the other Multivalves of Linnaeus. M. de Blainville, however, resting upon the generative faculty of the Chitons, proposed, in opposition to these views of Cuvier and Lamarck, which had been adopted by almost all zoologists, to form a subtype of Mollusks under the name of Malaeologoria, in which each of the Linnean genera, Lepas and Chiton constitute a class; the first, the Lepadis and Lepadaceae, the second, the Polyplacophores or Polyplaxiphora. These almost singular views of De Blainville have not prevailed among zoologists; and Cuvier, in the last edition of the Règne Animal, arranges the Chitons at the side of the Patelles, forming from these two genera, his small family of Cyclobranchiata.

Deshayes, in the article Ossérbrion, in the Encyclopédie méthodique, enters at large into the organization of the Chitons, and discusses with much learning and acuteness the conflicting opinions of Cuvier and De Blainville. The following is a summary of Deshayes's observations.*

* Digestive organs. No projecting head, in which the Chitons resemble the Phyllidians. No tentacula, which are replaced by a kind of veil which surrounds the mouth. Eyes, as in many other Mollusks, the Pteropoda, for example, wanting. Mouth and Osseophagus, furnished with a very long tongue rolled spirally, and armed with horny teeth, a good figure of which is given by Poli. Stomach, intestines, and liver, like those of the other gastropods. Vent at the posterior extremity of the body, as in the Phyllidians, Dorsis, &c.

Respiratory and Circulating Organs. The branchiæ of the Chitons consist of a range of small triangular leaflets placed, as in Patella and Phylidia, in the furrow which separates the foot from the mantle. The heart is situated posteriorly* in the mesial and dorsal line: it is symmetrical, and composed of a single ventricle and two auricles.

Organs of Generation. According to De Blainville, an ovary only, which, instead of having, as in the other mollusks, a single exit, has two external issues, one to the right, the other to the left. Deshayes observes upon this, that though he had made minute anatomical investigations, he has found it impossible to find the second issue of the organs of generation, but he acknowledges that the species which he dissected were small.

Nervous System. Proved by Cuvier not to differ from that of other mollusks properly so called. It consists of what may be termed a complete oesophageal ring, and of various branches, which are given off divergingly towards the several organs.

Locomotive Organs. The oval foot, more or less wide, according to the species, extends the whole length of the animal.

Shell. Eight narrow, transverse, calcareous pieces, overlapping each other, and strongly implanted on each side in a thick and fibrous border of the mantle, which surrounds the whole body, and is sometimes, as we have observed, naked, but more generally covered with small scales, spines, or hairs. These pieces are not immoveable, as the animal can roll itself up or stretch itself out again for the purpose of progression or adhesion. To work this machinery, there are three muscles given off from the first piece to the second, three others given off from the second to the third, and so on throughout, so as to make the mechanism of this scale armour complete. One of these muscles occupies the mesial, and dorsal line, the other two are lateral and oblique. The growth of the shell is analogous to that of the other mollusks.

The chitons then resemble the other mollusks: 1st, in the general form of the body: 2nd, in the organ of locomotion: 3rd, in the form, in the nature, form, and position of the branchia: 4th, in the heart, and in the distribution of the circulating vessels: 5th, in the mouth and its vein: 6th, in the tongue and the rest of the digestive organs: 7th, in the position of the vent: and 8th, last, but not least, in the nervous system.

What, then, are the differences? 1st, the form of the shell composed of eight pieces instead of one: 2nd, the mantle, which is more fibrous and fibrous than in the other mollusks: 3rd, the myology: 4th, the double issue of the organs of generation, allowing this difference to be established, whereas it is doubted. With regard to the absence of eyes, that defect exists in a considerable number of mollusks.

Hence Deshayes concludes, and the conclusion appears to us to be just, that the chitons are true mollusks, and that their place is not far distant from the Patelles.

Geographical distribution. The species are numerous, and there are few without some of them. As a general rule, the largest are found in warm climates, but there are exceptions; for instance, Chiton setiger and Chiton Boxonian, King, are found on the shores of Tierra del Fuego, and in the straits of Magellan; the former of these species grows to the length of two inches and three-


† The stomach is membranous and the intestine is very long and much dilated. The vent is situated in the posterior extremity.

‡ Upon the rectum.

§ Cuvier says that the ovary is situated above the other viscera, and that it would seem to open at the sides by two ostiaria.
eighths, and the breadth of one inch and three-eighths, and the latter to the length of three inches and two-eighths, and the breadth of one inch and a half. No mention is made of them in the ‘Supplement to Captain (now Sir Edward) Parry’s Voyage’ (1819–20), nor in the ‘Supplement to Captain (now Sir John) Ross’s Voyage’ (1829–1833). The British species are small.

Local. Rocky shores where it adheres, and also on stones and other submarine bodies. Found at depths varying from the surface to twenty-five fathoms.

Most zoologists agree that there are no differences sufficiently strongly marked to make a generic distinction between Chiton and Chitonella; and, indeed, the gradations from the one to the other are so imperceptible, that there is no point where the line can be satisfactorily drawn. In the most completely-developed form of Chiton the shell secretion greatly preponderates; in Chitonella that secretion is comparatively small, and the great development is in the border of the mantle, which, in some instances, almost hides the comparatively-minute shelly pieces.

a. Species with the mantle border or marginal ligament, coriaceous and naked. Examples, Chiton Chilensis, Frembly, and Chiton Blainvillei, Broderip.

Chiton Chilensis. Shell oblong-ovate, opaque, thick, dark brown, smooth, dull; inside white, with pink markings on the first, second, and last valves. Valves with longitudinal striæ, crossed by irregular concentric ridges. Anterior and posterior valves semilunate, slightly punctuated; second valve subcircular, the front margin obtusely angled, lateral margins acute, and the posterior with a prominent beak, on each side of which diverges a rather elevated granulated ridge; the next five valves alike, bow-shaped, with a granulated ridge on each side. Border smooth, coriaceous, tough, thick, darker coloured than the shell, semipellucid, broad at the sides and narrow at the extremities. Locality, Valparaiso, in crevices of rocks and under stones. (Frembly.)

[Chiton Chilensis.]

Chiton Blainvillei. In this species the shape of the coriaceous border itself is not only very remarkable, but it is here and there fringed, though not with hair. M. Deshayes has placed this under his section of those species which have the border of the mantle fringed with hair or spines, the whole being rose, variegated with white, brown, and greenish and, internally, white. The mantle-border orange-red, very narrow posteriorly, and enormously produced anteriorly, rounded and fringed here and there, especially on its anterior margin, with some short coriaceous processes. Locality, Inner Lebos Island, coast of Peru.

b. Mantle-border smooth, but with tufts of hair at the lateral extremities of each plate. Example, Chiton Faecicularis, Linnæus.

Shell apparently smooth, but when examined with a glass, proving to be rough like shagreen, except on the elevated dorsal ridge; margin surrounded with tufts of whitish hair, one at the junction of each valve, and two in the front, making eighteen in number. Colour brown or dark cinereous; length five-eighths of an inch; breadth rather more than two-eighths. Locality, British southern coasts. Montagu, who gives this description, says, that on the coast of Barbary it is not frequently an inch long.

[Chiton Faecicularis.]

γ. Mantle-border hairy. Example, Chiton Peruvianus, Lamarck.

Shell oblong-ovate, opaque, dirty yellowish green, or yellowish brown, inside white. Valves thin, slightly elevated; posterior compartments of the dorsal valves a little raised and striated, with minute granulated striae, and in like manner the other parts of the shell; under each valve is inserted a series of short black hairs, which lie on the back of the shell. Border narrow, coriaceous, thickly set with coarse black hairs. Length two inches, breadth one and a half. Found under stones at low water on the shores of Valparaiso Bay. There is a variety with the anterior valves much narrower than the posterior. (Frembly.)

[Chiton Peruvianus.]

π. Mantle-border beset with spines. Example, Chiton spinosus, Bruguière; and Chiton spiniferus, Frembly.

Chiton spinosus. Shell brownish black, valves opaque.

[Chiton spinosus.]

Chiton Blainvillei. Copied by permission from Sowerby’s ‘Illustrations of Conchology.’—Recent Shell probably from not having seen a good specimen. Shell roundish, anterior valve obscurely rayed, the posterior one very small and abrupt; the others concentrically lineated.

[Chiton Blainvillei.]
moderate, with the sides granulated, the anterior valves entirely granulated. Mantle-border wide, and beset with long aculeated blackish spines, very much resembling those of certain Echinus. Locality, South Seas, according to Pérnon. Length three inches.

N.B. Lamarck describes the valves as smooth, and the specimen figured by Sowerby in his Genera has them nearly so. This may be the consequence of age and corrosion, for in a comparatively young specimen the sculpture of the valves is that above described. The species is very rare at present.

Chiton spiniferus. This is the Chiton aculeatus of Barnes, a name which had been preoccupied by Linneaus for another species, and the Chiton tuberculiferus of Sowerby in the T ankerville Catalogue; but the latter name was given from an old specimen with broken spines, and has been rejected as inapplicable. Shell opaque, oblong ovate, reddish-brown, glossy; inside reddish-white. The posterior angles of the valves do not cover the anterior ones. Anterior valve with generally nine rows of raised dots diverging from the apex, but the number perhaps varies with the age of the shell. Second valve rather acutely beaked and carinated, longer than the five following, which are striated and shaped alike; these all rise into a rather acute beak, are carinated, each side of the carina being divided into two distinct portions, the anterior one the largest, and bearing broad, irregular, longitudinal striae; a prominent row of raised dots, extending from the apex to the anterior angles of the valves, separates the compartments; the posterior portion glossy, with fine concentric striæ; the posterior margins with tooth-like granulations. Last valve striated, like the anterior compartments of the others, and rising into a rather prominent beak, leaning towards the posterior margin; from under the beak are raised dots, disposed in a similar manner to those on the anterior valve. Border coriaceous, thick, broad, rough, greenish or orange-coloured, and in the younger specimens thickly studded with blunt spines; but in the old shells the spines are short and scanty, and generally covered with corallines: the inner edge of the border, inserting itself under the posterior angles of the valves, has the appearance of being deeply separated. (Frembley.) This species grows to the length of five or six inches, but has then generally lost all its external beauty. We have seen many individuals in all the stages of growth, and have invariably found the spines of the aged ones covered with that calcareous matter which is so frequently found adhering to shells and submarine bodies, but we have never detected anything organic about that which was attached to the spines of this species. Locality, Chili and Valparaiso, where Mr. Frembley found several specimens in very exposed situations; so much so, that collecting them was attended with much difficulty, and not unfrequently with danger, from the violence of the sea breaking on the rocks to which they attach themselves very strongly. They are generally covered with sea-weed.

Mantle-border scaly. Example, Chiton Coquimbensis, Frembley.

Shell ovate, narrow, opaque, greenish-brown, shining; inside blackish; the anterior valves with numerous undulated, concentric ridges; the next rather acutely keeled; the five following alike; carinae broad and smooth, on each side of which is a similar ridge diverging from the beaks, and forming with the carina a sagittate figure, and connected with it by several strongly marked ridges: from under the beaks, to the anterior angles of the valves, extend sharp, moniliform ridges, each side of which is coarsely striated longitudinally. Border thick, moderately broad, and covered with coarse, seed-like scales, which are attached laterally. Length three inches, breadth one and a half (Frembley). The description was taken from a young shell; for as the shell advances in age, the middle of the valves, which are very solid, becomes eroded and covered with adhesions, Balani, Patelle, &c. Mr. Frembley says, that the only part of the coast where he found this species was the south side of Coquimbo Bay; their habits, he adds, are very similar to those of Ch. spiniferus, with the exception that they seem more gregarious.

[Chiton Coquimbensis.]

Mantle-border granulous.

Example. Chiton magnificus, Deshayes.

Shell opaque, ovate, olivaceous, dull, dotted with lighter coloured spots; inside glaucous. The anterior valve with regular radiating striae, crossed by concentric ridges; posterior margin nearly straight. Dorsal valves obtusely beaked, divided laterally into two compartments; the anterior having regular longitudinal striae, crossed with other very minute and concentric; from under the beaks diverge to the lateral margins of the valves coarse and more irregular striae, which raise the posterior compartment above the other. The posterior valve has a well-defined apex, leaning towards the posterior margin. Border thin, moderately broad, and covered with fine shining bead-like gra-
nulations, of the same colour as the shells, divided into two distinct portions, the upper of which is composed of finer beads than the lower, and which are placed transversely (Frembley). This is the Chiton ovoideus of Frembley, and Chiton latius of Sowerby (Tankerville Collection), which latter may be perhaps considered a variety, remarkable for its breadth. Deshayes had previously given to the species the name here assigned to it. The species grows to the length of four or five inches: we have seen one that reached four inches and a half when dead. There is another variety narrower than the ordinary individuals, and Mr. Frembley observes that, among the very young shells, some of them have their borders of a lighter colour than their shells, and spotted with black: this not being a constant character in all the young specimens, Mr. Frembley thinks they may be regarded as a variety. Locality. Chili.

Species with the border highly developed, and the valves very small. (Chitonellus.)

These are more or less cylindrical, and vermiciform, the valves being very small, and in some species almost entirely hidden under the skin of the border, giving the animal an almost naked appearance.

Examples. Chitonellus levius, and Chitonellus larveiformis*.

Fossil Chitons.

G. B. Sowerby states that the fossil species are rare; and that detached valves are sometimes found in the calcareous sand of the neighbourhood of Paris and in the English coast. Deshayes in his tables (Lyell) gives but one fossil species (tertiary): in the 7th vol. of his edition of Lamarck (1836), he says that at that time (jusqu’à présent) but one fossil species was known; and that was discovered at Grignon by M. Defrance. Since, he adds, the genus has been found in the transition rocks (le terrain de transition) in the neighbourhood of Tournay; and he states that the knowledge of this curious and interesting fact is due to the researches of M. Duchastel and M. Fusin.

The student should refer to the great work of Poli (Testacea urtisique Sicilie), the Memoir of Cuvier in the Annales du Museum, the article Oesobron (by De Blainville) in the Dictionnaire des Sciences Naturelles, and in his Malacologie; and that by Deshayes in the Encyclopédie Méthodique. He should also consult the writings of Broderip, Bruguière, Frembley, Gray, King, Lamarck, Latreille, le Conte, Pennant, Quoy and Gaimard, Rang, Sowerby, and Wood.

CHITONELLUS. [Chiton.]

CHITTAGONG, a district in the south-east part of the province of Bengal, bounded on the north by Tiperah district, on the east by the Burnamore empire, on the south by the province of Aracan, and on the west by the bay of Bengal. This district lies between 21° and 23° north lat., and between 91° and 93° east long.; its length from north to south is about 120 miles, and its greatest breadth 50 miles, but the eastern boundary has never been accurately defined, and the average breadth is supposed to be not greater than 25 miles. According to an estimate made in 1784, the district was computed to contain 2987 square miles, about two-thirds of which was unproductive hilly land; near to the sea, the interior is generally hilly, and covered with jungle, the rapid growth of which is favoured by the moistness of the climate. The rainy season sets in earlier than in most other parts of the province of Bengal, and continues later, sometimes till the middle of December. The numerous streams, one-half of which flow towards the bay of Bengal, and the rest into the Irawaddy. The most considerable of these streams is the Khampanuli, or Chittagong river, which, at its mouth, forms a secure harbour, but so shallow that during the monsoon it is generally difficult for vessels to put to sea. The channel of this river at the capital, Islambod, is about a mile broad; but a little higher up its width does not exceed 100 yards. The land rises strongly up the river. The source of this river is in Ava, whence it flows south-west to the district of Chittagong, which it enters by the Mugh mountains, where many waterfalls occur.

The river Naft, which forms the southern boundary of the district, is about 70 miles south of Islambod; it is not navigable: the banks of this river are, for the most part, covered with thick jungle, and exhibit only a few spots cleared for cultivation, and a few miserable dwellings of hunters, who go on foot or on tame elephants, which are sold from Chittagong to every part of Hindustan. In the valley of the Khampanuli are some rich tracts of land, cultivated by Bengalese, who yield plantains, ginger, betel-leaf, sugar-cane, cotton, indigo, and tobacco. The land is parcelled out into very small divisions, having formerly been assigned for the support of the military stationed in the district, to prevent the incursions of the Mugs of Aracan. When this military establishment ceased to be necessary the farms became zemindaries, and have been so considered in the administration of the country. Between the hills are several well-watered plains and valleys, of small extent, which are cultivated partly by Hindus of Bengal, and partly by Mugs of Aracan, who migrated into the district upon the conquest of their country by the Burmese in 1763. The majority of the Mugs who thus settled in Chittagong are traders and mechanics, only a small proportion having become cultivators. Exclusive of the Mugs settlers, the inhabitants of Chittagong were estimated, in 1801, at 1,200,000; but this number is probably excessive, considering the physical circumstances of the country. The Mohammedan inhabitants exceed the Hindus in number in the proportion of three to two.

It is said that Chittagong was once a frontier province, belonging to the independent kingdom of Tripura, and that during the conflicts between the Buddhists and Brahmins, it was governed sometimes by chiefs of one and sometimes by others. When the Mogul and Afghans, the district was held by the Buddhists of Aracan, and yet at the beginning of the present century the population contained scarcely a single Buddhist. In 1652 this district was enumerated by Abu Fazl among the dominions of the Mogul sovereignty, but it does not appear to have been actually in their possession until 1666. Nearly a century later (1760), Chittagong was ceded to the East India Company, by Jaffar Ali Khan. In 1826, when Aracan was taken from the Burmese, the political superintendence of Chittagong was included in the government of Aracan, and has so continued to the present time.

(Adyn-A-Akbari : Ronelle's Memoir ; Hamilton's East India Gazetteer ; Report of Committee of House of Commons (1832) on affairs of India.)

CHITTOOR, a town and small pollam or district on the western side of the Carnatic, in 13° 15′ N. lat., and 79° 12′ E. long, eighty-two miles west from Madras. The situation is naturally strong, being between two ranges of hills, one of which bounds the Balkahut, and the other forms an irregular sweep of various elevation, and 27 proches within a few miles of the sea at a short distance from each other; the Morpeth. There is, however, no abob of the Carnatic in 1801, and an assessment of the lands was made in the following year; but it was not until 1804, that the British obtained complete and quiet possession through the expulsion of the Poligars, or small tributary chiefs by whom the country was held, and who had never been peacefully subdued by the Mohammedans. (Hamilton's East India Gazetteer.)
CHIVALRY has commonly been represented as a great institution, invented in the eleventh century, for a grand moral purpose—that of struggling against the deplorable condition of society at that period—of protecting the weak against the strong, and redressing individual injuries. So prevalent and so deeply-rooted has been this notion of the origin of Chivalry, that we find it set forth even in the new "Histoire des Francs" of M. de Sismondi, a writer usually so clear-sighted and so little a slave to the routine of the century, that he does not appear so thoroughly adapted to meet. It arose much more simply, more naturally, and more silently; it was but the development of material facts long before existing—the spontaneous result of the Germanic manners, and the feudal revolution. It took its birth in the interior of the feudal mansions, and was not at any set purpose beyond that of declaring, first, the admission of the young man to the rank and occupation of the warrior; secondly, the tie which bound him to his feudal superior—his lord, who conferred upon him the arms of knighthood.

Of this we find an irrefragable proof in the history of the term miles itself, which was constantly used in the latinity of the middle ages to designate the chevalier, or knight. Toward the end of the Roman empire, the word was signified simply to serve, to discharge a service, to serve towards a superior, whether the service itself were of a military or a civil nature. The service originally denoted by this expression, indeed, was, no doubt, the military service exclusively, and in like manner it is very probable that the term had been extended until it embraced every subordinate office and function. After the Germanic invasions of the declining Roman empire, we find it frequently employed in speaking of the household of the barbarian kings, and the offices which their companions held about their persons. Soon, by a natural retrogression, in conformity with the new turn given to the social state, the term miles resumed its almost exclusively warlike character, and denoted the combatant possession of a warrior. Such that became synonymous with wassus, or wassal, and indicated that a certain man held of another a beneficium, or fee, and was attached to him by that consideration; in short, from the ninth to the twelfth century, the word miles denoted, not the chevalier, or knight, as ordinarily conceived of, and as M. de Sismondi himself has described him, but simply the companion, the vassal, of a feudal superior.

Here we see the true and necessary origin of chivalry. But, the course of its development, was in the society it required the unity of stability and self-confidence, the usages, the feelings, the circumstances of every kind, which attended the young man's admission among the vassal warriors, came under two influences which soon guided and formed the culture of a new character. Religion and imagination, poetry and the church, laid hold on chivalry, and used it as a powerful means of attaining the object they had in view, of meeting the moral wants which it was their business to provide for. So early as the ninth century, we find some religious ceremonie associated with the Germanic practices on these occasions. A sanctified account of the reception of a chevalier, as practised in the twelfth century, will show what profoundly it had become united with their usages. It was as if the church had laid its grasp on every particular of that solemn act of the feudal world.

The young man, the squire, aspiring to knighthood, was first of all stripped of his garments and put into a bath, the symbol of purification. On his coming out of the bath, they clad him in a white tunic, the symbol of purity, a red robe, emblematic of the blood which he was to shed in the cause of the faith, and a black doublet, in token of the disinterested purity of his vassal's service. In this state, purified and clothed, the novice kept a rigorous fast for twenty-four hours. When evening came, he entered the church, and passed the night in prayer, sometimes alone, sometimes with a priest and with sponsors who prayed in common. Confessions, formed by a solemn and solemn confession; after which the priest administered to him the communion; and after communion he heard a mass of the Holy Ghost, and commonly a sermon on the duties of a chevalier, and the new course of life on which he was about to enter. When the sermon was over, the novice advanced towards the altar, with the sword of knighthood suspended from his neck: the priest took it off, blessed it, and attached it to his neck again. The novice then went to knelt before the priest, who knighted him. 'To what end,' the lord then asked him, 'do you desire to enter into this order? If it is that you may be rich, repose yourself, and be honoured without doing honour to knighthood, then you are unworthy of it, and would be to the knight- hood a stain, and to you a peril.' And the young man, a answer, that he promised well to discharge the duties of a knight, the lord granted his request.

Then did knights in attendance and sometimes, approaches the altar, knelt, and by his novitiate, and, putting on first the spurs, next the hauberk or coat of mail, then the cuirass or breast-plate, then the brassards or arm- pieces, and the gauntlets, and lastly girding on the sword, he was dubbed, to the modern English expression derived from the French adoubé, which, according to Ducange, signified adopted. The lord rose from his seat, went up to him and gave him the accolade, that is, three strokes with the flat of his sword upon the shoulder or the nape of the neck, and sometimes a blow with the palm of his hand upon the cheek, saying, 'In the name of God, Saint Michael, and Saint George, I make thee a knight,' and sometimes adding, 'Be thou brave, bold, and loyal.' The young man being thus knighted, they hanged him his sword, and bound his helmet, and held the horse under the stirrup, and canoed within the church, brandishing his lance and flourishing his sword. Then quitting the church, he went and exhibited himself in the midst of the people, and before the populace, whom he found eagerly awaiting their share of the spectacle.

It is easy to recognize in all this the influence of the priesthood, studious to associate religion with every circumstance of a solemnity so important in the service of the state and foreign to the state of lay society at that period. Moral notions so exalted—often so delicately scrupulous—above all, so humane, and so constantly impressed with the religious character, evidently emanated from the clergy. They kept up the usages and relations of the church to the state, to foreign, to a higher level than the rest, and the ideas and the usages to which chivalry had given birth. Whatever evils result from the unscrupulous and improvident use which the Roman church made of this direct influence over the power of the sword, in promoting so many crusades against the infidel and the schismatic, it undeniably created a chivalric individualism which别人 had brought forth, in labouring to introduce internal peace in society, and a stricter and more comprehensive morality into individual conduct. The influence was not, however, the same in every country. In France, it fostered the feudal order, with its manners, its ideas, and its life, and its distinction of classes. In England, it took a different turn; it was more religious, more charitable, more literary, more Renald, and spread a more equal light over society; but it was less independent of the state, and less a feudalism; and English chivalry had a different spirit, and a different bearing. In France, the people were the rulers, and in England, the state. In France, the state and the nobility were closely united in a spirit of great wisdom, and the state of the people were more independent of the state, and more free.
should be observed that in the earlier stages of society poetry is not merely a national pastime; it is also a means of progress, exalting and developing man's moral nature. The poetical remains that have descended to us from that age show, that the poet, invested with the character of the priest, performed the functions of the deities, and the practice of the same virtues, as were inculcated in the more solemn exhortations of the priests.

It is an oft-repeated observation, that all this was mere poetry, mere chimera, bearing no resemblance whatever to the reality. And indeed, when we consider the state of manners in those three centuries, and the incidents of daily occurrence that filled the lives of men, the contrast between the pretensions of the poets and the facts is truly shocking. The period before us is undoubtedly one of the most grossly brutal in the history of European society, one in which we find the greatest amount of crime and violence, in which the public peace was most incessantly disturbed, in which the most insolent manners prevailed. To any one attending only to the positive and practical state of society, all this poetry and morality of chivalry looks like sheer falsehood. Yet it is undeniable that the chivalric morality and poetry existed simultaneously with these disorders, with this barbarism, with all this deplorable social state. The monuments are before us: the contrast, we repeat, is shocking, but it is real.

This very contrast, however, forms the great distinctive characteristic of those two ages. When we look into the middle ages, into the social systems, as the Greek and Roman, when we examine, for instance, the early stage of Greek society, its heroic age, of which the poems that bear the name of Homer present a faithful and truthful resemblance to any of the contradictions that strikes us in the middle of the primitive ages. The habits and the theory of manners are there nearly accordant. We do not find men having ideas much purer, nobler, and more generous than their daily acts. Homer's heroes seem quitted in their own brutality, ferocity, selfishness, and conuenience; their moral science is not better than their conduct; their principles are on a level with their acts. We find to have been the same with all other ages, the same vigour, and the same turbulent youth. But in Europe, the contrary, in the middle ages, we find the deeds are habitually detestable, while crimes and disorders of every description abound, yet we find dwelling in the minds and imaginations of men nobler instincts and more exalted aspirations. Their notions of virtue are much more developed; their ideas of justice incomparably better than what is practised around them, than what they practise themselves. A brighter ideal of morality abounds, as it were, above the rude and barbarous social state, attracting the view and commanding the respect of the vulgar. It cannot be confounded to it. Christianity must undoubtedly be ranked among the principal causes of this fact: for its great characteristic is, its labouring to inspire men with a high moral sense, and to keep constantly before their eyes a standard of human morality, and stimulating them to attain to it. But whatever be the cause, the fact is inexcusable. It find it everywhere in the middle ages, in the popular poetry as well as in the exhortations of the priests.

The moral conceptions of men rose far above the practice of their lives. Nor let it be thought, because those conceptions did not govern their actions, because their practice was strangely belied their theory, that the influence of the theory was absolutely nil. The habitual judgment of men upon human actions is not without its influence. It has been justly remarked, that a bad action is better than a bad principle; a bad action may remain isolated and secrete, but a bad principle is constantly fructifying: for, after all, it is the mind that governs; and a man acts from reflection much oftener than he is himself aware of. In the ages of chivalry, we repeat, the principles were infinitely better than the acts. For instance, at no period perhaps has the influence between the sexes been more licentious; yet never was purity of manner more strongly enjoined or more strongly felt. Nor was it a theme for poetic eulogy alone. We find from a multitude of testimonies, that the public thought in this particular as the poet spoke, that the prevailing maxims were pure and noble amidst all the rudeness and licentiousness of conduct.

This, then, was the grand moral characteristic of chivalry, which entitles it to an important place in the history of modern civilization. If, on the other hand, we regard it not in a moral but in a social point of view, not as an idea, but as an institution, it merits but slight consideration; for though it had a great and stirring part in the world's affairs, yet, as already shown, it did not constitute an actual organization of society. The chivalric spirit, the possession of fiefs, were alone chevaliers; they alone, with few exceptions, had the right to become so. The knights formed no separate class of society with distinct functions and duties. Thus chivalry, properly so called, being inseparably bound up with feudalism, could not exist excepting as the latter was developed, and accordingly, so early as the fourteenth century, when compared with its condition in the twelfth, we find it to be rapidly declining.

It had, however, given birth to the religious orders, as the Templars, the knights of St. John, and the Teutonic knights; and it was beginning to produce the courtly orders —those of garters and ribbons—the knighthood of mere rank and parade. It was destined to fritter yet a long while the manners, the language, and the literature of European society. But the true chivalry, that to which alone the name can strictly be applied, flourished and fell with feudalism.

CHIVES, a small species of allium called amapeloprasum. Its bulb have the usual garlic odour of the genus, and are used in soups and stews: they are but little cultivated.

CHLATES, a genus of coleopterous insects, of the family Harpalidae, and section Patellimammes (Dejean.)

There are several species in this genus, rather neat, very elegant in form, and generally adorned with various hues of green, the colours being rich, but not glosy, owing to the upper parts being more or less covered with a delicate pubescence, which produces a silk-like appearance. The antennae are black in most of the species, but in that of the wing-cases of the same tint, and some have the elytra adorned with large yellow spots.

The genus Chlamis is one of a very large group of the Harpalid, which, according to our views, embraces the genera Epomis and Donodes, we will therefore briefly notice the distinguishing characters of these three groups. All three of the genera agree in having the hairs of the elytra in short and rigid, while all the other parts of the wing-cases are without hairs, except in the middle of the emargination of the mentum; but they differ chiefly in the form of the terminal joint of the palpi, and the difference may be thus expressed. —

Terminal joint of the palp.

Elongated and truncated at the apex, Chlamis. Elongated and distinctively secundiform, Epomis. Short and slightly secundiform, Donodes.

As regards the form of these insects, the body is generally more or less subcylindrical, about nine and one third mm. long, about one half mm. wide, and almost always considerably narrower than the elytra, broad towards the anterior part, and diminishing in width towards the posterior. The head is rather long, the eyes project considerably, and are rather remote from the base of the head. The prothorax is large, black beneath, and almost entirely protected by the shell. The species are found under stones, weeds, and almost any rubbish which will afford them shelter; sometimes under the loose bark of old trees, near the root, but they must be sought after in the vicinity of water.

Of the genus Chlamisius M. Le Conte Dejean enumerates one hundred and fifteen species, a great portion of which are European; many are from Africa, the East Indies, and North America, but South America and Australia appear to be almost entirely destitute of this species, which is almost always considerably narrower than the elytra, broad towards the anterior part, and diminishing in width towards the posterior. The head is rather long, the eyes project considerably, and are rather remote from the base of the head. The prothorax is large, black beneath, and almost entirely protected by the shell. The species are found under stones, weeds, and almost any rubbish which will afford them shelter; sometimes under the loose bark of old trees, near the root, but they must be sought after in the vicinity of water.

In England eight species have been discovered; of these however two only have been found in any abundance — Chlamisius vestitus (Carabus marginatus, Linn.) is very common in the south of England, and is found under stones by the edges of fountains where grass abounds. It has nearly half an inch in length, black beneath, and of a rich green colour above: the elytra are distinctly striated, very finely punctured, and covered with a delicate pubescence of a pale yellow colour; the fezdoms are more or less strongly coloured, and the leaf-tubes are rather glossy; the latter is finely punctured throughout, and has the margin slightly tinted with yellow; the legs are yellow, and the palpi are yellowish-white when the insect is alive.

Subsecirem (=secrem). "When the last joint of the tarsus is triangular, and the preceding joint is connected with the vertex of the elytra by a suture or strong band, Kirby and Spence's Introduction to Entomology, vol. iv., p. 229."
Of the genus Epomis M. Dejean enumerates six species, one of which is said to have been found in England, but it is in three samples since only three are recorded. It is about three-quarters of an inch in length; the head and thorax are of an obscure brassy-green colour and slightly punctured; the elytra are black, with the outer margin pale yellow; the legs and antennae are also yellow.

This species is not uncommon in France and Italy.

The genus Dinodes only embraces four species. *D. rufipes* is about half an inch in length, of a rich blue colour above, and finely punctured throughout; the legs and base of the antennae are a red-brown colour.

The thorax in this genus (taking *D. rufipes* as the type) is broader and more rounded than in the genera Chlamydosaurus and Epomis. The species described is found in France and Italy.

**Chlamydosaurus**, a genus of Saurians, founded by Mr. Gray, upon a specimen brought home by Captain Phillip Parker King, R.N., F.R.S., &c., on his return from his survey of the intertropical and western coasts of Australia, performed between the years 1812 and 1822. The following is Mr. Gray’s description:

Animal scaly; the head depressed; the nostrils placed on the side, midway between the eyes and the end of the head; the drum of the ear, or auricle, is oval and on the upper side of the auricle, or ear, is an oval-shaped (eight in the upper, and four in the lower jaw), the hinder ones longest; the side or cheek teeth compressed, short, forming a single ridge, gradually longer behind; tongue short, fleshly, with an oval smooth disk at each side of the bone of the tongue; body compressed, legs rather long, especially the hinder ones; destitute of femoral pores; feet four, with five toes, the first having two, the second three, the third four, the fourth five, and the little finger and toe three joints; claws compressed, hooked; tail long, nearly round, scaled. Example, *Chlamydosaurus Kingii*. The colour is yellowish-brown, variegated with black. The head is depressed, with the sides erect, leaving a blunt ridge on the upper part wherein the eyes are placed. The ridge over the eyes is covered with larger scales than those on the head. The eyes are rather small, with a fleshy ridge above them, and the eyelids are covered with minute scales, and surrounded by a delicate serrated ridge of small upright ones. The lips are surrounded by a row of oblong four-sided scales, arranged lengthways, the front scale of the upper lip being the largest. The chin is covered with narrow mid-ribbed scales, with a five-sided one in the centre, and several of larger size just over the front of the fork of the lower jaw. The nostrils are surrounded by a rather large orbicular scale, situated nearly midway between the eye and the end of the upper jaw, the tubes pointing forwards. The side of the face has a very obscure ridge extending from the angle of the mouth to the under part of the ear. The neck is covered with small scales. The frill arises from the hinder part of the head, just over the front of the ears, is attached to the sides of the neck, and extends down to the front part of the chest, supported above by a lunate cartilage arising from the hinder dorsal part of the ear, and in the centre by a bone which extends about half its length. Each frill has four plaited branches which converge on the under part of the chin, and fold it up on the side, and are united in the centre of the lower part of the neck. The front part of its upper edge is elegantly serrated, but the hinder or lower part is quite entire: the outer surface is covered with carinated scales, those in the centre being the largest. The inner surface is quite smooth. The scales of the back are oval, and nearly smooth; those of the lower part of the body and upper part of the legs have a short mid-rib, and those of the sides and joints of the limbs are minute. The tail is twice as long, roundish, covered with scales which have each a sharp mid-rib, and towards the termination, which is blunt, form six rows, so as to render that organ obscurely hexagonal. The toes are long, very unequal, compressed, and scaly. The claws are hooked, and the fore limbs are green-coloured. Dimensions. Length of the tail, twelve inches; of the body, five; of the head, five and a-half. Breadth of the head over the eyes, one inch. Length of the thigh, one inch nine-twelfths; of the foot and sole, two inches two-twelfths; of the outer edge of the frill, ten inches.

**Locality and Habits.** We owe the discovery of this extraordinary Saurian to Mr. Allan Cunningham, who accompanied Capt. King’s expedition as his Majesty’s botanical collector for Kew Gardens, and to whom naturalists in general are so much indebted for the Neal displayed by him in favour of natural history, and for the liberality with which he has communicated the results of his labours. He found the specimen from which the description was taken on the branch of a tree in Carneeing Bay, at the bottom of Port Nelson, and sent it to Sir Everard Home, by whom it was deposited in the Museum of the Royal College of Surgeons. The following is the account of the capture in Mr. Cunningham’s Journal:

A garam, Zoology. We give a representation of the dead animal from the figure in the Appendix to Captain King’s Voyages, where the animal and its capture are described; and, below it, a representation of the living head, as it is seen in the illustrations to the ‘Suites a Buffon.’

**Chlamyphorus** (Zoology), Dr. Harlan’s name for a genus of quadrupeds, of the order Edentata, first described by him in the ‘Annals of the New York Lyceum of Natural History,’ vol. i., from a specimen presented to the Philadelphia Museum, on the 18th December, 1824, by Mr. William Closterley, according to whom it is the *Pichichiago* of the Indians in Mendora (its native place), on the east of the Cordillera, in lat. 35° 25’, and long. 69° 47’. It had been obtained on the spot in a living state, but lived in confinement on the front table. The greater portion of the skeleton had been removed before the animal came into Dr. Harlan’s possession. In March,
1829, the council of the Zoological Society of London, influenced by the recommendation of Mr. Vigors, placed in the hands of Mr. Yarrell a specimen of this rare and new animal, and the latter able zoologist so executed the trust reposed in him, as to provide a perfect skeleton, without injuring the skin, which was mounted by Mr. Leadbeater. When Mr. Yarrell returned the specimen to the Society, he accompanied it with a valuable paper on the osteology of the animal, from which we are enabled to supply the information which the absence of materials prevented Dr. Harlan from giving.

Osteology. The form of the head presents the figure of an irregular cone, the base of which is turned toward the spine; the cranium does not exhibit any sutures; the cavity capacious; the frontal bone supporting two rounded processes projecting upwards and somewhat outwards; the space between them occupied by a substance resembling in appearance adipose matter, from which issued a fluid-like oil. From the anterior part of the base of these two rounded processes, a narrow ridge of bone extends forwards on each side converging towards the nose. The nasal bones elongated, the orifice opening downwards. No incisor nor canine teeth in either jaw; molars 3, cylindrical, separate, encircled with enamel, but none on the crowns; the first tooth on each side in the lower jaw, having no opponent, is the longest, the remaining seven opposed to the first seven of the upper jaw, and taking angular impressions on their surfaces by contact; the direction and depth of the alveolar cavities of the jaw distinctly marked on the outside by parallel ridges; in the lower jaw the alveolar cavities are pierced the whole depth. The anterior portion of the lower jaw is elongated; the inferior edge, the inferior irregulir convexity, then converges from the base broad, rising at right angles with the line of the teeth; the clypeal process longer than the coronoid, the condyle itself elongated transversely. The external meatus auditorius is extended in the form of a semicircular cylindrical tube of bone, curving round the base of the zygoma, and passing forwards terminates in an aperture immediately beyond the eye. The orbits and temporal fossa united; the zygomatic arch is slender posteriorly, but becomes thicker as it proceeds towards the front, expanding downwards, and furnished with an acute descending process.

The occipital foramen is of great size.

[Skull of Chlamyphorus truncatus; a, skull seen from above; b, the same from below; c, lower jaw.

The cervical vertebra seven, the first large, the articulating surface broad; the 2nd, 3rd, and 4th, very firmly ossified together, pierced with foramina for the passage of the cervical vessels; the 5th united to the 4th on the under surface only; the 6th and 7th slender and separate, allowing the head great freedom of motion upwards; the whole of the 7th is united to the under surface, in the line of the passage of the esophagus. Dorsal vertebra eleven, the spinous process of the first slender, three-eighths of an inch long, the others diminish gradually in length, but increase in size; all directed backwards. The first, second, and third from the 6th, the ribs of the Chlamyphorus, like those of birds, are firmly united to the sternum without the intervention of an elongated cartilage; and, again like those of birds, are also supplied with a false joint, at the distance of about two-thirds of their length from the spine to the sternum. The 9th, 10th, and 11th, being false ribs, are united in the usual way to each other, and to the 8th, by elongations of cartilage from their extremities. The portions of ribs intervening between the false ribs and the sternum are in the 6th, 7th, and 8th ribs, consolidated, broad, flattened portions of bone, which form the boundary of the anterior and lateral parieties of the thorax. The first bone of the sternum is broad and flat, the superior surface regularly concave, the inferior irregularly convex. Upon the anterior edge of the sternum are two prominences, to which are attached the extremities of each clavicle. From each of these articulations a slightly elevated ridge proceeds backwards along the inferior surface of the sternum, converging towards the centre of where they become united, and form a prominent crest. The lateral edges of this first bone of the sternum are articulated at its anterior extremity to the first and broadest rib; from this part the bone suddenly becomes narrowed posteriorly, and terminates in a concave articual surface to which the second bone of the sternum is attached. Judging from the imperfect remains of the second bone, of which the upper part only was distinguishable, it would appear that its form was oblong, the superior edge curved concavely. The remaining text was too much mutilated to admit further description.

[Lumbar vertebra three, the spinous processes short and flattened; the two last dorsal vertebrae, as well as the lumbar, furnished with long oblique processes directed forwards, upwards, and outwards; the transverse processes of the last two lumbar vertebrae considerably elongated, the last presenting a rudiment only.

The whole of the sacrum and innominata is so peculiar and unique in character, that it is scarcely possible to give any correct idea of this part, without the assistance of accurate representations. The superior part of the ilium is flattened, the upper part bent to form an arch, and on the bone, the concavity of which faces downwards and outwards; the crista of great length from before backwards. The inferior portion of the ilium is much stronger, inclining outwards, from its junction with the sacrum to the acetabulum.

The transverse and spinous processes of the sacrum are represented by three slender plates of bone, which, approximating as they pass backwards, are united to form a septum, extending down the median line of the sacrum to the tail. A channel is formed on each side of this septum by a thin flat plate of bone, which, arising from the posterior and superior part of the ischium on each side, is bent over the back part of the sacrum, and fixed to an arched and prominent plate of bone, which is extended from this septum outwards, to form a junction with it. The channels thus produced are bounded below by the sacrum, on the inner sides by the septum, on the outer sides by the ascending plates of bone just described, and above by the transverse processes of the lumbar vertebrae. From this union a short cuneiform ossicle arises horizontally on each side, and expands into a flattened circular plate of bone, to the rough surface of which, as well as to the tuberosity of the ischium below, portions of the truncated exterior of the animal are firmly attached.

The under surface of the sacrum, the part intermediate between the sacrum and the coccyx is thick and elevated, and marked by an indistinct central ridge. The pelvis is open in front, the ossa pubis on each side do no incline inwards, but descend at right angles from the junction of the femur with the sacrum. In the circumference of the pelvis behind, there is a second resemblance to the bony structure in birds.

The caudal vertebrae are fourteen in number; the transverse processes of the last four are elongated, to support the thin dilated lateral edges of the padder or spars of the tail. Large muscles are imbedded in the two cavities formed on the upper surface of the sacrum by its septum and the two lateral elevated portions of the
of equal size on the under surface. The tendons of these muscles were inserted on the upper and under parts of the caudal vertebrae, giving great power to the tail, which is probably exercised in moving backwards the loose earth accumulated under the belly of this burrowing animal by the action of the fore legs, and for which purpose the expanded and flattened extremity seems well calculated.

The scapula has its superior margin straight, ending in a notch of great size; the base rounded; the inferior margin concave, and the posterior inferior angle considerably elongated; the conoid process but little produced, the spine elevated, the acromion very long, passing forwards, downwards, and inwards, over the head of the humerus, to be articulated to a long and slender, but perfect clavicle.

There is a second spine of smaller size, parallel to, but beneath the true spine. The humerus is three-fourths of an inch in length, large, and broad; the deltoïd crest prominent; between which and the external condyle a deep groove is formed for the lodgment of muscles, &c.; both condyles very much elongated transversely; the inner condyle performed above; the edge rising from the external condyle acute. The radius small, and seven-sixteenths of an inch in length; the ulna flattened, concave upwards, the olecranon nearly as long as the ulna, horizontally flattened also, and presenting a superior concave surface, ending in a curve pointing downwards. The feet furnished with sesamoid bones for the insertion of the tendons of the flexor muscles.

The femur, thirteen-sixteenths of an inch long, large and strong; the length of the neck considerable; the great trochanter elongated backwards beyond the line of the articulation of the head of the femur with the acetabulum, and ending in a tuberosity; the lesser trochanter directed downwards; a third trochanter projecting from the outer side of the shaft of the femur somewhat above the middle; the femur is moderately elongated transversely, the outer having a crest directed backwards. The tibia and fibula fifteen-sixteenths of an inch, flattened, concave inwards, firmly anchylosed at each extremity, and joined in opposite directions, giving an appearance of great size and strength to the leg. The os calcis elongated backwards, flat, and ending in a curve slightly inclined upwards. Hind feet plantigrade.

Mr. Yarrell observed the following points of resemblance between the skeleton of Chlamphorus and that of other quadrupeds:—1. Beaver (Castor Fiber), in the form and substance of some of the bones of the limbs, in the flattened and dilated extremity of the tail, and the elongation of the transverse process of the lower caudal vertebrae, but no further. 2. Mole (Talpa Europaea), in the shortness and great strength of the legs, and in the articulation of the claws to the first phalanges of the toes; but in the form of the bones of the anterior extremity, as well as in the compressed claws, it is perfectly different, nor do the articulations of the bones, nor the arrangement of the muscles, allow any of the lateral motion so conspicuous in the mole.

The hinder extremities of Chlamphorus are also much more powerful. 3. Sloth (Bradypus tridactylus), in the form of the teeth, and in the acute descending process of the zygoma, but not otherwise. 4. Armadilloes (Dasypus), in the cost of mail, in the peculiar ossification of the cervical vertebrae, in possessing the sesamoid bones of the feet, and in the general form of the bones, except those of the pelvis; they differ however in the form and appendages of the head and in the tail. 5. Orzycteropus Caperina and Myrmecophaga jubate, in some of the bones. 6. Echidna and Ornithorynchus, in the form of the first bone of the sternum, and in the bony articulations as well as the dilated conning plates of the true and false ribs. 7 and 8. Ruminantia and Pachydermata, in the form of the lower jaw, and in other points equally obvious. The unique points in its structure appear to be the form of the head and the open pelvis.

According to Dr. Harlan, the total length of the entire animal is five inches two-eighths. The shell which covers the body is of a consistence somewhat more dense and inflexible than sole leather of equal thickness, and is composed of a series of plates of a square, rhomboidal, or cubical form, each separated by an external membranous production, which is reflected above and beneath, over the plates: the rows include from fifteen to twenty-two plates, the shell being broadest at its posterior half, extending about one-half of the body. This covering is loose throughout, excepting along the spine of the back and top of the head, being attached to the back immediately above the spine by a loose cuticular production, and by the two remarkable bony processes on the top of the os frontis, by means of two large plates, which are nearly incorporated with the bone beneath; but for this attachment the covering would be very easily detached. The number of rows of plates on the back, counting from the vertex, where they commence, is twenty-four; at the twenty-fourth the shell curves suddenly downwards, so as to form a right angle with the body: this truncated surface is composed of plates, nearly similar to those of the back; they are disposed in semicircular rows, five in number the lower margin, somewhat elliptical, presents a notch in its centre, in which is attached the free portion of tail, which makes an abrupt curvature and runs beneath the belly parallel to the axis of the body, the extremity of the tail being depressed, so as to form a pillar, the rest of the tail compressed. The superior semicircular margin of the truncated surface, together with the lateral margins of the shell, are beautifully fringed with silky hair.

Head.—Posterior half, broad, anterior half, before the eyes, tapering; the occiput is covered by the five first rows of the back plates with which they are continuous; the occiput not distinguishable externally. The anterior half of the top of the head is covered, first, by a row of large plates, five in number, which are firmly attached to the bone beneath, particularly the two outer; secondly, by a smaller row, six in number, anterior to which, that is to say, the top of the snout, is covered with smaller plates irregularly disposed,
Mr. Yarrell observes that when separating the skin from the muscles of the back, the fibres (described by Dr. Harlan) by which the outer coat was attached in the line of the vertebrae were found to be adherent to the muscles immediately investing the spinal processes, and each of them, Mr. Yarrell supposes, probably afforded a vessel running under the external covering; but these attachments did not extend below the dorsal vertebrae. Proceeding from thence forwards, the great size of the muscles of the scapula and neck was apparent, filling up the whole space, the posterior portion of the head forming one continuous line. The thick plate of scales covering the frontal portion of the head was without difficulty separated from the surfaces of the singular bony processes of the os frontis; the projecting cartilaginous portion of the nose was removed with the skin, and the tentorial ligaments of several muscles giving motion to the snout were cut through.

The hinder portion of the body still remained to be separated from the skin, and this was found to be a matter of some difficulty. The posterior and inferior portions of the sacrum on each side were firmly united by distinct attachments, differing in form, to certain scales of the truncated extremity of the outer covering. The necessity of preserving this outer covering entirely rendered a division of these portions of bone necessary, and from the particular form of the part, this was attended with some hazard, but was ultimately accomplished without injury, the bones being cut through as near to, and parallel with, the inner surface of the plates, as their confined situation would admit. The covering of the tail was separated from the vertebrae as far as the flattened extremity, where the greater elongation of the transverse processes of the last four vertebrae, and the tenuity of this flattened portion, made further separation difficult. The tail was then divided between the tenth and eleventh vertebra, and both parts of the animal entirely separated.

On the inner surface of the removed skin were two long, broad, and thin muscles, extending the whole length of the back; each muscle was divided, as it approached the shoulder, into two portions; the outer one was attached to the superior and greater spine of the scapular bone, the inner and longer slip proceeded forwards, and was inserted into the transverse occipital ridge. The posterior extremity of each muscle was attached to the superior edge of the spine of the ilium.

**External Ear.**—This, according to Dr. Harlan, consists of a circular, somewhat patulous opening, directly posterior to the eye, surrounded with an elevated margin, and communicating with a bony canal.

**Eye.**—Minute, totally black; and, like the ear, nearly hidden by long silky hair.

**Mouth.**—Gape small.

**Nose.**—Furnished with an enlarged cartilage, as in the hog; the anterior nares opening downwards at the inferior border.

The whole surface of the body is, it appears from the same author, and the correctness of his description is proved by an inspection of the stuffed specimen, covered with fine silk-like hair, longer and finer than that of the mole, but not so thick set. The anterior of the chest is large, full, and strong; the anterior extremities short, clumsy, and powerful; the hair is continued for some distance on the palm—the phalanges of the hand united; five powerful nails rising gradually one above the other; the external shortest and broadest; the whole so arranged as to form a sharp cutting instrument, rather scooped, very convenient for progression under ground, and such as must very much impede motion on the surface. Hind legs weak and short; feet long and narrow; the sole resembles considerably the human foot, having a well defined heel, and a vast flat upon the ground, and being arched in the middle, toes separate, nails strong.

In the specimen dissected by Mr. Yarrell, the abdomen and thorax had been opened throughout their whole length, and the organs both exterior and interior had been extended; the animal had been moved. Adhering to the skin lining the truncated portion of the animal, were two sacs which had been lodged in cavities on each outer side of the sacrum, immediately under the external projections, made evident by the corresponding depression in the investing muscles of that part. These globular bags were lined with a secreting surface, but having suffered some mutilation in removal, the mode by which the secretion passed, or its particular use, could not be ascertained. Mr. Yarrell thinks that they are probably analogous to the well-known anal glands of various other quadrupeds.

**Sexual Organs.**—The sex, in the specimen dissected by Mr. Yarrell, was evident from the penis remaining attached to one edge of the divided abdominal muscles; and, lying quite loose in the cavity of the abdomen, was found one of the tests, but whether its original situation had been internal or external to the parietes, could not be ascertained. The penis itself was large compared to the size of the animal, and one inch and one-eighth in length. The confined situation of the female sexual organ, in Mr. Yarrell's opinion, probably renders such a provision necessary, the truncated portion of the coat of mail covering the whole of the posterior extremity.

We must refer the reader for further particulars to the papers of Dr. Harlan and Mr. Yarrell, both of which are to be found in the ' Zoological Journal' (vols. i. and iii.).

**Habits.** According to Mr. Closeberry the habits of chlamysurus resemble those of the mole, as it lives for the most part under ground. He adds that the animal is reputed to carry its young beneath the scaly cloak with which it is covered, and that the tail possessed little or no motion. The carrying the young in the manner described may be considered apocryphal till further evidence is obtained.

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* The ontological figures are taken from Mr. Yarrell's Monograph.
Chloral consists of
Six equivalents of chlorine $56 \times 6 = 216$
Four oxygen $8 \times 4 = 32$
Nine carbon $6 \times 9 = 54$

CHLORANTHA/C. R., a natural order of achlamydeous exogens, allied to the Peppers, and, like them, having an aromatic fragrant odour; they are known from the orders, associated with them by their jointed stems and opposite leaves, with intermediate stipules. Their flowers grow in naked spikes, and consist of an ovary next the axis of inflorescence, and a fleshy antler on the outside. Choranthus officinalis is reckoned a stimulant of the highest order.

(See Blume, Flora Japonica, and Lindley's Natural System, p. 183.)

CHLORIA. [Dombeyarchata.]
CHLORAL, a liquid prepared by Liebig with chlorine and alcohol, from the first syllables of which words its name is derived. To form it, a current of dry chlorine gas is passed into anhydrous alcohol, at first kept cool, but afterwards sufficiently heated to expel the hydrochloric acid formed. During the action of these substances one portion of the chlorine unites with the hydrogen of the alcohol to form hydrochloric acid, and another portion with its oxygen and carbon to constitute chloral. When the operation has been long continued, a liquid of the consistency of a syrup is procured, which afterwards becomes solid; it is a hydrate of chloral containing some undecomposed alcohol and a portion of hydrochloric acid. It is then to be shaken with concentrated sulphuric acid, which combines with the water, and the chloral rises in a fluid state to the surface; this is to be mixed with lime, and by distillation the chloral is obtained free from hydrochloric acid.

Chloral is a colourless transparent oily-looking fluid; its smell is pungent, and its taste but slight; its specific gravity is 1.502; at about 200° Fahrenheit it boils, and the vapour condenses unchanged. Water when warmed dissolves chloral, but when mixed with a small quantity of it, they combine, when agitated, into a solid crystalline hydrate. It combines with bromine, iodine, and sulphur; when its vapour is passed over lime heated to 212°, it is decomposed, oxide of carbon is evolved, and chlorate of calcium, mixed with a little charcoal, remains; by solution of potash or soda it is also decomposed, and a chloride of carbon is formed.

CHLORIC ACID. [Chlorine.]
CHLORIDES OF CARBON. [Chlorine.]
CHLORINE, an elementary gaseous body discovered by Scheele in 1774, while examining an ore of manganese. As gave it the name of dephlogisticated marine acid. By the French chemists, in accordance with the views of Berthollet, it was called oxygenized muriatic acid, which was shortened by the English chemists to oxymuriatic acid: these latter terms meant that it was a compound of muriatic acid, a supposed elementary or at any rate an undecomposed body, and oxygen. Gay-Lussac and Thénard in 1809 published some experiments from which they inferred that oxymuriatic acid might be a simple substance, but they notwithstanding adhered for a considerable period to the opinion of its being a compound. About the same time Sir H. Davy commenced his examination of the same body, and from his numerous researches he concluded that it ought to be regarded as an undecomposed body; and on account of its green colour, he gave this gas the name of
chlorine. This opinion was at first strongly combated by Dr. Murray and Berzelius, but the latter is now a convert to the new theory, and has formed the new compound. Chlorine was first obtained by Scheele, by treating the binoxide of manganese with muriatic acid. During the mutual operation of these compound bodies, the oxygen of the binoxide combining with the oxygen of the water, and water being formed; the metal of the oxide remains combined with a portion of the chlorine, while the excess which the metal does not unite with is given out in the gaseous state, and possesses the following properties: it is of a greenish colour, and, to a large extent, the nature of chlorine, from the union of chlorine, green, it has a very powerful and disagreeable odour, is very suffocating, even when considerably diluted with air, and its taste is astrigent. According to Davy, 100 cubic inches weigh 177.4 grains, or 7.77 grains, in average temperature and pressure, and with this determination the experiments of Gay-Lussac and Thénard nearly agree; its specific gravity is consequently about 2.7. Mr. Faraday found that when this gas is subjected to a pressure of about four atmospheres, and kept cool, it is condensed into a yellow limpid fluid, which is extremely volatile, and which, when the pressure is removed, rapidly reassumes the gaseous form; its specific gravity is about 1.33; its refractive power is less than that of water; and it is a non-conductor of electricity.

Chlorine gas is absorbed and dissolved by water, and when this fluid has been recently boiled, it will take up twice its bulk of the gas at common temperatures and pressures. The solution has a greenish colour, smell, and taste of the gas itself. The equivalent of chlorine is 36, and when moist chlorine gas is exposed to a temperature of 32° Fahr., yellow crystals are formed, which are hydrate of chlorine, composed of the water, the hydroxyl of which combines with it to form muriatic acid, while the oxygen is evolved in the gaseous form; and this was the experiment which chiefly induced Berthollet to adopt the opinion of its nature which has already been referred to. In the acidifying of the composition of the water, which contain it, it is evolved like oxygen at the positive pole, or anode; except when separated from oxygen, and then it goes to the negative or cathode.

One of the most curious and important properties of chlorine is the power which it possesses of destroying the colour of animal and vegetable matter in general, and hence its extensive application to the purpose of bleaching. When acids alter vegetable colours, they may be restored to their natural state by dilution with an equal volume of alcohol, but this is not a sufficient operation with a strong solution of the alkali, but so complete is the destructive power of chlorine, that nothing whatever can reproduce the colour which it has removed. This power appears however to depend upon the action of both oxygen and chloride of chlorine, and when a solution of the chloride of chlorine is thrown into water, chloroform is formed, and the colour restored. Chloroform is still unstable when injected into water, and produces no bleaching effect. It follows therefore, that its decolourising power is not direct, but intermediate, dependent upon its decomposing water, and combining with its hydrogen to form muriatic acid, while the nascent oxygen of the water produces the bleaching effect.

Chlorine gas, like oxygen, is a powerful supporter of combustion. If certain metals, and especially antimony, in the state of the former, be thrown into chlorine gas, they burn spontaneously; phosphorus also exhibits similar phenomena.

Chlorine is also a powerful disinfectant; for this purpose it was first employed by Guyton de Morveau, and within a few days of its discovery, or perhaps of its chloride or hypochlorous acid (for the question is undecided), and lime or soda, have been extensively used for this purpose.

Chlorine is in general easily detected by its odour and colour, whether in its gaseous state or in solution in water. It occasions a white precipitate in solution of nitrate of silver, which speedily darkens by exposure to light. This compound is called chlorides of silver, and was formerly known by the names of born silver or muriate of silver. In this case however a portion only of the chlorine is thrown down; part of it uniting with the oxygen of the oxide of silver forms chlorate of silver, of which we shall presently make mention. It will be observed from the above statement that those compounds which contain chlorine are called chlorides, and that this is the case only when such compounds do not possess acid properties.

Chlorine combines with almost every other elementary body, forming compounds of great importance; we shall first state the nature of those to which it gives rise by uniting with the various elements, and which cannot be formed without it.

Oxygen and chlorine combine in several proportions, but the combination is never immediate; and different views of the number and nature of the compounds are entertained by different investigators. Thus Berzelius mentions one oxide and three acids, viz.,

| Protocatechuic acid composed of 8 vol. of oxide + 1 vol. of oxygen. |
|-----------------|-----------------|-----------------|-----------------|
| Chl.            | 1               | +                | +                |
| Chl.            | 1               | +                | +                |
| Oxalic acid     | 1               | +                | +                |
| Oxalic acid     | 1               | +                | +                |

Berzelius however admits that there probably exists a peroxide of chlorine composed of equal volumes of chlorine and oxygen, though it has never been obtained. Count Stadion, who discovered oxyclichor, supposes it contains seven volumes of oxygen instead of six, as above.

Dr. Thomson gives

| Protocatechuic acid composed of 8 vol. of oxide + 1 vol. of oxygen. |
|-----------------|-----------------|-----------------|-----------------|
| Chl.            | 1               | +                | +                |
| Chl.            | 1               | +                | +                |
| Oxalic acid     | 1               | +                | +                |
| Oxalic acid     | 1               | +                | +                |

Dr. Turner agrees with the last statements, which indeed differ from those of Berzelius only with respect to oxyclichoride. Dr. Turner however calls the chlorous acid of Berzelius, which is the quadroxide of Dr. Thomson, peroxide of chlorine. According however to Soubiran, the supposed protoxide of chlorine is a mixture of the peroxide and chlorine. The late experiments of Balain seem to prove the existence of what he calls hypochlorous acid, formed of two volumes of chlorine and one volume of oxygen, which is the composition assigned, as just noticed, to the protoxide. Balain remarks, that if both analyses be correct it would be an additional case of isomerism; but he seems rather inclined to adopt the opinion of Soubiran with respect to the so-called protoxide of chlorine. Leaving however the speculations of the philosophers, we shall describe the various compounds above mentioned. As to doubt exists with respect to its composition, and also for other reasons, we begin with

Chloric Acid.—It has been already mentioned that oxygen and chlorine do not combine by direct action; whereas however chlorine meets with nascent oxygen they unite. If chlorine gas be passed into water containing oxide of silver diffused through it, a portion of the chlorine combines with the silver and forms a chloride, which is precipitated; and the oxygen expelled from the other portion of chlorine, constitutes chloric acid, which remains in solution. Any excess of chlorine is to be expelled by heat. Or chloric acid may be made by adding dilute sulphuric acid to chloride of barytes to which has been added a solution of the barytes is precipitated, and chloric acid remains in solution. It is a colourless inodorous acid, which has a sour taste, and reddens vegetable blue colours. The solution may be concentrated by a gentle heat till it acquires an almost oil consistency; it has then a yellowish tint, a peculiar odour, and it sets fire to dry vegetable matters. It combines with bases to form salts termed chlorates, which were formerly known by the name of oxygenized muriates, or hyper or oxychlorates. Bodies which have a strong affinity for oxygen decompose chloric acid, by separating that element; thus sulphurous acid is converted into sulphuric acid by decomposing it, and taking its oxygen. Chloric acid is composed of

1 equivalent of chlorine = 36
5 equivalents of oxygen = 65

76

The chlorates, except that of potash, are not important salts; this however is used for many purposes; thus when heated in a current of air it gives very pure chlorine; if a solution of the chlorate of potassium remains; the oxygen is yielded both by the alkali and the alkali. Chlorate of potash [Potassium] is prepared on the large scale by passing chlorine gas into a solution of the alkali; part of the chlorine takes oxygen from part of the potash and forms with it a bleaching powder, with the remainder of the potash to form the chlorate, while the remainder of the chlorate unites with the potash to form chloric acid; both salts dissolve in water, but the
Chlorate crystallises first, and in rhombohedral plates. The salt detones when triturated with sulphur; and when struck with phosphorus it explodes and inflames, and in both cases it yields oxygen.

Chlorate of potash is composed of:
1 equivalent of chloric acid = 76
1 equivalent of potash = . . . 48

Equivalent . . . 124

Oxychloric or Perchloric Acid is procured by the partial decomposition of the chloric acid just described. It is obtained by mixing sixty grains of chlorate of potash with about four times its weight of sulphuric acid, and heating the mixture below 312° in a glass retort; a gas, which we will call perchloric gas, is evolved and heated, the acid is distilled, and it concretes on cooling into a solid, which crystallizes in prisms. It appears to be the most stable of all the compounds of chlorine and oxygen, not suffering decomposition either by the action of light, sulphurous, or hyposulphurous acids; it dissolves iron and zinc, with the evolution of hydrogen gas.

The salts formed by this acid into bases are termed oxychlorates or perchlorates; the first is the better name; they are decomposed by heating, evolving much oxygen gas, and are converted into chlorides. The oxychlorates are not an important class of salts.

Perchlorate of Chlorine, the chloric acid of Berzelius, is a gaseous compound evolved during the formation of oxychlorate of potash just described. This gas has a green colour; it has no smell of chlorine, but, on the contrary, an aromatic odour; it is readily dissolved in water, to which it imparts its own colour; the solution does not act upon mercury, nor does it combine with alkalies; it destroys most vegetable blue colours without previously reddening them. When heated to 212° this gas explodes violently, emits a strong light, and the residual gases occupy more space than the compound did which they formed; 40 volumes of the gas becoming 60, of which 40 are oxygen and 20 chlorine.

The changes which occur in thus preparing oxychlorate of potash and perchlorate of chlorine are these: the sulphuric acid decomposes the chloric acid which evolves chloric acid, which, at the moment of its liberation, is separated into oxygen and perchloric acid; the oxygen combines with the chloric acid of the undecomposed chlorate, and converts it into oxychloric acid, and consequently oxychlorate of potash is formed, while the perchloric of chlorine, as already noticed, is evolved in the gaseous state. It is probable, that when three equivalents of chlorine of perchlorate of potash are acted upon by sulphuric acid, there are produced oxygen, dehydrated oxygen of chlorine and one equivalent of oxychloric acid.

Protochloric of Chlorine, the euthone of Davy, by whom it was discovered in 1811. This gas is obtained by exposing very cautiously to a moderate heat two parts of chlorate of potash, one part of muriatic or hydrochloric acid, and one part of water; the products are water, chlorine, and the protochlorate of chlorine. The gases should be received over mercury, which absorbs the chlorine and leaves the protochlorate.

This gas has a yellowish green colour, more brilliant than that of chlorine; its smell resembles that of burnt sugar; water dissolves eight or ten times its volume of this gas, and becomes nearly of an orange colour. It does not combine with alkalies, but combines with alkali chlorates, and afterwards destroys them: this gas is very explosive, even the heat of the hand is sufficient to produce this effect. According to Soubeiran, as already noticed, this gas is not a definite compound, but a mixture of peroxide of chlorine and chromic acid, and it has also been observed, that Balard's experiments tend to show that the proportions of oxygen and chlorine assigned to this compound are such as form hypochlorous acid, which we shall now mention; protochloride of chlorine will therefore be probably removed from the compounds of these elements. The name hypochlorous acid, which have just alluded, is, according to Balard, an acid existing in what is usually called chloride of lime or bleaching powder; and this, as the first-mentioned name indicates, was first supposed by Berzelius to be the chloride of lime, and chlorine; but the more recent and minute researches of Balard seem to prove that it is a hypochlorite. This acid is thus obtained: add finely-powdered peroxide of mercury, mixed with twelve times its weight of distilled water, to chlorine gas; it will take it well; the excess of oxygen should be slightly in excess, so that as when the absorption of the chlorine, which goes on rapidly, is over, the residue should have a reddish rather than a white colour. The whole contents of the bottle are to be put in a filter, upon which there remains oxychloride of mercury, while the filtered liquor, when distilled in vacuo, yields weak hypochlorous acid, which may be concentrated by redistillation.

Hypochlorous acid thus procured is a transparent slightly yellow-coloured fluid; its smell is penetrating, and very distinct from that of chlorine or the peroxide; its taste is extremely strong but not acid. It attacks the epidermis with great activity, even more so than strong nitric acid, stains to a dark yellow, and forms an unstable compound, decomposing probably even at common temperatures. In hot weather it can be preserved for a few days only, without immersion in ice; when weaker and kept from the light, it may be preserved for a longer period. During decomposition it gives off a portion of chlorine gas, and some chloride of silver, and this decomposition is accelerated by agitation with angular bodies; it is decomposed by the action of light as well as by that of heat.

When to a concentrated solution of hypochlorous acid an equal bulk of solid dry nitrate of lime is added, a brisk effervescence is produced, which is owing to the separation of pure hypochlorous acid gas, which has the following properties: its odour is very little distinct from that of chlorine; its smell is penetrating like that of the solution; it is completely absorbed by mercury, which is transformed into a red oxychloride. It is best prepared by passing up a little of the gas at a time into a jar filled with and inverted in mercury; the nitrate of lime which is dissolved prevents the action of the liberated gas upon the metal; water dissolves nearly 100 times its volume of this gas; it is decomposed by heat with explosion. The fixed alkalies and the alkaline carbonates absorb the whole.

The hypochlorite of lime, usually called chloride of lime, or bleaching powder, is a compound of great importance, both in the arts [BLEACHING] and as a disinfectant. It is prepared by exposing a solution of lime to chlorine gas, when a large quantity of it is absorbed, and the result seems to be the formation of chloride of calcium and hypochlorite of lime; the exact composition of bleaching powder is however a subject still under discussion. Another compound, the nature of which is still more problematical, is that formed by passing chlorine gas into a solution of carbonate of soda; the gas is plentifully absorbed without evolving any carbonic acid. This compound, like the hypochlorite, is used as a disinfectant, under the name of Labarrague's soda liquor.

Azote and chlorine combine to form the Chloride of azote, or more correctly the quadrichloride of azote. This compound was discovered by Dulong in 1811. These gases do not combine by direct action, but when chlorine gas meets azotic gas in the nascent state they unite. It may be prepared by dissolving an ounce of muriate of ammonia in twelve to sixteen times its weight of water, and then adding a bottle of chlorine to the solution. The chloride is gradually absorbed, and there are gradually formed small drops of an oil-like fluid which sink in the solution; these are the chloride of azote, derived from the combination of the chlorine with the azote of the ammonia.

The properties of this substance are that it is extremely explosive, sometimes detonating spontaneously, but always on the contact of fatty matter, phosphorus, and various other bodies. Its specific gravity is 1.653.
It has been supposed to be a tetrachloride, but the subject requires further investigation.

Chlorine and carbon form four different chlorides; viz. the dichloride, protochloride, perchloride, and 4 chlorides. No combination can be effected between these elements by direct action; carbon, even heated to whiteness in the gas, cannot form any compound with them. The discovery of these compounds is due to Mr. Faraday. (Phil. Trans. 1821.)

The dichloride of carbon was an accidental product which has been only once obtained, and was formed during the preparation of nitric acid from crude nitre and sulphate of iron. It occurred in small soft colourless fibres; it fused when heated, and at 250° sublimed and condensed unchanged. It is insoluble in water, acid, and alkalas, but may be dissolved in hot oil of turpentine and in alcohol, more readily than ether, as the solutions cool; it burns with a red flame, yielding much smoke and muriatic acid vapour. It is composed of

\[ 1 \text{ equivalent of chlorine} \cdot 36 \]
\[ 2 \text{ equivalents of carbon} \cdot 12 \]

The perchloride of carbon, which it will be most convenient, although not in strict order, to consider next, is composed of

\[ 3 \text{ equiv. of chlorine} 108, \text{ or } 1\frac{1}{3} \text{ equiv.} 54 \]
\[ 2 \text{ carbon} 12 \]
\[ \frac{1}{3} \text{ carbon} 6 \]

As a sesquichloride.

When olefiant gas, a compound of hydrogen and carbon [Carbonyl] is mixed with chlorine, they combine to form an oil-like liquid which is composed of chlorine, carbon, and hydrogen; by exposure to the direct rays of the sun, muriatic acid and chlorine of carbon are formed during its decomposition.

This chloride is solid; its smell is rather aromatic; it is a non-conductor of electricity; its specific gravity is 2. It melts at 329°, and at a higher temperature burns and dissolves without suffering any change; water dissolves it sparingly, and it is also soluble in alcohol, ether, and oils.

It burns when strongly heated, but is not acted upon either by acids or alkalas; when passed with hydrogen through a red-hot tube, muriatic acid is formed and carbon deposited.

The protochloride of carbon is obtained by passing the perchloride in vapour through a red-hot porcelain tube; chlorine gas escapes in such proportion as to reduce the protochloride to chlorine; the protochloride, which is a limpid colourless liquid of specific gravity 1.552; it is not solidified at 6° Fahr. and at about 170° is vaporized. When repeatedly distilled it suffers no change. It is composed of

\[ 1 \text{ equivalent of chlorine} \cdot 36 \]
\[ 1 \text{ carbon} 12 \]
\[ \frac{1}{6} \text{ carbon} 6 \]

The last is the 7 chlorite; it may be formed by distilling a mixture of 8 parts of chlorine of lime, 12 of water, and 1 to 1 part of alcohol.

The chloride of carbon, which results from the mutual action of these substances, is a colourless limpid fluid; its specific gravity is 1.148, and it boils at 141° Fahr. It does not readily burn, and acids and alkalas, when moderately heated, act but little upon it.

It is insoluble in water, but dissolved by alcohol and ether. It is not decomposed by potassium. Like the other chlorides of carbon it is decomposed by being passed through ignited oxide of copper, and its composition, as well as that of the preceding, was thus ascertained.

The 4 chloride of carbon is composed of

\[ 5 \text{ equivalents of chlorine} \cdot 180 \]
\[ 4 \text{ carbon} 24 \]

Medical Uses—Chlorine, when pure and concentrated, is very deleterious; it acts as an irritant poison. Its action is most violent and speedy when it is brought into contact with the respiratory organs; it then occasions such violent spasm of the glottis, or opening of the windpipe, that instant death may ensue. To enable chlorine to pass this office it
must be very largely diluted with atmospheric air, or aqueous vapour. A strong solution of it introduced into the stomach causes irritation, inflammation, and death; and even a stream of the gas, or aqueous vapour of it, directed upon the skin, produces a painful irritation, followed by an eruption of pimples or even vesicles. Notwithstanding its formidable properties, it has been used in several cases with such success that no adequate substitute can be found for it. As a disinfecting agent, or means of decomposing putrific substances, or purifying water; or as a purifying agent for other sources of disease, it is unrivalled. For this purpose it may either be directly mingled with the air of the infected place, by preparing it on the spot, or by means of one of the apparatus shown in our illustration. Air containing carbon dioxide is gradually liberated from some of its combinations, such as the chloride of soda or lime. This last method is best when human beings remain in the apartment; but the former is preferable, when they have been removed, for purifying the wards of hospitals, cells of gaols, or holds of ships. When not in a very concentrated form, the respiratory organs become habituated to breathing it, and the workmen in manufactories where it is used enjoy a marked immunity from epidemic fevers, and attain a considerable age.

From having been observed to allay chronic cough existing among the workmen of certain manufactories, it has been proposed to inhale in a diluted state in several chronic affections of the lungs, such as asthma, chronic bronchitis, etc. It is efficient to moderate a cough of the nervous, or consumption. In the two former it is of some utility, in the latter it is a mere palliative, but is attended with the advantage of destroying the fittest of the breath, which is distressing both to the patient and those near him. Diphtheria is not of a very noxious variety. The chlorine employed in this way must be extremely pure, the preparation frequently renewed, of uniform strength of 1% volume of chlorine in solution, and carefully preserved from the sun-light, which decomposes it. It may be breathed in a small quantity, not exceeding 250 cubic feet in four or five times a day.

A weak solution of chlorine has been employed, introduced into the stomach, with considerable success in indigestion, with loss of appetite, loaded tongue, and fust in the mouth.

Its employment in the form of a bath is not common, but occasionally useful, from its irritant effect on the skin. It is doubtful whether it possesses the specific effect upon the liver which some ascribe to it.

In case of poisoning by the gas, inhaling ammonia or sulphuretted hydrogen in small quantity is useful. Should an overdose of the solution be swallowed, chalk, magnesia, or other alkali, or white of egg in water, or a draught of milk, be given to promote vomiting. On the other hand, chlorine is said to be a valuable antitoxic ipecacuanha, poisoning by hydrocyanic (prussic) acid, sulphuretted hydrogen, or hydrocyanate of ammonia.

CHLORIC ACID. 

CHLORIDE. 

CHLOROCARBONIC ACID GAS. This acid, called by Dr. Davy, who discovered it, phosphene gas (from sci-fi, light, and yeasts to produce), was formed by exposing a mixture of equal volumes of dry chlorine and carbonic oxide gases to the solar rays; combination takes place rapidly, but without explosion, and they contract to half their bulk. This action may be the effect slowly, but in the dark it does not take place at all.

Chlorocarbonic acid gas is colourless; has a strong smell, and reddens litmus paper even when dry; it decomposes water, and there are formed hydrochloric and carbonic acid. Several metals when heated in it decompose it; they are converted into chlorides, and carbonic acid is evolved. The specific gravity of this gas is about 3.44; 100 cubic inches weigh about 107 grains; it consists of one equivalent of chlorine and two equivalent of carbonic acid. 1 equivalent of carbonic acid = 50. When mixed with ammoniacal gas it condenses four times its volume, and forms chlorocarbonic acid of ammonia, which is a white solid salt; when dissolved in the stronger acids it yields muriatic and carbonic acid, but nitric acid does not enter into the decomposition.

1 equivalent of chlorocarbonic acid 50
2 ammonia 34

Equivalent 84

No other chlorocarbonates are known.

CHLOROCYANIC ACID. [Cyanogen.] The peculiar compound fluid, obtained about the same time by Sibbriton and Liebig. To procure it distil a mixture of alcohol and a solution of chlorid of lime, separate the product from the liquid distilled with it, shake it with five or six times its volume of concentrated sulphuric acid; pour it off, mix with a little sulphuric acid, distil, and Rectify from a little chlorid of calcium. Chlorocyanic acid is a liquid fluid; its specific gravity is 1.484, it boils at about 90° centigrade; it is phlogistic, but when a glass rod moistened with it is put into the flame of a spirit lamp, it burns with a yellow sooty flame. It is soluble in alcohol and ether; water precipitates it from the aqua regia; it is decomposed by potassium; but when this metal is heated in its vapor, combustion and explosion ensue; chlorid of potassium is formed, and charcoal is deposited.

It is composed of

Three equivalents of chlorine 36 x 3 = 108
Two carbon 6 x 2 = 12
One hydrogen 1 = 1

Equivalent 121

CHLOROMYS. [Agouti.] CHLORO-NITROUS GAS, a compound of chlorine and nitric oxide gases discovered by Mr. E. Davy; he obtained it by treating chlorid of sodium with nitric acid in the presence of air, and shows that the solution is oxidized and converted into sods by the oxygen of a decomposed portion of the nitric acid, and this combining with the undeveloped portion of nitric acid, they form the nitrate of soda, while the chlorine unites with the nitric oxide of the decomposed nitric acid, and they form the gas in question.

Chloro-nitrous gas is of a pale reddish colour; its smell resembles but is rather weaker than that of chlorine; it limits fumes when exposed to the air, is transparent, and possesses bleaching power; it is decomposed by most substances which have an affinity for chlorine, as some of the metals, phosphorus, &c. It consists, according to Mr. Davy, of equal volumes of chlorine and nitric oxide gases combined without condensation.

CHLOROPAL, a silicate of iron. [Iron.] CHLOROPHÆITE, a mineral found by Dr. Mac Culloch in the Isle of Rum, &c. It occurs in small masses imbedded in basalt or a black indurated basaltic breccia. Its colour when fresh broken is green, which becomes black by exposure to the air. It is brittle and soft enough to be scratched by a quill. Its specific gravity is 2.92. Some of the specimens are transparent. The fracture is conchoidal, vitreous; the fracture of the transparent sort is conchoidal of the opaque, intermediate as to conchoidal and granular. (Phillips's Mineralogy.)

CHLOROPHANE. [Fusur.] CHLOROPHYLL. The colouring matter of leaves has been thus named by Pelletier and Caventou. It is obtained by bruising, pressing, and then washing them with water, and afterwards treating with alcohol, which dissolves the green colour and wax; when water is added to this solution, and the alcohol distilled, the green substance, which contains wax, floats on the surface of the water; when this is heated with ether, the wax is dissolved, and chlorophyl remains nearly pure. When exposed to light, the action of chlorine, it is bleached. Acids produce a similar effect, and by the alkalis it is converted into soap. The red tint which leaves assume in autumn appears to be owing to the formation and action of an acid; the green colour is restored by an alkali.

CHLOROPSIS. [Melliphiad.] CHOCO. 

CHOCO-NUT TREE. [Cacao, vol. vi. p. 96; Thebomia.]

CHOCOAWS, one of the aboriginal tribes still inhabiting the southern states of the North American Union; they are now entirely restricted to the state of Mississippi, of which they occupy the middle portion, on both sides of the river Yazoo, a tributary of the Mississippi, and the country about the source of the Pearl River. Formerly they were a powerful tribe, who extended their limits from the Ohio, to the Missouri, and by war and by emigration to the countries on the banks of the Arkansas. Still they probably do not fall far short of 10,000 individuals. Like some other of the southern tribes in the United States, they have applied themselves to agriculture, especially to the rearing of cattle and swine. Some
missionaries have introduced among them the doctrines of Christianity, and have formed a few schools. Their language resembles that of the Cherokees.

CHOCZIM, or Chotin, a small fortified town, in the Russian government of Bessarabia or Kishinev, on the banks of the river Dniester, about 45° 30' N. lat., and 26° 30' E. long. It is 62 m. above the sea. Its situation is opposite the Polish fortress of Kaminiec rendered it a place of note in the wars between the Poles and Turks, and more recently between the Turks and the Russians. In 1739 it was taken by the Russian general Mummich. Population 4000.

CHEROPOTAMUS, a fossil genus, instituted by Baron Cuvier on the examination of the jaws, whose general form and dimensions are analogous to those of the hog, and which are confined to an early period preceding the Pecceuris, but larger. Teeth, six incisors and two canines in each jaw, and seven molars on each side.

Example.—Cheropotamus gypaurus. Found in the Paris conglomerates.

CHOR [Church.]

CHOR, that part of a cathedral, between the chancel and screen, in which divine service is performed; it is separated from the nave by the screen, over which the choir, choirs of England and Ireland, commonly placed.

The choral is also the term by which the lay-vicars, or lay-clerks, and choristers, i.e., the singers, of a cathedral, are collectively designated. Their number in each cathedral varies somewhat, proportionately to the dignity possessed by the respective dean and chapter at the Reformation, and subsequently. But, generally, the dignitaries contrived to retain as scanty a portion as possible of the revenues of the chapter in order to augment their own emoluments; and with the same view deprived, in several instances, that part of the choir which they suffered to remain of no considerable share of the revenues to which it was legally entitled, as in the case of Bangor, in which the control of chancery interposed, and restored to the organism and choir property to a large amount, whereas they had long been most unjustly disfranchised. With some striking exceptions, the choir service is now performed in by the choir in a more tolerable manner, owing partly to the paucity of singers, but chiefly to the lowness of their salaries, which, in a majority of cases, are hardly equal to the wages of the humblest mechanic; consequently, the musical duties of our cathedrals too often are allotted to persons either disinterested, or dissatisfied and negligent.

CHOUSCOUL, ETIENNE FRANCOIS, DUC DE, born in 1719, rose to the highest offices in the state under Louis XV., and was in fact the ruling minister during a great part of the reign of the young king. He was minister of state affairs in 1758, minister at war in 1761, and some years after he resumed the department of foreign affairs. He held this last office till December, 1770, when, in consequence of his high character, which had made him many enemies at court and in the provinces, and from the influential of whom was the Maréchal de Richelieu, the Duc d'Aiguillon, and the Ex-Jesuit Abbé de la Ville, he was dismissed from office, and exiled to his estate of Chanteloup, where he wrote his memoirs and a satirical comedy against the royal family, and especially against the Dauphin, afterwards Louis XVI., styled 'Le Royaume d'Arlequineries,' which he printed himself at Chanteloup, and distributed among his friends. His memoirs were published at Paris in 1799, after his death.

The Duke of Choiseul was singularly unfortunate. In the war against England, which terminated by the peace of Paris in 1763, France lost Canada, and her fleets, as well as the island of Spain, were defeated; and in the seven years' war France took the part of Austria against Frederic of Prussia, who triumphed over both. The Duc de Choiseul is also accused of not taking advantage of a party in Poland at the death of Augustus III., was disposed to offer the crown to the prince of Prussia, and the result was that Catherine of Russia placed the crown of Poland on the head of her favorite Poniatowski. The duke of Choiseul's partiality for Maria Theresa of Austria has been also strongly censured. He concluded the marriage between Maria Antonette and the Dauphin, afterwards Louis XVI. In 1760 he expelled the Jesuits from France. He is also said to have secretly encouraged the first symptoms of discontent among the English colonies of North America.

The personal character of the duke was generous though haughty, he was disinterested and splendid in his expendi-
ture by which he ruined his own fortune. He loved the arts and literature, and was a friend of Voltaire and the other literary characters of that age. His enemies exag-
errated his faults, and attributed to him crimes of which there is not the least evidence. He died at Paris in May, 1785. He was a friend of Voltaire and M. de Chomot de Château, in the Mémoires du Duc d'Aiguillon.

CHOKADEM, [Carbonic Acid Gas.] CHOLAPUS, Illiger's generic name for the two-toed stelias.

CHOLERA, from χόλη and πάθος, signifying bile flux, a disease which has derived its name from its supposed cause, a preternatural quantity and a morbid quality of the bile secretion.

The first symptom of this malady commonly consists of gripping pains of the bowels; these are soon followed by vomiting and purging; there is always a redundancy and an altered condition of the bile, and, in some cases, after the vomiting and purging have continued for some time, there supervene spasms in different parts of the body, but particularly in the upper and lower extremities, and more especially in the legs. The tongue is usually dry, the thirst urgent, and the urine scanty. The pulse, at first frequent and strong, becomes slower and weaker, and the strength is very rapidly reduced. This form of the disease is commonly termed bilious cholera.

The chief exciting causes of this malady appear to be particularly a certain degree of heat, and changes of climate, as attacks in the spring, at least in this country, while it is seldom altogether absent in the latter part of summer, and particularly when summer is passing into autumn. Hence its exciting cause would appear to be not so much a high temperature of the atmosphere as an alternation from hot to cold, such an alternation constantly taking place at the season of the year, and occurring every day, in the great difference that takes place between the temperature of the day and that of the night, or at least over the country.

It is observed to be by far the most frequent and the most severe at the seasons when those alternations are the most remarkable; when, for example, cold easterly or northerly winds suddenly set in after hot weather, and, above all, when these winds are accompanied by a fall of temperature from hot to cold, such an alternation constantly taking place at the season of the year, and occurring every day, in the great difference that takes place between the temperature of the day and that of the night, or at least over the country, or when such a concurrence of circumstances takes place in a high degree, the disease becomes so prevalent as to be truly epidemic as of any of the forms common to the continent.

It is generally conceived that the use of certain kinds of fruit which abound at this season, as cucumbers and melons, and certain vegetables, as peas and the undressed vegetables used in salads, are powerful concurrent causes. In persons already disposed to the disease, the use of such articles of diet may co-operate with the season to produce it; but when the state of the season is such as to render the disease epidemic, it attacks numbers of persons who never use food of this kind. Animal food of a bad quality or too long kept, as animal food of all descriptions is very apt to be at this season of the year, is a much more powerful concurrent cause. So also is excess of food, though of the best quality, and intemperance in the use of malt, spirits, and animal food. When the administration of the following medicines tends to diminish the vital energies, and so to lessen the power of resistance inherent in the body to the influence of noxious agents.

The evidence to believe that certain poisonous particles of matter, derived from decayed vegetable and animal sus-
tances, and diffused in the atmosphere, are among the most powerful exciting causes of cholera, as it is certain that they are of fever. Hence it has been observed that to certain noxious particles of climate, particularly the tropics, bilious cholera is very prevalent. It is said, from the frequency of its occurrence, to be strictly endemic, although in a less marked degree than certain forms of fever or dysentery. According to my own observation, says Dr. Copland, 'a certain of several years' experience has been great, bilious cholera is very prevalent in situations which are subject to emanations from decayed vegetable matter or putrid matter of any description, parti-

cularly from swamps, most grounds, the banks of rivers,
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lakes, or canals, &c., and from foul drains or cess-pools, during warm seasons, or wide and rapid changes of temperature; or when the thermometer rises high during the day and sinks low towards the night and morning.

The presence of these minute infestations accounts for the much greater prevalence and severity of this disease, in this country, in antient than in modern times. The account given by Sydenham, who wrote about these matters, perhaps, without the least reference to the case, is graphic. "The return of cholera and of its great fatality, may well make us rejoice at the altered condition as to cleanliness of our streets, drains, and houses, and at the different kind and better quality of our food."

'Tis says Sydenham, writing of cholera as it appeared in London in the year 1699, 'comes as certainly at the latter end of summer and at the approach of autumn as swallows at the beginning of spring, and as cuskaws at the height of the following season. That disease which is occasioned by a surfeit comes at any time; the symptoms are indeed alike and the cause the same, yet it is of another kind. The cholera is easily known, for there are violent vomitings and an evacuation of all humours with great difficulty and trouble by stool; there is a violent pain and inflammation of the belly; a heart-burning, thirst, a quick pulse with great anxiety, and often a small and unequal pulse with great nausea and sometimes a colliquative sweat, coming often only in spasms, by which the person is thrown out of the extreme parts, and such like symptoms, which frighten, the bystanders and kill the patient in twenty-four hours.'

The persons most liable to bilious cholera are either those whose bodies are preternaturally irritable, and who are consequently the commonest causers of the disease; or whose bodies are torpid, and who are consequently subject to habitual constipation. In the latter case it is probable that the biliary secretion is sometimes long retained in the gall-bladder, where it becomes changed in nature, and acquires irritating properties.

Bilious cholera is rarely fatal in this country, excepting at seasons when the concussion of circumstances is peculiarly favorable to the production of a severe form of the disease, and when each season it may be much predisposed to it, and whose constitutions have been previously enfeebled by other causes. Its ordinary duration is from twenty-four hours to three or four days, when it often spontaneously disappears; but in general medical aid is indispensable; and when the attack is severe, if such aid be not promptly afforded, the danger of the disease and the difficulty of the cure are very seriously increased.

The milder forms of bilious cholera may pass away without a degree of spasms; but when the attack is severe, spasms are as constantly present as vomiting or purging. And cases now and then occur in which the spasms come on so early and so prominently as to give its own name to the disease. It is rare that symptoms, so described by no means as frequent as bilious cholera, is on the other hand a much more formidable malady. It is indeed the same in nature, and arises from precisely the same causes, but its intensity and danger are widely different. Its attack is often immediately preceded by a sense of chilliness or a distinct rigor; the gripping pains are more severe than in bilious cholera; the vomiting and purging are more urgent; the matter rejected consists of a watery or sliny fluid, and very soon there come on a pressing and violent spasm, which attack the muscles of the abdomen, thighs, legs, thorax, and lastly the arms and hands. These symptoms are attended with a small, quick, and contracted pulse, great thirst, and an intolerance of heat, which is taken into the stomach. 'As the disease proceeds,' says Dr. Copland, who witnessed its progress in an intertropical climate, and who experienced it in his own person, 'the pulse becomes weaker and smaller; the spasm more gen
eral, the pain more intense, and the patient becomes conscious of much tenden
tus; the vomitings are renewed upon the ingestion of substances into the stomach; and the powers of life rapidly fail. During this time the fluids evacuated from the stomach and intestines is a mixture of blood and stomach contents; the occasional bane is seen in the evacuations to a small extent. In the course of a few hours the features shrink, the hands and feet become cold and clammy; the exacer
bation of the spasms forces out a cold clammy sweat on the face; the whole system is extremely surcharged with bile, and nearly disappears. In a case which came before me in Africa, in 1816, the pulse could scarcely be felt four hours from the attack; and the contents of the stomach are now, in the more dangerous cases, thrown off without any effort of retching. Commonly during all this time the faeces are turned into the exterior opening of the bowels, and the species of the disease is very frequent to the common biliary duct, and to spasitic contractions of parts of the colon; the epigastrum and hypochondria being sore, tense, and turgid. When the disease is treated with continued and free evacuations, the distemper is not likely to be made worse by the discharge of bile take place, and the patient soon recovers. But if neglected, or improperly managed, the powers of life fail rapidly; the eyes sink, and are surrounded with a livid circle; the countenance assumes a remarkably anxious expression; the voice is husky and shrunk; and the fingers are long and cold to the very fingers. The breathing now becomes extremely labious; the patient is restless, and at last is carried off, sometimes in the space of ten or twelve hours.'

The pathological state constituting the disease seems to consist of irritation of the mucous surface of the digestive tube, commencing in the duodenum and extending in each direction to the stomach, small intestines, and along the common duct to the gall-bladder and liver, with increased action of the muscular coats of these visceras and determination of the circulating fluid to them. This irritation or morbid excitement, owing to the connexion of the organic nerves supplying those parts, is propagated to the spinal nerves, by which the functions of the different parts of the vital animal com
tinities are affected by painful and violent contractions; and it is chiefly owing to the exhaustion of the vital manifestations of the organic system of nerves, and to the frequent and pro
drug discharges, that the disease takes place; the circulating organs, which are actuated by this system, being consequently incapable any longer of performing their functions.

In regard to the treatment, Sydenham recommends in the early part of the attack the promotion of the discharge of the offending matter by means of enemias, such as weak broths and soups; and since his time this practice has been very generally followed. When the discharge has continued some time opium is indispensable, which is best given in the form of pill, in doses of two grains, repeated at short intervals. The muriate of morphia, in doses of from half a grain to two grains, is an excellent remedy. In some cases the opium should be combined with colonel; and in the intense forms of this disease, common in warm climates, twenty grains of colonel combined with opium, repeated once or twice after an interval of from three to six hours, is found by experience to be the most effectual remedy. Under such circumstances these large and repeated doses of colonel do not salivate, partly because the whole of the colonel is not retained, and partly because the system is not in a condition favourable for the absorption of what does remain in the stomach.

The malady, new to this climate, which has spread to so many different nations of the globe, and is attended away so many of its inhabitants, commonly known under the name of pestilential cholera, is a totally different disease from that here treated of, and is noticed under the article PESTILLENCE.

For a more minute account of the symptoms, and for the details of the treatment of bilious and spasmodic cholera, see Sydenham's works; Dr. James Johnson On Diseases of Intertropical Climates; Dr. Chisholm On Diseases of Tropical Climates; and Dr. Copland's Dict. of Practical Med.

CHOLESTRINE, the crystalline matter which constitutes the basis of most of the biliary concretions of man. It is inodorous, insipid, insoluble in water, but soluble in hot alcohol, from which it can be separated with nitric acid it acquires the properties of an acid and is called choleric acid. [CALCULUS].

CHOLIAMBIC, the name of a kind of verse employed by Greek and occasionally by Latin writers (e.g. Martial). It consisted of six feet, and was regulated by the same general laws as the iambic verse of tragedy. In two or three points it differed considerably: the fifth foot was properly and generally an iambus, though a few instances are found where it is a spondee in the sixth place; the sixth foot was always a spondee or trochee. From this circumstance the name Choliambus (χωλιαμβος) is derived, which means lame iambus; the metre limps, as it were, in the sixth foot. Anapests appear in the fourth foot. The word Choliambus was one of the earliest writers in choliambic verse, and has therefore been called the inventor of it. The fragments of his poetry have been collected by Prof. Welcker.
Simonides and Callimachus also wrote in this metre, and a few specimens from the latter poet remain. The age succeeding the death of Alexander contained many choliambic writers, who employed the same antiquated dialect that was used by the comedians, and contributed almost nothing else. The fabler-writer Babrius [Babrussa], who lived a little before the Augustan age, revived the choliambic poetry, and, influenced probably by preceding poets, who had dropped the old metre, he seems almost to have considered himself bound by the custom of his own age in the choice of words. (Philological Museum, vol. i., pp. 290-304.)

CHOLET, or CHOLET, a town in France, in the department of Maine et Loire, and on the little river Morouet, which dates its name from the fact that its sources are nearly 190 miles N.W. of Paris in a straight line, or 217 miles by Chartres, Tours, and Saumur, in 44° 3' N. lat. and 0° 53' W. long. The town is situated in a pleasant and fertile country, not far from the left bank of the Loire. Before the revolution it had two religious houses, an ancient castle in good preservation, and an hospital: the castle and hospital were destroyed in the Vendean war, and the ci-devant convent of the Cordeliers was in consequence converted into an hospital. The population in 1832 amounted to 4657 for the town, or 7345 for the whole commune. The inhabitants manufacture linen-cloth, calico, and handkerchiefs, which resemble those of India, and carry on a considerable trade in domestic manufactures.

CHOLULA, a town in Mexico, in the state of Puebla, lying in 19° 2' 6" N. lat. and 98° 15' W. long. It is situated on the table-land of Anahuan, at an elevation of 150 feet above the level of the sea, according to Humboldt. Cholula is the principal town of the table-land of the valley, containing 16,600 souls, but its manufacturing industry is limited to the fabrication of coarse cotton goods. In the country about are numerous and extensive plantations of magnesia, from which the natives extract the beverage called pulque. Close to the town stands the largest of the Mexican teocalli, or pyramids. It is built like the pyramid at Sakkara, in Egypt, in terraces, of which there are four. It is 210 feet long and 166 feet wide, and each side of its base is 1440 feet. Its four sides lie exactly in the direction of the parallel and meridian lines. The platform on its top has an area of somewhat more than 50,000 square feet, and in the midst of it is built a church, dedicated to the Lady de los Remedios, in which mass is read every morning by a priest of the Indian race. The prospect from this platform over the adjacent plain, as far as the great mountain-masses of Popocatepetl and Pico de Orizaba, is very grand and striking. This interesting monument of the ancient inhabitants of Mexico consists of three ascending strata of bricks and clay cement. At no great distance from it are two other teocalli, but of smaller dimensions.

CHONAD, CHANAD, CSANAD, or TSCHANAD, a county or part of Hungary, on the Murray river, is the largest in the country. Beyond the Tisza.' It is bounded on the north by the county of Bekes, on the south by the territory of Temeswar, on the east by the counties of Sarand and Arad, and on the west by the counties of Szegedin and Tisa. Its area is between 4,255 and 47° N. lat. and 20° 42' E. long. Like the surrounding counties, Chonad is a level plain, broken here and there by innumerable eminences. The Maros flows along its southern frontier from Sajten to Klaraflava, and, like the Tisa, forms numerous swamps, which are called Panons and Gendichal. It is also watered by the Szaraz, a branch of the Maros. Chonad contains 623 square miles, yet does not include more than 2 market towns, 11 villages, and 30 peasant settlements. The population, in 1787, was 35,686; in 1794, 35,992; and, in 1808, 35,441, but it has advanced rapidly of late years, and may at present be estimated at 47,500. The soil is very favourable to the cultivation of every species of grain, especially wheat, which is excellent and very abundant. The vineyard is carried on in several places; the best wine is that made at Mako: the tobacco is also in high estimation; and, on the whole, an increased attention has of late years been paid to agriculture. Chonad contains 40,832 acres of arable land, 56,361 acres of meadow and pasture land, 88,666 acres of vineyards, 126,657 acres of arable land, 13,977 yehas, or 19,967 acres, of vineyards, and 5712 yehas, or 8160 acres, of garden ground. The woods and forests occupy 75,526 yehas, or 113,608 acres. A fine breed of cattle is reared in this and the neighbouring counties: that of Mako is famed throughout Hungary. Numerous herds of swine are fattened in the oak and beech forests, and much care is bestowed on the improvement of the flocks. In no other part of Hungary is the breeding of horses carried on with more skill and success than in this county, especially in the province of Temeswar, which stands unrivalled in Hungary, and probably in Europe. These royal mews are handsome and extensive, and always contain 3500 of the finest horses, the reservoirs for which are supplied by a branch of the river Mako, which discharges itself into the Danube near Tuzla. From the proximity of the Maros and the Thies, Chonad is supplied with an abundance of fish; honey also is plentiful. No minerals are found here, and the spring-water is very unwholesome.

The county of Chonad is inhabited by Hungarians, Raitzes, Walachians, Schelavians, and Jews. The Hungarians occupy six villages; the Walachians four, and the Schelavians one. Of these 1209 are Roman Catholics, 10,293 Greeks, 1288 Mohammedans, and 456 Jews. The Evangelical communion of the union of Bekes (for the most part Schelavians) 6000 of the Reformed church, and 800 Jews. There are very few mechanics, as nearly the whole population is employed in agriculture. The yearly quota of Chonad for the national war expenses is 17,228 florins, about 1739. The whole county consists of only one circle.

CHONAD, or CSANAD, the capital, on the river Maros, contains 6737 inhabitants, and was formerly a place of some importance; a cathedral castle has long since fallen into decay, and was erected into a bishopric by King Stephen I. in the year 1036, but the bishop does not reside here. It has two churches, and is the residence of a Greek protopope. 46° 10' N. lat. and 20° 35' E. long. The town of Mako, on the left bank of the Maros, contains 2000 inhabitants, and is the seat of the bishop of Chonad, who was subject to the archbishop of Colocza. After the conquest of the fortress of Temeswar, in 1716, it was reunited to the Banat and Temeswar, after having continued for 165 years under Turkish dominion.

CHONDROPTERYGI, or CARTILAGINEI, one of the two great sections into which the class Pisces is divided. In this section we find species which possess, in most respects, the highest degree of organization, whilst others possess the lowest observed in the class.

The principal character which distinguishes this section from the fishes with true bone (which usually come first in arrangement) is the fact that the bones are composed, a circumstance arising from the very small quantity of earthy matter which enters into their composition. This earthy matter, when observed, is found only in very small granules, and not in distinct fibres, as in the first section.

The cranium of these fishes is not divided by true sutures but is formed of a single piece: the maxillary and intermaxillary bones are either wanting or rudimentary, and their functions are performed by bones of the palate, the palatines, and sometimes the vomer. Many of the vertebrae are often consolidated. The gelatinous substance, in most fishes fills the intervals between the vertebrae (these intervertebral masses being connected only by a small cord), in this section, the bony plate forms a thick cord, which varies but slightly in diameter.

In the Myxine (Gasterobranchus caecus), no distinct vertebrae are perceivable, their place being occupied by a soft gelatinous mass. In the extraordinary little fish described by Mr. Yarrell in his 'History of British Fishes,' the lancelet (Amphioxus lanceolatus), this part is still more rudimentary, consisting only of a slender transparent column.

The caudal vertebrae of many species are divided by Cuvier into two orders—those in which the two bodies lie side by side, and those in which they are fixed, that is to say, the external edge attached to the skin. In the former of these orders, the species have but one external gill-opening. In the latter, they have several: some gills are divided into families and genera, as follows:—

Order 1. Chondropterygii, with free gills.

Family 1. Sturionom (or sturgeon).

Genus 1. Acipenser.

2. Spatularia.
CHORD (in mathematics), a straight line drawn from one point to another of a curve. [Arc.] The term chord is also used in trigonometry, with sine, cosine, &c. to denote the chord of a circle, in which case it was also called the chord of the subtending angle. But this term, not being wanted, has not passed into pure algebra with sine, cosine, &c. [Circle]. So that when used, it must be considered as retaining its trigonometric sense, namely, that of a straight line, not an abstract number expressing the ratio of a straight line to the radius. To find the chord of a given angle, multiply the diameter by the sine of half the angle. Thus the angle being given and its half known, take the sine of the half, which is ... 20°22′17″. If the diameter be 100 feet, then the chord of 23° 20′ is 20°22′17″, or 204 feet nearly.

To find the chord of a given arc, divide the arc subtending the given arc (Angular), and proceed as before. The following Table of Chords, to degrees up to 180°, will frequently be useful in rough calculations. The diameter is throughout 10,000, to avoid decimals.

<table>
<thead>
<tr>
<th>Angle</th>
<th>Chord</th>
<th>Angle</th>
<th>Chord</th>
<th>Angle</th>
<th>Chord</th>
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<td>97</td>
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<td>7553</td>
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<tr>
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<td>10242</td>
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<tr>
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<td>874</td>
<td>55</td>
<td>4617</td>
<td>100</td>
<td>7673</td>
<td>145</td>
<td>10363</td>
</tr>
</tbody>
</table>

Table of Chords (Diameter 10,000).
The chord of the Diminished Seventh—sometimes called the Equivocal Chord—consists of a given note, its minor 3rd, imperfect 5th, and diminished 7th. Example:

\[
\begin{array}{c}
\text{Diminished 7th.} \\
\text{1st Inversion.} \\
\text{2nd Inversion.} \\
\text{3rd Inversion.}
\end{array}
\]

This chord has three inversions, though they are not in very common use. M. Catel gives them in the following manner:

\[
\begin{array}{c}
\text{1st Inversion.} \\
\text{2nd Inversion.} \\
\text{3rd Inversion.}
\end{array}
\]

But by far the most elegant form which the chord of the Ninth and Seventh assumes, is as a retardation of the 8th and 6th. Example:

\[
\begin{array}{c}
\text{1st Inversion.} \\
\text{2nd Inversion.} \\
\text{3rd Inversion.}
\end{array}
\]

The Dominant Minor Ninth consists of the same sounds as the Dominant Ninth, but the 9th is flat. Example:

\[
\begin{array}{c}
\text{1st Inversion.} \\
\text{2nd Inversion.} \\
\text{3rd Inversion.}
\end{array}
\]

This has three inversions, which also we extract from M. Catel's treatise.
We have seen, that by adding to the perfect chord a 3rd above its 5th, the chord of the Seventh is formed: by the further addition of thirds, theorists form other chords, sometimes called chords by supposition. These are, the chord of the Ninth, of the Eleventh, and of the Thirteenth. The last three chords, as well as others presently to be mentioned, are mere chords of retardation: or, in other words, the dissonant notes in them are but appoggiaturas.

The chord of the Ninth consists of a given note, its 3rd, 5th and 9th, the discord retarding the 8th. Example:—

\[ \text{Diagram} \]

This chord is almost invariably figured by a 7, accompanied by a 5th, 4th and 2nd; but as the discord of the 2nd is always resolved in the base, it cannot, under such name, form a part of the chord of the eleventh.

The chord of the Thirteenth consists of a given note, its 4th, 6th (or 13th), major 7th and 9th. This is a retardation of the perfect minor chord, the 4th and 6th retarding the 3rd and 5th, the 7th and 9th retarding the 8th. Example:—

\[ \text{Diagram} \]

Albrechtsberger considers this chord as one form of the chord of the Eleventh, but the discord being resolved in the base proves it to be a 2nd, not a 9th. It is, in fact, the Sixth retarded by the base.

The chord of the Fifth and Fourth consists of a given note, its 4th and 5th, and retards the perfect chord, the 4th retarding the 3rd. Example:—

\[ \text{Diagram} \]

The chord of the Ninth and Fourth consists of a given note, its 4th, 5th and 9th. This also retards the perfect chord, the 4th and 9th retarding the 3rd and 8th. Example:—

\[ \text{Diagram} \]

We will only add that, the nomenclature of chords stands much in need of correction, but, unhappily, it is not the only branch of the theory of music that is confused and perplexing from want of logical accuracy and lucid arrangement.

CHOREA (remotely from the Greek χορεία, and immediately from the Latin chorea, a dance with singing—Chorea Sancti Viti—Saint Vitus's Dance), a disease affecting with irregular movements the muscles of voluntary motion, these muscles being no longer under the command of the will, and the power both of walking and of using the arms and hands being impaired. The chief external manifestations of this disease are in the muscles of voluntary motion; but its real seat is in certain internal organs, along more especially in those which belong to the apparatus of digestion. If the history of any case of chorea be carefully examined from the commencement, it will be found that the more manifest disorder has been preceded by deranged appetite, which is sometimes voracious, at other times altogether lost; by constipated bowels, and by imperfect digestion. There is at the same time a remarkable failure of the general physical strength. The derangement in these organic functions is always accompanied with a greater or less degree of mental disorder. The mind is irritable and fretful, and oftentimes reserved, gloomy, and desirous of solitude. After this state of physical and mental disorder has continued some time, and the languor, lassitude, and general weakness of the system have proportionally increased, there come on irregular and involuntary twitchings of the muscles, particularly the muscles of the face, which at first are thought by the friends of the patient to be merely the effect of imitation. But these contortive movements increase in frequency, and spread over the extremities, face, lower jaw, head, and trunk all become agitated with violent and irregular movements. In this case the patient is incapable of walking steadily, his gait is staggering or stilted; sometimes he is altogether unable to walk, and seems palsied, while he is equally unable to perform the ordinary motions with the affected arm.

A century and a half ago Sydenham gave the following graphic and correct description of the convulsive motions characteristic of this disease when fully formed. 'First it shows itself by a lameness or rather instability of one of the legs, which the patient drags after him like a fool. Afterwards it appears in the hand of the same side, which he that is affected with the disease can by no means keep in the same posture for one moment; if it be brought to the breast or any other part, it will be distorted to another position or place by a convulsion, let the patient do what he can. If a cup of drink be put into his hand he sends a thousand gestures, like jugglers, before he brings it to his mouth; for whereas he cannot carry it to his mouth in a right line, his hand being drawn hither and thither by the convulsion; he turns it often about for some time, till at length, happily reaching his lips, he flask or suddenly into his mouth, and drinks it greedily, as if designing only to make sport.'

As the disease advances the power of distinct articulation is lost; even the declination becomes difficult, in some cases, to such a degree that fluids are forcibly thrown up from the pharynx in attempts at swallowing them; the eyes lose their lustre; the complexion becomes pallid and muddy; the expression of the countenance languid and vacant; and in the most cases the mouth is variously twisted and the salivary drivels from it; the tongue is protruded irregularly and spasmodically; the eyes are distorted and rolled in various directions, and the sight is occasionally defective. The muscles meantime become soft and flabby; emaciation takes place; the pulse is weak, but not much quickened; the urine is pale and copious, and the bowels are always constipated.

The mind, irritable from the commencing, is now harassed by painful images and incongruous ideas, which every effort is made to conceal, and various desires and emotions are produced, sometimes without apparent cause. This disordered condition of the mind, when the disease is severe and long continued, ultimately terminates in the proportion of about three of the former to one of the latter. It seldom attacks before the 8th nor after the 15th or 16th
year of age, although no period of life is wholly exempt from it. The different muscles that are affected, and the different degrees in which they are agitated by the irregu-
lar states, gives rise to a characteristic appearance of different cases; for the convulsive motions are some-
times slight, at other times severe, sometimes partial, at other times general; but most commonly they are par-
tial, and sometimes they are strictly confined to one side. The period of the disease may vary from a few weeks to many months.

Chorea is often associated with other affections more or less closely allied to it in nature, and alternates with them. In some cases it is often seen in association with re-
cess, with the suppression of the catamenial discharge, and with hysteria, and in the male with rheumatism, paralysis, and dropsey. Occasionally it terminates in epilepsy, paralysis, dropsey, particularly hydrocele, and, as has been stated before, it has been observed in cases in which it has terminated in violent convulsions, and inflammation of the brain, followed by coma and death.

Such being the occasional case, the disease ought in no case to be neglected or trifled with, especially when, as is invariably the case, the postponement of the proper treat-
ment greatly increases the difficulty of the cure. In general, under proper management, the disease is removed without difficulty, and the return to health is commonly complete, and at the proper period. The success of the affection is greatly subject to relapse. It is not at all uncommon for the pa-
tient, when apparently cured, to be attacked several times in succession either with the same disease or with some one of the affections which it has been stated to have a great tendency to lapse. Still however those relapses are curable by persevering in the proper treatment, and it is remarkable that even when paralysis and idiocy appear to be fully established, they yield far more readily to appro-
riate remedies than when those affections have been in-
duced by a primary affection of the brain.

Chorea arises in widely different states of the system, and is produced by different causes, and therefore in different cases requires a different treatment. In the majority of cases it arises from an accumulation of irritat-
ing matter in the alimentary canal, which must be re-
moved by a course of purgative medicines. The choice of the purgative and the duration of the course must de-
pend on the state of the system in each particular case; but in general the purgative must be of an active nature, and the course decided and long continued. At the same time the strict regulation of the diet, both as to the quality and the quantity of the food, is indispensable. As this unaided almost invariably occurs in an enfeebled state of the con-
stitution, active exercise in fresh and pure air, and what-
ever medicines of a tonic nature are best suited to the pur-
poses of the cure of the individual case, should be combined with the purgative course of treatment.

When this affection is connected, as it occasionally is, with organic disease of the spinal cord or brain, it is of the last importance to the proper treatment of the case that this organic lesion should be removed, and that the different remedies proper to it should be promptly applied. From what has been stated it will appear that this is one of the diseases which should engage the anxious attention of pa-
rents, teachers, and all who have the charge of young per-
sons of either sex. Not only the health or disease of pu-
ternity and adolescence, but the health or disease, physical and mental, of mature age may depend on their prompt attention to, or neglect of, the very first symptoms of this malady.

CHORLEY, a market-town and parish in the hundred and deanery of Leyland, in the county of Lancaster, 208 miles N. by N. from London, 22 N.W. from Manches-
ter, 11 miles S.W. from Preston, 11 miles S.S.E. from Salford, 11 miles N.W. from Bolton, and 8 miles N. from Wigan. It has no dependent township, and is the only market-town in the hundred of Leyland. The parish of Chorley comprises an area of 3305 acres. The town is situated on a hill in the centre of the county, opposite the great road from London to the North. Its name is derived from Chor, a stream that rises at Heapey, two miles north-west of the town, and after a short course along the edge of the town, joins the Yarrow, which empties into the Douglas. A court-leet and baron was held here for the manor until 1827, when it was discontinued. The manor now belongs to the Faakerley's, after having passed through the hands of the Sherburnes, the Chorleys, and the Norman families of Faggers and Lay. Within the present century the popu-
lacion has more than doubled. In 1801 it was 4516; in 1831, 9282. Seventy years ago the whole town consisted of streets with a small shop built across it; now the streets are wide and amount to 67, with a market-square, and about 1820 houses. The town is lighted with gas by a company formed in 1819, and is partially supplied with water by a company formed in 1818. Articles of manufacture are calicoes, muslins, and ginghamas. Eight cotton-mills and printing and bleaching establish-
ments find employment for a considerable part of the popu-
lation. The Leeds and Liverpool canal, which joins the Whittle-le-Woods branch, runs within about a mile E.S.E. of the town, and furnishes the means of convey-
ing the flags, slates, and mill-stones which are got out of the quarries in the neighbourhood. Coal of good quality is abundant, and in 1839 a large bed of iron ore was dis-
covered near Gillibrand Hall. Lead and carbonate of barytes are found in the Anglezark mines, four miles dis-
tant. About one-fourth of the land is arable, and the re-
mainning three-fourths pasture and wood. There are four annual fairs, three of which are held for the sale of the last for woolen cloth, hardware, and pedlery. The market is held on Tuesday and Saturday. The town-hall, the basement area of which is used as a market-house, a stone church, with a tower and spire, was built in 1750 at the expense of Sir John Hollinshead, Esq. Above this are rooms for the transaction of parochial and public business. The local authority is vested in a constable and visiting magistrates, who hold a petit-session once in three years.

Chorley is a church-chapelry in the hundred of Croston until 1793, when it became one of three independent parishes, into which the former was divided. The living is a rectory in the archdeaconry of Chester. The parish church, dedi-
cated to St. Lawrence, is an ancient structure, supposed to be of Norman origin. The tower is a later erection. In this church a court & annually held by the bishop of Che-
ster, at which he presides by proxy, for the swearing-in of the curates for all the parishes in the hundred of Ley-
land, for the presentation of the chaplain, and for other administra-
tion. In the patronage of the rector of the parish church is St. George's, an elegant modern structure, built by the parliamentary commissioners at the cost of 13,7971. 14. 6d, and opened for public worship in 1825. Besides the churches there are dissenting chapels for the Unitarians, Independents, Wesleyan Methodists, and Bap-
tists; and at Welsbank, about a mile south of Chorley, is a Catholic chapel. In the various Sunday schools 1250 children receive instruction. The town has a subscription ad-
joining to the churchyard, but has a very small endow-
ment, so that the boys educated there are not taught gra-
tuously. There is a large and handsome school, con-
ducted by the committee of the town, built with a grant from subscription; there are also infant schools and a Catholic day-school, which afford gratuitous instruction to nearly 1000 children. Six almshouses, having gardens and a rent of 2l. per annum attached to each, were built in 1682 for aged women and widows. Other subscriptions amounting to nearly 30l are annually distributed among the poor. In 1825 a dispensary was established. The sur-
rrounding country is very picturesque, particularly towards the vale of the Ribble. On the north-west of the town is Astley Hall, an ancient mansion, the seat of Sir H. P. 
Hoghton, Bart., and a little farther from the town, in the opposite direction, is Duxbury Hall. The townships ad-
joining to, and adjoining to those of Heapey, Hesketh, Heaton, Whorrlean, and Winds-
net, and Whittle-le-Woods, are parishes in the hundred of Chorley in the county of Lancaster; Robinson's Description of the Parish of Chorley (1833).
representation. Many explanations of the object of the chorus have been offered by different writers. It would certainly give a very imperfect idea of its office, to say that it was only retained in order to give the other actors breathing-time, and to prevent a break in the performance. The chorus represented the assembled, or the general view or impression of the audience of the performance. The chorus usually gave utterance to those emotions of pleasure or sorrow which the audience might be supposed to feel. The chorus were used to give instruction or to administer reproof.

The tragic chorus consisted at first of fifty, afterwards of fifteen persons; the comic chorus consisted of twenty-four. According to Plutarch, in Onomast. iv. 15, the number of the tragic chorus was sixty, under the performance of the Eumenides of Aeschylus: the alarm caused by fifty of these ladies was too great. The chorus entered into the orchestra, and remained there performing their evolutions, and observing the thymele or altar, which was in the middle of the orchestra, as the centre of their movements. As they sang they moved in a dance, suited to the subject of their song, and modulated by the accompanying music: sometimes the movements of the dance were so appropriate as to convey to the spectators the full meaning of the chorus, independently of the words of the song. The perfection to which the Greeks carried their skill in affecting an audience by the harmonious union of music and dance, appears from the fact that the ancient and modern theatre. The modern ballet (properly so called) will probably give the best idea of what this combination was: but by the ballet (properly so called), we understand the performance given by the Vendéens at the theatre now ordinarily presented as a ballet. The songs of the chorus consisted of three parts, the strophe (or tumbling), the antistrophe (opposite tumbling), and the epode (after-song): during the first they turned from right to left, during the second from left to right, and during the third they stood still in front of the spectators. When they sang, they all sang; when they took part in the dialogue, one only, the corophius or leader of the chorus, spoke, from the top of the chorus, and who had served in an army. The chorus is a constant change of number—thou and ye. (Schlegel, Trans. in Theatre of the Greeks, p. 265.) Frequently they divided into two sets, who, by means of their two leaders, carried on a separate dialogue, which generally reversed their sentiments on the progress of the plot, their fears, anxieties, and hopes. They also chanted hymns of supplication or thanksgiving to the gods.

The choruses at Athens did not perform exclusively in the theatre, but were among the scenic representation at all. At the Panathenaea and the Thargelia, and at the Gymnopediae of Sparta, choruses of men and boys sang. All choruses at Athens were provided, equipped, and instructed, by persons appointed by the several tribes.

CHORUS, in music, a composition sometimes in two or three, but generally in four parts, sung by many voices, accompanied by the whole band when performed in an orchestra or on the stage, but by the organ alone when sung in a choir. The chorus of the oratorio and opera has full instrumental accompaniments, but that of our cathedral services and anthems is written with only an organ accompaniment.

CHOUS is also applied in an aggregate sense to the whole body of singers performing the chorus.

A DOUBLE CHORUS is in eight vocal parts, and sung by two choirs. Many of Handel's choruses in Israel in Egypt, Solomon, and Maccabees are examples.

CHOSE IN ACTION is a technical term in the law of England which denotes that kind of property of which the owner is not in the actual possession or occupation, though he has a legal right entitling him to obtain the possession, but by the act of suit. This sort of property is, for this reason, called a thing (res), or chace in action, in contradistinction from property in possession. Thus if I contract to buy a quarter of wheat out of a large quantity, and the seller, in breach of his engagement, refuses to deliver it, my interest in the wheat under the contract is a property to which I have an absolute right, but which, as I have not bought any specific parcel of wheat, I can only recover by a suit in the suit. And as long as I have only the right of enforcing the delivery of the wheat, or an equivalent in damages, and not the actual possession, my property in this respect is a chose in action, being, as a property, a thing rather in potential than in esse. (Blackstone's Com. vol. ii. p. 397.) In like manner money due upon a bond or a bill of exchange is a chose in action; and also the right to compensation for personal damage sustained by means of the breach of any kind of contract.

The antient policy of the English law, in discouraging all contracts tending to promote litigation, introduced a rule that property in choses in action could not be assigned or transferred to any third person. This rule has in modern times received considerable modification. In the familiar instance of bills of exchange and promissory notes (which are strictly choses in action), an indorsement not only gives the indorsees an absolute right to the sum to be recovered, but also enables him to sue in the common law-courts upon the bill or note in his own name. Courts of equity in other cases protect assignments of choses in action; but in these cases the assignee must sue in the name of the original contractor, whom the law, regarding the assignment, which it does not sanction, as a nullity, treats as the party still entitled, if the assignment proceeds at law. [ASSIGNMENT.]

CHOSREES. [KROSV.]
CHOTEESEHRUR. [NAGORP.]
CHOUANS was the name given to the irregular bands of royalists in the west of France, who continued in arms after the triumph of Joseph Bonaparte over the Bourbons in 1815 and was suppressed by the first Consul Bonaparte in the year 1800. The Chouans were chiefly on the right bank of the Loire, in the provinces of Bretagne, Maine, and Normandy, while the Vendéens, which is the name now applied to the left or south bank of that river. The Vendéens were a regular partisan party, possessing a considerable extent of country, having a kind of discipline in their army, and fighting honourably for their cause. The Chouans, who continued in arms after the Vendeans had submitted, were fighting disorderly bodies of men, marauding over various provinces of France, hunted after by the troops of the government, and having no fixed station. Some of the royalist officers who remained with the Chouans, and who were leaders of Chouan parties, but the parties themselves were swelled by many disorderly and desperate characters, who continued a struggle which had become hopeless chiefly for the sake of revenge and plunder. Frotté and George Cadoudal became the chief leaders of the Chouans, under the Vendean chiefs of Autichamp, Bernier, Bournont, Chatillon, Suzannet, &c., had made their submission to the first consul. Frotté was taken and shot. Cadoudal withdrew to England, and after returning to France and continued a that kind of warfare, mixed up with conspiracies against the first consul, for effecting one of which he went secretly to Paris, and remained several months in that city unknown to the police. He was last arrested, after killing several of the police, tried, convicted, and executed. [PARTY.] The Chouans scattered over France had been in great measure put down, and a vast number of them executed previous to Cadoudal's death; still we read of Chouan parties occasionally as late as 1806, under the empire, when one of them arrested the bishop of Vannes in the department of Morbihan and executed a considerable sum for his ransom. They had then regenerated into mere robbers. In general the name of Chouans was used in an unfavourable sense, while that of Vendean was respected even by their enemies.

CHOUGH. [COVRID.]
CHOUMLA. [SHUMLA.]
CHRISM, in church-divinity, the substance of CHROSOME, in its strict interpretation means 'unction,' from the Greek χρισμα (chrism), ointment; but is more generally received as the name for oil consecrated by the bishop and used in the English Church and a few of the Greek churches in the administration of baptism, confirmation, ordination, and extreme unction: and is, or used to be, prepared on Holy Thursday with much ceremony. Ducange (Glossar. ad Script. Med. et Infinas Latinitas, edit. Franc. ad Muen., 1681, tom. i, col. 927) says there are two kinds of chrism, the one prepared for oil and balsam, used in baptism, confirmation, and ordination, the other of oil alone, consecrated by the bishop, antiently used for the catechumens, and still used in extreme unction. Ducange, Duni's Nationalis Dictionarium Officorum, lib. vi., cap. 74, 84.) The word chrisme is also found applied to the cloth which was laid over a child's face when
baptised, to prevent the ungent from running off. (See the Liturgy compiled in the 2nd year of Edward VI.) Children likewise who die in the first month are called Chrestomies, in other cases, as was seen, are probably formed from the circumstance of the linen-cloth having been so recently laid upon them.

CHRIST, JESUS, was born at Bethlehem, a city of Judaea, in the days of King Herod. The first chapter of St. Matthew contains the genealogy of Jesus deduced from Abraham through David and to Joseph. St. Luke, the third chapter of St. Luke contains his pedigree from Joseph to Adam. From Joseph to David, the two genealogies are entirely different; but this discrepancy is satisfactorily explained by the contemporaneous chronology. The birth of Jesus was miraculous; when his mother Mary (according to the words of St. Matthew) was espoused to Joseph, before they came together, she was found with child of the Holy Ghost. Joseph, who intended to put her away privately with a view of avoiding a dream by the Angel of the Lord, and that what was conceived in her was of the Holy Ghost, took unto him his wife and knew her not till she had brought forth her first-born son: and he called his name Jesus. (Matt. i.) Herod was much troubled at the miraculous circumstances which attended the birth of Christ, and at the coincidence of the place of his birth with the prophecies. In order therefore that the infant might with certainty be destroyed, he gave orders that all the male children, in the land of Judah and in Bethlehem, two years of age should be put to death; but Jesus was saved by his parents, who were warned by an angel in a dream to take the child into Egypt. This part of the story is amplified by St. Luke in his only. According to him, to St. Luke, when the days of the purification of Mary were accomplished, his parents took him from Bethlehem to Jerusalem to present him in the Temple, after which they returned to their own city Nazareth in Galilee. At twelve years of age Christ disputed with the Jewish doctors in the Temple at Jerusalem, whom he astonished by his answers and his understanding. Towards his parents his conduct was an example of filial obedience. He was not above following the business of his reputed father, Joseph, that was of a carpenter; and until about his thirtieth year he fulfilled the common duties of life in an humble and obscure station. His public ministry was preceded by the warnings and admonitions of John the Baptist, the son of a Jewish priest, who called upon the people to repent and believe, for the time was fulfilled, and the kingdom of God was at hand. Christ was baptised by John in the river Jordan, and shortly after commenced his ministry, being about thirty years of age. For about the space of three years he was engaged in the work of promulgating his doctrines, and confirming his divine mission by numerous miracles. In order to diffuse that religion which he came to found, he selected a certain number of persons to be his constant companions, to learn, and do, and to witness their influence, to testify to the miracles by which their truth was demonstrated, and to be prepared to propagate after his death the truths which he had thus made known. Two of these persons were appointed, called the Twelve Apostles. They were ignorant persons, who possessed neither wealth, rank, nor education, and yet they were called to root out opinions which were deeply implanted in men's minds, and to overturn systems strengthened by all the influences which ancient and venerable authorities exert over the mind. Christ next appointed from among his followers seventy disciples, whom he sent into the temple, which he himself intended to visit. (Luke x. 1.) This appointment of seventy disciples is not mentioned by the other evangelists. Many of the Jews being convinced by Christ's preaching, and the miracles which he wrought among them, of his divine mission, the Jewish council was alarmed, and set about accomplishing his death. Being betrayed by Judas, one of the twelve whom he had chosen, Christ was taken before the Jewish court of the Sanhedrin, which had the cognizance of religion matters. From thence to the tribunal of Pontius Pilate, the Roman procurator or administrator of the revenues of the province. Before the former he was accused of blasphemy, a charge which was supported by false witnesses; and before Pilate as a seditious person, and a stirrer up of dissension, a charge which was also totally without foundation. But the Jews clamoured for his death; and though Pilate saw nothing in the accusations brought against him worthy of capital punishment, he was sentenced to death in compliance with the clamour of the people, and apparently also from fear of some disturbance. In the midst of their scoffing at his crucifixion, he was hung on the cross, probably from the circumstance of the linen-cloth having been so recently laid upon them.

The history of Christ has been written by four different individuals, whose accounts are received by the Christian world. The four Gospels are generally considered as the sole witness to the life and work of Christ in this world. Their testimony are founded upon the mode in which they accomplished their task. Matthew, who had been a collector of customs, wrote his Gospel in Hebrew for the use of the Jews, and for his instruction, and was afterwards translated under the direction of Peter, for the use of the Christians at Rome; Luke, whose Gospel was written for the Heathen converts, was a physician, a companion in the labours of St. Paul, and is supposed to have written his account of Christ while travelling with the apostle; John's Gospel was written after all the preceding, and notices circumstances which the other evangelists had passed over. That part of the New Testament which follows the four Gospels is called the Acts of the Apostles, and gives an account of the Apostles, and the history of Christianity, for about thirty years after Christ's death.

The primitive assemblies of the converts to Christianity were called Churches (Ekklesia). The converts at Jerusalem, the first established, consisted of those of Jerusalem, Antioch, Ephesus, Smyrna, Athens, Corinth, Rome, and Alexandria. The churches founded by the apostles were regarded with peculiar veneration in after times. Their authority was appealed to on points of discipline and doctrine, and the spirit of the apostolic regulations had been more rigidly adhered to. The church of Jerusalem may be regarded as the mother of all other churches; but the church at Rome. To the Christians there he was shown in vision, with the churches of Antioch and Alexandria, which collectively were the three respective capitals of Roman provinces, by far the most important of all the churches. The four churches of Jerusalem, Antioch, Rome, and Alexandria were formed in the order in which they are mentioned, though some exist as to the title of the church of Rome to priority over that of Alexandria. The church of Rome became the metropolis of the west, while that of Antioch was regarded as the metropolis of the east. As the apostles extended their travels, churches were planted in various parts of Asia. Paul and Barnabas visited the islands of Cyprus and Crete, and various parts of Greece, where they made converts to Christianity. In a second visit to the churches which were formed by Paul, he regulated some of the practices into which the converts had fallen. At Corinth he remained eighteen months, during which period he exercised himself to establish firmly the faith of the Christians, and was exposed to peculiar dangers. When unable to visit distant churches, he dressed them in 'Epistles.' Paul next directed his attention to the west of Europe, to nations that were yet rude and barbarous. There is no certain record of this portion of his history. The writings of the apostles are emphatically called the apostle of the Gentiles, for he formed the most important part of the history of the second period of
CHRISTIANITY. In less than forty years after the death of Christ the Gospel had been preached in every country of the then civilized world, and a general diffusion of knowledge had taken place in a state of barbarism. In the year 68, that is 37 years after Christ's death, Peter and Paul suffered martyrdom at Rome, and the records as to the other apostles do not afford an adequate idea of the extent of their labours. John was banished to the island of Patmos by Domitian, and there wrote the Revelations. He was subsequently permitted to return to Ephesus, where he wrote his gospel and epistles. He was the last of the apostles to die, and passed away at the close of the first century, about the year 98. The seven churches mentioned by John in the Revelations are Ephesus, Smyrna, Pergamus, Thyatira, Sardis, Philadelphia, and Laodicea.

The Christian religion, as founded by Jesus Christ, and accepted by all Christians, whatever differences there may be in their opinions, rests for its authority upon the proofs of his divine mission. The history of Jesus Christ, as given in the Four Gospels, presents us with a series of miracles wrought by him from the commencement of his ministry to the crowning miracle of all, his resurrection from the dead, and his ascent into heaven. Whether the miracles are based upon its constitutional unity; or, if not, is a matter of historical inquiry which must be determined from the whole evidence, like any other historical fact. If the miracles are admitted actually to have taken place—if the dead, for instance, were actually raised to life, the case would be different—and it is evident that He who performed these miracles must have had a particular power which other men have not. It has sometimes been said that the miracles, if true, do not prove the constitution of the church itself; but if any claim to this and the unique power of Jesus which is in the divine mission, and perform miracles in confirmation of it; if he predict his own death and resurrection, and actually die and rise from the dead in accordance with his prediction—this will ever seem to the mass of mankind sufficient proof of a divine mission, and the miracles, even if true, would be difficult to explain, and what other proof can be asked for.

The second proof of the divine mission of Christ to which Christians appeal is contained in the types and prophecies of the Old Testament, which, under various figures, and in a great variety of expressions, of different ages, refer to the future coming of the Messiah, and to his kingdom. A comparison of the passages of the prophets with the passages in the history of Christ, and the application of many of these passages of the prophets by the Evangelists, and even by Christ himself on several occasions, are considered by all Christians to be a proof of the divine mission of Christ, and also a collateral evidence for the truth of those Gospels in which the prophetic passages and the conditions of the kingdom which is in itself to his own death, the destruction of Jerusalem, and the condition of his followers after his death, are also appealed to as evidence of his divine mission. The predictions of the prophets were accomplished in Jesus, and the prophetic conditions were fulfilled in the subsequent history of the religion which he founded.

The diffusion of the gospel, after the ascension of Jesus, by means at first apparently so insufficient for the purpose, is also viewed by all believers as a proof that his doctrines were not of man. And further, that the early preachers of Christianity sincerely believed what they taught, is shown by their inflexible zeal in diffusing the Gospel amongst Pagans and Jews, and even by their readiness to die for their holy profession, and this strong conviction in the minds of those who had the best opportunity of learning the genuine doctrines of Christianity must be taken as confirmatory evidence of their divine origin.

The system which Christ came to teach has for its great sanction, the resurrection of the dead, and the doctrine of future rewards and punishments. In the Mosiac law there is no declaration of the doctrine of the resurrection, and of concomitant rewards and punishments, of which this life forms no part of the law. Before the coming of Christ indeed there was a partial belief of a resurrection among some of the Jewish sects (Matt. xxii. 23; Acts xxiv. 15): but the preaching of Jesus proclaimed in the clearest terms a great change which should be an annual anticipation from the state of the world which he leaves behind him in a future life for all. It is this firm belief in a future state, which gave to the primitive Christians their inflexible courage and their readiness to suffer death; and which, as it was one of the main causes of the success which attended the preaching of Christianity in its early history, is at the present day the vital spirit of the Christian religion.
The college is governed by the acts of the dean and chapter, revokable at their pleasure. There is no visitor but the king, or persons commissioned by him.

The benefactions to this college enumerated by the writers on Oxford are few, and consist chiefly of the proffers arising from munificence, or benefaction, bequests to exhibitions, or for the better maintenance of poor students. Among them the names of Dr. Chalonor, canon of Windsor; John Bostock, of New Windsor; Thomas Whatey, citizen of London; William Wickham; William Thurston, Esq., of London; and John Gardiner, Dean of Westminster; Master of Dr. Chalonor, ofminster School; Lady Holford; and Bishop Fell, deserve especial enumeration. It may be observed that the ample endowment of the last foundation, the increasing prosperity of the college, and the high rank and opinion of its members, rendered such helps less necessary in this College than in any other of the same university.

The buildings of this extensive and noble establishment have undergone as many revolutions as its foundation. Had Wolsey tried to complete his plan, it would probably have exceeded that of any college in Europe. The priory of St. Frideswide formed its principal site, the church of which serves both for the cathedral and the college chapel, and is at least of Norman, if not in some parts, of earlier date. This church is in the shape of a cross, with a spiral steeple in the centre 144 feet high. The length from east to west is 154 feet. The cross aisle from north to south 102 feet.

The height of the roof in the western part is 41½; in the choir 37½; in the nave 33½; in the aisles 34½. The church has a cloister, and the chapter-house, built about the thirteenth century, is one of the finest specimens of the early style of pointed architecture in England. The first part of the kitchen, finished by Wolsey, is in the kitchen fabric of which still remains its ancient shape. The workmen next made room for the hall, by levelling a part of the old city wall which ran from Merton and Corpus Christi College gardens behind St. Frideswide's church. They pulled down likewise the parish church of St. Michael at Sonet, which was standing when the Hebrew professor's lodgings are now built.

In the four years which elapsed between laying the first stone and his disgrace, Wolsey had the satisfaction of seeing the hall, the whole of the south side, and the greater part of the west side of the large quadrangle, finished according to his design; and to hear the praises which were lavished by all quarters, both at home and abroad, upon his love of literature, his taste, and his munificence.

The hall is 115 feet by 40, and 30 in height. The great quadrangle, nearly a square, 264 feet by 261. The north side was intended to be occupied by a large and handsome church, but scarcely had this portion been commenced ere the numerous donations laid and the master had put a stop to the work, and this side of the quadrangle remained unfinished for more than a century. Wolsey's quadrangle was surrounded by an open battlement with puncheons, and the present Roman balustrade which was added by Bishop Fell. The eastern side was finished after the restoration of King Charles II. The western gateway was completed by Sir Christopher Wren in 1682, when the bell was transferred to it from its original Great Ton, which had formerly been the church-bell at Sonet.

The new modern buildings of this college are Peckwater and Canterbury quadrangles. Peckwater derives its name from an inn or hostel which stood upon the same site, and had been St. Frideswide's manor; it received its present form and elevation in 1705. The library, which forms the south side of Peckwater quadrangle, was commenced in 1716, but was not wholly finished till 1751. The old library stood on the north side of the chapter's quadrangle, the eastern side of the college which an adjoining cell had been a refectory to the convent of St. Frideswide. After the completion of the new library, about 1775, it was converted into rooms. Canterbury quadrangle, adjoining Peckwater, is the site of what was formerly Canterbury college or hall. King Henry Vlll. transferred the half with other buildings to the college, subsequent to which it was repaired and fitted up for the reception of students, and remained in that form and condition till 1773, when certain alterations were made and a new quadrangle constructed upon a new design, chiefly through the munificence of Dr. Robinson, then Lord Rekeby, archbishop of Armagh, who gave more than 4000l. for that purpose. The Dean's gateway was erected in 1776, by Mr. J. Wyatt.

Of the eminent persons who have been educated in this college it is impossible to make an enumeration, the magnitude of the establishment, and the high rank in the learned professions to which it has usually led, would extend the full list to a volume. Among the deans who have presided over the college, may be mentioned John Pierre, archbishop of Canterbury; Matthew, bishop of Norwich; John Giffard, bishop of Winchester; Richard, bishop of Salisbury; George, bishop of Durham; John, bishop of London. Among the archbishops and bishops who have received their education here, we find the names of Bancroft, Prideaux, Sancroft, Sandys, and Upton; among the statesmen and clergy we have Sir Dudley Carleton, Sir Edward Littleton, Edward Sackville Earl of Dorset, Lord Littleton, William Earl Mansfield, and George Canning; among poets and orators we find Lord Byron, Lord Chesterfield, Lord Byron, Lord Byron, and Lord Byron. As to the university of Oxford, these may be added Hackluyt, Camden, Gunter and Hooke the mathematicians, Mercia Cameron, Littleton the compiler of the Latin dictionary, William Penn the founder of Pennsylvania, Locke, Lord Bolingbroke and Desaguliers.

The present society of Christ Church, including students, independent members, under-graduates, &c., consisted Dec. 31, 1835, of 920 persons. The present dean is Thomas Grosart, D.D. (Wood's Annales of the University; Chalmers' History of the Colleges and Halls of Oxford; Ingram's Memoirs of Oxford, 4to, 1834; Oxford Univ. Calendar, 1834.)

CHRISTCHURCH, a parliamentary borough, market-town, and parish, in the south-west extremity of Hampshire. It is 9 miles N.W. of Southampton, and 93 miles S.W. of London, on the main road to Winchester, and 35 miles from the river. It is by its church and ancient priory, founded by the West Saxons, and held by the Convocation of Canterbury, as a dean and twenty canons. Ralph Flamard, bishop of Durham, rebuilt the priory in the time of Rufus, and its revenues were greatly augmented by Richard de Redvers, earl of Cornwall. When the priory was suppressed, the manor was given by Henry I. At the dissolution the annual income was 544l. 6s. (Speed). Fragments of the priory walls are still standing, and of the castle keep, which has measured 120 feet in thickness, and in the Norman style. The earliest notice of Christ Church in the Saxons chronicles, where it is said to have been the military position of Etheldreda during his revolt against Edward.

By the Saxons it was called Twynhelm-Bourn, and Tween-w; and in Domesday Book, where an entry is mentioned, as the manor was given by Henry II. At the dissolution the annual income was 544l. 6s. (Speed). Fragments of the priory walls are still standing, and of the castle keep, which has measured 120 feet in thickness, and in the Norman style. The earliest notice of Christ Church in the Saxons chronicles, where it is said to have been the military position of Etheldreda during his revolt against Edward.

The place is known by the name of By or Bygh, by the jurisdiction of the county magnates. It sent two members to parliament since the time of Elizabeth; the number was reduced to one by the Reform Act, and the parliamentary borough was enlarged by the Boundary Act. The town is not lighted nor regularly paved, but is supplied with water. The salmon fisheries on the coast and river have greatly declined. The population in 1831 was 5344, and of the new parliamentary borough. The river is navigable for small vessels, and Lancasterian school, and several endowed charities. The rivers Avon and Avon, after uniting about a mile and a half below the town, flow into Christchurch Bay, and form a fine estuary in the sea, which during the winter is open for a distance of 18 miles, and is frequented by small vessels drawing five or six feet of water. There is high water twice every tide. Good anchorage in six fathoms of water is found in the bay, east of the harbour, two miles under the mouth of the Avon, and does not appear likely to improve in that respect.

CHRIST'S HOSPITAL. The hospitals of Christ, Bridewell, and Saint Thomas the Apostle, were founded by the same charter of King Edward the Sixth, dated 26th of June, 1552; each was to be granted to the mayor and commonalty, and to the citizens of London, numerous possessions within the city of London, and the counties of Middlesex, Essex, Hertford, Buckingham, Cambridgeshire, Kent, Derby, and York. Christ's Hos-
CHRITIANIA, the province of, occupies the south-eastern portion of Norway, extending from 59° 49' to 4° 40' N. lat., and from 10° 2' to 12° 30' E. long. Its greatest length from south to north is near 800 miles, and its average breadth not much short of 100 miles. According to the official statements, its area is 13,998 square miles, or 35,020 square miles; it is therefore nearly 7000 square miles larger than before. Its population in 1855 was estimated at 618,425.

The southern part of the province is washed by the Skager Rack, and bounded by a rocky and bold coast, which however only rises to a considerable elevation west of Fredrikvaen, towards the province of Christiansand. It is much indented, and contains several good harbours.

The Bay of Christiansia, or Christiansand Fiord, stretches about 60 miles inland. At its entrance, where the Hval Oerne islands lie, it is about 15 miles wide, but it narrows gradually further north, and is only eight miles across where it divides into two branches. These branches are from one to three miles wide, and at their respective extremities are situated the towns of Christiansia and Drammen. The shores of the bay are formed by rocky but gentle hills, mostly covered with forest.

Along the western and northern side of this province extends the mountain-chain called Nordrak Fjalln, or Norway Range, which commonly rises to the line of perpetual snow, and at the upper end of the range is the Skogstils Tind, which rises to more than 8500 feet; and the Sneehitten, which attains more than 8300 feet. These are the highest summits in the range, which in width extends from 30 to 300 miles, this being the average distance between the inhabited places in the contiguous provinces of Christiansia and Bergen. By far the greatest part of it is always covered with snow. Two roads traverse this chain. By the southern the town of Christiansia is connected with Hamar. From Hamar it goes north-west to the northern extremity of the lake of Tyri, and hence along two of the upper branches of the river Drammen. It crosses the highest part of the range south of the Skogstils Tind, and descends rapidly to the long and narrow Tosen Fiord, from whose shores it runs south-west over a hilly country to Bergen. The northern road leads from Christiansia to Trondheimg. It runs from Christiansia to the southern extremity of the lake of Mossen, then along the northern side of the bay and the gardens of the city to the river Seljord, along the Lougen-Elf, nearly to its source, whence it traverses the highest part of the range, east of but near the Sneehitten. It afterwards descends through some valleys to Trondheimg. On its northern side are built four small houses for travellers, as a refuge in snow-storms: they are called field-stuer, and the most elevated is 4563 feet above the sea.

The western and northern parts of the province are traversed by the numerous affluents of this range. Near the principal chain they are of great height, sometimes rising above the snow-line, as the Halling Skarven, which rises to more than 5400 feet. Further east they are lower, but the mountains are at a distance of 15 or 16 miles, and commonly rise to 1000 or 1500 feet. The valleys between these ranges are narrow, and have only small strips of cultivable land along their rapid rivers; but part of the declivities of the mountains are covered with high trees, and on the mountains themselves are found large quantities of iron. Such is the country north of 61° N. lat., and west of 10° E. long., which contains about three-fourths of the province. The remainder is also very uneven, but the more rarely rises above 1500 feet, and are clothed with fine forests. Most of them have a gentle ascent, which admits of cultivation; and there are also numerous level tracts between them, though nowhere of great extent, except at the town of Moss, on the eastern confines of Christiansia. The most considerable rivers lie east and north-east from Christiansia, along the rivers Glommen, Wormen, and the lake of Mossen, and are known by the names of Hedemarken and Guldbrandalsen.

They produce rye, barley, and oats, in sufficient quantities to supply them as exports to the other districts of Norway.

No. 418.
The eastern districts are drained by the Glommen, the largest river of Norway, which brings down the waters of the mountains between. This river runs through the middle of a valley which descends from the Sørre Fjellene, between 60° and 61° N. lat. They unite about 25 miles from the mouth of the river, which then enters into the western branch of the Bay of Christiania near Drammen.

The southern districts are drained by the Loven-elv, which rises at the high Hardanger Field, runs for some time east, and then continues in a south-eastern direction to its mouth, near the city of Aalesund. This river is navigable for 160 miles, or nearly 640,000 acres from its source. The country along this river is very fertile, and produces a great quantity of flour, which is exported to all parts of Europe.

The city is situated on a narrow strip of land between the sea and the river, and is about 6 miles long and 3 miles wide. The city is divided into 12 wards, each with its own council and mayor. The city is an important commercial center, with a port that is navigable for ships of 100 tons. The city is also an important cultural center, with a university, several museums, and a number of theaters and concert halls.

The city is also known for its many parks and green spaces, including the large public gardens that are located along the river. These gardens are a popular destination for residents and visitors alike, who come to enjoy the beautiful scenery and to take part in a variety of activities, such as picnicking, walking, and playing sports.

The city is also home to a number of important cultural institutions, including a large museum that is dedicated to the history and culture of the region, as well as several art galleries and theaters. The city is also the home of a number of important universities and colleges, which are known for their high-quality education and research programs.

The city is also a center for the arts, with a number of important artists and writers who have made their home in the city. The city is also known for its vibrant music scene, with a number of important concert halls and music festivals that attract performers and audiences from around the world.

The city is also known for its strong sense of community, with a number of important local organizations and clubs that are dedicated to promoting the cultural and social development of the city.

The city is also known for its strong sense of history, with a number of important historical sites and monuments that are dedicated to the memory of the city's past.
faith and discipline which have divided Christians, and of the various communities or associations into which Christians have been distributed. But those histories, in all ages, being mainly written by the clergy, are often not so much histories of the church as of the clergy; not so much histories of the great body of Christians in this or that country, as of those whose interests are represented by the clerical and monastic orders. To the latter the clergy were as much interested as those whom it was their business to instruct. Such a contrived view of the history of Christianity, and of the history of the church in the several countries where Christianity is established, has misled many of those who, considering the origin of the religion of Jesus Christ, its progress, and its development, as the great subject of the political drama of the civilized world for eighteen centuries, regard the history of the church or of a church not so much a subject of historical enterprise as a convenient component part of it. Intimately blended with all the relations of life, with all the great events of political society, and now for at least fourteen centuries directing or influencing in all the functions of government, and by turns obstructing or retarding the progress of knowledge, according to the various forms in which it has been moulded for political purposes, a history of the church, distinct from the political history of the same nation and the same period, can have little value, except so far as it may be a good history of the clergy.

Such a history of the church, however, has been often attempted by men neither deficient in industry nor learning; but the one-sided view which they have taken has never failed to produce a difference between the sympathy and common interest in the minds of those who read much and think little, a certain confused notion of some essential difference between the history of the church and the history of those who, in various ages, have composed that church. On the other hand, the exterior activity of the clergy and monks, especially in the case of certain parties in their mission to the remotest and least instructed, and into all the recesses of domestic life, is rarely glanced at, and seldom, if ever, duly estimated by writers of history. The history of civilization, which is the history of a continued progress, would appear to every reflecting person inseparable from the history of Christianity, or, in other words, of the church, taking this word in its large and proper sense. The public acts of the clergy as a body receive a place among other events, if they are recorded at all, as a part of the general history of a people, which is generally sunk in the history of their rulers, so that the true church is merged in the history of the clergy.

A history of the church, in the sense in which we believe all writers of general church history have understood the term, appears to be a division or a history which ought either to be entitled a History of the Church and of their Acts and Opinions, or it ought so to be blended with general civil history as to render a separate name unnecessary.

Instead of attempting a history of the church in any sense, which cannot be accomplished in a satisfactory way by the clergymen, though the clerical body be divided into characteristic doctrines and discipline of the various bodies of Christians, whether properly called churches, or improperly so called, under their several heads. (See the Articles CHURCH; CATHOLIC CHURCH, &c.; and APOSTOLIC, &c.) Christianity is at present diffused over a large part of the world; but it can only be said to be established, either by the authority of the state, or by general consent, in the following countries. Christianity is established in all parts of Asia, in India, and the adjacent islands, and in all the countries which are under the dominion of descendants of Europeans, which are, in fact, the largest and best parts of the continent. In Asia, it exists in Abyssinia in a very corrupt state, and among the Copts in a very degraded state, and in Persia and Tartary, established in all those countries which are under the dominion of descendants of Europeans, which are, in fact, the largest and best parts of the continent. In Africa, it exists in Abyssinia in a very corrupt state, and among the Copts in a very degraded state, and in Persia and Tartary, established in all the countries which are under the dominion of descendants of Europeans, which are, in fact, the largest and best parts of the continent. In Asia, the Christian religion is established in Armenia, but the number of Armenian Christians must not be estimated by the population of the country, for the merchants of this active and industrious people are found in many parts of Europe and Asia. In Syria, a branch of the Greek church still exists in the mountains of Libanus and the islands of Cyprus; another in part of Syria and Diarbekr, and the Nestorians, who also belong to the Greek church, are found in Asiatic Turkey, about Mousul on the Tigris, in Persia, and also in some parts of India under the name of the Christians of St. Thomas. In all these parts, the influence of European powers, and especially those of the British empire, Christianity may be considered as established; though in many cases, as, for instance, in the British possessions in India, the Church is very much opposed and combated by the natives. But the zeal and persevering labours of European and American missionaries are now diffusing a knowledge of Christianity, and with it, the useful arts of life, over countries hardly accessible to commerce. This great work may safely be expected to advance by their efforts, and the spirit of colonization which distinguishes some of the European nations, Christianity will rapidly spread itself over a much larger part of the habitable globe. The two other religions which occupy so large a portion of the earth's surface, Mohammedanism and Buddhism, are limited as to the sphere within which they can extend their doctrines, and it seems unlikely that they will pass the limits within which they are now confined. But Christianity, being the religion of the most important part of the human race, of those whose life consists in action more than in tranquillity and repose, is, in a state of continual progress and diffusion; and it is probably this circumstance, more than the commencement of the reign of Europe (a difference in some degree dependent on climate and local circumstances), and those of Asia and Africa, that Christianity still languishes among its comparatively few native professors in Asia and Africa, while the zeal and energy of the European race animate the missionaries of the United States and of England to preach the doctrines of Christianity in the very place of its birth, and to rival the old Catholic missions in zeal and courage. As the Church of the East in the East, the Church of England in the West, is the patrons of the church, which is too untamed and savage tribes of the earth, have exhibited examples of a country's perseverance, and self-sacrifice unparalleled in the history of man.

In Africa, Christianity has hitherto made the least progress: and indeed wherever the Mohammedans have settled in that country, it has gradually disappeared. The Church of the churches of the south coasts of the Mediterranean, which were established at an early period in the history of the Church, no longer exist; those of Asia Minor have disappeared, and in Syria and Palestine, Christianity, it still maintains a feeble and uncertain existence.

The great Christian churches are—
1. The Greek, or Eastern Church, divided into four principal branches.
2. The Latin, or Western, or Roman Catholic Church, which is single, and undivided.
3. The Protestant Church.

The Protestant cannot be called a Church in the sense in which the Catholic is called a Church, as it is not one undivided community, but consists of numerous independent communities. Still, as distinguished from the Catholic community, the whole body of Protestants is sometimes called the Church.

CHRISTIANSHAND, THE PROVINCE OF, comprehends the most southern part of Norway, extending from Cape Linnesnes (called by our seamen the Naze), from 38° to a little north of 60° N. lat. It is in the meridians of 2° and 10° E. long. Its length south and north is 140 miles, and its average breadth may be about 100 miles, which gives an area of 14,000 square miles. This computation does not differ much from the official state in the province in 1814. The government consists of 14,110 English square miles, or nearly twice the surface of Wales: its population amounts to 213,000 souls.

Cape Linnesnes is considered as the southern extremity of the mountain-chain, which traverses the country from north as far as 62° N. lat., and then turns E.N.E. till it joins the Kilien Range at 63° N. lat. This chain is named by modern geographers very properly the Norskka Fjellen, or Norway Range. It begins with Cape Linnesnes, but does not attain the perpetual snow-line south of 59°; so that...
CHRISTIERN II., of Denmark, born in 1481, was the son of King John, and grandson of Christiern I. He was a great warrior, and by his prudent and calculated measures, the nation that was on the verge of disunion was saved, and the power of the nobility was checked. In 1520 he succeeded in having himself elected king of Sweden, which country had been long distressed by civil faction. [MARGARET OF WILDEMAR.] Christiern took an active part, and, as it were, employed his countrymen, until the country was made ready for the future. Having assembled the chief nobles and prelates at Stockholm on the occasion of his coronation, he had them suddenly arrested and publicly executed. He also massacred a number of the citizens of Stockholm. (Puffendorf.) Gustavus Erickson, a descendant of the ancient kings, who was a prisoner in Denmark, having contrived to escape, took refuge in the forests of Dalcarlia, where he roused the peasantry, attacked Christiern and his worthy satellite the archbishop of Upsa, and, after a long campaign, made an attempt to recover his Danish dominions. He failed, and being taken prisoner, was put in prison, where he died in 1595. He had been called the Nero of the North.

CHRISTINA (of Sweden), the daughter of the great Gustavus Adolphus, was born in Maribo, 1626. She was educated at Zschendorf, born on the 8th of December, 1626. Her father bestowed great care on her education, and having no son to succeed him was anxious to cultivate in her a strong and masculine character. After many trials, she is expected to be a general and to be expected that she, as the daughter of a warrior, should bear the roar of artillery without emotion. On his departure for the wars in Germany, Gustavus Adolphus appointed her regent, and, carrying his daughter in his arms, presented her to the assembled states of the kingdom as her future sovereign.

Gustavus fell at Lutzen in November, 1632. Christina, then six years of age, was proclaimed queen by the States-General, in the hands of regents or guardians,—the fact, dignities of the crown, and the administration of affairs and the task of completing the young queen's education. The Chancellor Oxenstiern, an experienced and enlightened statesman, was at the head of the government, and at the time of his death (1680) he was a person of ability and upright intentions. They, however, pursued the plan of education and discipline that had been traced out by the king himself, and to this we must in part, attribute the singular character afterwards displayed by Christina.

From her earliest years she was surrounded by grave masters and scholars, who crowded and oppressed her intelligence with Latin, Greek, Hebrew, history, and politics; and for her acquaintance with the court, she was dressed in masculine attire, to hunt, to shoot, and review troops. The society of her own sex was soon insupportable to her. It is generally stated that she made considerable progress in several antient and modern languages, and in other branches of knowledge, and that at the court table she showed a searching wit and great precision of reason. But her wit was almost always of that sort which is nearly allied to madness; her knowledge was not digested, and after being in the hands of numbers, and thus much increased, which is given by pursuit and sound judgment. Bayle says she read daily some pages of Tacitus in the original.

In 1644 she took the reins of government into her own hands, and, much favoured by circumstances, acted rather than became the victim of the intrigue of the day. She was at last forced to conclude a peace with Denmark, obtaining by treaty the cessation of some territory to Sweden; she pressed on the peace with Germany against the advice of Oxenstiern and others;
and finally became a party to the treaty of Westphalia in 1648, by which, in consequence of the victories of her brave troops, she obtained several millions of dollars, three votes in the diet of the Germanic empire, and the cession of Thuringia, where her soldiers were quartered. Gustavus, a prince of excellent qualities. In 1649 she was induced by the states to declare him her successor; but she would not allow the prince any share of her sovereignty, thus excluding Christianity from Sweden. Soon after the naming of her successor was announced, she had herself crowned with great pomp, under the title of King.

Having now no wars to engage her attention, she gave herself up with all the energy of her character to arts and literature. She became the patron of many learned men of letters. Her court was soon crowded, good being mixed with the bad, the empty pretender with the real man of science, the sage with the buffoon. She attracted to Stockholm, Saunina (Salmastus), Voss, Bonn, Hare, Chereis, Naudé, Meibom, and other foreigners, chiefly Frenchmen. To some of these she gave places and offices; others were mere retainers and hangmen-of-the-court.

Dissatisfied was her quest, but she died there soon after his arrival, leaving behind her the remains of a great and virtuous queen, being unable to resist the rigours of that northern climate.

Bourdol, a gossiping intriguing French abbé, who pretended to some knowledge of medicine, and who was regarded with some respect by the court of the king, now her successor, was created in the person of the queen by flattering her vanity and ridiculing her court of philosophers and men of letters, whose jealousies and jarrings were incessant. This court was expensive and unpopular. Christina spent enormous sums, for so poor a country as Sweden, in the purchase of books, manuscripts, statues, pictures, antiquities, and curiosities. But reverence and affection for her father's memory stifled the murmurs of the Swedes, and when, to the astonishment of everything, the country appointed her regent, she was honestly entreated to remain on the throne. For some short time after this she showed a renewal of good sense and energy, and a disposition to public business. It was at this interval that Cromwell's ambassador, Whittuck, saw a good deal of her majesty, and that her secretary or follower, Morton, picked up that curious information about her court and herself which was afterwards published in England. (Journal of an Embassy to Sweden in 1653, 1654, from the Correspondence of the Edict of Nantes, p. 318.) For the matter for what she called the splendid slavery of royalty, her desire to indulge in all her caprices in perfect liberty, and a stronger motive perhaps than any other) her wish of presenting an extraordinary spectacle to the world, soon took the place of the ambition of the restoration of the crown in May, 1654, and on the 16th of June her abdication took place with great solemnity, being then only in the 28th year of her age.

Aristocrats referred to herself the revenues of some districts in Sweden and Germany, the entire independence of her person, and supreme authority, with the right of life and death over all such persons as should enter her service and form her suite. A few days after this public act she set off for Brussels, where she privately abjured the Protestant religion. A little later she publicly embraced Catholicism in the cathedral of Insprueck. People have doubted the sincerity of her conversion, and some of her words and gestures have been held to indicate some reservation of her new faith; but there is no doubt of the sincerity with which she placed her trust in the Roman church. From the Tyrol she travelled to Rome, where she made a sort of triumphal entrance, riding on horseback, dressed almost like a man. Here she surrounded herself with Jesuits, preachers, Bonaldus, nunneries, and the like. Quarrelling however with some of the college of cardinals, she made a journey into France in 1656. At Paris she of course made a great sensation. Her constant companions were authors and academicians; for the evenings of her life she gave a grand courtly repast, which was not inferior to that of the French. She was regarded as the greatest woman of the time, and the only French woman about whom she seemed to take any interest was Ninon L'Enclos. Her stay in Paris is said to have been shortened by Cardinal Mazarin, who, on the birth of Christina, had taken the regency against his authority, took such measures as rendered that capital an unpleasant residence for her. She, however, returned to France in the following year, and added to her notoriety by committing a murder in the royal palace of Fontainebleau, where apartments were allowed her. Monaldeschi, her master of the horse and chief favourite, who had been entrusted with all her secrets, was suddenly discovered, his face cut off, and her soldiers ordered to prepare for death. Lebel, a monk of the order of the Trinity, was summoned to hear the offender's confession, implored for a pardon, or at least a suspension of so irreligious a sentence, but was told it was for his own good. Then Monaldeschi burned the confession and was put to death on 26th of July, 1658, under the title of King. The court was offended, but took no public notice of this atrocious crime, which was left uninvestigated. The abdication she had reserved to herself supreme power over her own suite—that she was still a queen wherever she went, and that Monaldeschi was guilty of high treason. Strange to say, she found defenders elsewhere; and among them especially Lennitz, who wrote an elaborate apology, or rather justification of the deed at Fontainebleau. French writers have pretty generally stated that Monaldeschi was only a traitor in love, and that he perished from a fit of jealousy; but there is no proof of any such conduct, such conduct, of course, in opposition to the whole tenor of Christina's life and conduct.

The real nature of the offence is a mystery.

Finding herself avoided in France, the queen thought of visiting England, but the Protector Cromwell turned her away on the score of an alliance with Sweden, and did not land in England, but returned to Rome, where she presently involved herself in great pecuniary difficulties, and a quarrel with the pope (Alexander VII.). Upon the return of the pope, Christina was taken with fever, and she travelled hastily from Rome to Stockholm, where, according to most accounts, she not only showed a regret at having abdicated, but a strong desire to re-assume the throne. But the minds of the people were entirely alienated, and her change of religion was an insuperable barrier. She returned once more to Rome, which she never again left, except for one or two short intervals, during the remaining twenty-eight years of her life.

She lived with few cares, although that long period was not without its tribulations. She took part in several political intrigues; she is even said to have aspired to the elective crown of Poland; she interested herself for the Venetians in Candia, besieged by the Turks; she quarrelled anew with the pope and cardinals, who had liberally supplied her with money; she engaged actively in the Molinist or Quietist controversy; she indulged in the dreams of alchemy and judicial astrology; she violently censured Louis XIV. for his revocation of the Edict of Nantes; and she assisted the Venetians and the Venetians of France; she founded an académie, or literary society; she corresponded with many savants, and she made a large collection of objects of art and antiquity. The ruling passion, which made her unhappy and ridiculous, was the ambition of being the grand empress of the whole world, and all power and influence had departed from her. She died at Rome with great composure on the 19th April, 1689, in the sixty-third year of her age. Though she continued, not much of her writing has been preserved. Her 'Maxims and Sentences,' and 'Reflections on the Life and Actions of Alexander the Great,' were collected and published by Archenholz, in his memoirs of her life, 4 vol., 1751. From the somewhat tedious minute work of Archenholz, who was librarian to the landgrave of Hesse Cassel, and an honest pains-taking man, Laconbe derived the materials for his life of Christina, and D'Alenbert his reflections and anecdotes of the same personage. Her 'Secret Letters and Instructions' were published under the title of 'Letters Addressed to God,' are forgeries. (See Archenholz, as above; see also Lesubscriber's Histoire de Kristina, Reine de la Suede; Portia's Travels in Sweden; Biographie Universelle; the works of Bayle, Bossuet, and correspondent; Voltaire; and Horace Walpole.)

CHRISTMAS, the festival in memory of Christ's Nativity, the day of which is observed on the 25th of December. St. Chrysostom informs us that in the primitive times of the Church, Christmas and Easter were celebrated at one and the same feast (Homil. in Diem Nat. D. N. J. Christi, Opera edit. Montfaucon, tomo. iii. fol. Par. 1718, p. 354), probably from the belief that the rising of the star in the east and the Nativity were simultaneous. The eastern Christians took place at the Council of Nice, A.D. 325. The Armenians however continued to make but one feast of the two, as late as the thirteenth century.
The learned have long been divided upon the precise day of the Nativity. Some have fixed it at the Pasover; others, among whom was archbishop Usher, at the feast of Tabernacles; and it has been observed, that if the shepherds were watching their flocks when it occurred in the field by night, it could hardly have happened in the depth of winter, which it may, in the 23rd of December has been the day most generally fixed upon from the earliest ages of the church. Sir Isaac Newton, in his "Commentary on the Prophetties of Daniel," (Pt. i. c. ii. p. 144,) has written "Of the Times of the Trespasses and Paffing away of our Saviour," in which he accounts for the choice of the 25th of December, the winter solstice, by showing that not only the feast of the Nativity, but most others, were originally fixed at cardinal points of the year; and that the fixed position of the sun having been arranged by the astronomers at pleasure, without any ground in tradition, the Christians afterwards took up with what they found in the calendars. So long as a fixed time of commemoration was solemnly appointed, they were content. The reader who would know more upon this subject, may consult Baronii "Apparatus ad Annalos Ecclesiasticos," fol. Lucae, 1740, p. 475, et seq; and a curious tract entitled, "The Feast of Fossits; or, the Celebration of the Sacred Nativity of our blessed Saviour Jesus Christ, as regulated by the Scriptures, and confirmed by the practice of the Christian Church in all ages." 4to. Oxf. 1644.

The season of the Nativity is no longer marked by that servile hospitality which characterized its observances in primitive times. At present Christmas feasts are chiefly confined to family parties. The Wassail bowl, the yule-log, and the lord of misrule, with a long train of sports and customs, which formerly prevailed at this season, are forgotten: even the custom of lighting a near group of churches, and of a few houses of people in humble life, with holly and other evergreens, forms now almost the only indication that this great festival is at hand. For the customs formerly prevalent, before, at, and about Christmas, see vol. iv. of Dr. Gutch's "Diary," one time liv. 339-412.

CHRISTMAS ROSE. [Helleborus.]

CHRISTOPHE, HENRY, was born about 1757 or 1760. The place of his birth seems to be uncertain, for St. Christopher, St. Cosma, St. Damian, and other saints mentioned by different writers. He first attracted attention when a young man as a skillful cook at a tavern in Cape-Town, St. Domingo. In 1790, on the insurrection of the blacks in the French part of that island, he joined the insurgents, who paid great respect to his gigantic stature, energy, and courage. As the negroes succeeded he was promoted in military rank. Toussaint Louverture, the generalissimo of the blacks, employed him to put down an insurrection of the negroes, and, as far as possible, to subjugate general M. Dumas, his nephew. Christopher, by employing consummate artifice, got possession of Moses, who was put to death by his uncle, on which Christopher succeeded to his command in the northern province of French St. Domingo. He subsequently suppressed other insurrections which threatened the young republic. In 1802, when General Leclerc, the brother-in-law of Napoleon Bonaparte, conducted a strong expedition from France to regain St. Domingo from the blacks, Christopher boldly declared Cape-Town, and when obliged to retreat, he burnt a great part of the town, and carried off 3000 men, with whom he joined Toussaint Louverture. When Toussaint was treacherously seized and transported to Europe, Christopher rallied with Dessalines, who then became the chief of the revolutionaries in the southern provinces. In 1806, after the death of Dessalines, he assumed the title of King. In 1808, he was defeated by a superior force, and became a refugee in Haiti. In 1811, he was killed in battle with the Spanish, near the town of St. Dominick.

CHRISTOPHER, DUKE OF WÜRTTEMBERG, was born in 1515. His early life was past in great troubles. In 1519-20 the confederated Swiss cities expelled his father Ulric from his dominions, and transferred the dukedom to the house of Austria. Christopher was carried to Vienna, where he narrowly escaped being made a prisoner by the Turks during their siege of that capital, under the great Solymon. In 1532 the Emperor Charles V. determined to punish Ulric, and proceeded to the attack of Ulric, and entered into a treaty of peace with Ulric in 1532, which confirmed his dominion over the Swabian States.

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of the clergy—the great theological seminary at Tübingen, and other establishments for the instruction of the people. Christopher also extended the liberties of his subjects, and gave them a code of laws. After the death of his brother and before the end of his reign, he died in December, 1588. 

CHRISTOPHER, HERB. [Acrida.

CHRISTOPHERS, ST., or ST. KITT'S, one of the Caribbean islands, was discovered by Columbus in November, 1493, who was so delighted with its appearance that he gave it his own Christian name. At this time it was well populated by the Caribs, by whom it was called Limnaga, or the Fertile Island. It was never colonized by the Spaniards, but was the first of all the British settlements in the West Indies. A party under Mr. Thomas Warner took possession of it in 1623, and four years afterwards it was shared with some French settlers and various bloody contentions, the island was wholly ceded to the English, in which state it remained till 1782, when it was taken by the French, but restored at the peace of 1783. In 1805 it was again ravaged by the French, who however did not retain possession.

St. Kitt's contains about 44,000 acres, nearly one half of which is unfit for cultivation. The other part is almost entirely occupied with plantations of sugar-cane, leaving only a small portion for cotton, indigo, pasturage, and provisions. The centre of the island is a broad expanse of rugged barren mountains, which contain some hot springs. The highest point, called Mount Misery, 3711 feet above the sea, is an extinct volcano, the crater of which is still active. The soil of the plains is chiefly a dark grey loam.

The island is divided into nine parishes, and contains four towns—Basseterre, Sandy Point, Old Road, and Deep Bay. Basseterre is considered the capital. Its shores are protected by several small batteries. It sends ten members to the House of Assembly at Antigua, of which government it forms a part. The climate, though hot, is considered healthy, but the island is subject to violent hurricanes. It is long in length, and wide in breadth, and is separated from Nevis by a strait only a mile and a half wide.

CHRISTOMO. [ACHROMATIC; OPTICAL.}

CHROMATIC SCALE, in music, is the scale of semitones [SCALE]; and chromatic music is commonly signified that kind of harmony in which extreme intervals are much used.

In the Greek music the chromatic (from χρωμα, colour) was the second of the three genera, and, according to the opinion of some, was so denominated because the notes, or musical characters, in that genus were written in colours. Others think that the word was figuratively employed, and expressed a greater variety of shade, more of contrast, than the other genera. Having no data to judge from, it is impossible to say which of the two opinions is the correct one; and, in truth, the question may just as well remain in its present state.

CHROMIC ACID. [CHROMIUM.

CHROMIS, a genus of fishes. [Labridae.}

CHROMIUM, a metal discovered by Vauquelin [Vauquilin], a distinguished French chemist, in the year 1797. He found it in a rare Siberian mineral, which contained lead, and called, from its colour, red lead, but which is now known as chromate of lead. Previous but imperfect attempts had been made to determine the nature of this substance. Vauquelin proceeded in the following manner: he boiled 1000 grams of a solution of 30 grams of potash; after long evaporation it was found that 22 parts of the mineral were dissolved; the 78 remaining were boiled in diluted nitric acid, which dissolved 64 and left 14 parts; these, again treated with carbonate of potash, left only 2 parts, which, being red lead, were neglected. The nitric solution being evaporated yielded a crystallized nitrate of lead, which being converted into sulphate gave such a quantity of it as indicated 56.68% of metallic lead. The alkaline liquids being mixed and acidified, yellow crystals were procured; these, dissolved in water, and treated with dilute nitric acid, yielded, by spontaneous evaporation, crystals, which were the acid of the new metal, and to which Vauquelin gave the name of chrome, from the property of forming compounds which enter; and he concluded from his analysis that the Siberian red lead consisted of nearly

100 

When this chromic acid, or, better, the oxide of chromium presently to be described, is mixed with charcoal in a crucible and very strongly heated, it is decomposed; this however is effected with difficulty on account of the great affinity of the metal for oxygen, and also of the high temperature requisite to fuse the metal; this is indeed so great that it cannot be obtained in a button or one mass, but is pulverulent, of a yellowish white colour, and metallic lustre. Its specific gravity is generally stated at 5.9, but according to Dr. Thomson it is but little above 5. The appearance of the metal varies however according to the circumstances under which it is reduced; thus Liebig obtained it as a black powder, by acting upon one of its chlorides with ammonia; from another chloride and ammoniacal gas it was obtained of a chocolate brown colour, and so finely divided that when heated in the air it burnt.

Chromium suffers but little change by exposure to the air; it conducts electricity. Acids act upon it but slightly, the nitric even dissolving it only after long sublimation; nor is the solution readily effected even when hydrochloric acid is added to the nitric so as to produce maseetn chloride: hydrofluoric acid when heated dissolves it, and hydrogen is evolved: heat and little upon this metal; even the flame of the blowpipe scarcely affects it.

Before describing the various compounds which this metal forms with different elementary bodies, or the nature of the more complex combinations of which it forms a part, it will be proper to describe the various areas which have been met with since its original discovery in the Siberian red lead, beginning however with a description of that substance.

ORES CONTAINING CHROMIUM.


When pure it is composed of

- Chromic acid
- Oxide of lead

100

Massive varieties, amorphous; structure columnar, granular.


Before the blowpipe, fuses into a dark grey globule of metallic lustre, surrounded with beads of metallic lead.

The massive varieties are amorphous, botryoidal, reniform. Structure compact, fine granular.

Found with chromate of lead in Siberia.

Composition of, according to Berzelius.

- Chronic acid
- Oxide of lead
- Oxide of copper

100

Chromate of iron. Chromon—occurs massive and crystalized; crystal, the regular octahedron; colour, blackish; lustre, imperfect metallic; opaque; hardness, 5.5; brittle;
specific gravity, 4.321; streak, brown; fracture uneven, imperfect conchoidal; not attracted by the magnet; clefts parallel to all its planes.

Analysis of the crystals from Baltimore, by Dr. Thomson:

<table>
<thead>
<tr>
<th>Substance</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green oxide of chromium</td>
<td>28° 95</td>
</tr>
<tr>
<td>Peroxide of iron</td>
<td>29° 24</td>
</tr>
<tr>
<td>Alumina</td>
<td>12° 22</td>
</tr>
<tr>
<td>White matter</td>
<td>3° 09</td>
</tr>
<tr>
<td>Water</td>
<td>6° 78</td>
</tr>
<tr>
<td>A trace of silica</td>
<td></td>
</tr>
</tbody>
</table>

The massive is amorphous, with a granular or compact structure; it is found in the island of Unst, in Scoland, and sometimes interspersed with green oxide; it occurs also in France and in North America, especially near Baltimore. Oxide of chromium has been observed in some aërolites.

We proceed now to the binary compounds of chromium, and first those which result from the combination of

| Oxygen and Chromium |

1. **Chromic acid** may be prepared in several ways; one of the best is to dissolve dichromate of potash in water, and to pass through the hot solution hydrofluosilic acid, which combines and forms a diffusely soluble salt with the potash, and the chromic acid remains in solution: this is to be evaporated to dryness in a platinum capsule, and the residue dissolved in a very small quantity of water; this solution, when further concentrated by evaporation, deposits red crystals of chromic acid, which are deliquescent, and very soluble in water. The solution is devoid of smell, but has a sour styptic taste; the solution is red or yellow, according to the degree of concentration: this acid is also very soluble in alcohol, and when the solution is heated it is decomposed, the results being oxide of chromium, formic acid, and water. It acts upon and destroys vegetable colouring matter, and combines with bases to form salts, called chromates.

According to Berzelius, chromic acid is composed of 3 equivalents of oxygen . . . . 24
1 " " chromium . . . . 28

Equivalent 52

2. **Oxide of chromium, or rather sesquiisulphuret of chromium**, may be prepared in several modes, almost all of which are dependent upon the partial deoxidization of chromic acid; thus when chromate of potash is mixed with its own weight of murate of ammonia, and heated to redness, oxide of chromium is left, being formed by the oxidization of the acid by the hydrogen of the ammonia. Alcohol, sugar, sulphur, potassium of murgury, and oxide of acid, produce corresponding effects. The properties of this oxide are, that it has a green colour, it is insoluble in water, and unchanged by heat; the alkals do not act upon it, but it is soluble in acids, forming salts with them. When combined with water so as to form a hydrate, it is of a bluish tint, and then more readily dissolved by acids than after it has lost its water by a red heat.

It is the colouring matter of the emerald. It is composed of

<table>
<thead>
<tr>
<th>Equivalent of oxygen</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4 equivalent of oxygen</td>
<td>12</td>
</tr>
<tr>
<td>1 &quot; &quot; chromium</td>
<td>28</td>
</tr>
</tbody>
</table>

Equivalent 40

A brown oxide of chromium has been supposed to exist, but it is probably a mixture of the acid and green oxide. _Ame and hydrogen_ do not combine with chromium.

**Sesquisulphuret of chromium** combine in two proportions: the sesquisulphuret of chromium may be prepared by dissolving the sesquisulphuret of hydrochloric acid, and evaporating the solution to dryness at 212°; a green residue is obtained, which consists of the sesquisulphuret of chromium combined with water: when this is heated, the water is decomposed, and the pure sesquisulphuret remains of a reddish colour, when the operation is so conducted as to prevent the access of carbonic acid: when strongly heated in a close vessel it sublimes in scales of a reddish brown colour. This compound is readily soluble in water, the solution is green, and remarkable for the sweetness of its taste.

It is composed of

<table>
<thead>
<tr>
<th>Equivalent of chlorine</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4 equivalent of chlorine</td>
<td>54</td>
</tr>
<tr>
<td>1 &quot; &quot; chromium</td>
<td>28</td>
</tr>
</tbody>
</table>

Equivalent 82

**Terechloide of chromium** is prepared by heating a mixture of chromate of potash, fused chloride of sodium, and sulphuric acid in a glass retort. By their mutual action a red vapour is evolved, which, passed into a cooled receiver, condenses into a fluid of a fine red colour. By water it is immediately decomposed, and yields a mixture of chromic and hydrochloric acids. It is composed of

<table>
<thead>
<tr>
<th>Equivalent of chlorine</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 equivalents of chlorine</td>
<td>108</td>
</tr>
<tr>
<td>1 &quot; &quot; chromium</td>
<td>28</td>
</tr>
</tbody>
</table>

Equivalent 136

**Fluorine and chromium** form two compounds: the sesquisulphuride is procured by dissolving oxide of chromium in hydrofluoric acid; by their mutual decomposition and evaporation to dryness, water and the sesquisulphuride are formed, and the latter remains as a green powder, which is soluble in water and composed of

<table>
<thead>
<tr>
<th>Equivalent of fluorine</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4 equivalent of fluorine</td>
<td>28° 6</td>
</tr>
<tr>
<td>1 &quot; &quot; chromium</td>
<td>28</td>
</tr>
</tbody>
</table>

Equivalent 56° 5

**Terefluoride of chromium** is prepared by distilling a mixture of chromate of lead, fluor spar, and sulphuric acid in a leaden retort. A red coloured gas comes over, which acts rapidly on glass, and is decomposed by water, with the formation of chromic and hydrofluoric acids. It is composed of

<table>
<thead>
<tr>
<th>Equivalent of fluorine</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 equivalents of fluorine</td>
<td>57</td>
</tr>
<tr>
<td>1 &quot; &quot; chromium</td>
<td>28</td>
</tr>
</tbody>
</table>

Equivalent 85

**Chroming and chromium** form two bromides, which are stated to be sesquibromides and terbromides. They are unimportant compounds.

The _non-metallic solids_, or at least several of them, combine with chromium; but this is not the case with carbon.

**Sulphur and chromium** may be made to combine, though not by direct action, in several different modes; the simplest is to heat the hydrate intimately mixed with sulphur in a close vessel; this sulphuret is of a dark grey colour, unctuous to the touch like plumbago, and when slightly heated in the air it burns like a pyrophorus, and is converted into oxide of chromium and sulphurous acid gas. It is not acted upon by nitrate acid, but nascent chlorine dissolves it. It is a sesquisulphuride composed of

<table>
<thead>
<tr>
<th>Equivalent of sulphur</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4 equivalent of sulphur</td>
<td>24</td>
</tr>
<tr>
<td>1 &quot; &quot; chromium</td>
<td>28</td>
</tr>
</tbody>
</table>

Equivalent 52

**Phosphorus and chromium** form phosphuret of chromium. It is prepared by acting on the sesquisulphuret of phosphorus and phospuretted hydrogen. It is black, insoluble in hydrochloric acid, and but slightly acted upon by nitric acid or nascent chlorine. It is composed of

<table>
<thead>
<tr>
<th>Equivalent of phosphorus</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 equivalent of phosphorus</td>
<td>16</td>
</tr>
<tr>
<td>1 &quot; &quot; chromium</td>
<td>28</td>
</tr>
</tbody>
</table>

Equivalent 44

The salts of chromium are next to be noticed. There is perhaps no metallic substance which so perfectly acts as an acid to bases and as a base to acids as this metal; the difference depending, of course, upon its degree of oxidizement, that is, whether it be an acid or an oxide. The compounds of the chromic acid and bases will first be mentioned, or the chromium.

**Chromate of potash**. This salt is used in large quantity, and is prepared by reducing chromiorn to powder, mixing it with nitro, and subjecting the mixture to a high temperature in a crucible. The nitric acid of the nitre is decomposed, the oxygen acidified, and the base of the chromiorn, and this unifying with the potash of the nitre, forms chromate of potash, which is washed out from the residue of peroxide of iron, and the solution is evaporated and crystallized.

The crystals of chromate of potash are yellow; the primary form is a right rhombic prism. It has a bitter disagreeable taste, is soluble in about twice its weight of water at 60°, and much more so in boiling water; it is insoluble in alcohol, and unalterable in the air; it turns turmeric paper reddish brown, but is a neutral salt, composed of
Dichromate of lead is prepared by digesting the chromate in solution of potash; this removes half the chromate, and the remaining salt is of a fine scarlet colour, insoluble in water. When crystallized it becomes brick red, but its scarlet colour returns as it cools. The addition of nitric acid it is reconverted to neutral yellow chromate. It consists of

<table>
<thead>
<tr>
<th>1 equivalent of chromic acid</th>
<th>52</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 of oxide of lead</td>
<td>224</td>
</tr>
</tbody>
</table>

Equivalent . . . . 276

These are the most important chromates; the salts which contain oxide of chromic as a base are not at all employed: we shall mention only the most distinctly marked of them.

Nitrato of chromic. Oxide of chromic dissolves readily in nitric acid; it is however difficult to saturate it.

The solution when evaporated to dryness leaves a reddish substance, which dissolves easily in water. It does not appear to yield crystals, nor has its composition been ascertained; it is however probably a neutral nitrate.

Sulphate of chromic. Prepared by dissolving the hydrate in dilute sulphuric acid; the solution is of a dark green colour, and has a sweetish taste. By evaporation to dryness a dark-coloured tasteless matter remains, which is not altered by exposure to the air, and does not readily dissolve in water. It is probably a neutral sulphate.

The arsenate, carbonate, and phosphate of chromic are all insoluble compounds, which are not at all employed, nor indeed any salt of oxide of chromic; but, as already noticed, the chromates of potash and lead are largely used, and oxide of chromic is employed to give a green colour to glass and porcelain.

CHRONICLE, CHRONICON (from σχόλεος, time), denotes a history in which facts are digested in order of time, though not necessarily in successive years, as is distinctly implied in the expression by the ancients. It must be understood that the two terms have been indiscriminately used for histories in which the succession of years has been the governing principle of the narrative. The term Chronicle, at the present day, is seldom used but in speaking of our old histories, as the "Saxon Chronicle," "Fabyan's Chronicle," "Holinshed's Chronicle," &c. This term was also adopted by the French, as in "Les Chroniques de France" (appelée la Chronique de St. Denis), compiled par l'ordre du Roy Charles VIII., 3 tom., fol. Par. 1476.

CHRONICLES, the name of two books of the Old Testament. In the original Hebrew they constitute only one book, entitled דָּרְתוֹן (Dobri Haiminim) Verba Dietriou, Words of Days; that is, diaries or journals. In the Septuagint they are called Παρασκευὰς, res protermaia, things omitted. The books of Chronicles are the "two Books of Kings." They are compiled from being considered as supplementary to the Books of Samuel and of Kings; the histories of which they repeat with considerable variations. Some commentators and critics state decisively that the compiler is unknown. (Vat. blus, Hoffmann.) The name Chronicles seems to have been first applied by St. Hieronymus (Jerome), who is followed by Du Pin, Bishop Patrick, and most modern commentators, in speaking that Ezra, otherwise Essas, was the compiler of these books, about twenty-six years after he compiled the Books of Kings, and eighteen after the return of the Jews from the seventy years' captivity in Babylon. (Dr. Allix, Refex. on Old Test., vol. ii., c. 1.) Eichhorn enumerates several reasons for assigning the chronicles to Ezra (Einleitung, vol. ii., pp. 359-401), the chief of which is, a similarity to the Books of Kings and Ezra in style, orthography, and idiom. The Jews also ascribe them to Ezra. There are however several considerations which diminish the probability of their being his work (Calmet's Dict., by Taylor), one of which is, that (Chron. iii. 19, et seq.) an account is given of the posterity of his contemporary Zerubabel, which extends several generations beyond the time. Eichhorn is supposed to have died at the age of 120, a year or two after compiling the Chronicles (Ezra, in Taylor's Calmet); but nothing, as Eichhorn observes, is certainly known of the time of his birth or death. The apparent importance and historical nature of the Books of Kings should be re-written by the same person with such numerous discrepancies and contradictions as are found between Kings and Chronicles, is
thus explained by the commentators: they state that Ezra, on his return to Judæa, discovered more and better materials than he possessed when he compiled the Books of Kings at the beginning of his work. The first books are to be regarded as addenda and corrigenda. Some however of the variations are not improvements: for example, in the history of Jehoram (2 Chron. xxvi.), which is repeated verbistam from 2 Kings vii. 17, &c., this king is said to have been 29 years older than the father. It stands thus in the authorized version, but in some ancient MSS. of Chronicles it is written 22. The numerous contradictions throughout Chronicles and Kings, in facts, dates, numbers, names, and genealogies, are acknowledged by many learned persons to form the base of the whole of Dr. Kennicott's First Dissertation on the State of the Hebrew Text; where they are treated as corruptions, interpolations, and mistakes. In the narrative 1 Chron. xlvii. 3, which is taken verbistam from 2 Sam. viii. 3, there occurs, besides a variation of proper names, an alteration of 700 sermons to 7000: and exactly 'the same mistake' (Kemmis) occurs in the passage cited in 1 Chron. xlvii. 3, x. 6. Compare the number of the kings of Judah, 1 Kings iv. 26, with 2 Chron. ix. 25; and 1 Kings ix. 23, with 2 Chron. viii. 18. Many passages and chapters in Chronicles and Kings appear to have been transcribed verbistam from records made before the Babylonian captivity. With these standing parallels, 1 Kings viii., which are word for word alike, and speak of the ark, the former in v. 9; the latter in v. 8, as being in the Holy Place 'unto this day': though neither kings nor Chronicles are supposed to have been written until sixty or ninety years after the Temple, and all its contents had been demolished, or carried off by Nebuchadnezzar. Another instance is in 2 Chron. viii. 8. In fact, the compiler or abridger appears to have had before him a collection of various authentic memories, genealogies, annals, registers, &c., from which he quoted indiscriminately 'without taking the trouble to reconcile inconsistencies.' (Rees's Cyclopaedia: Theol. Dict., by J. Robinson, D.D.) The last thirteen verses of 1 Chron. ch. i, occur verbistam in Genesis, ch. xxxvi., and appear to have been transcribed from some historical document made after Saul, the first king, reigned in Israel (see v. 31), which was 400 years after the death of Moses. Another curious particular is that the two last verses of 2 Chron., concerning the proclamation of Cyrus, are the same which begin the following Books of Ezra. In Rees's Cyclopaedia, this fact is accounted for in the following words:—Some transcriber has been blamed for having transcribed Chronicles at v. 45, and leaving the usual space, to write the Book of Ezra; but finding his mistake he broke off abruptly, and began Ezra at the usual distance, without indicating his error by enjoining which he had previously subject the Chronicles. The broken sentence with which Chronicles end at 'go up,' is completed in v. 3 of Ezra 'to Jerusalem,' &c. Groetus, in his Opinion. on Chron. says, 'ls nos libros continuandi est antiquus, quem et Procopius sequitur Vandoquirum et Cohorurum initium.' (Opera Omnia, tom. i., p. 189.)

To this suggestion may be added a fact not noticed by the commentators, that the Jews, in the public reading of their scriptures, were accustomed to add to the end of any passage, producing dejection, add the commencement of the next paragraph, or repeat a portion of that which precedes, in order to finish with something consolatory. Accordingly, in Hebrew copies, at the end especially of Isaiah, Malachi, Lamentations, and Ecclesiastes, a 22nd chapter is given, and formed of the initials of these four books (2277) to indicate the recital of some antecedent or subsequent passage. It is so understood by the Jews, and is supposed that the present books of Chronicles are those of the Jews, and that whenever a 22nd chapter is given it is referred to in the books of Kings. The objection to this supposition is, that these references are not unfrequently made to what is not to be found in the present book of Chronicles. Thus, the prophecies of Isaiah, 2 Kings iv., are generally thought to have been a voluminous work from which ours are only a brief and mutilated abstract. Groetus, Capellus, Spinoza, Clericus, R. Simonious, Whiston, and others, held this opinion. Carpos, in his Introduction, ad Vet. Testament, rejects it as 'very absurd.' The chief design of this composition seems to have been to exhibit, first, the genealogies, ranks, and functions of the priests, in order that the people might re-assume their proper dignities; and secondly, by describing the distribution of lands before the Captivity, to direct the families of each tribe in regaining their ancient inheritances. The first book is a recapitulation of all that is contained in the 1st and 2d Books of Chron., i.e., an epitome of the Old Testament, is of such great importance, that if a man lay claim to a knowledge of scripture without knowing this book, he is only deceiving himself; for every single name, and every justitiation, and every manner of man, is contained in this book. The second book gives the history of the kings of Israel and Judah from Solomon, to the return from Babylon. Jerome attaches a great importance to the study of these books, in order that they might be read in order that they might be read in the Books of Kings, and explain innumerable difficulties in the Gospel (Hieronymus Opera, 1734, tom. i., p. 277); and in his preface 'ad Lib. Paralip.' he says, 'This work obtains all the learning of the Scriptures.' The same father enjoins a young friend (Epist. 7 ad Leta.), to learn by heart the whole of the two Books of Chronicles, together with the Pentateuch, Prophets, Kings, Esdras, Nehem, and Solomon's Song. The authority of the books of Chronicles is so established by the Scriptural passage (Heb. i. 5) to the character of our Saviour from 1 Chron. xvi. 13 and 14; see also chap. xxii. 10. (Bishop Mant's Bible.) For the purpose of comparing these books with the other books of the Old Testament, Samuel, and Kings, in Horne's 'Introduction to the Bible,' vol. iv., p. 58, and vol. ii., p. 37: also Cruquius's 'Concordance of Parallels,' p. 147. A notice of the Commentaries on the books of Chronicles—Hieronymus, Procopius, Beeli, Cronimus, Laven, Lembard, Serarius, Strigelius, Jackson, &c., may be found in Jo Gotob. Carpzovius 'Introduct. ad libros Canonicos,' 4to, 1731, tom. i., pp. 279-303, and tom. ii., pp. 466-487; in William Crowe's 'Commentary of Chronicles, London, 1668, pp. 46-49, and in Hoffmann's 'Lexicon.' See also 'Poly Synopsis Critororum,' fol., vol. i., p. 714, et seq.: Bishop Patrick's 'Comment,' vol. ii., p. 539; Du Pn 'Complect. Hist. of the Canon,' fo. 84. Eichhorn, 'Einleitung in das Alte Testament,' ubi supra; Kennicott's 'Discertation,' and 'Reply' to it, by Julius Bates, pp. 104—183; and the Abbé Richard's critical treatise on the apparent contradictions of Chronicles and Kings.

CHRONOLOGY (chronologia), a Greek word, literally signifying 'time reckoning.' In contradistinction to history, which connects events according to the manner in which each is produced or occasioned by another, chronology arranges events according to the order of time. It is evident however that the succession of events in the order of time makes a very important part of their exposition in the relation of cause and effect; for whatever else there may be in the bond which unites what we call a cause and effect, the sole circumstance which determines the effect in the order of time is always present. A history therefore cannot be written even in the loosest manner, nor an intelligible narrative put together, without chronology being so all attended to that everything will be related in the order in which they happened. Even what is called the epic method of taking up the story in the thick of the interest, rather than from the beginning of the series of events outwards, if the interest grows, is no exception. In whatever mode it is written, it must be best for the reader that the several portions of the story should be arranged and exhibited, each portion must in itself be depicted chronologically, else it will be incomprehensible. In order that an event may be always strictly observed throughout, the poet may select a different series of events through which to make his course from that which would be adopted by the historian. In any case, for example, it is true that the events of the shipwreck of Zenas and his consolida
tion by Queen Dido, which are related in the first book of the poem, happened subsequently to the destruction of Troy, and their adventures in the course of their navigation to Carthage, which pass before the first chapter of Zenas and third books; but these last mentioned events are really what the poet professes to relate in these two books. What they profess to contain is the discourse addressed by Zenas.
to Dido, at the banquet in her palace; and the delivery of this discourse happened not before but after the events relating to those which follow. The order of the first point of Larcher, in the preface to his French translation of Herodotus (edition of 1862), has noticed that Photius has complained of the confusion occasioned by the digressions of this author, and that other critics have been disposed to deny that he followed the order of history. Larcher, however, dissents from this judgment, and explains what he conceives to have been the plan of Herodotus (Preface, pp. xxxv.—xxxvi.). He has also printed, with annotations, in his translation, the Abbe Germain’s edition of Herodotus against the authority of Photius; and of these the third (pp. 601—627), is an exposition of the method and plan of the historian. His history is of the form of an epic poem, of which the main subject is the wars of the Greeks and Persians. The digressions, which correspond to the episodes of an epic poem, and, as in the case of that on Egypt, take up an entire book, render it very difficult for a young student to form an idea of the history as a whole. But if the episodes are cut out, the whole history exhibits the main subject in a regular progression. The chronological system of Herodotus has been amply illustrated by Larcher in his “Essai de Chronologie sur Héro- dot,” printed in the sixth volume of his first edition (1780), and still further amplified and enlarged, in the seventh volume of his second edition.

But although both Herodotus and Thucydides have, each after his own method, so far adhered to a chronological order of events in the order of time in which they happened, neither of these marvels of literature is throughout his narrative attended to chronology in any scientific sense. They were both prevented from doing this by the want, in that early age, of any fixed epoch or starting point from which to reckon. It has been well observed, that ‘the best scheme for dates is to say, that they are to history what the latitude and longitude are to navigation—fixing the exact position of, and serving as unerring guides to, the object to which they are applied.’ (Nicolau’s Chronology of History. Preface, p. vi.) In this view the histories of Herodotus and Thucydides may be compared to charts or maps drawn without the aid of parallels of latitude or meridian lines, in which indeed the situations of cities and mountains, the courses of rivers, and the general form of countries and outlines of coasts might be represented with a certain degree of correctness, but not with the precision requisite for any scientific purpose. Thucydides, however, in recording the events of the Peloponnesian war, keeps to the order of the years; and he fixes the date of the commencement of the war (ii. 2), by referring to the truce made after the capture of Eubea, to the priesthood of Chrysis in Argos, to the episcopal letter of Amiens to Sparta, to the publication of the work of Thucydides at Athens, and to the date of other events that happened long before the war (i. 13, 19), he refers to the end of the Peloponnesian war as the point from which to reckon backwards.

The determination of the length of the year and the regulation of the calendar appear to have occupied the attention of the ancients before they ever thought of dating events from a fixed epoch. But the latter object was of interest only to historical inquirers; the former matters were naturally in the hands of the cultivators of astronomy, who were the best qualified for their management, and were besides more immediately interesting and important to the whole community. There is a curious passage in Plutarch’s windows of Athens, in which the author, addressing the people of Athens, report a complaint made by the moon about the displeasure she had incurred from the gods in consequence of the confusion into which their festival had fallen. Is it not possible that this may have been the best adapted for conveying a clear view of each particular portion of history of which he has treated, every series of naturally connected events forming a narrative or story by itself, it

is not easy to gather from his work any notion of the synchronism of events, or of the relation of those of one series to those of another? (Preface, pp. 352—353.)
fixing historical events. The following paragraph is from the introduction to Playfair's Chronology, with the exception of the first sentence, which is the passage from Cicero: "(n.c. 496-411) he regulated his narration by the succession of the priestesses of Juno at Argos. Ephorus (n.c. 300) digested things by generations. The Arindelian marbles (n.c. 263) make no mention of Olympiads, and reckon the events from the time of the great exploits of Herodotus (n.c. 484-413) and Thucydides (n.c. 471-391) the dates of events are not ascertainable by any fixed epochs. The Olympiads were not commonly applied to this purpose in so early a period as in the time of the Sicilians, who are accused of the error by Polyoelius of Philadelphus (n.c. 263-245), the first who attempted to establish an era, by comparing and correcting the dates of the Olympiads, the Spartan kings, the archons of Athens, and the priestesses of Apollo. Eratosthenes (n.c. 288) in his Chronology, and Apollodorus (n.c. 115) digested the events recorded by them, according to the Olympiads and the succession of Spartan kings. When the Olympiads were adopted as an era, the reckoning was made to commence from the games at which Corophius was the victor, being the first at which the name of the victor was recorded. The Olympiad of Corophius accordingly is considered in chronology as the first Olympiad. Its date is placed 169 years after the restoration of the games at Corinth, and is calculated to correspond with the year B.C. 776.

The statement we have just quoted from Playfair is given at greater length, and with references to the authorities, in the introduction to the late Isaac Newton's Chronology. The names that have been mentioned, only Eratosthenes and Apollodorus can be considered as having been systematizing chronologists, or as having employed themselves on the science of chronology. The men of later times have not so much ceased to ascertain with greater precision than any preceding historian the dates of the events of which he treated in his histories of Sicily, of the wars of Pyrrhus, &c. An account of his works is given in Clinton's "Pasti Hellenicis," ii. 409-491. The fragments of Timaeus have been collected by Goeller, in his work, 'De Situ et Origine Sycusanorum,' Svo, Leipzig: 1818. Eratosthenes, the eminent astronomer, seems to have endeavoured to establish what may be called a system of chronology by ascertaining the dates of certain antient events, which might serve as fixed points from which to reckon all other events. We have no account however of the process by which he arrived at his conclusions. The fragments of his chronological as well as of his other writings, with the passages of the antient authors in which each is mentioned, and notes, have been published by Gottfr. Bernhardy in a small volume, entitled "Eratosthenes," 1816. Of the life and works of Celsus, the first century immediately preceding our era, but of whose numerous and learned works very little remains. Belonging to a much later age, the third century of our era, there has been preserved a work of Censorinus, entitled "De Die Nastali," which is in the greater part lost. Clinton has shown that the leading dates of Eratosthenes and Apollodorus were adopted generally by subsequent chronologists, both Greek and Latin. Among the Romans the most eminent authority in chronology was Varro, who flourished in the first century before Christ. Varro has attributed its preservation to the special goodness of Providence. The establishment of the first Olympiad as a common epoch may be said to have given birth to chronology as a science. The introduction into historical writing the general practice of dating events with reference either to that or to some other fixed point. The principal business of chronologers after this was to determine the relationship of each of these epochs to every other. The common era of the Roman historians commences

from the foundation of the city of Rome. But there was a great variety of opinion among the antients, as there has been among the moderns, as to the real duration of the first date of this event. The Romans themselves for the most part followed either the computation of Cato, which places it in n.c. 752, or that of Varro, which assigns it to n.c. 753. With respect to the time, among others I shall express, as the times by which the last is determined by the former: most modern chronologers follow that of Varro. This practice of dating events from the building of Rome may be regarded as the first adoption of the simple method of reckoning from a fixed point of time, which are forming therefore one of the great stages of chronology.

Another useful mode of reckoning among the Latin histiorians was by the annual consulships. Often both the year and the consul are given. The method of reckoning from the first Olympiad was occasionally employed long after the birth of Christ. Some writers, says Playfair, have continued the use of the Olympiads to the 312th year of the Christian era. Credner (a Greek monk of the eleventh century) has brought them 80 years lower, making the 393rd year of our Lord the last Olympian year. Sir Harris Nicolas (Chronology of History, p. 2) speaks of the computation by Olympiads of the year of Christ 85 after the 364th Olympiad, in the year of Christ 440. Particularly writing in Latin the Olympiads are down to that date, as they might do down to the present day; but it had certainly long before ceased to be the common practice to do so. From A.D. 312 the regular public distribution of the Roman empire, both west and east, was by the inductions, which were cycles or periods of fifteen years, beginning with that year. [trans."

The practice of dating events by inductions was at one time followed in most of the kingdoms of modern Europe, and in France was not altogether discontinued at the end of the fifteenth century. The method of dating events from the birth of Christ is said to have been first practised by a Roman monk named Dionysius the Little about the year 225. It came into general use in Italy before the termination of that century, but in France not until the eighth century, in Spain not until the fourteenth, and in Portugal not till after the commencement of the fifteenth. The method of reckoning from this epoch, being now universally adopted throughout Christendom, and the only computation generally used both in historical accounts of past events and in dating current time, has furnished a chronological measure of much more extensive application than any other which had preceded it. It is generally held that the birth of Christ actually took place about four years earlier than the date assigned to the event by Dionysius; but this mistake of the inventor of the vulgar era does not affect its value as a scheme of chronology. It should be observed, however, that the point is from which we reckon, if it be a determinate point.

There is one inconvenience however attending the choice of this epoch, namely, that it necessarily introduces two modes of reckoning, and leaves the events of a large, in fact the largest, portion of history to be as it were dated backwards. Accordingly to the distance of each behind the assumed epoch. Even the Cursus Olympiadicus was not free from this objection; for although, as we learn from Censorinus, Varro considered the historical age to commence only with the first Olympiad, the traditions even of the Greeks and Romans, and especially Homer, refer farther. It is generally admitted that the era of Cato and of Celsus, the Julian era, is the most correct, and should be adopted. The histories and traditions of the Hebrews, and other antient nations, extend much farther back. To provide a more comprehensive mode of reckoning, Joseph Scaliger, in 1592, introduced a cycle of 7960 years, which is the product of the continued multiplication of 28, the number of the solar cycle, 19 that of the lunar, and 15 that of the induction. The advantage of this construction of the period, the ease of dating any of its years, is that it is at once found by a simple process of division. It is found that the first year of the Christian era must, according to its position in these three cycles, have been the 444th of the Julian period. We therefore, in this period, a chronological measure which may be applied if necessary, over all that space before the birth of Christ. But as some chronologers have carried the creation of the world, or the beginning of human history, back to a date
of the famous Argonautic expedition by an ingenious calculation founded upon the known precessions of the equinoxes at the rate of a degree in seventy-two years, and the assumption of the equinoctial and solstitial colures having at the time of the expedition cut the ecliptic in the cardinal points. From these dates he determines the expedition to have taken place in the year 550 B.C. The antiquity by about three centuries than that commonly assigned to the event. But the grounds on which Newton has assumed the position of the colures at the time of the expedition are generally acknowledged to be quite insufficient. Although the full exposition of this system was not published till after the death of the author, its general principles got abroad during his lifetime, and were attacked from various quarters. The two chief early assailants of the theory were the French Jesuit Sourieux, and Nicolas Freret, known for his many valuable contributions to the memoirs of the Academy of Inscriptions. In latter times the system has been examined by Playfair (pp. 31-37), and by Hales (vol. i., pp. 26-29). See also Sir David Brewster's Life of Newton, and a valuable note by M. Daunou on the article on Newton by Biot in the 'Biographie Universelle,' vol. xxxi., pp. 189-186. Clinton denies that the general uncertainty of the early Greek chronology is so great as is supposed by the scheme of Newton.

Although Newton's deduction of the date of the Argonautic expedition from the precession of the equinoxes was based on no absolute authority for the position of the colures at the time of the expedition, the science of astronomy has in another way rendered valuable assistance to that of chronology. This is seen from the fact that by the Greek observations there are recorded by antient writers, and are sometimes connected by them with historical events that happened at or near the same time. In the first volume of the great French work, 'L'Art de trouver les Dates', pp. (46-262), are given lists first of all the eclipses of the sun and moon which could have been seen to the north of the equator for ten centuries preceding the birth of Christ; and secondly, all the that eclipse of the sun which may in one year have had the exact date of one of the visible eclipses that have happened since the commencement of the era of the Christians. Lists of eclipse, solar and lunar, are also given in Playfair's 'Chronology,' pp. 175-219. As an example of the arrangement of a recorded eclipse, see the article AYLV私立.

One of the earliest of the Christian systematic chronologists is Sextus Julius Africanus, who flourished in the first half of the third century. Of his chronological work, entitled 'Pentabiblos,' however, beginning with the creation, which he dated B.C. 5499, and结尾 with A.D. 181, in which all the years in the cycle of the 6,000 years are marked with 6's, are then included among the fragments of Greek. The most important of the early Christian chronologists which we now possess is the Chronicle of Eusebius Pampelius, bishop of Cesarea, in the fourth century, of which an edition was published in 1638, in one volume folio, containing the Latin translation by Saint Jerome, and Scaliger's attempted restoration of the lost Greek text. The Armenian version of the Chronicle of Eusebius, which is the complete text of the foregoing editions, was published at Venice in 1618, with a literal Latin translation, and another Latin translation of it, in the same year, at Milan. There is a famous Spanish commentary upon the Chronicle of Eusebius, by Alvaro de Sotomayor, printed at Seville in five volumes folio, in 1566. The work which is to be considered as having laid the foundation of the modern science of chronology is that of Joseph Scaliger, 'De Emendatione Temporum,' first published in folio at Paris in 1583, and afterwards, with some additions and amended, at Leyden in 1598, and at Geneva in 1632. Another important work of that age is that of Dionysius Petavius, or Petav, 'De Doctrina Temporum,' two vol. folio, Paris, 1627, with the continuation in the 'Chronica sacra' of the 'Cosmologiae,' sive Systema variorum auctorum qui de Sphaera ac Sideribus, &c. commentarii sunt.' An abridgment of this work, under the title of 'Rationarium Temporum,' was published at Paris in 4to. in 1636, and has been several times reprinted. Of other early contemporary works on chronology.

* Properly a degree in about 721 years.
ology the following are some of the most valuable, or the most celebrated:—Sethi Calvisi’s 'Opus Chronologicum,' Leips. 1663, and after. 1673; and J. Bapt. Reformation, 1 vol. fol., Bonon. 1669; 'L’Antiquité des Tems retablief et dévidée,' par le Père Paul Perzon, Paris, 4to., 1687, and the Defence of that work by the author, Paris, 4to., 1691; Hare, Wenceslaus’s, 'Description de l’Opus de Christiano Reformation,' 2 vols. 4to., Paris, 1733; Mundus ad Annum Julianum accommodatus,' fol., August, Vindel, 1621, a work for which the learned and unfortunate author was shut up during the remainder of his life in the prisons of the Inquisition, in consequence of his discovery that Christ was not the Saviour of the world. The last was not the first, and it was not celebrated the last year of his life, and, in instituting the Eucharist, did not make use of unleavened bread; Philip Labbe et Philip Preeti's 'Chronologiae Historicae,' 5 vols. fol., Paris, 1670; 'Chronologiae de Vitis Mundi,' 2 vols. 4to., Berlin, 1738. The work of the Benedictine monks, M. d’Antine, Durand, and Clemenc, first published in 1 vol. 4to. at Paris, in 1756, has, in the latest edition, extending to 38 volumes 8vo., published at Paris, 1818-1831, become the most extensive and important work on general chronology that exists. The principal works by English authors upon these sciences are the 'Chronica Canonis Eryppiaciis, Editionis,' et 'Graecæ,' of Sir John Marshall, fol., London, 1672, and also Spinoz and Torsun, and Francour, 1696; Archbishop Uber’s, 'Annales Uriusique Testamenti,' fol., Lond., 1650, and several times reprinted; Sir Isaac Newton’s work, already noticed; Jackson’s 'Chronological Antiquities,' 3 vols. fol., 1716-1721; 'Chronology of the History of the World, from the Creation,' fol. 1754, and again, 1768, with additions; Kennedy’s 'Complete System of Astronomical Chronology, unfolding the Scriptures,' 4to., 1782; Playfair’s 'History of Chronology,' fol., Edin., 1794; and the Rev. Dr. William Hold’s, 'New Analysis of Chronology, in which an attempt is made to explain the History and Antiquities of the Primitive Nations of the World, and the Prophecies relating to them.' 3 vols. 4to., 1800-1812. There is also a useful introduction to chronology by Bishop Beveridge, entitled 'Institutionum Chronologicae Libri Duo, una cum totidem Arithmeticae Chronologicæ Libellis,' 8vo., Lond., 1699, and several times reprinted. Particular portions of ancient chronology have been illustrated by Corsini in his 'Fasti Attici, in quibus Archontum Athenienium series, Philosophorum, aliquotque illustrium vivorum atas, atque præcipuæ Attestis Historiae capia, descripturam,' 4 vols. 4to., Flóir. 1744–61; by Wesseling, in his edition of Diódoros Siculus, 2 vols. fol., Amster., 1745; by Dodwell, in his 'Annales Thucydidii et Xenoplontii,' 4to., Oxford, 1702; and by Larcher, in his 'Essai de Chronologie sur Hérodotte,' already mentioned. But in so far as the Greek chronology is concerned, the most comprehensive and valuable work that has appeared is that of Mr. H. F. Clinton, entitled 'Fasti Helliceni,' the Civil and Literary Chronology of Greece, from the earliest accounts to the death of Augustus, now completed in three volumes, the first, containing the earliest accounts to the time of Pisistratus, was published at Oxford in 1834; the second, comprising the period from Pisistratus to Ptolemy Philadephus, in 1824; and the third, completing the review to the end of the reign of Augustus, in 1830.

The volumes of chronological tables that have appeared are too many to be enumerated. Several of the systematic works on chronology that have been mentioned contain collections of dates. The only other work that we have mention is a most useful and, as far as we have examined it, very accurate publication, in one small volume, by Sir Harris Nicolas, entitled 'The Chronology of History' (1833), forming the 44th volume of Dr. Lardner’s 'Cabinet Cyclopaedia.'

[See the articles Aera, Epaact, Epoch, Cycle, Day, Month, Year, Indiction, &c.]

CHRONOMETER, a name applied to those timekeepers for determining the longitude at sea, or for any other purpose where an accurate measure of time is required, combined with great portability in the instrument. The general appearance of what is termed a pocket chronometer is that of a common watch, and it is generally made or finished in about 30 to 32 days, taking up, on an average, 30 hours. Those used for nautical purposes are larger, having dial-plates from three to four inches in diameter, and are usually made to go from two to eight days between each time of winding up; they have, in addition to the hour, minute, and seconds, circles, one on which a hand denotes the time of starting the work of the instrument, and another for last winding up. Each chronometer is well secured in a brass box, mounted on globulars in order that the machine may preserve one uniform position, and enclosed in a mahogany case.

A chronometer, like a common watch, has for its moving power a main-spring, the variable force of which is equalized or rendered uniform by the introduction of the fusee, a very beautiful contrivance, which, when properly made, enables the operator to wind up the machine and set it going with nothing more than a variable lever, upon which the main-spring acts through the medium of the chain. A common observer would say of the fusee that it was a sort of cone upon which the chain is wound from the barrel by the operation of unwinding the mainspring. But a mathematical curve which has this peculiar property, that as the chain winds upon it, the distance from the centre of motion of the fusee to the semidiameter of the chain which is in contact with it continually varies; and also that it varies in this proportion, viz.: that the distance of the centre of motion of the fusee to the semidiameter of the chain at that point where it leaves the fusee for the barrel, multiplied by the force of the main-spring acting on the chain at that time, shall be what mathematicians call a constant quantity; that is, shall be the same whatever point of the fusee may be taken. Thus: suppose the chain, which receives its power to turn the fusee from the main-spring, first leaves the fusee at a certain distance from the centre of motion of the fusee to the semidiameter of the chain at that point where it leaves the fusee is 42 hundredths of an inch, or, expressed decimals, .42; then for the next instant, suppose .42 = 3.78. Now let the spring be wound up to different points at which its force will be required, and then clamped the mode of use is no longer of the chain. It is necessary here to observe, that by a detached escapement is meant one in which the impulse which causes the balance to vibrate is given suddenly, and the balance performs two vibrations before the impulse is renewed. This kind of balance vibrates nearly independently of the maintaining power, the impulses being given so rapidly that the force applied acts on the balance during an extremely small part of one oscillation. The balance is a pendulum, and when it is in the escapement, which is of the detached kind. It is necessary here to observe, that by a detached escapement is meant one in which the impulse which causes the balance to vibrate is given suddenly, and the balance performs two vibrations before the impulse is renewed. This kind of balance vibrates nearly independently of the maintaining power, the impulses being given so rapidly that the force applied acts on the balance during an extremely small part of one oscillation. The balance is a pendulum, and when it is in the escapement, which is of the detached kind.
uty of fine brass to cover the steel when the brass is melted. After having cooled gradually, the superfusious brass is filed away from each side of the flat piece of steel, so that the steel is completely cleared of brass everywhere, except on the edge: by this means the artist is enabled to judge of the comparative soundness of the juncture of the tubing of brass to the steel which it now encircles, and if any unsoundness appears it is thrown aside; if perfectly sound, the brass is now reduced by a file upon its outer edge, so as to present a ring of tolerably equal thickness all round, and is left about double the thickness wanted; it is then very carefully condensed either by the hammer or a burnisher as equally as possible, after which the steel is turned out of the centre and the brass from the outer edge, leaving a cone whose weight is to the movable ends of a of the balance, and having the brass part about twice the thickness of the steel. Within the steel rim a bottom is left, out of which the bar A B is cut; the cutting through of which the increase of the temperature are diminished just sufficient to the balance to move round on the balance with a slight pressure when formed into the weights W W, which are secured in their places by a small screw through their outer edge pressing against the rim of the balance. Two screws, C C, are called mean-time screws, and are merely used for altering the rate of the time keeper, having nothing to do with the compensation.

The principle upon which this balance acts is as follows: - an increase of the temperature of the arms, the greater will be the space through which they move by any change of temperature, and consequently the greater the variation in the inertia of the balance; whereas, if an increase is last to cause the machine to lose, or a decrease of temperature causes it to gain, it shows the compensation not to be sufficiently active; or, in other words, the inertia of the balance is not altered sufficiently to compensate for the effect produced by the increase of temperature. Consequently the effect produced by the increase of temperature the arms, and consequently the weights must be set nearer to the movable ends a a of the arms. If an increase of temperature causes the machine to gain, or a decrease to lose, then the weights must be moved farther from the movable ends a a of the arms. In adjusting those balances made with screws, it will readily be perceived that the moving in or out the screws 4 4 will produce a greater effect than 3 3, and these again a greater than 2 2, and so on; and also that in the adjustment two opposite screws must always be moved in or out the same quantity: it will be further seen, that the mean-time screws 2 2 can produce no effect, because there is no change of temperature, as no motion is given to them by the curvature of the arms. It has been found by experiment, that in every balance-spring of sufficient length, there is a part of it which will be isochronous, or nearly so, and this length being found, it is not disturbed in temperature alter it has received its full length of time; for, if it be shortened, the long vibrations will be quicker than the short ones, and if lengthened, the short vibrations will be quicker than the long ones; and to avoid this source of error it has been found, that in such cases, the drawing out of which from the centre causes the machine to lose, and the screwing them in to gain. Considerable advantages have been anticipated by some persons from the application of a balance-spring of glass, the invention of Mr. Dent, of the firm of Arnold and Dent, of the Sirand, London, but we believe it is not yet in a state to induce the inventor to bring it before the public, though we are informed that there is every prospect of ultimate success.

The following have been some of the most eminent chronometer-makers in this country, which has certainly produced them superior to those of any other nation in the world: - Harrison, Mudge, Barnsaw, Sen., Arnold, Sen., Broekhans, Arrowsmith, Arrowsmith. We shall not enter in detail here, but it is worth mentioning that the chronometer is, in the hands of brothers and others, who have been long established as chronometer-makers, a far more accurate instrument than the ordinary timepiece; and to have the benefit of this instrument, a time-measurer either blindly or wilfully pretends that it is meant rigorously to govern the whole of a composition, and that thus the beautiful effects of accident, which are to be sacrificed; but those who have advised the employment of a pendulum never contemplated its being used for any other purpose than to indicate the time to be adopted in the movements of the instrument, and to give an idea of the neglect of some contrivance by which the intention of composers might have been transmitted, we are now obliged to guess the true movements of the most classical works; and it is notorious that many compositions of the highest excellence, and some of the most recent date, are frequently performed in times which could not have been intended, because by good critics admitted to be exceedingly prejudicial to their effect. The invention, by the ingenious M. Meisnier, of a most accurate and convenient machine, which he calls a Metronome, is beginning to convince musicians of the utility of a pendulum; and we are persuaded that not many years will elapse before it will be universally adopted, both by composers and performers. [METRONOME.]

CHRUDIM, a circle in the eastern part of Bohemia, is bounded on the north by the circle of Königgrätz, and on the east and south by Moravia. Its area is 3218 square miles, and it contains 15,317, in 1817, a population of 248,758, and in 1834 of 300,110 inhabitants, who are chiefly native Bohemians. The circle is traversed by the river Elbe, and along its whole length, from east to west, by several rivers, which form a junction, and receiving the name of Chrudimka, fall into the Elbe near Königgrätz. The eastern division of the circle, where it joins the Glatz chain, is mountainous and thickly wooded; the western part is level, and is occupied by numerous small villages, which contain about 400 ponds. The soil is fertile and produces excellent corn, hay, clover, &c. and flax; it abounds in pasture and woodland, game, fish, &c. and contains also iron, some mineral springs, and precious stones. Much attention is paid to the raising of horses; but the chief manufacture of the inhabitants is manufacture of flax and wool;
are likewise extensive potters, glass-houses, and peper-
mills. The circle contains 9 towns, 23 market-towns, and
761 villages.

The chief towns of the circle, besides Chrudim, the
capital, are Letohomelch, the famous 3656 inhabi-
tants, including a college, gymnastic school, manufactur-ers of linen, spirits, &c. Pardubitz, a royal town at the
junction of the Chrudimka with the Elbe, with 3665 inhabi-
tants, a high school and establishments for rearing horses for
the army; Landekron, with 4146 inhabitants; manufac-
turing factories of cloth, corn, and live stock, bleaching,
&c. Hohenmauth on the Myeto, 4568 inhabitants, factories of
cloth; Pollitzka, 2823 inhabitants, contains a high school,
and carries on trade in cloth, flax, and linen; and Wilden-
schwert, 2878 inhabitants, has manufactories of cloth and
linens.

CHRUNIM, the capital of the circle, a royal appanage,
lies on the right bank of the Chrudimka. It is well
built, surrounded with walls, and contains a magnificent
collegiate church, a capuchin convent, and a high school
(Hauptschule). It is the seat of the local government,
and, in 1834, had a population of 4523 inhabitants. The
city has its own civil court. The time of the founda-
tion of Chrudim is not known; but it is certain that it was
reckoned one of the Bohemian towns in the year 1035.
N. lat. 49° 46', E. long. 15° 56'.

CHRYSALIS. [Popa.

CHRYCHIM, a name applied to a genus of
composite flowers, most of which are wild in different parts
of Europe, and of little general interest; it is however popu-
larly known from its also comprehending the Chrysanth-
emum Sinense, a Chinese half-shrubby plant, whose nume-
rous varieties constitute one of the chief ornaments of gar-
dens in the months of October, November, and December.
The native state of this species is not certainly known, all
the many varieties now in gardens having been brought in
the markets of Macao, from the Chinese traders. In the
cultivated state the plant has bluish-green broad leaves
with sharp serrations and deep lacinations; and the flower-heads
consist exclusively of ligulate florets of almost every colour,
except blue. Pure white, bright yellow, deep and pale red,
rich crimson, and a dark mauve are exhibited in different
varieties of this favourite flower, and together contribute to
the beauty for which the species is so much admired. It is
probable that the numerous varieties cultivated by the Chi-
inese and now introduced to Europe have been the result of
ages of careful improvement, and that their properties have
been derived partly from mere sporting and partly from
intermixture with allied species unknown in Europe; for
among those thus cultivated are varieties remarkably dif-
ferent in constitution, some being capable of bringing their
beautiful flowers to perfection in the open air, and others
hardly unfolding them even beneath the atmosphere of a
green-house or stove. They all strike root with great facility
by sowing them as early as possible, and the parent plant at
midsummer, and planted in a cold frame under a bell-glass.
After rooting they may be successively transferred from one
sized pot to another, until they have formed two or three
stout stems ready for flowering, when they must be finally
left at rest. If the soil in which they grow is rich, and
the air cool and moderately moist, with a free exposure to
light, cuttings struck at midsummer will flower beautifully
in the succeeding autumn. The size and perfection of their
flowers is increased by a little manuring, and the flower-heads
naturally appear being destroyed. As the varieties of this
species are very different in their degree of hardness and
beauty, the following classification of them is transferred
from the pages of the Horticultural Transactions:

1. Flowers large or showy; requiring protection.

- Superb white.
- Paper white.
- Sulphur yellow.
- Gold yellow.
- Lilac.
- Curled blush.
- Semi-double quilled pink.
- Starry purple.
- Early crimson.
- Pale blended yellow.

2. Flowers large or showy; quite hardy.

- Quilled white.
- Superb clustered yellow.

- Tasselled white.
- Semi-double quilled white.
- Quilled flamboyant yellow.
- Tasselled lilac.
- Lilac.
- Blush ranunculus flowered.
- Brown purple.
- Two-coloured red.
- Pale buff.

- Golden lotus-flowered.
- Park's small yellow.
- Rose or pink.
- Purple.
- Buff, or orange.

3. Flowers large or showy; but produced sparingly.

- Semi-double quilled orange.
- Expanded light purple.

- Dark pink.
- Flowers small, or late; not worth cultivation.

- Double Indian white.
- Yellow variegate.
- Windsor small yellow.
- Quilled salmon colour.
- Semi-double quilled pale orange.

- Small yellow.
- Early blush.
- Pale pink.
- Changeable pale buff.
- Spanish brown.

- Quilled light purple.
- Two-coloured incurved.
- Late pale purple.
- Double Indian yellow.
- Late quilled yellow.
- Quilled yellow.
- Quilled pink.

The varieties of the 2nd class may be cultivated without
any protection by having their stems pegged down upon
the surface of the earth so as not to be allowed to rise more
than a few inches above it when in flower. So treated
they form a charming ornament of a flower-garden; but the
other kinds do not like this treatment.

Lastly seeds of these plants have been obtained at Oxford
and in Jersey, and many new varieties have been raised,
among which are some that rival the handsomest of the
species; but hoping less success from the commercial point
of view, none of them can however be compared to the
‘two-coloured incurved,’ which is the finest and rarest of the
whole.

CHRYSALID. A family of Hymenopterous insects of
the section Pupipora. Distinguishing characters: — No pere-
vus to the under wings; terminal segments of the abdo-
men forming a jointed retractile ovipositor; abdomen of
the females with only three or four distinct segments, cor-
nered apex of a dark brown, and the female is provided
with a pair of ovipositor ducts, and a pair of ovipositor
ducts. The male has only one pair, and the female has
three; in the male both the hind legs are modified for
walking, and the abdomen is not very elongated. Some of
these species are called ruby-failed flies.

Crysina ignita will afford a good illustration of this
family. This insect is rather less than half an inch in length,
has the head, thorax and legs of a rich blue or green colour,
and the abdomen of a burnished golden-copper hue; the
part is truncated at the apex, and furnished with four little
spines.

It will be perceived that the above is a description of a
little four-winged fly, which so often attracts our notice
from its brilliant colouring, and is so common on our garden
walls when the sun is on them. This little insect is in
constant motion, for if it ceases running or flying for a
moment it seems to keep up their respiratory motion.
If we watch one of these insects for a short time, we per-
cieve that it thrusts its head into every little hole in the
brick-work; it is then searching after the nest of a wasp-
like insect which builds in these situations.

The genus Panorpes comprises the family Chrysemelides
are Panorpes, Chrysia, Stibium, Hedecium, Elepsius, and
Cleptes. An account of the habits of one of the species
of Panorpes will be found under the head Bembex, where the
habits of Bembex rostratus are given, that being the species
whose nests are subject to the attacks of the Panorpes which
we are about to describe.

The genus Panorpes is distinguished from the other ge-
nera above mentioned principally by the elongated maxillae
and labella, which appear like a pair of proboscides, and the
palpi being very small and two-jointed. Panorpes curvisus
is
about half an inch in length, and considerably broader than the *Chrysia ignita* (above described); the head, thorax, and base of the abdomen are of a blue-green colour; the remainder of the abdomen and the legs (with the exception of the thighs, which are blue) are of a reddish-yellow colour. It is found in various parts of Europe, but has not yet been discovered in England.

The technical characters of the genus *Chrysia* are:

- Maxillary palpi five-jointed, and longer than the labial; labial palpi three-jointed; thorax not narrowed in front; labium rounded. About six or seven species of this genus are natives of England. *Chrysia bidensa* is rather less than *C. ignita*, and differs from that species in having the thorax as well as the abdomen of a rich copper-like hue; the latter however has the apex blue. *Chrysia cyanea* is entirely of a blue colour.

CHRYSIPEPUS, son of Apollonius, was born at Soli in Cilicia, B.C. 280. He appears to have been driven to study by having, in some way, lost or squandered his patrimony. When he determined on devoting himself to philosophy he went to Athens, and attended the instructions of Cleantdes, whom he afterwards succeeded. (Strabo, xii., p. 610, Caes.) Cicero (De Nat. Deor. ii. 6.; ii. 10.) in common with other antient writers, describes Chrysiippus as a skilful and acute dialectician, and (i. 15) accounts him the most ingenious expositor of the Stoic dreams. Habits of industry probably gave him an advantage over his rivals. Diogenes Laertius reports, upon the authority of Diocles, a statement of Chrysiippus’s nurse, that he seldom wrote less than 200 lines a day. It appears however that he indulged largely in quotations; and the actual amount of his original labour in composition cannot be gathered from the number of his productions. He is said by Diogenes to have written upwards of 700 volumes, many on the same subject. Cicero (Tusc. Quest. i. 108) gives him the character of a careful collector of facts. After Zeno he was considered the main prop of the Peripatetic School (Cic. Acad. Quest. iv. 75); and allusions are frequently made to the estimation in which he was held. (Juvénal, Sat. ii. 5.; xiii. 184; Horace, Epist. i. 2. 4.)

Chrysiippus sometimes exposed himself to the attacks of his enemies. Cæneides in particular, by defending two opposite sides of the same question: but the arguments which were good in his were good also in others’ hands. He frequently succeeded in entangling his hearers by the use of the logical form *sorites*, which is said to have been invented by him, and is called by Persius (Sat. vi. 80) *Chrysiippus’s heap.* *Sorites (auguris) means* ‘a heap,’ and is in logic a heap of propositions in the syllogistic form. (Cic. Acad. Quest. iv. 16; Whatley’s Logic, p. 122.) Chrysiippus did not meet his attackers in their arguments; and some anecdotes which are told of him seem to show that he occasionally overstepped the bounds of moderation. Notwithstanding this, his style of argumentation was so much admired, that it was said, if the gods themselves were to use a system of logic, they would adopt that of Chrysiippus.

Chrysiippus appears to have held substantially all the main doctrines of the Stoic theology, though in some minor particulars he is said to have diverged from Zeno and Cleantdes: the charges of impiety made against him are probably to be ascribed only to a peculiar method of advocating his opinions. He died, apparently from an apoplectic fit, at the age of seventy-three, B.C. 207. (Dio. Chrysostomus, Life of Chrysiippus; Fabbricii Bibliotheca Graeca, vol. ii. pp. 392, 393.)

CHRYSOLABANAECAE, a natural order of Polyphemous Exogens, allied to Rosacea and Fabaceae (Leguminose), from which it differs in the style proceeding from the base of the ovary, and in its stamens being very irregular, often placed only on one side of the ovary. They are trees or shrubs, with alternate stipulate simple leaves, and flowers in loose racemes, corollas, or paniciles. Many species have no petals, and the stamens are exclusively tubes of the troche, where they often bear the name of plums. The grey or rough-skinned plums of Sierra Leone are produced by species of *Parinariu* and the Callimia or cocoa plum of the West Indies belongs to *Chrysolabanaea.* The fruit of the *Callimia* is yellow, black, coppery, sweet, and agreeable; the plant forms a shrub seven or eight feet high, with very long sharp-pointed leaves, dark green on the upper and pale on the under side: it loves a cool moist soil.

No. 420. [THE PENNY CYCLOPEDIA.]

CHRYSEBERYL, the *Cynophore* of Haly, occurs massive and crystallized. Primary form, a right rhombic prism. Its colour is green, sometimes with a yellow or brown tinge, with occasionally a blue opalescence. Streak white. Lustre vitreous. It is translucent or transparent. Specific gravity about 3*38. Hardness 5*5. Fracture conchoidal. Before the blow-pipe it suffers no change alone; with it in a blow-pipe it fuses into a transparent glass.

The massive variety occurs in rounded pieces. It is found in Brazil, and in Connecticut, North America. *Analysis.* Seybert first found that it contained glucina. The following are his and Dr. Thomson’s analyses:—

<table>
<thead>
<tr>
<th>Substance</th>
<th>Analysis</th>
<th>Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alumina</td>
<td>73*60</td>
<td>76*720</td>
</tr>
<tr>
<td>Glucina</td>
<td>15*50</td>
<td>17*791</td>
</tr>
<tr>
<td>Silica</td>
<td>4*60</td>
<td>4*494</td>
</tr>
<tr>
<td>Protocriste of Iron</td>
<td>3*38</td>
<td>6*490</td>
</tr>
</tbody>
</table>
| Oxide of Titanium | 1*60 | Moisture: 0*40

98*18

CHRYSCHLORYR, a genus of Dipteron insects of the family Straitomades. Technical characters:—body elongated; antennae with the basal joint short, the third long, conical, and compressed; style terminal, elongated; third posterior nervure of the wings not reaching the hinder fourth.

Only three species of this genus are described; they are all of large size.

*Chrychorpha amethystina* is about three-quarters of an inch in length; the head and antennae are black; there is a white spot at the base of each antenna; the thorax and abdomen are of a violet blue colour, the latter has a yellow spot on each side of the second, third, and fourth segments; the legs are black.

It inhabits the Isle of France and the East Indies. The remaining two species are from South America; their colouring is black and yellow.

CHRYSCHLORIS, Lacerpe’s name for a genus of mammiferous animals allied to the moles (Talpidae), but dif-
feet. The dried state of the specimen might account for the colour, but not for the tail, and hardly for the four bird claws, the five.

CHRYSCOLLA. [Copper.]

CHRY'SODON (Zoology), Oken's name for the Pecti-
naires of Lamarck, the Amphicienes of Savigny, and the
Acroptilinodes of Cuvier, forming part of the genus Ambi-
plate of Cuvier, who well observes that these perpetual
changes of names (and, he adds, in this case there is not
even the pretext of a change of the limits of the group)
will terminate in making the study of nomenclature more
difficult. [Descr. by Fouqué, 1823.]

CHYSOGA'STER, a genus of Dipterus insects of the
family Syrphide. Technical characters:—Body much
depressed; no false nervures to the wings; third joint of
the antennae oval or orbicular.

About the 18th species of this genus have been disco-
ered in England, they are all of moderate size, and their
colouring is metallic.

Chrysogaster splendens is about one-third of an inch
in length; the head is green; antennae yellow; thorax golden-

Green; abdomen purple-black; greenish towards the sides;
the legs are black; wings brownish.

This and all the other species recorded as British
have been found in the neighbourhood of London.

CHRYSOSTOMA. A bill of Hares, Ovileine is a variety
of this mineral, and Chusite also, according to Dr. Thomson.

It occurs massive and crystallized. Primary form, a right
rhombic prism. Colour green, sometimes brownish or yel-

lowish; streak white. Luster vitreous. Transparent.
Translucent; refractive index, 1.543. Specific gravity 3.23
3.41. Hardness 5.5 to 7. Fracture conchoidal.

Massive varieties:—Amorphous; granular.

The chrysolyte used in sculpture is brought from the
Levant, and supposed to be found in Upper Egypt. The
variety, on account of its colour called olivine, occurs in basalt
in Bohemia, Hungary, and on the banks of the Rhine.
The following are the analyses of

Kioyusid. Vaqueous.

Silica 39. Magnesia 45.5.

Potasioxide of iron 19. 9.5

101.5 98.0

Some varieties contain small portions of alumina and of
the oxides of nickel and manganese. It does not fuse or lose
its transparency before the blow-pipe. With hops it fuses
into a coloured glass, and with soda into a brown glass.

CHRYS'O'LORAS, EMMANUEL, a learned Byzantine
of the fourteenth century, was sent to Italy about 1347 by
the Emperor Manuel Palaeologus, to request the assistance
of the Venetians and the pope, and the other Christian
princes, against the Turks. Having fulfilled his mission,
he settled at Venice, where he gave lessons in the Greek
language. He afterwards taught the same at Florence,
Naples, and lastly at Rome, where he grew into favour with
the papal court, and was sent to the council assembled at
Constance, where he died in 1415. Poggio Bracciolini,
Leonardo Bruni, and Filofo, were the most distinguished
pupils of Chrysoloras in Greek. Chrysoloras wrote a
Greek grammar entitled Ekdikagora, Quassinias, which was
one of the first published in Italy, and was afterwards
printed at Ferrara in 1500. He also wrote several epistles
in Latin, in one of which, addressed to the Prince John
Palaeologus, son of Manuel, he draws an eloquent eulogy
on Constance and the Church. He died in 1415.

CHRYSOL'IAS, a family of Coleoptera insects, of the
number of Cicindles. Distinguishing characters:—Anten-
nae wide and prominent; the base and insertion of the
body generally short and convex; tarsi short and rather
broad, four-jointed, the penultimate joint bilobed; all th,..
joints, excepting the terminal joint, covered beneath with a velvet-like substance.

The Chrysomelidae constitute a very numerous and beautiful family of the beetle tribe; they are generally of moderate size in all respects; the head is never extended or flattened, and the thorax and elytra are generally very unequally, and studded with numerous angular projections. This circumstance, together with the extremely brilliant colouring with which they are adorned, has caused them to be compared to pieces of minerals; indeed, one which is now before us, and which is of the red hue, has been supposed to be a gemstone, at first sight, for a piece of copper ore. Most of the species of Chlamydis inhabit Brazil, and none are found out of the western hemisphere. The generic characters are:—head very large, the lower half of the head being hidden beneath it, the head and the thorax being generally rounded, oval, or convex. The first of these sections may again be subdivided according to the proportions of the antennae. In some, the antennae are short and more or less serrated; in others, they are long and more or less cylindrical; and in those in which the head projects from the thorax so as to be distinctly seen when examined from the side where the body is generally rounded, oval, or convex. The first of these sections may again be subdivided according to the proportions of the antennae. In some, the antennae are short and more or less serrated; in others, they are long and more or less cylindrical; and in those in which the head projects from the thorax so as to be distinctly seen when examined from the side where the body is generally rounded, oval, or convex. The first of these sections may again be subdivided according to the proportions of the antennae. In some, the antennae are short and more or less serrated; in others, they are long and more or less cylindrical; and in those in which the head projects from the thorax so as to be distinctly seen when examined from the side where the body is generally rounded, oval, or convex.

The genus Chrysomela is now reclassified, and is distinguished by the following characters:—terminal joint with an terminal joint as large, or larger, than the preceding one, and of the form of a truncated cone, or nearly oval; the elytra are separate, i.e., not joined at the suture; no sternal projection.

The genus Chrysolina is one of the largest species of this genus; but it has been described in England. Chrysolina Bihorsii is one of the largest species of the genus: it is rather less than half an inch in length, and of a bright green colour; the thorax has an indentation running parallel with and close to the lateral margins; the elytra are coarsely punctured. The legs and antennae are ochre-coloured. It is found on nettles in the neighbourhood of London and elsewhere, but is rather rare. C. scutellaris is about three-eighths of an inch in length, and of a dull blue-black colour; the elytra are rather rough. C. graminis is about the same size as the last, and of a bright green colour; this species is abundant in grass-plots and on clover, and is found on the ground in May. C. scutellaris is a reddish ochre colour. This species is very common in marshy situations. C. rufilata is about the same size as C. scutellaris. This is one of the most beautiful species of the genus. It is tolerably common in France and Germany, but till found on the summit of Snowden (within the last three or four years), was scarcely known as a British insect. It is very Batesian in its general appearance; and a purchaser pays a good price for it. C. scutellaris is blue: the elytra are adorned with longitudinal stripes of blue, green, and red; and the same colours are observed on the head and thorax. C. Gruttenus is a variety of a purple colour, and the elytra are very finely punctured. This species is very common. CHRYSONELLUS, a genus of Dipterous insects. [Lepidoptera.]

CHRYSPHORA, a genus of Coleoptera insects, of the section Lamellicornis, and family Xyphilidae. The principal generic characters consist in the immense size of the hind legs of the males. The sternum is produced into a somewhat pointed process between the second pair of legs; the posterior thigh of the male is very thick; the tibiae are curved and produced at the apex internally into a long bent fleshy outgrowth, the thigh and the tibiae being considerably shorter; the front tarsi are abruptly terminated; the outer claws of all the tarsi are larger (in both sexes) than the inner; they differ in the male, however, in being broader than in the female, and those of the anterior pair of legs are longer. The fore legs are very long, and the insect has the power of bending them under so as to fix its points beneath a projection of the fourth joint of the tarsi; they are probably used for clinging to the slender branches or leaves of its food. Most of the species of this genus are known—Chrysophora chrysochroa; it is of a rich metallic green colour; the head, thorax, and scutellum are shaded; the elytra are russet throughout; the tibia of the hind leg is of a brassy copper-like colour; all the tarsi are bluish-black. The length of the hind leg of the male exceeds that of the body, which is about one inch and a half; the female is rather less. This beautiful insect inhabits Columbia.

CHRYSPHORS, a genus of fish of the family Sparidae, and order Anthophytygini. The species of this genus are distinguished from their allies by having their four rows of teeth above and below; those in front are somewhat conical, and the remainder are molars of the same size. The body is deep; the operculum is covered with scales; branchiostegal rays, six.

One of the species of this genus, the Gilt-head (Chrysophora aurata), is the chief food fish of the coast, but it is here extremely rare. One of its chief localities appears to be the Mediterranean. It is about twelve inches in length; the body is somewhat oval, tapering towards the tail; and the greatest depth (which is about one-third of the whole length) is a little behind the gill operculum, which part the dorsal fin commences, and continues (in a specimen twelve inches long) to within about an inch and a half of the root of the tail. The pectoral fins are long and rather pointed. The body is deep, the sides yellowish grey above and silvery beneath; numerous longitudinal yellow, coloured bands adorn the sides of the body, and there is a semilunar band of the same colour between the eyes.

CHRYSPHYLLUM CURATO, a West Indian fruit, commonly called the star apple, and belonging to the natural order Sapotaceae. Like the rest of its kindred, it abounds in a sweet harmless milky juice, that flows most copiously when the tree is beginning to mature its fruit, which grows in a moderately sized spreading tree, with very slender flexible branches. The tree is not much above four feet in height, with a round head, and is covered beneath with a remarkably satiny ferrugineous pubescence. The flowers grow in small purplish bunches, and are succeeded by a round, fleshy, smooth fruit, of a pale greenish or whitish colour, which, when ripe, is about an inch in diameter, and contains five false joints or divisions; eyes of a golden green colour, with purple lines or spots.

Eight ornine species of this genus have been discovered, two of which are rare in the female, and both possess

Chrysops coarctatus is rather larger than the common house-fly, the expanded wings measuring about two thirds of an inch. It is black; the male has a yellow spot on each side of the first segment of the abdomen; the female, in addition to these, has also a yellow spot on the T. 229.

CHRYSPHORAS: Green Quartz. [Silicon]

CHRYSPHYLLUM CURATO, a West Indianfruit, commonly called the star apple, and belonging to the natural order Sapotaceae. Like the rest of its kindred, it abounds in a sweet harmless milky juice, that flows most copiously when the tree is beginning to mature its fruit, which grows in a moderately sized spreading tree, with very slender flexible branches. The tree is not much above four feet in height, with a round head, and is covered beneath with a remarkably satiny ferrugineous pubescence. The flowers grow in small purplish bunches, and are succeeded by a round, fleshy, smooth fruit, of a pale greenish or whitish colour, which, when ripe, is about an inch in diameter, and contains five false joints or divisions; eyes of a golden green colour, with purple lines or spots.

Eight or nine species of this genus have been discovered, two of which are rare in the female, and both possess...
with two diverging black lines in the middle; the wings are whitish, the anterior border is broadly margined with black, and there is a broad black band near the middle: the body is nearly all black.

Most persons undoubtedly have been troubled more or less with the insect above described when walking in the country, especially in the neighbourhood of water. Three or four will sometimes settle on us at the same time, and if we try to put them off, a sharp prick caused by their thrusting the proboscis through the sleeve; the bite however is not venomous, and for the slight pain caused by it we are repaid by a sight of the little creature, which can be more beautiful than its large eyes, which seem to reflect all the colours of the rainbow: they may be described as green with purple spots, but the green varies to golden and red hues in certain lights. When it first settles this fly is not easily caught, but it soon becomes so engaged in its occupation that it may almost be touched before it will move.

The other British species is the *Chrysoptera relictus*, which very closely re-embles the one just described.

There is another genus of flies closely allied to Chrysops, and having the same habits; we mean the genus *Hematoptera*, the principal characters of which are:—Antennae with the basal joint generally long, thick, and downy in the male, conical and without down in the female; third joint of the palpi long and slender in the males, shorter and longer than the others taken together; no ocelli; wings at rest sloped like a roof.

*Hematoptera plautia* is about the same size as the species described; the wing is green, banded under the part purple, with yellow markings; the thorax is grey, varied with black; the body is black, with a central yellowish longitudinal line, and there is a row of spots of the same colour on each side of this; the wings are greyish, spotted with brown.

Four species of this genus are found in England; one just characterized is very common.

**CHRYSOSTOM.** [Don]  
ST. JOHN (σπυριδών ο, i.e. the golden-mouthed), the most renowned of the Greek fathers, was born of noble and very opulent parents, A.D. 334 (some writers say 341 and 347), at Antioch, the capital of Syria. In early life he lost his father Socrates, who was commander of the imperial army in that province; and his mother Anthas, from the age of twenty, remained a widow, in order to devote herself wholly to her son's improvement and welfare. He was educated for the bar, and studied oratory at Antioch under Libanius, who declared him worthy to be his successor, were it not that the Christians had made him a proselyte. He was taught philosophy by Andragathius, and spent some time in the schools of Athens. After a very successful commencement of legal practice, he relinquished the profession of law for the gospel, and at this time he heard the preaching for many years. While he was extremely prevalent, and Chrysostom retired to a monastery in a mountain solitude near Antioch, where, in opposition to the pathetic entreaties of his mother, he adopted and encosed himself with the ascetic and rigid austere during four years. The manners and discipline of the authorities with whom he associated resembled, as described by some of the *Ecclesiastical* events, in fasting, praying, reading, subduing on vegetable food, maintaining silence and solitude, and discarding all consideration of meus and tuam. (Homil. 72, on Math., and 14, on Timoth., tom. ii.) At the age of twenty-three he was baptized by Meletius, bishop of Antioch, after which he withdrew into a solitary cavern, where he remained for a long time, but not without change about two hours, in committing to memory the whole of the Bible, and in severely mortifying his carnal affections. Having neither bed nor chair, he repelled by a rope slung from the roof, he would sit on the ground and receive the sun's rays, and the same air of the place reduced him at last so ill a state of health, that he was obliged to return to Antioch, where, being ordained a deacon by Meletius (A.D. 381), he commenced his career as a very eloquent popular preacher, and published several of his sermons in verse, and two commentaries on the Bible,而又被拥戴为教父。五十年后，他成为教会长老，并且在334岁时被封为主教。他的声誉作为教会的卫士和领袖，特别是在康斯坦丁堡，他非常受人们尊敬，并在幕后承担了维护城市的职责。Chrysostom在这个城市中的角色和重要职位，是通过他的声誉和威望来实现的，这些声誉和威望是通过他与人的交谈和通过在神职人员的职责中表现出来的。
mass of the people. He was a pathetic advocate of the poor: his pulpit orations were calculated to excite their strongest emotions. When it was known therefore that their favourite preacher was banished, an alarming insurrection ensued, which rolled on with such fury to the palace gates, that even Eudoxia entreated the emperor to recall Chrysostom, for already the mob had begun to murder the Egyptian ambas- sador, and the philanthropists in the streets, who had days elapsed before Chrysostom was brought back to Constantinople. The Bosphorus, on the occasion, was covered with innumerable vessels, and each of its shores was illuminated with thousands of torches. The archbishop however gained his hearers' confidence, and, a spacious hall in the palace of the empress was set up near the great Christian church, and honoured with the celebration of festive games, he preached in very uncourteous terms against the ceremony, and compared Eudoxia to the dancing Herodias longing for her head on a platter in a principal theatre. His offensive conduct was the calling of another synod, which ratified the decision of the former, and again Chrysostom was arrested, and transported to Cucusus, a place in the mountains of Taurus. Another uproar was made by the mob, in which the great church and the adjoining senate- house were burnt to the ground. The death of Eudoxia shortly afterwards, and a tremendous storm of hailstones, were regarded by the people as the avenging visitation of heaven upon the apple-pudding crowd, at whom Chrysostom's most faithful adherents, refused to acknowledge his successor, and formed for some time a schism, under the name of Johannites.

Chrysostom then, being in a kind of Babylonian captivity, and being still possessed of abundant wealth, he carried on very ex- tensive operations for the conversion of the people about his place of banishment. His enemies soon determined to remove him to a more desolate tract on the Buxine, whether he was compelled to travel on foot, beneath a burning sun, which, in addition to many depredations, produced a violent fever. On arriving at Comana, he was carried into an oratory of St. Basil, where, having put on a white surplice, he lay for five days, with proof of remarkable mental energy, that in the midst of duties so humble and merely manual, he contrived, by unassisted application, to acquire a general knowledge of literature and science, and to become a distinguished writer on subjects of religious and moral controversy. The discussion which arose on the publication, in 1710, of the Arian work of Whiston on Primitive Christianity, induced Chubb to write his 'Supremacy of God the Father asserted,' consisting of eight arguments from Scripture, proving the Son to be a subservient and inferior being. It was published in 1715, under the immediate superin- tendency of Whiston, and by opposite parties was equally extolled and condemned. Chubb repulsed to his Trinitarian opponents in 'The Supremacy of the Father vindicated.' In 1720 he published 'A Collection of New Sermons,' in a handsome 4to. volume; containing, besides the two works just mentioned, thirty-three others on faith, mysteries, reason, origin of evil, persecution, liberty, virtue, government, and similar religious topics. In one of these letters to Gay, after speaking of Chubb as 'the wonderful phenomenon of Wilshire,' says of this volume, 'I have read it through with admiration of the writer.' Among the eminent individuals who admired Chubb, and sought to be of service to him, was Sir Joseph Jekyll, master of the rolls (the early patron of bishop Butler), who appointed him steward, or supervisor, of his house in London; an office of which the duties appear to have been as little connected with the practice of law, as that of a tallow-chandler. Accordingly some of the witty adver- saries of Chubb made themselves extremely merry with the grotesque appearance of his short and fat figure as he conducted at his right hand a pipe and at his left a tie-wig and a dress-sword. After a year or two he relinquished his stewardship, returned to Salisbury, and to the last 'delighted in weighing and selling candles.' (Kippis's Biog. Brit.) His next publications were 'A Discourse on Reason, as a sufficient Guide in matters of Life and Death; on Moral and Positive Duties, showing the higher claim of the former,' 'On Sincerity,' 'On Future Punishment and Eternal Punishment;' 'Inquiry about Inspiration of the New Testament.' A few years after his death, 1739, his 'Vicerius Suffering and Intercession refused;' 'Time for keeping a Sabbath;' and several other tracts upon in- teresting points of religious dispute. In 1739 appeared his

Great and the works of Chrysostom, vol. folio (editio optima). (Mémoires de l'Acad. des Inscrip., vol. xii., p. 474, and vol. xx., p. 197; also Jortin, Eccl. Hist., vol. iv., p. 165, et seq.) The 'Gospel Book' of St. John Chrysostom concerning the education of children, 12mo., p. 1659, is translated from a MS. found in the cardinal's library at Paris, 1656. The precepts are very curious. The boy is to see no female, except his mother; to hear, see, smell, taste, and touch, nothing that is not wholesome, and to read the 'Story of Joseph' frequently, and to know nothing about hell till he is 15 years old. Chrysostom is described by his biographers as being short in stature, with a large bald head, with prominent, deep-set eyes, a large round nose, a scared countenance, hollow cheeks and sunken eyes, having a look of extreme mortification, but in his movements remarkably brisk, energetic, and smart. He was strongly attached to the writings of St. Paul. His surname Chrysostom was not bestowed until he arrived in a principal theatre. His offensive conduct was the calling of another synod, which ratified the decision of the former, and again Chrysostom was arrested, and transported to Cucusus, a place in the mountains of Taurus. Another uproar was made by the mob, in which the great church and the adjoining senate- house were burnt to the ground. The death of Eudoxia shortly afterwards, and a tremendous storm of hailstones, were regarded by the people as the avenging visitation of heaven upon the apple-pudding crowd, at whom Chrysostom's most faithful adherents, refused to acknowledge his successor, and formed for some time a schism, under the name of Johannites.

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True Gospel of Jesus asserted." Chubb would explain what was the Gospel itself, and what was he also required thereby, that, as it is said to have been preached to the poor by the founder of Christianity himself and his disciples, antecedently to many transactions of his life, and of course to the events of his death, it could not be a history of his own; nor were the sufferings of the Saviour, the moral reformation which he announced as a rule of conduct, and consequently that the several historical accounts of these transactions and events, with the doctrines founded thereon, are not the gospel, nor any part of it; and, moreover, nothing else forms its nature and object as the subsequent establishment of state hierarchies, and the metaphysical subtleties: since introduced by the political managers of Christianity. In the following year, 1740, Chubb published "The Present State of this Voluntary Church and of the Discourse annexed to it, against the doctrine of a particular Providence. The following are some of the answers of his opponents: "Constitution of Chubb's True Gospel," by the Rev. Jos. Halley; "Remarks on Chubb's True Gospel," by the Rev. Joseph German, Wightwick, 1740; "Answer to Chubb's True Gospel," by a Sufferer for Truth; "Letter to Chubb on his True Gospel," by Richard Parker, 1739; "Remarks on Chubb's True Gospel," and "Disquisitions on Chubb's Discourse," by George Flechner, 1738; "Remarks on Chubb's Vindication of his True Gospel," by the Rev. C. Fleming, 1739. To these Chubb replied in his "Enquiry into the Grounds and Foundation of Religion," 1740; in which he advocates the priority of a natural revelation. This occasioned a "Vindication of the Revealed Religion," in answer to "Chubb's Grounds," by John Phelps, 1740. In "A Discourse on Miracles," published 1741, Chubb contends that they furnish no proof of a future resurrection. This discourse elicited "Animadversions on Chubb's Discourse," by the Rev. C. Fleming; and "Examination of Chubb's Discourse," by a Layman, 1742; "An Enquiry concerning Redemption," in 1743, and "Four Dissertations," in 1746, on portions of the Old Testament history. The several works of Chubb have been answered in "Truth and Modern Deism at variance, shown by a careful Examination of Chubb's Four Dissertations," by the Rev. C. Fleming, 1746. In February of the same year, 1746, Chubb, according to his desire, died suddenly at the age of 68, as he sat in his chair. Though he left several hundred pounds, his income was to the last so scanty, that it is said he often thankfully accepted from Chiseldon, the eminent surgeon, the present of a suit of left-off clothes. His posthumous works, consisting of numerous tracts similar to those already mentioned, were published in 2 vols., 1748, and were answered by Fleming, his indefatigable opponent, in "True Deism the Basis of Christianity; or, a Vindication of Chubb's Posthumous Works." Dr. Loland, in his "View of Deism," 1750, voted above 80 pages to remarks upon them. For notices of Chubb, see also bishop Law's "Theory of Religion." The writer of the article in Chalmers' "Biographical Dictionary," in 1858, says, "Chubb's Posthumous Works," 1801, 1 vol., 12mo, has been praised. There are also several churches and convents, with domes and steeples, which from a distance give it the appearance of a large town. But the place is of moderate extent, having only a population of 26,000. It has an appearance of neatness and cheerfulness not very common in New America. Since it has become the seat of the legislature and government of the republic, great changes have been effected. The palace in which the archbishop of Charleston was located is now the capitol of the republic. Some of its well-built convents have been converted into institutions of education, one having been given to the university, and another turned into a mining-school. The city has a university and a college, and a hospital. A steamer from Charleston to Savannah by the Savannah and Manatee, both of which were founded in 1707. (General M'Culloch.)

CHURCH, or KOrk, which is precisely the same word in a varied orthography, is supposed to be the Greek word ἡ κοινούς (kurioús), a derivative of κύριος (lord), one of the most potent words in the Semitic system. It is one of the Saxon adoptions from the Germanic. Κυρίος is an adjective, and we must understand it some word denoting flock, or house, the Lord's flock, the

CHUDLEIGH. [Devon.] CHUPLANEEER, a subdivision of the province of Guza- rat, situated between 23° and 24° N. lat., and between 72° and 73° E. long. It is bounded on the north by the desert of Kharwar, and on the south by the sea. At its greatest breadth it is about 150 miles long by 80 or 90 miles wide. It is about 180 miles long by 80 miles wide. It is on the east by Mulwa; and on the west by the district of Baroon. This territory is principally possessed by the British government and the Guzwar, but on the decline of the Mogul empire, some portion, including the town of Chum- paneere, fell into the hands of the Mahrattas, and there are besides a few petty chiefs, or Rajails, who acknowledge a limited kind of dependence upon the actual possessors of the sacred mountain upon which the ancient town and fortress of Chum paneer was founded. This mountain rises out of an extensive plain to the height of about 2500 feet. Chum paneer is described by Abul Fazl as a fort upon a lofty mountain, the access to which, for up towards of two centuries, was exceedingly difficult, and there are gates at several parts of the mountain leading to the fort. It is said that the inhabitants "to consist of 1000 steps made by a woman carrying a jar of water on her head and a child in her arms." At the northern base of the mountain are the remains of a city, supposed to have been the capital of a Hindu princely state before the Mohammedan invasion. The city was taken in the year 1869 of the Hegira, answering to 1455 of the Christian era, by Mahmood, the Mohammedan ruler of western Guzrat. Half a century later it was taken by the emperor Akbar. It was finally taken by the Mogul emperor in 1569, and is still in the possession of the Moguls. In 1857 it consisted principally of Hindoo and Mohammedan dwellings. The town does not contain at present more than 200 and 300 inhabited houses, but the ruins of ancient buildings extend for several miles on each side of the mountain: there are two forts on the mountain; the upper one is considered to be of great strength. (Ayn i-Abbati; Report of Committee of House of Commons of 1832, political division.) CHUQUISACA. [Bolivia.]

CHUQUISACA, the capital of Bolivia, in South Ame- rica, is situated near 19° S. lat., and between 63° and 65° W. long. It lies in one of the valleys which descend from the eastern declivity of the eastern chain of the Bolivian Andes. The valley has no waters of its own; it is drained by the stream from the larger valley of the sea: to which circumstance its delightful climate must be ascribed. This valley contains the Cachamay, a tributary of the Piquemayo, which is a branch of the Paraguay, one of the branches of which formerly called Charcas, or La Plata, and, at a certain period of the civil war with the Spaniards, Sucre, from the name of the general who gained the victory of Ayacucho, is on the whole well built, and has a magnificent cathedral, with large towers rising from each angle. There are also several churches and convents, with domes and steeples, which from a distance give it the appearance of a large town. But the place is of moderate extent, having only a population of 26,000. It has an appearance of neatness and cheerfulness not very common in New America. Since it has become the seat of the legislature and government of the republic, great changes have been effected. The palace in which the archbishop of Charcas once resided has been superseded by a building of government. Some of its well-built convents have been converted into institutions of education, one having been given to the university, and another turned into a mining-school. The city has a university and a college, and a hospital. A steamer from Charleston to Savannah by the Savannah and Manatee, both of which were founded in 1707. (General M'Culloch.)

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Lord’s house; the two senses in which, kirk, or church, is used.

Of church, as denoting an edifice appropriated to Christian purposes, we treat in a separate article. We have now to speak of it as a term used to designate bodies or communities of men, when contemplated under the aspect of bound persons who are followers of the Lord Jesus Christ. Whether they are in Scotland, and in places where the word church is in use with as much completeness as our limits will allow. The word church has been used from the most remote period to represent the Greek term ἐκκλησία (Ecclesia), which was adopted into the Latin language without any change, and which gives us our words ecclesiastes and ecclesiastical, which correspond to the Saxon terms church-men, and of churchmen. The meaning of the word ecclesia, as so used, was a corporation of assembled people, and in this or the somewhat modified sense of community it was adopted by the writers of the New Testament.

The whole community of Christians thus constitute the church. This is the sense in which the word is most commonly used in the New Testament: as when it is said that “the Lord added daily to the church such as should be saved” (Acts ii. 47); “Head over all things to his church” (Eph. i. 22), and “He that is sent as an angel of the churches” (Rev. i. 1). And when our Lord said, “Thou art Peter, and upon this rock I will build my church” (Matt. xvi. 18), he contemplated that majestic assembly, the multitude, whom no man can number, who in ages to come should form the kingdom of nations, and which had been used by the Apostles, it comprehended all the disciples of Christ, without regard to questions which divided the opinions of Christians even in the earliest times, so it is often used to denote the whole body of Christians, not excluding any peculiarities in their church-order and ritual, or however they may understand the instructions on some points of Christ and the Apostles.

But it soon came to be regarded as essential to the idea of the church, having the form of a visible society, a species of mutual pledge, and form a compact and unified body. Certain outward forms of profession came to be regarded as requisite for every member, such as baptism, and taking part in the Lord’s Supper; certain officers, as bishops, pastors, and deacons, were regarded as essential; as certain uniform services, and the acknowledgment of certain propositions as containing a just exposition and summary of the doctrine of Christ and the Apostles. A continued effort was not presented in the church, in the history of the church of Christianity to bring the body of professeur-sing Christians into this state of consistency and uniformity. And to give the greater effect to the effort, the bishop of Rome, who was regarded as the direct successor of St. Peter, and who controlled the church, received by almost universal consent a kind of headship, or supremacy, and about him was gathered a council, consisting of other bishops, pastors, and deacons, forming a supreme authority in this compact community, and a court of ultimate appeal. Nearly the whole body of professing Christians in the states of western Europe were, by various means, brought to enrol themselves in this great confederacy, and they formed for many ages the church, a numerous and in the main a well-ordered and well-governed community. At the Reformation, certain states of Europe separated themselves from this great community of Christians. The separation was made on various grounds: objections to the tyranny of the Papal authority, and to their assumption of powers not sanctioned by reason or Scripture; to the corrupt lives of some of the persons near the head of the church; together with an opinion that the ceremonies enjoined in the rituals were superstitious, if not idolatrous; and that many things were taught to the people as Christian virtues which not only had no countenance from Scripture, but which were opposed to the plain teachings of Christ and the Apostles. Many of the more learned and more virtuous reformers, by whom the movement was commenced, were men who, by the reformation of it in doctrine and discipline, leaving the community of believers in the compact and, in the main, beautiful consistency and order in which they found them. But the resistance which was made to it did not all arise from these causes. Other things, rendered this impracticable, and no hinging remained for the states in which the call for reformation was the loudest, and where a strong sense of the corruption of the Roman Catholic system had possessed the minds both of rulers and people, but to break off from the great confederacy, and to remain entirely alien from the spiritual allegiance to the pope, the great head of the church. Hence arose another use and application of this term church, and we hear of the church of Geneva, the church of England, of the church of England, of the church of England, of the church of the United Netherlands, of the church of each Christian member of those political confederacies, or belonging to those nations, when regarded under the aspect of being professed believers in Christ.

The expediency and the right of particular nations thus to separate themselves from the great confederacy of Christians, and to establish churches of their own, have been the subject of controversy. The Protestant, however, regards the point as settled, and in each of the three states above mentioned, and in other Protestant states, there are national churches established, founded on the public law, and regulated by the same public will which regulates affairs purely political and secular. Those national churches of Protestantism vary among themselves on almost every point both of order, ritual, and doctrine according to the peculiar opinions of the persons who happened to possess the chief influence at the time when the new form, and order were established, or who at a subsequent time, and in different circumstances, influenced the church in any of those points. Hence there is no common church of Protestants. Each Protestant nation has its own church, and regulates its own spiritual affairs without communication with other Protestant people. It is a matter of national convenience. The people of Scotland, however, are not found to comprehend all persons who in their political character are members of the respective nations. In the English, the Scottish, and other Protestant nations, there are many persons who continue to profess that they adhere to the ancient and great community, that they are members of the Christian church in the second of the senses of which we have spoken, and who abstain from connecting themselves in any manner with the national church, which they look upon as a branch of the great cathedrals or universal church. Again, there are a great multitude of Protestants who do not regard themselves as members of the church of England or of the church of Scotland; some who object to the frame and order of the churches as in England and being episcopal, and in Scotland being presbyterian; some who have scruples respecting points in the public service book of the church of England; some who regard the Articles of Faith of the church of England, as not agreeing with the Church of Holy Scripture; some who think that the church as at present constituted does not leave the ministers sufficiently at liberty for the influential performance of their duties; and some who think that practically the system is not far from corresponding to the churches which they regard as the main object in every appointment connected with the church. We touch but upon the broad and leading objections. But there are many also who separate themselves from the national union because they object to the principle of a national church. They contend that there should be no such church regulated by councils and parliaments, but that the believers in Christ should be left at entire liberty, each person for himself and his family, and not depend upon others, if the see proper to do so, and thus to form Christian communities on principles and for purposes such as each individual might approve for himself. The Congregationalists or Independents of England, the most numerous of them in the English church, in the development of their church order, and discipline, issued by authority in 1633, avow the principle that each society of believers associated together for religious purposes is properly a Christian church. The question about which there has been no doubt, whether such a society is authorized to collect on other subjects; or, whether there shall be no expression of a common will, but each person be left to receive or neglect Christianity, and to make his public profession of it in whatever way seems to him to be best. These points enter in the main to the solution of this question, but we may state the main arguments briefly thus:—In behalf of a national church it is contended that
without some public provision there would soon be many parts of the country without Christian ministers at all; that by securing an order of well-instructed ministers, there is the best preservative that can be devised against the prevalence of injurious superstition and dangerous errors; that affairs of such importance as these should be subjected to the consideration and direction of the enlightened mind of a people; and that practically from the moment that property is acquired by any body of professing Christians, that body must become amenable to the state, must apply to the state for direction whenever questions arise respecting it, so that it is in fact impossible entirely to disjoin affairs of religion from affairs of state. On the other hand, it is contended that to set up articles of faith and forms of worship is an injurious invasion of the rights of Christians; that to connect the profession of particular opinions with temporal advantages is unfavourable to the progress of inquiry and of truth, and has a tendency to produce simulation in Christian ministers; that the system leads to political subserviency, and fosters a worldliness of spirit; and that practically the system is not acceptable to the nation, as is evinced by the multitude of the persons who, notwithstanding the losses and inconveniences to which in consequence they subject themselves, yet do not belong to the church.

The Methodists do not, we believe, speak of themselves as a church; but their system is in all its great features that of a Presbyterian church.

We have now gone through the principal senses in which this term church is used when it is applied with any propriety. But we cannot conclude without noticing one other sense in which the word is often used, and we notice it to condemn it as mischievous, and in every point of view incorrect and improper. We mean when church is used to denote the officers of the church, the bishops, priests, and deacons; a use of it neither sanctioned by etymology nor the usage of primitive times, and which is calculated greatly to mislead, as things which are predicated, and truly predicated, of the church in its proper sense of a community of believers in church order, and appointed with proper church officers, may be transferred inadvertently to church when it is the officers only who are meant. ‘The interests of the church,’ for instance, a very common phrase, are properly the interests of the great English community looked upon in the aspect of its relation to Christianity, not the interests of the officers or ministers only. Their proper designation is not the church, but the clergy.

CHURCH. An ecclesiastical edifice, sometimes built after the model of a modern basilica, and sometimes in the form either of a Latin or a Greek cross. The basilicas form however must be considered as belonging to the churches
of the early Christians. The origin of the difference between the form of the Latin and Greek cross belongs to the period of the schism in the church. The Latin was in common use until the Reformation. Some resemblance to the basilica form may be traced in modern churches erected since the Reformation to the present day. The most perfect resemblance to the church basilica is observable in the cathedrals of Europe, and especially in England. Attached to these edifices there are still many of the various buildings which formed the monastic establishments of former days. A church or cathedral with a Greek cross has the transept as long as the nave and choir: the greater part of the Greek churches are built in this form.

The Latin cross has the nave much longer than the transepts and choir. Many of our modern churches consist of only one long nave, with an altar at the east end: the cross form, or transept, is in some instances scarcely perceptible, and in others entirely omitted. In the nave of the church, towards the east end, are placed the pulpit and reading-desk, sometimes on one side, and sometimes in the centre of the nave. A sounding-board is often constructed over the pulpit in order to assist the voice of the preacher. The altar end of the church is raised by a step or steps, and is enclosed. The font is sometimes placed near the entrance and at others near the altar: and the stoup, or small stone basins, set in niches and originally intended for holy water, are often seen in village churches. At East Dereham these stoups are on the exterior of the porch. Near the altar in antient churches there are sometimes three niches with seats in them raised each a step above the other.

Churches are of five classes, metropolitan, cathedral, collegiate, conventual, and parish churches. The term cathedral is derived from cathela, a seat, from the seat or throne of the bishop being placed therein. Cathedrals are the chief ecclesiastical structures of the dioceses in which they are situated.

Almost every cathedral is varied in plan, although the leading features, the nave and choir, are found in almost all. The plan usually consists of a gallery, or chapel, at the principal entrance; the nave, or main body of the church; the side aisles, which do not rise so high as the nave, and are placed on each side of the nave, sometimes with chapels, at other times without, between the openings formed by the windows; the choir, or place for the ceremonies of the church; the transept, or division at right angles to the end of the nave next the choir, which projects on each side, and forms a cross on the plan. Some cathedrals have a double transept, and the transepts have often aisles. At the end of the choir is the high altar, behind which is usually a lady chapel, or chapel to the Virgin. The choir end of a cathedral is sometimes terminated by an apsis, or semicircular end. The term apsis was originally applied to the whole choir, or part raised off from the nave, like the end of a church basilica. Along the sides of the choir are ranged richly-carved seats, ornamented with arches, pinnacles, and tracery, carved in oak. The bishop's seat, richer than the others and raised above them, is on one side, at the eastern end. The choir has also side aisles. Cloisters and a chapter-house are usually attached to English cathedrals, but the latter are rarely met with on the continent, the chapters being usually held in the cathedral, or in a chapel within the cathedral or abbey. The minor parts of a cathedral are the muniment room, the library, the consistory court, the vestries of the dean and chapter, minstrels' chapels, a font, and a minster's gallery.

Beneath the body of the cathedral there is usually a crypt, or low basement, supported on arches springing from thick columns, as in Canterbury cathedral and others. Both externally and internally the antient cathedrals of England, France, and Germany display all the luxury of Gothic architecture. Like all ecclesiastical buildings, they stand with the altar towards the east, and the principal entrance to the west; the transept is placed north and south. At the point of intersection of the transept with the nave there is usually a lofty tower, sometimes surmounted by an elegant spire, as in Salisbury cathedral. Sometimes the principal or western front has a tower at each angle, which in some instances are also terminated with spires. The nave of a Gothic cathedral is supported by clustered columns, arched from one to the other, over which there is usually a row of small arches forming a gallery, which is called the triforium, and above are windows called clerestory windows. The aisles are lighted by windows placed between the openings of the arches of the nave; and, externally, the buttresses of the aisles often rise, supported on an arch, to the wall of the nave: these are called flying buttresses. The exterior walls of the cathedral, with its towers, are generally decorated with buttresses, surmounted with pinnacles; and between the buttresses are the openings or windows of the nave and aisles. The ceiling of the nave is sometimes of stone, and covered with tracery formed by the intersection of the arches which spring from the clustered columns of the...
nave. The west or principal front is usually the most highly decorated with traceries, pinnacles, and sculptured figures. In the side aisles, and the aisles of the choir, there are often chapels richly designed, which contain the tombs of the family which built the church. There are also tombs of monarchs, bishops, and nobles, with monuments of various epochs, from the early Norman period of our history to the present time. The chapter-house and cloister are large and important features in many of our cathedrals. The finest chapter-houses in England are those of canons, situated on the plan of a round from the entrance, and the interior decorated with sculpture, and in some instances with painting. In some chapter-houses a column, or cluster of columns, rises from the centre of the room, from which spring the sides of pointed arches, meeting the other half of pointed arches rising from the column or columns at the angles of the walls.

The chapter-house of Salisbury cathedral contains some of the finest specimens of the kind of sculpture usually found in such buildings.

The cloisters are rectangular enclosures, with a richly-ornamented and arched gallery running round the sides, and a wall forming the back of the enclosure: the arches, which are filled with traceries, look into an area, where probably the monks were formerly buried. There are also cloisters in some of the colleges of Oxford and Cambridge. The cloisters seem to be very similar to, and perhaps derived from, the Campo Santo at Pisa. The Campo Santo at Pisa appears to have been originally a large cloister, similar to our cathedral cloisters. This part of the ecclesiastical structure may have been used not only for the benefit of their souls, but also the cloisters were probably glazed in Italy: they are often decorated with frescoes, by celebrated masters. Chantryes, or chapels for singing mass, were formerly founded by the pious for the benefit of their souls. They are often placed between the pillars of the nave, as the chapel of Canterbury at Winchester: the effigy was also placed within the chantry. Some are complete chambers formed in the aisle of the church as at Ely, and others are independent of the cathedral. In some great and modern cathedrals and large churches the principal feature is a dome, as St. Sophia's at Constantinople, St. Paul's, London, St. Peter's at Rome, and St. Mark's at Venice, Santa Maria de' Fiori at Florence, the Pantheon at Paris, and many others.

Some parish churches have very much the form of a cathedral, as Christ church, Hants. The chancel of a church, which is often the property of a layman, corresponds in situation to the choir of a cathedral. In some great and modern cathedrals and large churches the principal feature is a dome, as St. Sophia's at Constantinople, St. Paul's, London, St. Peter's at Rome, and St. Mark's at Venice, Santa Maria de' Fiori at Florence, the Pantheon at Paris, and many others.

The ancient cathedrals of England are Bristol, Chichester, Canterbury, Carlisle, Chester, Durham, Ely, Exeter, Gloucester, Hereford, Lichfield, Lincoln, Norwich, Oxford, Peterborough, Rochester, Salisbury, Wells, Winchester, Worcester, and York. St. Paul's, London, is modern. These cathedrals have several edifices, called minsters, which possess a cathedral character both in their construction and in their uses, as Westminster, Beverley-minster, and Lichfield, which still retain the name of minister. Abbey churches are called a cathedral character.

The cathedrals of Norwich, Westminster, Canterbury, Peterborough, and Gloucester, have a semicircular apse. Ely has a centre tower and lantern, and Wells, one at each end, much higher: there had two towers at the angles of the western entrance, but only one remains. The style of the building externally is Norman and early English. The nave is a beautiful specimen of Norman style. The elevation consisting of three tiers of arches are round each pier. The elevation of the choir internally presents a superb design of decorated English. It was erected, with the equally beautiful chapel of St. Mary, between the years 1321 and 1349. The tower and lantern, supported on eight large piers, were unique until the erection of St. Paul's. Ely lantern is said to have suggested to Sir C. Wren the idea of the lantern over the dome of St. Paul's. This cathedral has the lady chapel at one side, and not at the east end.

Salisbury is in many respects one of the finest English cathedrals, and is a perfect example of the purest Norman style. It has two transepts. The lady chapel has been, perhaps injudiciously, thrown into the choir. There is a porch entrance on the north side, leading into the nave. The cloisters, which are very perfect and complete, form a great part of the present designed chapter-house. There is a small muniment-room attached to the south end of the second transept. The tower is supported by four massive piers, surrounded with smaller columns: the tower is surmounted by a spire; the whole height is 404 feet. This spire was added some time after the tower was finished; and the weight of it has considerably warped the piers, in consequence of which the summit of the spire is near two feet out of the perpendicular.

Hereford cathedral has a nave, four aisles, two transepts, a choir, a lady chapel, cloisters, and a chapter-house. The nave and chapter-house are in ruins. The architecture of the nave is Norman. The east end is built in the early English style. Underneath the lady chapel is a crypt, and at the intersection of the nave there is a very large square tower.

Worcester cathedral is very similar in plan, having two transepts, but no side aisles to the larger transept which intersects the Chapter house. The cloisters are built in a style like those of Hereford; and at the intersection of the nave there is a handsome tower. The interior of the nave is in the early English style. The chapter-house is in the Norman style.

Wells cathedral, in plan, differs very much from all the rest. The chapter-house is on the north side of the church: the cloisters are in the usual place, the south, but they have only three sides; the entrance to them is from the outside. Here we have two western towers, a tower, and a transept, with side-aisles; and at the end of the choir a very elegant lady chapel, with a termination at the east end, somewhat similar to the apsis of a basilica. The architecture of the nave is early English: the towers appear to be much later in style. There is a crypt under this cathedral.

Exeter cathedral, founded in 932, rebuilt in 1112, has a chapter-house, used as a library, in the form of a parallelogram, the sides of which correspond with the external line, like it, is formed of a group of towers, each from the side of the cloisters of this cathedral were destroyed during the Commonwealth. The singularity of the design of this edifice consists in its having two towers, in the Norman style, one at the north and the other at the south end of the transept; the nave is 120 feet long, and the central portion placed at the nave, and forms the entrance at the west end, and contains the belfry. One of the most magnificent and best preserved parish churches in this country is St. Cross at Winchester. Norfolk and Suffolk possess many fine churches, some of which are remarkable for the lightness of their construction. (View of Collegiate Churches, by J. P. Neale; Ferrey's Christ Church, Hants).

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without aisles. Two large chapels on the sides of the choir are attached, and a rectangular chapter-house, are attached on the south side.

Hereford cathedral has an aisle, a north porch, double transepts, a choir, lady chapel, cloisters, and remains of an irregular chapter-house.

Carlisle cathedral, formerly a priory, is small, and inferior to the other cathedrals.

Chichester cathedral has a nave, side aisles, transepts, a choir, lady chapel, a new library, and an irregular chapter-house. There is also an isolated bell-tower, like the Italian campanile in principle. This cathedral has an elegant spire.

Chester has a nave, side-aisles, and south transept, now a parish church; but lady chapel is also attached. There is an aisle on the north side of the transept; and a chapter-house with parallel sides terminated at two ends with semi-elliptical figures.

Canterbury has a nave, and a cloister on the north side leading to the chapter-house, which is in the form of a rectangular hall; double transepts, choir, and side chapels. At the end of the choir is a long and spacious, with a large circular apse, and a circular chapel beside, called Becket's Crown. The font in a circular chapel, leading from the north transept. To the east of a library is a large crypt, and beneath the entire cathedral are the finest in the kingdom. There are three towers, one in the centre, and two at the west end.

York, on a very elegant plan. The transept has double aisles; there is a long octagonal chapter-house leading from the north transept, a superb centre-tower, two western towers, a record-room, and consistory-court. There is also a small crypt.

Lincoln has a regular plan: the cloister was rectangular, but both it and the chapter-house have been destroyed. The transept is remarkable and unique, on account of the aisles running round the three sides. A small lady chapel is attached to the east end, and there are extensive crypts under the cathedral.

Lincoln has a nave, a choir, and double transepts. Behind the choir is a place called the Presbytery: a small gallery is attached to the south transept. The cloister, which is comparatively small, leads to a magnificent chapter-house, of a polygonal figure, ten-sided, with flying buttresses. The transepts have aisles, and a large tower at the intersection with the nave. At the west entrance there are two stairs leading high. For information on English art, the reader should refer to Britton's "Cathedral," sixteen of which have been treated by him in separate publications, beautifully and correctly illustrated; Bentham's "Ely," and Miller's "Big Dugdale's Monasticon;" Dodsworth's "Salisbury," .Lincoln and Worcester;" and Brown's "Survey of the Cathedrals."

The numerous cathedrals of France, Italy, and Germany present beautiful specimens of architecture, not only in the Gothic style, but also in the Romanesque. The cathedrals of Amiens, Beauvais, Notre Dame de Paris, as well as others, are beautiful examples of Gothic. Cologne, and Freiburg, in the Breisgau, are equal, if not superior, to any cathedral in England. The cathedral, or Duomo, at Padua is partly in Italian style, and the western front, though imitating, is not in correct taste, produces a masterly effect. St. Peter's is the largest cathedral in Europe. Vienna and Strasburg have the highest spires; the former is 463 feet, the latter 456 feet, high. For information on English art, the reader should refer to Britton's "Cathedral," sixteen of which have been treated by him in separate publications, beautifully and correctly illustrated; Bentham's "Ely," and Miller's "Big Dugdale's Monasticon;" Dodsworth's "Salisbury," .Lincoln and Worcester;" and Brown's "Survey of the Cathedrals."

CHURCH, STATES OF THE. [PAPAL STATES.]

CHURCHILL, CHARLES, was born in 1731, in Westminster, where, in St. John's parish, his father was curate. After accomplishing the usual period of grammatical studies in Westminster School, he was taken by his father to Holland to be matriculated in that university; but his volatility and vivacity of imagination, which already had prevented his becoming distinguished in the scholastic routine, occasioned his rejection at the entrance examination. It is said that the sage solemnity of the examiner's visage, assuming a large bushy wig, contrasted strangely with the frivolous grammatical questions proposed for solution, that Churchill imprudently indulged in a fit of laughter; and instead of making the proper replies, he aggravated the indolence of his conduct by making facetious and satirical remarks, and proceeded to interrogate the examiner on which, of course, he was dismissed with indignant displeasure. He was shortly after admitted a member of the university of Cambridge, where however he took no degree, but soon returned to Westminster, where he became passionately attached to a young lady of the name of Scott, whom, although he was but in his seventeenth year, he precipitately married, without any means or plan of subsistence. After a year's residence in his father's house, he retired with his wife to Sunderland, and prepared for
takin' sides. At the age of 25 he was ordained by bishop Sharlock, who is said to have exclaimed, 'Good God! before what sort of an examiner must this gentleman have been, when he was pronounced to be deficient in scholastic education?'
Most of his biographers state that he now repaired to a curacy in Wales of 30l. a year, and that in order to support himself during the small stipend he at once set about the amiable project of supplying this miserable pittance by fitting up a cider-bar, and undertaking to sell that article to the neighbourhood; a project which terminated in his becoming a bankrupt. But this statement is contradicted by the editor of his works, published in 1804, who asserts, in a prefixed biographical account, which appears to be collected from authentic documents, that Churchill went at this period to officiate in the curacy of Rainham, in Essex, previously held by his father, and that he then supported himself by teaching a school. It is probable that the cider story may have arisen from some confused relation of the fact that Churchill was first ordained deacon on the small curacy of Cadbury, in Somersetshire, which, as being not far from Wales, and famous for cider, presents sufficient data for the makers of marvellous and interesting anecdotes. In 1758, on the death of his father, he succeeded to the curacy of St. John's, in Westminster, and from this period a partial alternation took place in his churchmen's life, from which, having been lotted into those of a moral, domestic, and studious man, became gradually ruined, and terminated in avowed and abandoned licentiousness. This change may be attributed to his intimacy with the profligate pert and profane Dr. Edward Lord, his father, Dr. Lloyd, a master of Westminster school, about this time interposed as the friend of Churchill, and rescued him from jail by advancing to his creditors a composition of the value of £500. In this vindictive and bitter proceeding, the credit of Churchill must be added, that he himself subsequently paid the whole amount.
His first poems were 'The Bard' and the 'Conclave', for which he was unable to obtain a publisher. The Rosciad, a very clever and severe satire upon the literary managers and performers at that time, was published in 1761, at his own risk; the London publishers having refused to give five guineas for the MS. It obtained an amazing popularity, and was answered by the numerous ripostes of Dr. Johnson, Mr. Burke, and Mr. Storm. The subject is one on which the author, as a poet and constant play-goer, was well qualified to express a critical judgment. Like most of Churchill's productions, it is more remarkable for energy and eloquent roughness of sarcasm, than for polished phraseology or refined sentiment. His next poem, 'The Allegory,' written in reply to his critical adversaries, is perhaps the most finished and correct of his works. The poem called 'Night' was written while he was to be found in the nocturnal occupations of the rites of Bacchi. These orgies, in which Churchill was associated with the convivial wits of his time, Colman, Thornton, &c., are well described in Charles Johnson's 'The Adventures of a Guinea.' The argument of the 'Allegory' is nothing more than a dissertation; showing only that the open avowal of vice and licentiousness is less culpable than the practice of it under the hypocritical assumption of sanctified temperance. 'The Ghost,' a poetical satire on the ridiculous imposture of Cock-lore, served but little to increase the literary fame of his author. With the exception of a few well-delineated characters, it is a series of rugged Hudiastic incogmitures. 'Pomposo,' in this poem, is 'the person, the political, and the political,' by the literary public. The editor of the last edition of Churchill's works declares it 'to be one of the most admirable specimens of satire in the English language.' There is much humour in the following imitation of Virgil's 'Ante levos erga pascentur in seattu cervi,' &c. (Reg. 1.)

Ab Jockey, ill aviseous thou, I wir, and mung songs as a such a fine wth, Thon shall berth charge yors these baren rocks; Soun shall not berth charge your rugged Bocks; Soun shall nor want wise armen a school, and wee Vot to live from hand to mouth.

The praise and profit which Churchill obtained by this
CHUDORUS (Zoology), Leach's name for a genus of Branichopus of the section Lophyropora. [Branichopus.]

CHYLE (χυλός), the product of digestion formed by the action of the pancreatic juice and the bile on the chyme in the duodenum. [Digestion.]

CHYMEX (χύμης), the product of digestion formed by the action of the stomach on the food. [Digestion.]

CIBBER, CAINUS GABRIEL, a celebrated sculptor, was a pupil of Dr. Chytz, the then President of the Académie des Beaux-Arts, and of Sir Anthony Cottle of Oliver Cromwell. The two figures of Raging and Melancholy Madness, which adorned the principal gate of Old Bethlehem Hospital, were his work, and also the basin-relievies on the pedestal of the London Monument, in which Sir John Vane is buried. He married the daughter of a member of the Glamis, in Rutlandshire, and granddaughter of Sir Anthony Colley, a stanch royalist, who in the cause of Charles I. reduced his estate from 3000l. to 300l. per annum. By this lady he had Colley Cibber, the actor, dramatist, and poet laureat. Mr. Cibber was employed in the latter years of his life by the earl, afterwards duke of Devonshire, in the improvement and decoration of the magnificent family seat at Chatsworth; and at the time of the Revolution in 1688, he took arms under that nobleman in favour of the prince of Orange.

CIBBER, COLLY, was born, according to his own statement, on the 6th of November, o.s., 1671, in South- ton Street, Gracechurch, London. In 1685 he was sent to Free School at Grantham, Lincolnshire. In 1687 he returned to London, and in 1688 was at his father's request received as a volunteer in the forces raised by the earl of Devonshire. In 1699 he induced an admired actress to accept the stage, by fixing upon her seriously as his profession; and after performing gratuitously for about eight or nine months, obtained an engagement at a salary of ten shillings per week. This pitance was afterwards increased to fifteen shillings; but a feeble voice and a meagre person were considerable obstacles to his progress, and the trufing part of the Chaplain in Otway's "Orphan" was the first in which he obtained any notice. His performance in that play excited the attention of Lord Townshend, and in consequence of Mr. Kynaston's illness, obtained him the commendations of Congreve and five additional shillings per week. At this time, being scarcely twenty-two years of age, after a very short courtship, he married Miss Shore, to the great anger of her father, who immediately spent the greatest part of his property in the erection of a little retreat upon the Thames, which he called Sh're's Folly. Mr. Cibber's professional progress was very slow for some years, and considerable loss of health and the success of his comedies, "Love's Last Shift," "Love makes a Man," "She Would and She Would Not," "The Careless Husband," &c. In 1711 however he became joint patron of Collier, Wilks, and Doggett, in the management of Drury Lane Theatre, and in 1734 and 1735, in conjunction with Sir Richard Steele; which latter partnership continued till the death of Mr. Esden, the poet laureat, in 1730, when Cibber was appointed to succeed him, and sold out, having become during his nineteen years' management so great a favourite with the public in the performance of fops and feeble old men, that after he had retired from the stage he was occasionally tempted back to it by the offer of fifty guineas for one night's performance. In 1745 he played Pandulph in his own tragedy of "Pious Tyranny," being at that time in the seventy-fifth year of his age. On the 12th of December, 1757, about nine in the morning, he was found dead in his bed by his man-servant, with whom he had been in conversation about three hours before, apparently in perfect health. He had recently completed his eighty-sixth year.

Mr. Cibber has described himself with considerable candour in his well-known and very amusing "Apology" for his life. Vain, inconsistent, and negligent of his health, a quick-witted, good-humoured, and elegant gentleman. His person, though spare and unprepossessing in youth, improved considerably as he advanced in life: a fact confirmed by a fine portrait of him in the collection at the Garrick Club, in his favourite part of Lord Foppington. As a writer of comedy, he is inferior perhaps only to Congreve, Wycherly, and Vanbrugh; but his Birth-day Odes are by no means exceptions to the above generalisation. The best comedy is allowed to be "The Careless Husband," the dialogue of which is delightfully easy and polished; but the...
play which brought him the most money was his adaptation of Molière's 'Tartuffe,' entitled 'The Nonjuns,' on which Bickerstaff afterwards founded his 'Hypocrite.' For this play King George I, to whom it was dedicated, sent him 200l. He was the author and adapter of nearly thirty dramas, various descriptions, among which, besides the already mentioned, we may reckon 'The Provoked Husband,' written in conjunction with Sir John Vanbrugh, and the modern acting version of Shakespeare's 'Richard III.' His 'Apology' is published in two vols., 12mo, and his poems in five vols., 8vo.

CIBBER, THEOPHILUS, the son of the laureat, was born on the 26th November, 1703. At the age of thirteen he was sent to Winchester school, where he remained but three or four years, for in 1721 we find him on the stage performing in the 'Comedy of Love.' He acquired considerable reputation in characters similar to those supported by his father. He married early an actress of the name of Johnson, who died in 1733, and in 1734 he formed a second union with Miss Arne. His extravagant habits forced him to retire to France in 1738, and on his return he separated from his wife under very discreditible circumstances. After twenty years more passed some in prison and the rest in alternate prodigality and penury, he engaged with Mr. Sheridan of the Dublin theatre, and sailed for Ireland in company with Mr. Maddox, a dancer on the wire, in the month of October, 1758. The vessel was however driven by a storm on the coast of Scotland, and going immediately to pieces, Cibber, his companion, and the greater number of the passengers perished.

Cibber wrote and altered a few unimportant dramas, and was concerned in a work entitled 'An Account of the Lives of the Poets of Great Britain and Ireland,' 3 vols., 12mo, which was published under his name.

CIBBER, SUSANNA MARIA, the daughter of Mr. Arne, an usherholder in Covent Garden, and sister of Dr. Thomas Arne the composer, made her first appearance as a singer in 1734 she married Mr. Theophillus Cibber, son of the laureat, and in 1736 attempted the part of Zara in Hill's tragedy of that name. Her success was most decided, and she rapidly became a great and deserved favourite. Her union with Mr. Cibber was an unfortunate one, and a separation took place about five years afterwards. She died January 30, 1766, and was buried in the cloisters of Westminster Abbey. Garrick is reported to have exclaimed when he heard of her death, 'Then Tragedy expired with her!'

CICADA (Homoptera.)

CICADELLA (Latefille), CERCOPI'DE (Leach), a family of insects of the order Hymenoptera and section Cicadaria. This family is synonymous with the Cicada Ranatra of Linnaeus. The species may be distinguished from those of a like group by having the antennae situated between the eyes. These insects are generally small, and hop by means of their hind legs.

The genera may be arranged under two heads or sections, as the head is prolonged; the pro-thorax, which is always very large, generally much humped, and has the posterior portion produced over the abdomen, sometimes so as to completely cover that part, or even extend beyond its apex; the antennae are very small, and inserted in a cavity on the head. To this section belong the genera Membracidae, Tragopogon, Dermitis, Bocydium, and Centratus.

There are perhaps no insects more remarkable in structure than those which compose this order, on account of the peculiar group of the species of this section. Their peculiarities arise from the great development of the pro-thorax: this part is sometimes so large as greatly to exceed in size all the other parts taken together. We have selected for illustration two species of the genus Bocydium, as being the most remarkable; the first is the Bocydium tintinnabuliferum. In this species the thorax is black and glossy; the posterior part is elongated and pointed, and from the disc there arise a series of secondary scutellum, which the summit bears four slender horizontal stalks, each of which is furnished with a little round black spherical body: these little globes are covered with fine hairs; the abdomen is reddish, and the wings are variegated with the same colour.

Second, the Bocydium galericatum. This species, as well as the one just described, inhabits Brazil; the pro-thorax is of a dark reddish-brown colour; the posterior part is elongated; the disc is elevated into a process which is at first compressed, but at the summit becomes dilated into a broad angular mass, and throws out a flattened portion, which suddenly bends downwards towards the body, and then runs parallel with it. The wings are transparent, with the exception of the basal and apical portion of the upper ones. The principal distinguishing characters of the genus Bocydium consist in the elytra being wholly or partially exposed, e. e. not covered by the pro-thorax; and the posterior prolongation of the pro-thorax narrowed and pointed.

Of the genus Centratus two species are found in England; the more common species is Centratus cornutus. This little insect is found on the leaves of the hazel and other shrubs, in the early summer months. It is about one-third of an inch in length, and of a brown colour; the pro-thorax is prolonged posteriorly (this part is compressed and pointed, and extends nearly to the apex of the abdomen), and the sides are dilated, and form two horn-like projections: a character from which the insect has received in France the name of le petit Diable. The wings are brownish and semi-transparent. In this genus the wings are exposed, as in the last, but the species differ in having a visible scutellum.

In the second division of the Cicadellidae, the head is on a line with the upper surface of the pro-thorax, or nearly so; the latter part is of moderate size, and without the extraordinary processes which characterize the former division—the wings are consequently always entirely exposed; the scutellum is distinct and of a triangular form. To this division belong the genera Betulius, Lepis, Circus, Cercaea, Euplae, Euplex, Penthimia, Jassus, Tettigonie, and some others.

Of the genus Cercoptes (Latefille) we have many species in this country. They are all small, the largest and most beautiful of the British species is the Cercoptes vulneris. This insert is about one-third of an inch in length; black; the upper wings are obscure, and have each two large red spots (one at the base and another in the middle), and a fascia of the same colour near the apex, the black and the red being about equally divided; the under wings are transparent. This species is not uncommon in various parts of the country, and is found on the herbace in woods. Cercoptes spumaria is one of the most common insects we have, being found in abundance on the various plants in our gardens. It is sometimes called the frog-hopper, from its habit of leaping when approached. Its colour is brown, the under wings are transparent, the upper wings have two white spots, one in the middle and another towards the apex. The larva, in form, resembles the perfect insect, except that it is destitute of wings; it is soft and of a greenish colour, and is always found on the leaves of plants inclosed in a frothy liquid, with which it surrounds itself, probably as a protection against the sun's rays. This frothy liquid is commonly known in English d by the name of co-ki-kot, and in France it is called crochat de grenouille. The pupa differs only from the larva.
in having a double nature, the insect is perfect in size, but this enabled him to pay the more attention to the education of his two sons Marcus and Lucius. His wife Helvia had a brother, Aculeo, the intimate friend of L. Crassus, a man equally distinguished for his oratory and the public offices he had held; and the two sons of Aculeo, with their cousins the young Ciceros, received their education under the direction of Cicero. It is this circumstance probably that we must attribute the special direction of Cicero's talents to the study of oratory. He was afterwards removed by his father to Rome, where he had the instruction of Greek instructors, nor particularly the poet Archias, who was living under the roof of L. Lucullus. As soon as he had exchanged the boy's dress for the toga, he was placed under the care of Q. Marcus Scaevola, the augur, and father-in-law of his father's friend Crassus, and upwards of a hundred pages of the same name, who excelled all his contemporaries in his knowledge of law, and added to his other accomplishments considerable powers of eloquence. While Cicero was thus preparing himself for the forum, he relished the severity of his legal and philosophical studies; an intermixture of poetry. Even as a boy he had composed a poem called 'Pontius Glauicus,' which was extant in Plutarch's time, and he now translated the 'Phenomena' of Aratus, and his translation of the 'Phaenomena' of Aratus was in Latin verse. He was a lover of Attic art, and translated the work called 'Marius,' in honour of his fellow-townsmen, which received the commendation of Scaevola, and another entitled 'Limon.' But he was now arrived (n.c. 89) at the age when he was called by the laws of his country to the military profession. In the year 86 B.C. he accompanied Pompeius Strabo, the father of the great Pompey, and was present when Sulla captured the Sannine camp before Nola. The termination of the Marse war in the following year gave an opportunity of exhibiting to the public the lectures of two distinguished Greek philosophers; first Philo, who then presided over the Academy, and soon after Apollonius Molo of Rhodes, who had been driven from their homes by the arms of Mithridates. This prince had been long a practitioner of attacking the Romans, and in the year 81 B.C. he declared war on Rome. The late civil war in Italy had induced him to throw off all disguise. He had overthrown the Roman province of Asia, and was already master of nearly all Greece, when the Romans concluded the war with their Italian allies, with the intention of opposing their formidable enemy in the East. But unhappily that which should have led to a union of their strength was the cause of divisions still more disastrous. The command of the war against Mithridates was disputed between old Marius and Sulla, and led to a series of civil commotions. Sulla however, who was at the time consul, had the important province of that war allotted to him. The appointment excited the furious opposition of Marius, who was the champion of the superior of his party at Rome but by bloodshed and prescription. His departure for the Mithridatic war was the signal for re-action, and Marius re-entered Rome (n.c. 87) with the support of the consul Cinna, and put to death all the proconsuls of the provinces, and the people was unable to make their escape to Sulla's army in Attica. Cicero's schoolfellows Pomponius was probably one of the fugitives, for he left Rome about this period, and by a twenty years' residence in Athens acquired the name of Atticus. Of Cicero's pursuits during the three or four next years little more is known than that he wrote some rhetorical works, which dissatisfied his masterly judgment; probably the work entitled 'De Inventione,' besides translating the 'Phaenomena' and 'Marius.' He was also in the habit of declaiming both in Greek and Latin, and received instruction in philosophy and logic from the stoic Diodotus, whom we find afterwards living under his roof, where in fact he died, leaving his property to Cicero. He had also a second cureship in Rome: a second cureship for the improvement of the new constitution, Cicero made his first appearance as an advocate. The speech in favour of Quinicus, though not the first he delivered, is the earliest of the speeches of Cicero’s public career. In his twenty-sixth year (n.c. 86), when Sulla had begun his political career, together with his uncle Gratidianus, who was killed there, served under Antony the orator in his government of Cilicia. Lucius left a son of the same name, to whom his cousin Cicero was much attached, and whose death he deplored (n.c. 88). Marcus Cicero, the father of the orator, though he was on intimate terms with the leading men of the times, was compelled by the delicacy of his health to live in retirement;
Ciceró fully prepared himself for the occasion, and produced so powerful an impression, that, to use his own words, the public voice at once placed him among the first orators of Rome. When he had spent two years in the severe duties of his profession, the delicacy of his health led him to return to his native city. He first visited Athens (b.c. 79), where he devoted six months to Antiochus of Ascalon, the most distinguished philosopher of the old Academy. He also attended Phædrus and Zeno of the Epicurean school, in company with his friend Atticus, and probably under their instruction, acquired the habit of an able rhetorician, named Diogenes, of Syria. He next traversed the whole Roman province of Asia, still cultivating his favourite pursuit of oratory under the first orators of that country; and then, after he had had experience for the whole of a year, he placed himself under Molo, and derived considerable benefit from his instruction, in clearing the redundancy of his style, and moderating the vehemenacy of his voice and action. He studied philosophy likewise under Posidonius.

In the year b.c. 77, after a two years' absence, during which Sulla had died, Ciceró returned to Rome, and married Tertulia, whose rank and station in society we may estimate by the fact that her sister Fabia was one of the vestal virgins. He applied himself again with zeal to the law courts and the forum, in which at this time the most distinguished orators were Aurelius Cotta and Hortensius; but next to them stood Ciceró, whose services were in constant demand for the most important causes. In the independence of the reputation he was acquiring, he was at the same time opening the way to the political honours of his country; and it is a somewhat singular coincidence, that in the year b.c. 74, Ciceró and Pompeius being both on the same list of consuls, were successful candidates for the several offices of consul, edile, and questor, which they respectively filled in the following year. The provinces of the consuls being distributed to them by lot, the island of Sicily fell to Ciceró's share, or rather the western portion of that island, which had Lilybaum for its chief town; the whole island being under the government of S. Pedius Cæsar as praetor, with whom Ciceró, and above all Atticus, lived on terms of the closest intimacy. Pompeius fell with him in the battle before Mutina. Sicily was one of the granaries, as it were, of Rome, and the questor's chief employment in it was to supply corn for the use of the city; and as there happened to be a peculiar scarcity this year at Rome, it was necessary for the public quiet to send large and speedy supplies. This task Ciceró accomplished, he tells us, and at the same time gave the highest satisfaction to all parties in the province. In the hours of leisure he employed himself in the rhetoric and composition of orations, so that on his return from Sicily his abilities as an orator were, according to his own judgment, in their full perfection and maturity.

Before he left Sicily he made a tour of the island, and gratified himself by a visit to Syracuse, where he discovered the habits and philosophy of the Greeks, which he afterwards brought into contact with his countrymen, and was found overgrown with briers. He came away from the island extremely pleased with the success of his administration, and flattering himself that all Rome was celebrating his praise. In this imagination he landed at Puteoli, and was not a little mortified on being asked by the first friend he met, 'How long had he left Rome, and what news he brought from there? This mortification however led him to reflect that the people of Rome were not incapacitated by their imperfections; and he determined to so study and to so improve his powers as to become an ornament to his countrymen, and to live perpetually in the view of his countrymen.

Pompey was at this time carrying on the war against Berenice in Spain. Nicomedes, king of Bithynia, soon after died, leaving the strange legacy of his kingdom to the Romans; and the king of Pontus, over ready to avail himself of the dissensions of the Romans, and justified on the pretext of saving the emperor, inveigled renewed his hostility by a double invasion. Bithynia and Thrace the west, and Asia the east. The two consuls, Lucullus and Cotta, were both sent to oppose him; and while the arms of Rome were thus employed in the different extremities of the empire, a still more alarming danger was on the point of arising, originating with some gladiators led to an extensive insurrection of the slaves, and under the able conduct of Spartacus threatened the very existence of the state. During this turbulent period Ciceró persevered in a close attendance upon the forum, though none of the speeches which he then delivered have been preserved, excepting those which relate to the prosecution against Verres. Pedius Cæsar had been succeeded, after one year's government of Sicily, by Sacerdos, and he, after the same interval, by Verres; for it was a principle of Roman policy to give to as many as possible a share in the plunder of the provinces. Ciceró, upon occasion, more than once, performed the duties of an able advocate, and the bad hands were so well calculated to produce. Ciceró had many difficulties to overcome in his endeavours to subject the criminal to the punishment of his crimes. In the first instance he was the enemy of the prosecution of Verres exclusively of senators; that is, of those who had a direct interest in protecting provincial mal-administration. Moreover, at the very outset there started up a rival in one Cassius, who had been questor under Verres, and claimed a preference to Ciceró in the task of impeaching him. A previous suit, technically called a dērēriatio, was necessary to decide between the rival prosecutors. Ciceró succeeded in convincing the jury that his opponent's object was to use another technical term, prœstūrato; that is, to screen the criminal by a sham prosecution. This previous point being settled in his favour, he made a voyage to Sicily to examine witnesses and collect facts to support the indictment, taking his cousin Lucas Ciceró to assist him. Fifty days were consumed in the journey, during which he had to encounter the opposition of the new praetor Metellus, who was endeavouring, with many of the leading men at home, to defeat the prosecution. On his return to Rome Ciceró met with a fresh set of difficulties, in the form of delay which interest or money could procure for the purpose of postponing the trial to the next year, when Hortensius and Metellus were to be consuls, and Metellus's brother one of the praetors, in which character he might have presumed to act as judge. Ciceró was induced upon these grounds to waive the privilege of employing twenty days in the accusation; and a single speech on the 5th of August, followed by an examination of his witnesses and the production of documents by evidence produced an impression so unanswerable to Verres, that even his advocate Hortensius was abashed, and Verres went forthwith into exile.

The five other speeches against Verres, in which Ciceró enters into the details of his charges, were never actually spoken, if we may believe the circumstances. Ciceró was induced upon these occasions—who passed under the name of Asconius—but were written subsequently at his leisure; partly perhaps to substantiate his charges before the public, but still more as a display of the character of an advocate, which he did not often sustain.

Though a verdict was given against Verres by the jury of senators, yet the past misconduct of that order in their judicial capacity had been so glaring that the public indignation could not be assuaged, until the sight of Verres was slept for some years; and the magistrates so appointed erased from the roll of the senate sixty-four of that body, expressly on the ground of judicial corruption. To remedy the evil for the future a new law was passed, at the suggestion of the praetor Aurelius Cotta, hence called the lex aureliana, by which the equites (knights) and certain of the commoners (tribuni curiae) were associated with the senators in the constitution of public juries. It was subsequent to the enactment of this law that Ciceró tendered his resignation to Q. Roscius, M. Fonteus, and A. Cecina. The first of these was the celebrated actor, whose name has since become pro verbal. The suit grew out of a compensation which had been made to the envoys of the Senate to the king of Thrace, which lasted five years, and was not fully paid. The envoys had a private nature, and turned entirely upon dry points of law. The sedition of Ciceró (b.c. 69) had little of that magnificence which was so commonly displayed in this office, but it involved the Sicilians in an unpleasant procedure, and the procurator of Verres, by supplies for the public festivals. After an interval of two years Ciceró entered upon the office of praetor (b.c. 66), and it fell to him to preside in the court of extortion; a court especially provided against that ordinary offence in the administration of office.
the provinces. The year of Cicero’s praetorship was marked by the conviction of Licinius Macer, in opposition to the influence of his kinsman Crassus. But the most remarkable event in his praetorship was the passing of the Manilian law, by which the consuls of that war against Mithridates was transferred to Pompey, whose claim Cicero supported in a speech which still remains. It was in this year too that he defended Cluentius. This speech likewise, and gives a sad spectacle of the uncertainty of life and property were made for the first time. Cluentius lost his reputation, and betrayed his daughter Tullia, who could not have been more than ten years old, to C. Piso Frugi. She was at present his only child, for his son Marcus was not born until the following year, which was also the birthday of Horace.

On the expiration of his office he declined the government of a province, which was the usual reward of that magistracy, preferring to employ his best efforts at home towards the attainment at the proper period of the consular office. This was perhaps his chief object in undertaking the defence of C. Cornelius, the tribune of the preceding year, against a charge of treason, which was supported by the whole influence of the aristocracy. The guilt of Cornelius consisted in his energetic and successful support of the law against bribery in elections, called the Lex Asita-Calpurnia. Cicero published two orations spoken in this cause, the loss of which is the more to be regretted, as they contain his best oratory sentiments, both by others and himself. The return of Atticus from Athens at this time was most opportune to his friend Cicero, who looked upon the following year (a. e. 4) as having the most effect on the Senate, as being now most closely connected with the influential men of the aristocratic party, could give essential assistance to a new man, as the phrase was, against six candidates, two of whom were of patrician blood, while the fathers or ancestors of all had already filed public magistracies. Cicero, who had just witnessed the election of his son to the highest office in the state.

From this period the life of Cicero is the history of the times. Of the orations he made in the year of his consulate the vanity of his life he indignantly complained. His panegyrist, Middleton, seems to acknowledge the change, and attributes his past conduct to that necessity by which the candidates for office were forced, in the subordinate magistracies, to practise all the arts of popularity, and to lower the dignities of public life, to the necessity which grew out of his situation. Before the people indeed, to whom he addressed two speeches upon the same subject, Cicero still wore the popular mask; and while he expressed his approbation of the principle of Agrarian laws, and pronounced a panegyric on the two Gracchi, he artfully opposed the particular law in question on the ground that the bill of Rullus created commissioners with despotic powers that might endanger the liberties of Rome, and he prevailed upon one of the other tribunes to propose a change in the bill. In the case of Caesar, who was charged with the murder of the tribune Saturninus three-and-thirty years before, he goes so far as to maintain the right of the senate to place Rome in a state of siege, if necessary. The arrest of the candidates was to suspend all the laws which protect the lives of citizens, yet, in the same speech, he endeavours to curry favour with the people by bestowing the highest praises on their favourite Marius. Rabirius had already been convicted by the judges appointed to inquire into his case; but the law, as it allowed him, to the people, who accordingly assembled in the Field of Mars to hear the appeal. While the trial was proceeding, it was observed that the flag upon the Janiculum opposite to his house was hoisted, and this was interpreted by some of necessity broke up the assembly, according to an old law which was made when the limits of the Roman empire extended only a few miles from the city, and was intended to protect the citizens from being surprised by the enemy. The signal of the day, the supposition of the Roman consolation still maintained the useless ceremony, and the aristocratic party employed it on the present occasion in the hands of Metellus the praetor to annul the proceedings of justice. The orations in which he defended Otho against the populace, who were enraged at his law for setting apart a separate seat in the theatre for the order of the knights, and that in which he opposed the restoration of their civil rights to the sons of those who had been proscribed by Sulla, were also delivered this year, but nothing remains of them. Of the conspiracy against Catiline, and the several speeches which were made to the senate in relation to it, Cicero had evidently no voice to say more than will be found under the head CATILINA.

Two other causes, in which Cicero’s services as an advocate were called forth during this year, were those in which he defended Otho and C. Piso Frugi, who were accused of extortion in his government of Cisalpine Gaul, and was maintained at the instance of Caesar. Cicero, in a speech made on a subsequent occasion, seemed to admit the guilt of his client, and to account for his acquittal on grounds altogether foreign to the merits of the case; another proof of the change that had taken place in the patriotic prosecutor of Verres. His conduct is not less disgraceful in the affair of Murenus, who was charged with bribery, treating, and other violations of the law, in his late election to the consuls. His guilt will not be doubtful to a careful reader of his advocate’s speech. The prosecution was supported by C. Sulpicius and M. Auruncus, who had been accused of the most heinous crimes by a prosecution of Sulpicius as trifling, and the principles of Cato as impracticable. His defence amounts in fact to a defence of the crime rather than the criminal, which was the more indiscreet, as he himself had only a few weeks before carried a new law against bribery.

The success of Cicero, in crushing the Catilinarian conspiracy, would probably have earned for him the unmixed good will of the aristocratic party, had he not offended them by his conduct towards the government of Cisalpine Gaul, and were the more offensive to them in one whose origin they despised. So completely was he carried away by his sense of his services to his country that he wrote a history of his consulate in Greek, and even sung his own glory in verse; but the most decisive evidence of his unbounded vanity is the extraordinary letter which he addressed to his friend Lucceius. (Ad Fum., v. 13.)

On the other side he had damaged his reputation with the people by his evident change of principles; and the precipitate execution of the conspirators, without the form of a trial, was an offence against the laws of the country which the sanction of the senate could not justify. Already on his laying down his office there were signs of a desire for his removal, and in a few years drove him in disgrace from the city which he had lately saved.

But we must return for a while to his forensic exertions. While the associates in the crimes of Catiline were, for the most part, prosecuted and driven into banishment, it pleased the party of the senate to screen P. Sulla, whose guilt is generally asserted by the historians of the times. Hortensius and Cicero were his advocates, and the support of the latter is reported to have been bought by a large sum of money, which Cicero required for a purchase he was then making of a house on the Palatine Hill. To see this in its true light, it should be recollected that the receipt of a fee was at variance with the avowed principles of the Roman patrician. The appeal of A. Gracchus, which might have been insufficient, were it not indirectly yet decisively confirmed by more than one passage in Cicero’s letters. In the following year Quintus Cicero, the son of the latter, was appointed governor of the rich province of Asia, as successor to L. Fulvius, who came home with the usual reputation for extortion, for which he was called to account two years after. This L. Fulvius had been the chief praetor in the consulate of Cicero, and in his capacity of quaestor, had prevented the detection of the conspiracy, so that he had a certain claim upon Cicero, which was not neglected. But this trial was preceded by one of the same nature which more nearly concerned the life of Antonius.

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league in the consulship, was recalled from the province of Macedonia, where he had presided for two years, and had to
defend himself against an impeachment for the grosse
rubrications which had been given by the province,
originally fallen to the lot of Cicero, who took credit on
many occasions for his disinterestedness in transferring
the lucrative appointment to his colleague. He omitted
to state that the consul's interest agreement was not
with Antinous bound himself to a periodical return
to Cicero; and the extortion of which the proconsul had
been guilty was in part owing to this obligation. The
very
day on which Antinous was condemned was marked by an
event in the life of Cicero—the advent of Clodius, his enemy, into a plebeian family. The object of
this ceremony was to render Clodius eligible to the tri-
bunate, from which, as a patrician, he was excluded; and
no sooner was the obstacle removed than he offered him-'
self as a candidate, and was elected with some little manoeuvring, the cause and object of which are
not very intelligible, he made public advertisement
of several new laws, which were all aimed at the authority
of the senator; and among them was one to the effect that
whoever took the life of a citizen uncondemned and
without a trial should be interdicted from fire and water.
Although Cicero was not named in this law, it was so evi-
dently aimed at him, that it was necessary for him at once
to appear before the Senate, and, as it were, to recommend
him to the law by force, but when he found
Pompey was unwilling to support him, he took the
advice of his friends Cato and Hortensia, which coincided
with the wishes of the Senate, and the field of
adversaries, went into voluntary exile. Leaving Rome
towards the end of March (b.c. 58), he proceeded to
Vibo with the intention of crossing over into Sicily, but from this
he was prohibited by the governor, Virgilius, although he
was of the same political party, and was under obligations
from Cicero. He received about the same time information
from Rome that a special law had been passed, which
forbade him to appear within a distance of four hundred
miles of the city; and, in circumstances which changed his
mind, he proceeded first to Brundisium, where he was hospi-
titably entertained for some weeks, in defiance of the law.
He then crossed over to Dyrrachium, where he was re-
ceived by Pleanius, the questor of the province, and con-
ducted by him to Thessalonica. The conduct of Cicero
in his exile as such might have been expected from one
whose mind had been so extravagantly elated in prosperity.
He gave himself up entirely to despondency; spoke of his
best friends as enemies in disguise, not even sparing Atticus
and Brutus; and so completely lost the control of his
thoughts and his conduct, that his mind was supposed to be
deranged. In the mean time, his friends at Rome, whose fidelity he doubted, were actively engaged in taking measures for his
rescue. The 1st of June was fixed on as the date
when he was made in the senate to that effect. The
election, too, of his friend Lentulus Spinther to the consular, offered a
brighter prospect for the ensuing year, but in the interval there occurred a little incident which gave him fresh un-
concern. Some of his enemies had published an oration,
in which he had composed some years before in an angry
moment, against an eminent senator, and had shown pri-
vately to his intimate friends. Its appearance at so un-
toward a moment alarmed Cicero, who imagined it had been
destroyed, and he wrote to Atticus requesting him to disavow
it: 'Fortunately,' says he, 'I never had any public dispute with him, and as the speech is not written with my usual
taste, I think you may convince the world that it is a forgery.'
The end of the year his residence at Thessalonica became disagreeable to him, and indeed he thought dan-
gerous. His enemy Piso had been appointed governor of Macedonia, and the troops who were to serve under him
were already expected. Even before this, some of the
scarcely of Catiline, who were living in Macedonia as
sores, had been plotting, it was said, against the life of
Cicero. He therefore found it safer to remove to Dyrrhachium, where he had friends, although it fell within the
distance prohibited by the law. His residence upon this
couch afforded an opportunity likewise for an interview
with a friend of his, in the name of whom he had been
commissioned by M. Licinius Crassus, to despatch
M. Caelius, who was accused on a charge of forgery.

The next day, being the 1st of June, he was
conducted before the senators, who were about to consider
the charge. While some declared he had been un-
influenced, others maintained that he was guilty. The senators, by a vote of eleven to three, acquitted
him. The authorities are: Use,
x, 127, and 257, 262, 263, 271, 272, 278, 280, 281, 282,
Milo, as well as Clodius, had his armed bands, and was avowedly seeking for an opportunity of murdering Clodius; while the next day made a furious attack in a forest road upon the Capitol for the purpose of destroying or carrying off the broken tablets upon which the law of his exile had been engraved. One of those who took an active part in the disturbances was P. Sestius, who, in his tribunate, had been opposed to the appointment of Cato the Younger as a senator, Vatinius, who had been one of the chief witnesses against Sestius. Cicer. was less fortunate in his defense. O. Calpurnius Bestia, who was prosecuted about the same time for bribery in the last election of prytanes, had incurred the enmity of Cato the Younger and Caesar by appearing as the advocate of L. Cornelius Balbus, a native of Gades, who had received the citizenship of Rome. The legality of his franchise was the subject-matter of the trial. It is somewhat strange to find Cicer. so closely allied as he was at this time with Caesar, on whom he had showered his abuse on nearly every occasion; but the fact and the disgrace of it are acknowledged by himself readily. He had an old friend at Rome named Atticus, the miller, says he, and I have been long enough wasting it, but farewells now to honour and patriotism. There exist two other speeches delivered by him during the same year: one of these in the senate, on the annual debate about the auspices, delivered as his address to the people, which is not preserved. The other speech is preserved. It was delivered at Alexandria as the agent of Gabinius with Pтолемей, and in that capacity was said to have received part of the ten thousand talents which the king had paid the Roman general as the price of his services. As this was followed closely upon the preceding, and was so intimately connected with it, the prosecutors could not spare the opportunity of riling Cicer. for the part which he had acted.

In the end of the year Cicer. consented to be one of Pompey's lieutenants in Spain, and was preparing to set out thither, when he was induced to abandon the appointment on receiving a letter from his brother, who was at that time serving in Gallia, that such a step would probably give umbrage to Caesar, for the latter had it a passion for the old senator, and had given him the chief link which held Caesar and Pompey together. At the beginning of the following year, news was received of the death of Crassus and his son Publius, with the total defeat of his army by the Parthians. By the death of these two, the upper orders of the equestrian order felt a great loss, and the people of Rome, which had been so long in gloom, at length broke out in the most violent excesses, which were only aggravated by the endeavours of Milo's powerful friends to kidnap him from punishment. These disturbances were cured by the appointment of the consulship, which was armed too with extraordinary powers by the senate, and finally Milo was brought to trial, condemned in spite of Cicer. eloquence, and banished from Italy. Cicer. is said to have been so alarmed on this occasion, by the presence of the most violent excesses, that he had stationed around the court to prevent any violence, that his usual powers failed him; and indeed the speech which is found among his works, under the title of the defence of Milo, is very far from being that which he
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actually delivered. In the two trials of Scaurus, one of Milet's confidants, which grew out of the same affair, Cicero was more successful; and he had soon after some amends for the loss of his friend in the condemnation of two of the tribunes, who had been their common enemies, for the part they had taken in the late disturbances. At the trial of P. Claudius Piso, Cicero himself prosecuted, which is the only exception, besides that of Verres, to the principle which he laid down for himself of never acting the part of an accuser. It appears to have been soon after the death of Scaurus that Cicero owned up all his debts (De Legibus), three books of which are still preserved; but the work in its original form contained probably, like the 'De Republica,' to which it is a kind of supplement, as many as six books, for ancient writers imagine the four, six, and eight, and fifth. But the civil and literary pursuits of Cicero were soon interrupted by the demand for his services abroad.

Among the different laws which Pompey brought forward for checking the violence and corruption which the candidates employed for the attainment of public office, was one which disqualified all future consuls and praetors from holding any province until five years after the expiration of their magistracies. But before the law passed, Pompey procured an exception for himself, getting the government of Spain and Africa continued to him for five years longer, while, to gratify Caesar on the other side, Cicero, at the special request of Pompey, induced one of his friends to bring forward a law by which Caesar's presence might be dispensed with, and which, if possible, would considerably add to the number of the consuls. There was no person who might have been better placed to do this, for the period of five years the senators of consular and praetorian rank, who had not held foreign command upon the expiration of their magistracies, should divide the vacant provinces by lot. A law of which, however, Cicero rested, under the government of Cicilia, with which we united Pisidia, Pamphylia, Cyprus, and three dioceses, as they were called, of the adjoining province Asia. Thus Cicero found himself in the very position which it had ever been one of his chief objects to avoid, and his friends were the more uneasy as that quarter of the empire was threatened by the Parthians in revenge of the late invasion of their territories by Crassus. Under these circumstances Cicilia was left to have among such men as his brother and Pontius. The latter had established a high military reputation by his successes and triumph over the Allobrogues, while the merits of Quintus Cicilia as a soldier had been proved and acknowledged by Caesar in Gallia.

Still the government of a province was suited neither to the taste nor the talents of Cicero, and he urged all his friends before his departure, as well as in nearly every letter he sub-equently wrote, not to allow the command to be extended beyond the year which the law of Pompey required, or the year itself to be lengthened out by the caprice of the pontifical college; for the length of the Roman year at this time did not exceed it was a pleasure of that body to insert more or less intercalary days in the month of February, and the Pontifices were guided in this not by any fixed rule, but by private motives, lengthening or shortening the year to favour a friend or injure an enemy. It was therefore about the 1st of May, and on his arrival at Tarentum paid a visit to Pompey, with whom he had a conference on the serious aspect of affairs, and was assured by him that he was prepared for the dangers which threatened the midsummer. Cicero proceeded to Brundisium to Corcyra and Actium, thence partly by land and partly by water to Athens, where he spent ten days, and then crossed in fifteen days to Ephesus, touching at several islands on the way. He had here a foretaste of the duties he would have to perform; for among the lawsuits which waited upon him at his landing was one from the citizens of Salamis in Cyprus, to lay before him his complaints against the extortion and cruelty of a Roman citizen named Scapudius, who had claimed from the city a large sum upon a bond, together with an accumulation of interest at the rate of forty-eight per cent., and who had used the military authority he held under the late governor, Appius, to besiege the senate of Salamin in their council-room, until five had died of starvation. As Bruttus had recommended the interests of Scapudius to Appius, who was his father-in-law, he placed himself in the same degree of favour with Cicero, and was seconded in this suit by the letters of Atticus; but the extortion raised Cicero's indignation, and he resisted the claims of Scapudius, though Bruttus, in order to move him more effectually, at last impressed upon him that he was not out of his debt, and that as his own debt was really his own, and Scapudius only his agent in it.

Cicero however was the friend of justice up to a certain point only, for when he refused the usual interest, Scapudius complained as in a way of quibbling. The capi- cal was only one hundred and six talents, the Salumi- nians through some mistake believed it to be two hundred, and suggested that Cicero might safely give an award for the larger sum. Cicero himself gives us this anecdote in his letters to Atticus (v. 21), adding that he assented to the proposal, but was unable to effect the object because he found the Salaminians more precisely acquainted with the accounts than Scapudius had anticipated. This same Brutus, whose character is so commonly put forward as one of the finest examples of Roman virtue, had applied for the assistance of Cicero in another affair of a nature somewhat similar. The king of Pappadoes, whose empty coffers proved how dearly he paid for the protection of the Roman government, had been arrested, or rather, following up Cicero's advice he was then at Rome. But Cicero was unable to render him the least assistance in the recovery of this money, as the king owed a much larger sum to Pompey, whose position in the political world at Rome was such that no one could meddle with the full interest of the debt. These instances afford a good example of the miseries which resulted from the Roman form of provincial government. But Cicilia had felt these miseries in a degree more than usually severe under the late governor Appius; and Cicero, who was certainly visible everywhere, and could only be compared, says Cicero, to the track of a wild beast. Indeed he found employment enough in healing the wounds which Appius had inflicted. He appeared to have given Cicero into the hands of Cicilia, who wrote at the same period to Atticus. But Appius and Pompey were allied by the marriage of their children, and the latter induced Cicero to promise everything from the province that could be of service to the accused, so that the guilt of the whole was acquitting the military proceedings of Cicero were not of a very interesting nature. He had proceeded at once on his arrival in the province to the south-eastern frontier, which was threatened by the Parthians; but a Roman officer who communicated in the adjoining province of Syria had so completely occupied the attention of the enemy, that Cicero's troops never came in sight of them. Being unwilling however to let the army return into winter-quarters without effecting anything, the attention of the mountain tribes, and the position he had hitherto protected them, and took a number of prisoners; while his troops had a pretext for saluting him 'imperator.' He was also successful in the siege of a mountain fortress, and having taken it, sent it to Rome. When he arrived Cicilia obtained him the honour of a public thanksgiving. His other services in Cicilia included nothing deserving especial notice, and he was happy when the year of his appointment expired, and enabled him to return to Italy. He received a second appointment towards the end of November, and playing his laurel-wreathed fasces, for his friends, and among them Pompey, flattered him with the notion that his eminent military services deserved nothing less than a triumph, how long before he received the triumph of Rome on the 4th of January, he found matters of a more serious nature in agitation. The senate had just passed a decree that Caesar should dismiss his army, and when M. Antony and another tribune opposed their veto to it, proceeded to that vote which gave the consuls and other magis-
trates a power above all the laws. The tribunes fled to the camp of Cesar, who, considering this decree as equivalent to a declaration of war, advanced with a rapidity which destroyed all the arrangements of the Senate. The consul fled from Rome, accompanied in his flight by Cicero and the other democratic senators. Cicero, however, stayed at the southern part of the peninsula. With this view the principal senators had particular districts assigned to them, Cicero undertaking to guard the coast south of Formiae and Campania. The other democratic senators, including Cicero, drave Cicero from his purpose. He disavowed the military engagement he had entered to fulfill; made different excuses for not joining Pompey in his march to Brundisium; and finally, when Cesar made himself master of the city, Cicero refused to treat with him. The mark of Lentulus Spinther, and other senators, gave the lie to those reports of his cruel intentions which his enemies industriously circulated. Cicero deemed it a favourable opportunity to open a negotiation with Cesar, under the pretext of thanking him for his generosity to his friend Lentulus. In the middle of March Pompey sailed from Brundisium, abandoning Rome and Italy to his opponent. The return of Cesar from Brundisium to the capital afforded an opportunity for an interview, in which it appears to have been stipulated that Cesar should remain in Italy and observe a strict neutrality.

When Cesar proceeded to Spain to oppose the Pompeian troops under Afranius, he left Antony in command of Italy, with whom Cicero had previously objected to a government similar to that of his rival. While residing on the coast, occasionally showed symptoms of a disposition to slip off and join Pompey in Greece. This resolution was not unobserved by Antony, and drew from him a monitory letter; but in vain. An account of some recent affronts to his person, magnified by himself and injurious friends into a certain prospect of speedily destroying Cesar and his army, led many of the wavering to fly from Italy to the camp in Greece. Cicero appears to have been one of these; at any rate he made his escape in the early part of June, and met with a cold welcome from the army of the Senate. He was not present at the battle of Pharsalus, staying behind at Dyrrhachium, where he received the news of that, event with horror. But he continued determined to cross over into Africa with the intention of still maintaining the war, he again committed himself to the mercy of the conqueror, and landed at Brundisium at the end of October, a. d. 49. Here he passed many miserable months, the laurels upon his face being drawn upon him an attention which he would gladly have avoided, while the news of Cesar's difficulties in Egypt and the successes of the Pompeians in Africa again inspired the Senate with hope. All this time he received no intimation of pardon from Cesar himself, though he was assured of his safety by Cesar's friends. On the other hand, should the Pompeians ultimately succeed (and they were already talking of their plans), Cesar might be sure to be treated as a deceiver, for he well knew that while Cesar pardoned even his enemies when they submitted to his power, it was a declared law on the other side to consider all as enemies who were not actually in their camp. After a long series of mortifications, he was cheered at last by a kind letter from Cesar himself, and still more when Cesar landed at Brundisium after his successful expeditions in the east, and gave him a reception which at once removed his fears and induced him to follow the conqueror to Rome. About the end of the year Cesar embarked for Africa, and again the empire was in suspense; for the name of Sulpicius was thought ominous and invincible on that ground, not only to his friends, but to his own party. He was not made a public address to the Senate, but shut himself up with his books, and entered into a close friendship with Varro, a friendship which was consolidated by the mutual dedication of their learned works to each other—of Cicero's Academic Questions to Varro, and Varro's Treatise of the Latin Language. Cicero was his good friend, and no doubt of the friendship of this kind is his dialogue on famous orators, called 'Brutus,' in which he gives a short character of the chief orators of Greece and Rome. But though the work was finished at this time, it was not published till the year following after the death of his daughter Tullia.

He now parted with his wife Terentia, who had lived with him more than thirty years, and which may have been the cause of his not entering the Senate again. He was engaged in business of no less importance by marrying, immediately after, a young girl named Publilia, possessing much beauty and very considerable property, over which he had been placed as trustee by her father's will. This marriage, he subsequently married Sallust, the historian, and even after his death again entered into the married state once, if not twice. She is said to have lived to the age of 103. Amid these domestic events, Cicero perhaps found some consolation in the marked attention paid to him by Cesar, who returned victorious from Africa in the summer of 46 b. c.; but any gratification he may have derived from this source of the offense he was giving to his former friends through his close intimacy with the dictator. The nepotism which he committed about this time in honour of Catulus, and the defence of Marcellus might be put in evidence to the same effect, if there were not strong grounds for doubting the authenticity of the oration bearing that name. At the end of the year Cicero was called away in great haste into Spain to oppose the sons of Pompey; and young Cicero requested his father's permission to go to Spain, that he might serve under Cesar with his cousin Quintus, who was already gone thither. They were at the same time procuring for themselves a commission to raise their former friends, and thought it more desirable that he should go to Athens to devote a few years to philosophy and literature.

Soon after he had parted from his son, whom he was doomed never again to see, he was oppressed by the remembrance of the death of his son. He sailed from Tullia was then married; first to Piso, who died about the time of Cicero's return from exile, and then to Crassus. For her third marriage with Dolabella both parties secured themselves by a divorce from their unions and at the time of her death, arrangements for another divorce had been carried so far that her father was already applying for payment of an instalment upon her dowry.

In this new grief Cicero drew little comfort from the consideration of the number to which he had added by the reading and writing, and he composed a treatise 'Of Solution' for himself, which was much read by the fathers of the Christian church, especially Lactantius, to whom we are indebted for the few fragments that remain. His domestic grief was completed by the misery of his ill-assorted marriages, which he was happy to dissolve after a union of less than a year. In this deplorable condition he was raised to high, and a period of his life produced a richer literary harvest. He then wrote a list of the works which he wrote in this and the following year. (De Div., ii. 1.) The Orator completed his rhetorical works, forming a sort of supplement to his three books entitled De Oratoribus and De Oratore, and the last mentioned of this period were, the Hortensius, so called in honour of his deceased friend, and in which he recommends the study of philosophy; four books in defence of the Academy, dedicated, as has been already mentioned, to Varro, five books entitled De Finibus, and addressed to Brutus, in which he contrasts the opinions of the different sects of philosophy on the subject of the summum bonum; the Tusculan disputations, in the same number of books, on a variety of points which involve the happiness of human life; three books on the Nature of the Gods; one on Divination, or the art of seeing into futurity; another on Fates; and the beautiful treatise on Old Age. These were followed by an essay on the nature of the soul, and an essay on the nature of printing; the Topica, addressed to his friend Trebatius; and the De Officiis, which was dedicated to his son.

The publication of these works extended over the years 45 and 44 b. c. In the autumn of the former of these years Cicero returned from Africa, and the next year he quitted his retirement and came to Rome, where he soon after exerted his talents in the service of an old friend, Deiotarus, king of Galatia, who had incurred the displeasure of Cesar by his firmness. The son of this Cesar was charged with having formed a plot to assassinate Cesar a few years before. Cicero failed in obtaining pardon for his friend; but his intimacy with the Dictator did not alter the conduct of the government, which seemed to have changed the whole face of affairs. Cicero was present at the scene of assassination in the senate-house, where he
had the pleasure, he tells us, of seeing the tyrant perish; but the conspirators were grievously disappointed in the results of their crime. As soon as the first stuper had passed away, the public indignation drove the murderers from Rome, and Cicero, a candidate for the office of praetor, was elected to military command.

He proceeded first to Rhegium, then crossing to Sicily, on the 1st of August he arrived at Syracuse, whence he sailed next day, and was driven back by cross winds to Leucopetra. Here he met with some people of the fleet, who were sensible of the unexpected turn of affairs there towards a general pacification, so that he was induced to set out immediately on his return. He touched at Vela, where he had his last interview with his sister and mother on the 31st. The senate met the next morning, but Cicero, not finding things in the favourable state which he expected, was unwilling to meet Antony, and excused himself from attending, as being indisposed by the fatigue of his journey.

The next day Antony was absent, and Cicero delivered the first of those orations which he called Philippics, as being rivals of the invectives which Demosthenes directed against the king of Macedon. The violence of this ha

ragh continued with him Antony, and he again retired for security to some of his villas near Naples, where he composed and published the second Philippic. This speech, if that name can be given to what was never spoken, was a furious inveigh, well charged with falsehood, against the whole people of Rome, and which he was asked to be sent to the chief cause of Cicero's death. The departure of Antony for Cisalpine Gaul left Rome again open to Cicero, who returned there on the 9th of December, and ten days after delivered a third Philippic, the chief object of which was to procure the sanction of the senate to the late proceedings of Octavianus in opposition to Antony. Having effected this object, he passed into the forum and harangued the people upon the same subject in his fourth Philippic. The ten other speeches bearing this name were delivered from time to time in the senate or the forum, to excite the people of Rome against Antony and his friends; but the prospects of the oligarchy were finally disappointed by the treachery of Brutus and Lepidus, and the recall of Antony to Antony, and thus sharing the whole power of the state among them. The proscription which followed, though it can in no way be justified, was levelled against men who had been themselves assassins, or the avowed advocates and panegyrist of assassination. Cicero himself had lauded the murderers of Caesar as the greatest benefactors of their country; nay, it is doubtful whether he was not himself privy to the conspiracy, though he may have wanted the courage to use the dagger himself; and afterwards when he found Antony in his way, he repeatedly expressed his regret that the conspirators had not served up one more dish at the glorious feast of the Ides of March. Cicero was at first in dark with his brother, whether they had received the news of the proscription, and of their being included in it. He fled to Astura on the coast, where he found a vessel ready for him, in which he immediately embarked, but was compelled by the weather to land again near Cicerno. The following day he embarked a second time, but again landed at Cassena, whence he proceeded to his Formian villa. In the middle of the night his slaves informed him of the approach of the soldi

ers who were invested with the munificent commission, and he made an attempt to escape in a litter, but being overtaken in a wood, the scene was speedily finished. The assassins cut off his head and hands, says Plutarch, and carrying them to Rome, presented them to Antony, who had entered the praetorium in the meantime. Cicero was killed on the 7th of December, in the year 43 B.C.

The works of Cicero have been repeatedly published in mass, as well as separately, but perhaps the best edition of his extant works is that by Wundt and his admirers. The following editions deserve particular notice.

1. 'The Variorum,' as it is called, by Graevius, containing the Orations, the Letters ad Familiarum and ad Atticum with one or two only of the other. The notes of Wundt and his admirers are exceedingly valuable.

2. 'De Divinata et De Fato,' by G. H. Moser.

3. 'De Legibus,' Moser et Creuzer.

4. 'De Natura Deorum,' by the same. Ditto.

5. 'De Republica,' by Moser.

6. 'Of Procuratores,' by Wundt.

7. 'Pro Flacco,' by Wunder.

8. 'Pro Mucia Philippico,' by Wundt.

9. 'Pro Florio,' by Wundt.

10. 'Orations, and those of the moderns, besides some others, which belong to this family being most pre-eminently voracious.

The Cinctinidae are divided into two tribes; those species in which the emargination of the mentum is fur

nished with a row of bristles, and those without it, those in which this process is wanting. To the first group and section belong the genera Mantitor, Platychelis, Mega...
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ephylla, Orcheha, Irina, Cricentra, Dromica, Euphorbus, and Ctenotoma; and to the second section belong the genera Therales, Trienandroid, and Curtisia.

The typical genus of the family we are treating of is Cicindela, and in this genus, as is generally (if not always) the case in typical genera, the species have a wide geographical range, and are very numerous. Taking Dejean's Catalogue as our guide, we find the genus Cicindela contains some species with a width of span which is the same as that of any of the other genera taken together is about 40. The species of Cicindela are found in every quarter of the globe; whereas the other genera mentioned are very local; they are all extending from Europe, some being entirely confined to Africa, some to South America, and others to India.

The technical generic characters of Cicindela are: labial palp moderately long, in this respect not exceeding the maxillary palp; last joint of the palpi truncated at the apex; and the same width as the preceding joints; three basal joints of the outer tarsi dilated in the male, and covered beneath with a velvet-like substance.

As regards the form, the most striking character of Cicindela is the great projection of the eyes; the jaws are very long and sharply pointed, and furnished on the inner side with three tooth-like processes; the head is generally equal in width to the thorax, or sometimes exceeding it; the thorax is either somewhat cylindrical, or rather depressed and nearly square, and is transversely indented before and behind. The elytra are generally rather depressed and almost double the width of the thorax; the legs and antennae are long and slender.

The colouring of Cicindela is generally rich and metallic; the upper surface is usually more or less shaded, and hence it is not glossy; the under surface is glossy, and generally sparingly covered with hairs of a pale colour.

With respect to their habits, it has been before remarked that Cicindela is extremely voracious; we may add, they are very active, and almost always take to the wing when approached, and hence are caught with difficulty; their flight is however short. The situations which they inhabit are generally sandy plains or heaths, and sometimes the sea-shore or the shores of rivers; but some of the other genera of the Cicindelida, from their form and colouring, appear to be more particularly adapted to the last-mentioned situations.

Six species of the genus Cicindela have been found in England, of which the most common is Cicindela campestris. This insect is found more or less abundantly throughout the country, and is very common in the neighbourhood of London; it is rather more than half an inch in length, and of a bright green colour; the anterior and posterior margins of the thorax, the legs, and the basal joints of the antennae are of a rich copper colour; the under side of the body is of a blue green colour; the wing-cases are each adorned with six cream-coloured spots, on the shoulder or outer angle, another at the apex, three on the outer margin at nearly equal distances apart, and one on the disc, a little lower down than the third marginal spot from the shoulder.

The larva of this insect is very well known, and may be found almost at any time during the summer in sandy situations: it lives in cylindrical burrows, varying from six inches to a foot in depth, these burrows being excavated by itself. Like the perfect insect, it is very voracious, and in fine weather may be seen with its head on a level with the surface of the soil, lying in wait for any insect which may happen to crawl over its cell. Its form is remarkable: the head is very large and slightly concave; the jaws are also large and curved upwards; the body is furnished with six legs, attached to the three first segments, and is humped near the middle of the back, at which part there are two tubercles, each of which is furnished with a horn or horn-like organ, and the body being naturally of a bent shape, enable the animal to sustain its position at the top of the cell, or to ascend and descend very quickly: the concave head and the recurved mandibles form a kind of natural basket in which the soil is brought to the mouth of the cell during the progress of its excavation.

Four other British species of the genus Cicindela, C. splendens, maritima, aprica, and sylvestris, have white or cream-coloured spots in the same situations as in C campestris, but they are joined together in pairs; the two towards the base of the wing-case form a curved dash which surrounds the shoulder; the one on the disc of the elytron and that at the margin nearest it are also joined, and form a bent fascia, and the two at the apex form a bent dash, which follows the outline of that part of the wing-case. This disposition of the markings, viz., a lunular spot at the shoulder, a bent fascia in the middle, and another lunular spot at the apex of the elytron, is that which is most commonly found in the species, and the most common colour is brownish bronze; such is the colour of C. maritima, riparia, and sylvestris; the latter sometimes varies to a green hue.

In some exotic species of Cicindela the elytra are adorned with numerous spots; eleven is the greatest number we have found; of these, however, three or four are often obliterated, and the others are joined (two or three together), as often to form three irregular-shaped oblong dashes or fasciae.

In some instances the markings run one into the other, so that there is more white than ground colour; and in one species, now before us, the wing-cases are entirely white. These markings vary but slightly in individuals of the same species.

The Cicindelidae, in most arrangements of insects, form the first family of the Coleoptera.

CICISBEO, in the Zaytun, means a gallant, a man who courts the ladies. The term is also applied to a knot of rhinbs, which used to be worn appended to the hilt of swords or to the handles of fans. (Dizionario della Crusca.)

Like manner a Cicisbeo is a man who hangs upon a lady, is constantly by her side and at her beck, and attends her wherever she goes. This derogatory custom has long prevailed with married ladies, especially in the towns and among the fashionable classes, in Italy and other southern countries; but the courts of many noble and other persons have gradually removed from it. Even in the towns the practice is losing ground of late years. The

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* We have entered more than usually into detail in this article, because the insects here treated of constitute a group in which cabinets are very rich in species; it therefore affords good illustrations of various points of general application in entomology which it may be hereafter necessary to refer to. While writing this, and in endeavouring to trace the markings of the various species of Cicindela to one source, we have discovered (upon referring to other families of the Coleoptera also) that in most beetles, where markings occur, they may be traced to variations of one pattern.
words caridier servente and ratito are also used in the same sense.

CICOGNARA, COUNT LEOPOLD, was born at Ferrara, November 26, 1676, and, although the inheritor of con siderable wealth, began early to distinguish himself by his industry. While yet a youth he made considerable proficiency in mathematics and physics, whereby he recommended himself to the notice of Spallanzani, Scarpa, and many other eminent individuals at the university of Padua. He devoted his course of study there to the study of anatomy, and proceeded to Rome, where he occupied many years not only in studying the great works of art, but likewise in practising himself both in drawing and painting, for which he had almost from his boyhood manifested a more than ordinary talent. After visiting Narni and Sicily, in which latter country he published, at Palermo, his first literary effort, a poem, entitled Le Ore del Giorno, he successively visited Florence, Milan, Bologna, and Venice, for the purpose of making himself thoroughly acquainted with the various treasures of art in those cities. In 1769 he fixed himself at Modena, and during the twelve following years appears to have given much of his attention to public affairs, having been for some time minister at the court of Sardinia. He resigned his post in 1808, when he was made president of the Academy of the Fine Arts at Venice; an office for which he was well qualified, no less by the public spirited zeal with which he discharged it than by his knowledge of art itself and the literature belonging to it. From this epoch in his life may be dated the commencement of his career as a writer, during which he enriched the branch of literature just mentioned by many important works. In the early 1810's he published a treatise on 'The Beautiful' (Il Bello). This was succeeded by his great work, 'The History of Modern Sculpture' (Storia della Scultura dal suo risorgimento in Italia al Secolo di Napol onne), an undertaking to which he had been urged by his friends Giordani, D'Agincourt, and Schlegel. It is in three folio volumes, the first of which appeared in 1816, and the last in 1818, and contains about 180 outline plates, exhibiting a vast number of subjects from the earliest period to the present century the history of the art from the point at which it had been left by D'Agincourt, who himself had taken it up where Wincelmann had quitted it. Besides a vast body of information as to the professed subject, this work also embraces much subsidiary matter of great interest, particularly the descriptive and historical notices of St. Mark's at Venice, the cathedrals of Milan and Orvieto, St. Peter's, and many other Basilicas.

His next publication was a catalogue raisonne, in two thick quarto volumes, of his own library, an immense collection of works in every department of the fine arts. This is a most valuable addition to bibliography, and shows that Cicognara spared no cost in the pursuit of his favourite studies. He likewise produced a work entitled Memorie per servire alla Storia della Calcostrage, and numerous articles relative to subjects of art and artists, printed in various journals, but never, unfortunately, given afterwards to the world in a collective form. Even had he produced none of the works above enumerated, the name of Cicognara would have been transmitted to posterity with honour by the two splendid architectural volumes, entitled Le Fabbriche più Con spicative di Venezia, 1815–20, of which the greater share of the literary part and the chief forecast of the work belong to him, although he was assisted in it by Diedo and Selva, who furnished the accounts of many of the buildings. It is illustrated with 230 engravings, wherein will be preserved at the most interesting structures of Venice when the now noulavering originals shall have fallen in theutter decay. He died at Venice, of a disease of the lungs, March 5, 1834, and his obsequies were performed with great solemnity in the cathedral of St. Mark.

CIOONIA, (St许可.)

CICUTA VISO'-SA, or WATER HEMLOCK, is a wild poisonous plant of the Umbelliflorous order, found occasionally by the sides of ditches and ponds. It is a perennial plant, with fleshy white root covered externally with fibres, and divided internally into several low chamber filled with a milky or yellowish juice. The stem is erect, hollow, cylindrical, striated, and two or three feet high. The leaves, especially the lower ones, are decomposed or thre e-pointed; the leaflets are narrow, lanceolate, deeply and irregularly toothed. The umbels are usually destitute of involutes; they contain at least one seed, and a single linear bract; the small umbels have several such bracts.

The flowers, which are white, have the ordinary umbelliferous structure. They are succeeded by globular double fruit, crowned by the style and the five teeth of the calyx, and showing on each of their convex faces five simple linear angles. Its medicinal properties are similar to those of common hemlock (Conium), but more energetic. Its roots have been mistaken by children and country folks for parsnips, and have been eaten with fatal consequences.

CICUTA. [Conium.]

CID. The adventure of this famed Castilian hero are nearly as much involved in fable and romance as those of our King Arthur and his Knights of the Round-table; nor is it easy, at this distance of time, to separate the truth from the exaggeration of tradition and the inventions of ballad writers. Ferreras and one or two other Spanish ballads think, however, they have established the following facts.

The Cid (from the Arabic El Serid, 'the Lord'), so called by the Moors of Spain whom he subjugated by his victories, was born at Burgos somewhere about 1040. His real name was Rodrigo Diaz de Bivar. He attached himself to Sancho II., king of Leon and Castile, whose life he once saved in battle. At the siege of Zamora Sanchez was treacherously slain, and his brother Alfonso, the next in order of succession, was suspected of the deed. The Cid insisted that before taking possession of the vacant throne, Alfonso should purge himself by taking an oath of his innocency of his brother's murder; and when the rest of the nobles backed, he alone exacted and made the king repeat the vow. Diaz de Bivar did not hesitate to carry the matter in case of perjury. After such a step he could expect little court favor, and the state of Spain encouraged his propensities to war and adventure. His life was a continued series of combats with the Moors, who occupied by far the largest and richest parts of the country. He fell upon them in Aragon, burning, plundering, and slaughtering wherever he went; he took Alcocebre, and making that place his stronghold, he was gradually joined by a numerous band, half patriots, half freebooters, with which
he made numerous incursions into the neighbouring territories of the Moors. Still gathering force he penetrated to the district of Térmel, at the south-western extreme of Cadiz, and was opposed and attacked at La Chiripa (a rock, which is still called 'La Peña de El Cid' (the rock of the Cid)). By the sudden death or murder of the Moors king of Valencia, he was encouraged to extend his incursions into that province, and to the shores of the Mediterranean. To establish his authority he had to establish his power. After a long siege he took Valencia, the capital city, and held it until his death, which happened about 1069.

It is said the Cid really had a wife named Ximena, the Chimenese of the celebrated French tragedy 'Le Cid', but the story of his affecting courtship, and the struggle and contrast of affection in the heart of his mistress, are mainly inventions of Corneille. The Spanish Chronicles and ballads, even those of the French historian took the notion of his plot, or from a drama founded upon them, do indeed relate that the Cid had killed Ximena's father; but they destroy all interest in the heroine by saying that after her father's death, and before any tender addresses on the part of his slayer, she earnestly begged the king to marry her to the Cid, 'because,' she is made to say by these naive writers, 'I am quite certain that his possessions will one day be greater than those of any man in your dominions.'

'They married and their roots became the Cid and his wife, 'Diaz Campeador' is supposed to have been written in the 13th century, about 150 years after the hero's death. Mr. Southey, in his curious work, makes use of a printed edition of 1592, and says the first and only other edition was printed in 1552; but the c is a copy of an edition in the library of the British Museum, which bears the date of 1541.

The 'Poema de el Cid,' which is believed to contain rather more historical truth than the prose chronicle, was written about the middle of the 12th century, or only some 50 years after the Cid's death. The author has been called the 'Homer of Spain,' but his name has not been preserved. Mr. Southey says that the poet took the older psem in the Spanish language, and (in his opinion) the finest beyond all comparison. This praise is perhaps extreme, but the 'Poema' contains some powerful passages, and is highly interesting from its undoubted antiquity.

Besides this poem the Spaniards have an immense number of romances and ballads relating to the exploits of the national hero. No fewer than 102 of these are in the real old style of the 13th and 14th centuries; many are evidently more modern, and many more have never been printed. In some of these ballads the wonderful achievements of Bernardo de Carpio, Ferran Gonzalez, and the rest of the twelve peers (for Spain had her twelve peerless knights, as well as Britain and France) are interwoven with the adventures of the Cid and other persons. The most interesting of all will be found in Mr. Southey's 'Chronicle of the Cid,' 1 vol. 4to. 1804.

CIDARIS. [ECHINIDAE.]

CIDER. A word used to signify the juice of apple expressed and fermented. The article Apple contains a general view of the culture of apple-trees; what is here stated as to the management of apple-trees has special reference to the English cider counties.

In the Hereford district (under which name we shall refer to that county with the adjoining cider districts in Gloucestershire, Monmouthshire, and Worcestershire, while by the name of the 'Devonshire district' similar portions of Dorsetshire, Somersetshire, and Devonshire are included), whose variousities of cider-apple cultivated are far more numerous than in any other part of England, the New Foxhelf (a seedling from the old), the Wilding, the Cherry Pearmain, the Yellow and Red Norman,* are among the many sorts that are preferred. It appears to be almost immaterial whether the crab-stocks are grafted before or within a short time after they are removed from the nursery to the orchard in which they are to stand. In Herefordshire it is usual to leave them six feet from the ground, but the number of the trees about 66 feet between the rows, and 36 between the trees where the soil is rich; if the soil is poor, less distance is allowed, as the trees will not spread with so great vigour. This seems a preferable system practised in Devonshire, where the greatest

are inserted at from three to four feet from the ground, and the trees planted about 16 feet apart. The advantage which in Devonshire is gained from the trees being less in number and broken by the wind, and perhaps from a greater produce of apples. There is, however, the entire loss of the land, usually a wilderness of weeds, into which horses run in the winter, and calves in the spring, but where neither grown cattle nor the plough can ever be admitted.

In the Hereford district the choice is determined chiefly by the quality of the soil, without reference to the nature of the farm-house. In their youth the trees do comparatively little injury to the land, while they receive considerable benefit from the frequent stirring by the plough of the soil round their roots, so that newly-ploughed fields, or hedges which may be again laid down to grass as soon as the trees have acquired some strength, are spots frequently chosen. This practice is agreeable to the very sensible instruction given by Mr. Marshall, Rural Economy of Gloucestershire—'Plant upon the steep hedge with worn out sword; keep the soil under a state of arable management until the trees be well grown, then lay it down to grass, and let it remain in sward until the trees be removed; when it will then require a course of arable management.' (vol. ii., p. 202.)

In February or March, or, where the soil is light, in October or November, holes should be dug about six feet in diameter, and three feet in depth, to the root of the tree that it is to receive. The best sward, with the most turf, if the spot is grass land, should be thrown into the bottom of the hole, and the roots of the tree separated with the hand in horizontal layers with the richest mould between them; when the earth is thrown in it should be firm, an inch from the base of the tree, and the surface of the earth be well watered. If the sward is dry, or the soil is clayey, trowls should be thrown into the depth, then, at the same time binding them round the tree as tightly as can be done without injury to the bark. Where the stocks are not strong, the best fence is one large post, silt with a saw and placed flat-way, with the faces to the plant, and about two feet apart, with rails on each side, nailed upon the edges of the posts. (Marshall.) In the Hereford district these fences are much used; they are cheap and effectual, and from their narrowness offer little impediment to ploughing and other agriculture, whereas the fence carried on as much in the orchards as in any other lands.

Very little attention is paid to enriching the soil round the trees when once they have been planted. In Devonshire, where it is constantly done, the weeds are weeded off, and the orchards, heaped near the stem, there to decay and nourish the roots; and in Herefordshire the more careful planters cause the earth to be dug once a year round trees that have been recently planted: neither is there so much care taken with the trees themselves, when they have once grown strong, as the benefits which have been derived from a better system of management would warrant. In by far the largest proportion of orchards, with the exception of the best fruit, nothing is done to the trees from spring to autumn, except to remove superfluous wood by judicious pruning (an art of which many that practise it are most mischievously ignorant), to remove part of an excessive crop of fruit, to cleanse from moss and mite, which latter in frosts forms an abundant food for sheep, are practices too frequently neglected.

The fruit of the different varieties of apple ripen at different times of the year, earlier or later, according to the variety. The earliest is mentioned. Among the first of this sort are, the Red Moongate, six feet from the ground, and the Gold Moongate, six and a half feet from the ground. Then come the Black Moongate and Red Moongate, both of which bear early in summer; the former in July, the latter in August. The next in order is the Golden Russet, which ripens a little later than the Black Moongate; and the last is the Golden Delicious and June Apple, which are ready in the middle of October. The practice of picking the fruit is by striking the trees with poles, provincially called 'pouling,' and then gathering the fallen

* It has been objected to 'Norman' cider, that it will not carry to a distance without damage,
apples; but though this practice is almost universal it is frequently mischievous, from the young bearing wood being broken by the violence that is used. It is better economy to pay a small extra price for collecting the fruit which falls at several times, than to injure the trees by knocking down all the fruit, the unique way of ripening it, to save an extra rack of shillings. The apples will fall by degrees, and at intervals a boy may be sent into the trees to shatter the branches: in all practicable cases the use of the pole should be avoided. When the apples have been gathered, each sort by itself, and always to the wind, and washed about ten inches deep, where they remain for a month, or more, until they become mellow; they are then ready for the mill.

Cider is manufactured with very rude machinery, by the following process. The apples are put into a circle stone trough, usually about eighteen feet in diameter, called the chase, round which the runner, a heavy circular stone, is turned by one or sometimes two horses. When the fruit has been ground until the rind and the core are so completely reduced that a handful of "must" when squeezed will all pass without lumps between the fingers, and the maker sees from the white spots that are in it that the pipes have been broken, a square horse-hair cloth is spread under a screw-press, and some of the must is poured with pails upon the hair, the edges and corners of which are folded inwards so as to prevent its escape. Ten or twelve of these hairs are piled and filled one upon the other, and then surmounted with a frame of thick boards. Upon this the square cloth is now moved down by a cider-drain; and with the pressure, a thick brown juice exudes from the hairs, leaving within them only a dry residue, which, in years when apples are scarce, is sometimes mixed with water, groomed to prevent the liquid preserving itself too soon. This latter product is called "water cider," a thin unpalatable liquor, which is given to the labourers early in the year.

The cider is received by a channel in the frame of the press upon which the hairs stand, emptying into a flat tub called a "train." From the train it is poured with buckets or 'racking cases' into casks, placed either out of doors, or in sheds where there is a free current of air. In about three or four days, more or less according to the heat of the weather, the liquid usually will ferment, and the thick heavy parts will subside as a sediment at the bottom of the cask, and the lighter become bright clear cider. This should then be racked or drawn off into another cask, and the sediment be put to strain through linen bags, and what cozenes from them should be restored.

It is during the fermentation that the management of cider is least understood, and there is the greatest hazard of injury. It is necessary also to know what fruit will by itself make the best cider. This kind of knowledgether with what proportions should be mixed. But it is in the preservation of strength and flavour after the cider is ground that the principal difficulty consists: slight fermentation will leave the liquor thick and unpalatable; rapid fermentation will injure its strength, and dulness and dizziness will make it sour, harsh, and thin. Other things being equal, that cider will probably prove the best in which the vinous fermentation has proceeded slowly, and has not been confounded with the acetic. Two remedies usually in cases of cider not clearing are either yeast or the addition of cider in a state of fermentation, sugar, eggs, or a quart of fresh blood stirred up with the liquor, in which last case it is to be racked on the following day; these do not appear to be usual. But the second, that of rapidity or rapidity of fermentation; and if a better quality than farm-house or "family drink" is sought, cider requires so much care to prevent its being spoiled, that the best and most useful can not be obtained. It is frequently has it looked at during each night for some weeks after it is made; and if the bubbling hissing noise, the sign of fermentation, becomes frequent or too loud, the liquor is immediately racked off into another cask: this check often requires to be repeated several times before it is settled; and in some portions of the strength will be lost, the body, flavour, and sweetness will chiefly be retained. It is the habit of the farmer to add sugar, treacle, brandy, or any colouring matter to the liquor, usually added only in the hands of cider dealers and publications; but will not lose its goodness, and one has turned sour, or has been otherwise damaged, it must be 'doctored,' in order to render it marketable.

At the beginning of January the cider is moved into cellars, where by large growers it is frequently stored in casks of great capacity, containing 1000, 1500, or even 2000 gallons, but by the small farmers in smaller casks, to save an extra rack of shillings. In March the liquor is burned down; it is then fit for sale, and may be used soon afterwards, though it will greatly improve by keeping. If bottled cider is required, it should be bottle drawn in September, and stored about ten inches deep, where it remains for a month or more, until they become mellow; they are then ready for the mill.

In 1830 the tax upon cider of ten shillings a barrel was taken off (M'Culloch, Doc. Com.), and in the same year an Act was passed allowing any person to sell cider upon the payment of 2s. 2d. annually for a licence from the Excise. This act was amended in 1854, and a licence for the sale of cider is now (1836) granted by the Excise to an applicant signed by six ratepayers of the applicant's parish, the payment being 3s. 5d. if the liquor is to be drunk on the premises, 12s. 6d. per gallon; good, from 10s. to 12s. per gallon; family cider used by farmers and in public-houses, from 4d. to 10d. per gallon; 'drink' for labourers, from 2d. to 6d. per gallon.

There are in many counties, I believe, large farmers, who, in many instances, might increase his profit by contribution of the cost of production. It cannot certainly be supposed that small growers can go to the expense of procuring such machinery; nevertheless, as the economy is considerable, he will be enabled to purchase without much difficulty some larger owners in erecting suitable buildings and apparatus.

It is true that some improvements have been made, that larger mills are used, that in the press an easily worked iron screw has been substituted for an awkward wooden one; but far more remains to be effected. If the mill was placed upon a first floor, which could easily be done in a building erected against a bank, or having an inclined plane, so that horses might enter at that height, all lifting of the cider from the press might be saved, as the cider pipe should be carried from the press into casks in the cellars underneath. Again, if the casks in the cellars were placed upon stages, manual labour in racking might be dispensed with, and waste from these casks prevented. A pipe from a hose-head upon a high stage would empty the liquor into the casks. To use, again, is made of the siphon, a cheap instrument within the reach of any farmer's purse, which would no doubt be serviceable and economical.

The present situation of the cider-making is one of steady progress; by workmen is very large: two or three quarts a day is the usual allowance given in Hertfordshire by masters; and in harvest-time many labourers drink in a day ten or twelve quarts of a liquor that in a stranger's mouth would be mistaken for vinegar; they do not like sweet cider. Notwithstanding so great a quantity is consumed, there do not appear to be any diseases peculiar to or very general in cider countries: idioxy and rheumatism have been stated to be very prevalent in such districts; but in the Ashtabula district of New York it is not in any was proved to be the case. It is remarkable that during the continuance of the cholera in this kingdom, there occurred very few cases in Devonshire, and none in Hertfordshire, although the sickness reached the adjoining counties at the time of harvest, when cider-drinkers to exceed carolled from their native city by the Guelphs. Carlo, who showed an early taste for painting, was put under Germain Glauber Carlo for instruction. He soon surpassed his master, and was removed to the care of Albani, under whom he
rapidity rose in reputation and success. He subsequently
enlarged his style of painting by a careful study of the
works of Grecorius and Annibal Caracci, from whom he
learned the art of giving life and animation to his figures.
His images of a powerful and skilful use of chiaroscuro.
Le Brun is said to have been deceived by a picture of his,
and to have taken it for the work of his great countryman.
Cicero became a city of mountaineers and he was
crewed upon him, he enjoyed the friendship and corre-
spendence of many of the reigning princes of his time,
and acquired great wealth. He was also made a count by
Rome II, his native sovereign.

Being invited to paint the Duomo of Forli, he removed
thither with his family, and resided there for the remainder
of his life. While Forli was occupied by some German
troops during the war between the pope and the emperor.
Cicero was carried into the city. He met with a man
who in return, besides a handsome gift in money, issued an
extraordinary order to his troops to refrain in every way
from molesting the good people of the city. The citizens
testified their gratitude to Cignani by enrolling him among
their nobility. In 1768, when the Clementine Academy
was instituted, Cignani was elected president. He died
September 6, 1719, leaving two sons, one of whom, Felice,
was a painter.

CICILIA (Caere) was celebrated for an infinite variety of subjects, sacred, clas-
sical, and even comic. His colouring is pleasing and bril-
liant, and his finish most elaborate. His chief work is
the Duomo at Forli, an immense composition, ingeniously dis-
persed, which represents the assumption of the Virgin.
(Calanderi, xxvii. 197)."

CICILIA [Sicilia] of Asia Minor, forming part
of Anatolia. The antient boundaries were, on the
north the Taurus, which separated it from Cappadocia
and Lycaonia, on the south the Mediterranean sea, on the
east Mount Amanus, which separated it from Syria, and on
the west Pamphylia. According to Herodotus (v. 32), the
Euphrates was the boundary of Cilicia and Armenia. Cili-
ca had a considerable length of coast, the names of which
were derived from their physical character. The west divi-
sion was called mountainous or rough Cilicia (KiaiexKor-
ixia, or, Herod. i. 34, ἀ περγη Κιλίαρι, Cilicia aspera),
and the east division, level Cilicia (Kiaiex xitalos, Cilicia campestria). Many attempts have been made by antient and modern
writers to account for the name Cilicia; the Greeks derived
it from Cilix, son of Agenor, who was said to have colonized
this country (Herod. vii. 91). The inhabitants were for-
merly called Hypaccis ( Yüksek), according to Herodotus
(vii. 91). For our information on the geography of Cilicia
we are chiefly indebted to Strabo (book xiv.), and Bea-
afort's survey of the line of coast as far east as the gulf
of Lebanon, to whom the modern nations, whose names we
are most acquainted; the principal towns which are known on
the coast. Level Cilicia is described as fertile: moun-
tainous Cilicia has always been famous for a fine breed of
horses; and the annual tribute of the Cilicians to Darius
consisted of 400 white horses and 900 talents of silver
(Herod. iii. 90).

The first town in mountainous Cilicia, on leaving Pam-
phylia, was Coraceisium, according to Strabo (pp. 667, 4,
674, c. Calabria). The modern name is Ałaya; it is a strong
natural fortress, situated on a high and almost insulated
rock. Coraceisium held out against Antiochus (Livy, xxxiii.
39; Beaufort's Karaduniay, pp. 160-168).

The next town of importance is Seleucus (Seleucia-
cstrum), so called from Seleucus Nicator, who died there,
and the town was afterwards called Trajana: the mod-
ern name is Seliti. Cape Anemurium (now Anamur) is the
most southern point of Asia Minor; and probably from
its fine view of the circular desert (pp. 671, 4, 684, e). The shore
presents a line of noble promontories and white marble
cliffs rising perpendicularly from the sea. This rocky
character diminishes a few miles west of Seleucia, where the
high lands begin to reede from the coast. Many rare
kinds of animals and birds are found on the coast, and
almost every district is said to have some peculiar to itself
(Beaufort, p. 595). In the time of Cicero, Cilicia was
famous for panthers.

There is no town of much importance between Seleucia
and the river Latmus (now Lamax), which was the boun-
dary of Cilicia and Lycaonia (Strabo, p. 671, d). Here the
rocks and cliffs cease, and are succeeded by a gentle
beach and broad plains, which extend to the mountains.
The principal towns in level Cilicia were Soli, Tarsus or
Tarsii, and Issus or Issi ( Xenoph. Anab. i. 2, 26).

It was afterwards inhabited by the Pergamans, who
settled the remains of the pirates there: perhaps it is Menetui (Cap-
tain Beaufort, p. 235). This town was the birth-place of
the philosopher Strabo (p. 671, d). Tarsus, antiently one of the most celebrated
cities in Asia Minor, still bears a respectable rank: its
modern name is Tarseos. Tarsus was the birth-place of
the Apostle Paul, and a school for the study of philosophy
and the arts. According to Strabo (p. 673, d), it was a
superior school to Athens and Alexandria.

Tarsus stood in a plain on the banks of the Cydnus, now
called the Tarsus river. The water of the Cydnus, as of
other rivers along this coast which carry down
melted snow from the ridges of Taurus, is extremely cold:
inojudicious bathing in it proved fatal to Frederick Bar-
rossa, and nearly so to Alexander the Great. The Cydnus
has undergone a great change from the deposits carried
carry on from the main line of war; nor none but the smallest boats can enter it (Capt.
Beaufort, p. 265). Issus is situated in the extreme eastern
part of the plain of Cilicia, at the head of the Isiac gulf,
called the gulf of Scanderon; here Alexander defeated
Darius, a.c. 333. The river Pymnus (the modern Jy-
hoon), between Tarsus and the plain of Issus, has
brought down such a quantity of sand and earth, that
the river has been diverted twenty-three miles from its
ancient course (Captain Beaufort, p. 273). In Strabo's
time the Pymnus entered the sea a little to the east of
Cape Megarusa (Karadash); now the mouth is not
west of Etgmac (Ayas). Strabo (book xii., p. 536, a) says
that it passes under ground for a great distance, and bursts
forth again through a deft of Mount Taurus: he was well
aware of the immense deposits which were brought down
by the stream.

The origin of the Cilician is uncertain: they were prob-
ably a Phoenician colony (Herod. vii. 91). Their charac-
ter in historical periods did not stand very high, and in
this respect they were commonly classed with the Cappadocians.
They were the only nation within the Halya, except the
Harpazontes, who did not reduce the title of a king. The earliest information represents them as governed by kings;
and when Cilicia became one of the Persian satrapies, it
evidently continued to be governed by native kings, subject
course to the Persian empire. The name of one of the
Cilician kings, Seleucus, is familiar to us from Char-
phon's 'Anabasia' (t. 2), and he was not the first of his
name. Herodotus (i. 74) mentions one as contemporary
with Alyattes, and Asclepius (Pers. 426, Dindorf) has
imortalized the bravery of another, who joined Xerxes
in his expedition against Greece.

Cilicia became a Macedonian province on the downfall
of the Persian empire; Seleucus and his descendants, after
the death of Alexander, held the sovereign power over a Roman province. Cicero was accony of Cilicia a.c. 702; and for his success against those who had fortified themselves in the mountains, and
had held out against his predecessor Appius Claudius Pul-
cher, he was rewarded with the return with a triumph. Yet
the reign of Vespasian, mountainous Cilicia appears to
have been governed by kings who were appointed by the
Romans, but after that time it became a province.

Strabo, xiv., pp. 568-676, Calabria; and Beaufort's Kar-
adaia."

CLYFERA. [MICROZORIA]

CLIOGRADES, an order of Actebrates instituted by
De Blainville, and comprising the Cnemophore of Ech-
inos, and other animals; the following is the Blainville,
"Actologia," where he admits that the distribution of the
species of one of the genera (Beroe) adopted by him in the
article 'Zoophytes' in the 'Dictionnaire des Sciences Natu-
ralles.'

Y 2
relles,' according to the number of ambulae, depended upon an erroneous observation, and consequently prefers that given by Eschscholtz, founded on the disposition of the 
cilia, at the same time considering Eschscholtz's genera 
Pandora and Medus in no other light than as simple divi-
sions of the species.

Body gelatinous, very contractile, free, diversiform, evi-
dently binary or bilateral, sometimes appearing subradi-
ated, provided with a kind of straight ambulae, formed by 
the approximation of two series of vibratory cilia.

Internal and complete, or provided with two orifices, a 
mouth and a vent.

Before we proceed further, it will be necessary to inquire 
into the nature of the cilia above mentioned, with which, 
or as a part of the same organ, are combined by the 
many of the Medusae are provided, though with certain mo-
difications. Eschscholtz describes these cilia as peci
timated or comb-like organs, arranged in longitudinal rows on 
the external surface of the body with their flat surfaces in con-
tact. Each is made up of many small, flattened, pointed 
filaments, united by a common base, the points being di-
rected towards the posterior extremity of the body. They 
are endowed with a motion not unlike the fins of fishes, 
and are slowly raised but suddenly struck back, whereby 
the body is carried through the water. In Berio and its 
congeners the cilia are directed towards the closed extre-
mitv of the body, so that the opposite or open end is carried 
forward. The Ciliogrades appear to have the power of en-
folding a partial or total action of these organs at pleasure, 
so as to enjoy other motions besides that of direct progres-
sion. When separated from the body with a piece of the 
skin the cilia continue to move, as is observed in the article 
Berio. Under each of the rows runs a longitudinal vessel, 
which communicates with the rest of the vascular system, 
and contains a fluid, in which there are yellowish particles.
Eschscholtz looks upon these as arteries, and regards the 
cilia as respiratory organs in addition to their locomotive 
functions; Schweigger compares these vessels to the canals 
communicating with the tubular feet of Echinus and Ast-
terias; and Dr. Grant inclines to think that the motion of 
the cilia, whose filaments he conjectures to be tubular, is 
due to their alternate fulness or emptiness of fluid derived 
from the longitudinal vessel, like the tubular feet of the 
Echinodermata. Whereupon Dr. Sharpey well remarks, 
'This view of their mode of action, however, is scarcely re-
concileable with the observed phenomena. A tuboin believed 
that in the Idys, a genus nearly allied to the Berio, the 
fluid of the longitudinal vessel, which he supposes to be 
water, is sent into the cilia; he therefore regarded them as 
respiratory organs. If the vessel under the cilia in this 
examet be more or less filled in the Berio, it communicates 
with the rest of the vascular system, and its contained fluid is 
considered as blood, then the cilia of the Idys, which, according to Audouin, 
are permeated by the fluid, would bear a certain analogy to 
the gills of fishes.' But our limits do not permit us to pur-
sue this part of the subject farther, we must therefore refer the student to the lately published and elaborate works 
of Professor Purkinje and Dr. Valentini, and Dr. Sharpey.

De Blainville, who acknowledges that he has never studi-
ed the Ciliogrades in a living state, and that he only 
knows them from figures and descriptions, or at best from 
some specimens preserved in spirits of wine, which he owes 
to MM. Quoy and Gaimard, says that, nevertheless, he has 
no doubt that they ought to be withdrawn from the class 
Anthocoenemata in which they have hitherto been placed 
by all zoologists. He observes that he cannot venture to 
assert whether they ought to pass to the type of the 
Macrozoarina, or whether they ought not to remain near 
the Annelida, or Turbellaria, and adds that it is a subject of research 
which can only be terminated by investigation in the living 
subject.

De Blainville goes farther:-'A sufficiently great num-
ber of persons,' he remarks, 'have spoken of the Cili-
ograde, but very few have been seen near or on the sea; 
the persons who have observed them—in a living state, it is 
true—but incompletely. I do not know even one zoo-
ologist who has published 'quelque chose d'un peu ration-
el' upon their organization. What we know is 
limited to some details as to their locomotive system.
Thus, we learn from those who have seen them in the sea, 
that the Ciliogrades are gelatinous transparent animals, 
continually agitating the cilia with which their very con-
tractile body is provided, organs which possess the 
plorosecnt faculty in the highest degree. They float thus 
continually free, and swimming in the waters of the sea at 
sufficiently great distances from the banks. For the rest, 
we are ignorant of the nature of their food, of the mode of 
their generation, and other circumstances of their manners 
and habits.' The work wherein this passage is found was 
published in 1834, and though we by no means would have 
it understood that there is not still a great deal to be done 
before the whole of the organization of the Ciliograde can 
be satisfactorily elucidated, we cannot agree with M. de 
Blainville's assertion of the entire state of ignorance which 
he would have us believe, prevail on the subject. In addi-
tion to the interesting labours of other observers, some of 
whom we have already mentioned, Fabricius had detected 
multitude crustaceans in the digestive organs of Berio, and 
thus furnished a key to the nature of the nourishment of 
that genus; and an abstract of Dr. Grant's paper 'On the 
Nervous System of Berioe Pileus' was published in the 'Pro-
ceedings of the Zoological Society of London' early in 
1833.

Geographical Distribution.—M. de Blainville says that 
Ciliograde exist in all the seas; but that it seems to him 
that they are most abundant in those of the north, perhaps, 
he adds, because they have been neglected.

Systematlc Arrangement.

De Blainville, whose amended arrangement we take, ob-
serves that systematists have hitherto agreed to imitate 
Gonin's more or less on the subject of the place of the 
Ciliograde in the animal series, that is to say, to form 
them a genus approximating to the Medusae, and he in-
stances Lamark, Cuvier, Latreille, and Oken, as not having 
expressed any doubts on the subject.

Genera. Berioe.

a.

Species whose cilia are smaller than the interstices which 
separate them (Genus Berioe of Eschscholtz).

Example, Berioe oresta. Those found by Browne seldom 
exceeded three inches and a half in length, or two and 
half in the largest transverse diameter. 'This beautiful 
creature,' says Browne, Jamaica, p. 384, 'is of an oval form, 
obtusely octagonal, hollow, open at the larger extremity, 
transparent, and of a firm gelatinous consistence; it con-
tracts and widens with great facility, but is always open 
and expanded when it swims or moves. The longitudinal 
radi are strongest at the crown or smaller extremity, where 
they rise from a very beautiful oblong star, and diminish 
gradually from these to the margins; but each of them is for-
ished with a single series of short, delicate, slender appen-
dixes or limbs [the cilia] that move with great celerity either 
the one way or the other, as the creature pleases to direct 
its flexions, and in a regular accelerated succession from the 
top to the base, the extremity nearer the margin. It is impos-
bable to express the harmony of the motions of those delicate organs, or the beautiful 
variety of colours that rise from them while they play to-
and fro in the rays of the sun; nor is it more easy to express 
the speed and regularity with which the motions succeed 
each other from the one end of the rays to the other.' 
Dr. Browne frequently met with these animals to the north 
of the western islands (West Indies).
Species whose cilia are twice as long as the interstices.

(Genus Medus, Eschscholtz.)

Example. 

Beroe fuscescens

Species whose cilia are situated in two ambulacral ridges.

(Genus Pandora, Eschscholtz.)

Example. 

Beroe Flemingii

Cydippe.

Body regular, free, gelatinous, divided into eight sections, more or less distinct, by as many double longitudinal rows of vibratory cilia. An indentation of the sides: conical appendages on the sides of vibratory cilia are ranged.

Example. 

Mnemiopsis papillosa, Gmelin; Beroe piletida, Lamarck; Pleurobrachia, Fleming; Eschscholtz, Péron, who really established the genus; but Eschscholtz having transferred the last name to a genus of Ciliobranchiata. De Blainville prefers following him, to avoid greater confusion. [Benoit, vol. vi, p. 317.]

Callianira.

See the article, vol. vi. p. 163.

Mnemion.

Body smooth, oval, elongated vertically, very much compressed on one side, and as if lobated on the other. Buccal openings between the cilia, four in number, which do not extend towards the extremities.

Example. 

Mnemiopsis heteropera, Callianira heteropera of Chamisso, thus described by M. de Chamisso and Pavie.

There are four lobes, ciliated to the extremities, one extremity, with a transverse mouth, into which it was impossible to penetrate. A large cetoid wing on each side, with vibratory cilia on its edges; six intermediate smaller wings, of which the four inferior (buccal) are lamellated, ciliated on the edges, and attached to the base of the body; two superior ciliated wings uniting themselves to the two large lateral ones, which Péron, according to the describers, erroneously regarded as branchiae. It is suggested that the two pairs of appendages of the mouth may be the analogues of the buccal appendages of the Lamellibranchiate Malacozoa;—the two double bands on each side their branchiae;—and then the question arises whether the Ciliograda might not be placed under this type and form, a particular class; but little removed from the Bipores [Salpacia], and forming a passage still more marked towards the Actinozoa. The cilia, which have some analogy with those on the edge of the mantle of the Lamellibranchiata, are said to be only coloured by the decomposition of light between their borders.

Calymma.

See the article, vol. vi, p. 173.

Axiotina.

Body a little elevated, a little compressed, or subcircular, prolonged, like a box, to which belong a sort of appendages, bearing the series of cilia towards their terminal half only, and up to their end. Mouth small, entirely deprived of labial appendages.

Example. 

Axiotina Guidia, Eschscholtz. Locality, South Seas, near the equator.

Eucharis (Eschscholtz).

Body oval, sufficiently elevated, slightly compressed, or subcircular, covered with papillae, with the ambulacra of natatory cilia extended from the summit to the base. Mouth small, provided with two rather long pairs of appendages.

Example. 

Eucharis Tiedmanni, Eschscholtz. Locality, seas of Japan. This name had been employed, as we have seen, by Péron, to distinguish another genus of Ciliograda, and should not have been transferred: for in all such cases confusion must be the consequence. The species must now remember that the Eucharis of Péron and that of Eschscholtz represent two different generic forms.

Ocytia.

Body gelatinous, transparent, vertical, cylindrical, provided above with two lateral musculo-membranous, bific, thick, wide lobes, and with two fleshy ciliated rib-like elevations, with two other ciliated ribs upon the edges between the lobes: aperture provided with four ciliated arms.

Example. 

Ocytia cristallina, Rang, who founded the genus. De Blainville thinks that it bears much resem-
watching them; and he was ultimately permitted to assist them. Having acquired more knowledge than his instructors possessed, he became noted as one of the best painters of the Venetian school, in landscape and communities. His fame having spread abroad, he was invited to adorn the church of St. Francis at Assisi. He painted part of the walls in concert with certain Greek painters, who came from Constantinople for the occasion. His cordiality and ambition increased, and he went on with the work alone. He was recalled to Florence by private affairs, and obliged to leave his work uncompleted. It was afterwards finished by Giotto. After his return to Florence, among other pictures he painted a Madonna on either side of the church of Santa Maria Novella, which was of a size so unusual at that time, and was considered so novel and splendid, that it was carried to the church in procession; and according to the tradition, when Cimabue and Andrea del Sarto were both working on the church at the same time, the latter not yet obtained a sight of the picture accompanied him with rejoicing and festivity, that the street was afterwards called Borgo Allegri—literally, Merry Borough. Cimabue was engaged as an architect, in conjunction with Arnolfo Lapi, to build the church of Santa Maria del Fiore; but he died shortly after, in the year 1300.

Previously to the time of Cimabue, painting had sunk to a merely mechanical occupation, and was chiefly in the hands of Greeks, who worked after certain fixed patterns, each blindly copying his predecessor. Cimabue's right to be considered as the restorer of the art has been warmly urged, and as warmly contested. It appears probable that a real break with that tradition would have been effected by Cimabue himself. The name of the art was then of new animated life, and the former art would have been delayed some time longer, had it not been for the impulse which it received through him. He gave some life into the heads and into the action of his figures, abandoning the solid straight lines of his Greek instructors. He is supposed to have been the first to recur, after a long interval, to the study of nature, and to have drawn from the living model, though but sparingly. Nor is it the least debt which painting owes to Cimabue, that he discovered and fostered the genius of Giotto.

He worked in fresco and tempera, oil painting being a later discovery. Some of his works still exist; the principal are in the church of Santa Maria Novella at Florence, and that of St. Francis at Assisi. (Vasari; Luzzi.)

CIMAROSSA, DOMENICO, one of the most celebrated composers of the Italian theatre, was born at Naples in 1754. To April he was inducted for his first instruction. He soon completed his education under Dufay at the Conservatorio of Loreto. His general education was also of a superior kind, and he was not only esteemed for his professional art, but for his well-informed mind and good taste. His representation of L'Italiana in Londra, performed 1759, in the role of 'Il Matrimonio Segreto,' which will transmit his name to posterity; for it must be acknowledged, that of his thirty operas, most of which were in their day the admiration of all music lovers, the last mentioned is the only one now given on the stage, or likely to be again heard. When this was brought out at Vienna, it so delighted the emperor, Joseph II., that at its conclusion he invited the singers and band to a subscription party at his palace, and the whole expense of the piece was repaid; the only instance on record of the entire of an opera. In 1757 Cimarosa was invited by the Empress Catherine to St. Petersburg, where he produced three operas. He returned to Naples, and having shown no little prejudice for the French during their occupation of that city, very narrowly escaped the sangriento punishment which disgraced the restoration of the old royal family. He died at Venice in 1801.

Cimarosa composed in concerto, C'Orari e Curiazzi proves that he could compose well in a different style. He is the link which unites the old and modern schools, his scores exhibiting an instrumentation much stronger than that of his predecessors, though often in vigour and richness to that of Mozart. The last part of them, by many composers of his day, esteemed for the fullness of his accompaniments. Grétry, when asked by Napoleon the difference between Cimarosa and Mozart, replied, 'Cimarosa, Sire, placed the statue on the stage and the pedestal in the orchestra, but Mozart put the statue in the orchestra and the pedestal on the stage.'

CIMBRELLI, a group of Lepidopterous insects of the section Terebrantia, sub-section Securifera, and family Tenthredinidae.

The genus Cimbex, as it formerly stood, has been subdivided (principally by Dr. Leech) into the following subgenera: Cimbex, Perga, Spyzynia, Trichi somna, Clavellaria, Zareia, Abia, and Amosia. All these subgenera have the antennae short, and terminated by thickened joints, which are nearly of an oval form; the third joint of the antennae is long, forming a superior wings have two marginal and three sub-marginal cells.

The antennae of these insects generally present six distinct joints, of which the two basal joints are very short, and almost lacking. The two joints which are long, the fourth and fifth are of moderate length, and the sixth is elongate (or moderate), rounded at the apex, and tapers more or less towards the base; this last joint is, however, evidently composed of two or three joints consolidated. All the joints of the tarsi have a membranous pad attached to their under side, and protruding from their apex.

The genus Cimbex, as now restricted, may be known by the following characters: the antennae are thickened in the basal segment emergent above (that is, it appears as if a semicircular piece had been removed); the space thus left unprotected by the horny covering filled up with a membrane. Thighs of the four posterior legs of the male have a dark scale-like projection on the under side of the basal segment.

This genus includes the largest species of the family Tenthredinidae.

Cimbex Gryphini is about an inch in length, and when the wings are expanded its width is about one inch and three quarters. It is of a reddish-brown colour, the abdomen is yellow, and more or less clouded with brown towards the base; the antennae and tarsi are yellow, the former is brighter towards the apex.

The larvae, we have been informed, feed upon the sallow, and is not uncommon in the neighbourhood of Cambridge. Mr. Stephens enumerates eight British species of this genus, some of which, however, it is thought, will eventually prove to be mere varieties.

CIMBRI, or KIMBRI, the name given by the Roman and Greek historians to a vast multitude of people who came from the northern parts of Germany at the same time as the Teutones, crossed the Rhine, and entered Gaul, where they joined the Ambrones, a Celtic tribe, and, after ravaging and plundering part of Gaul, went into Spain, where they were afterwards repelled. The Teutones from the Rhine, and, after Guarac and Teutones and Ambrones then made an incursion into Italy, where they were defeated by Marius, 102 B.C. Part of the Cimbri, however, had gone into Helvetia, where they were joined by the Tigrini, a Helvetic tribe, with whom they crossed the Rhine. Pomponius Mela (iii. 27) says, that the Cimbri were the first of the Cimbri we know nothing certain. Strabo (vii. 291—4) places them north of the Elbe beyond the Chaucii, and numbers them among the German tribes. Pomponius Mela (iii. 27) says, that the Cimbri held the lands on both sides of the Baltic Sea. Pliny speaks of the promontory of the Cimbri; and the peninsula of Jutland has been called Cimbereosus Cimbria, without however being proved that the Cimbri ever inhabited it. It is probable that the Cimbri on the invasion of Italy were divided into two parts; the Teutonic and Celtic, for in their war with Marius, the description of their arms, and the name of their chief Beorixus, appear to designate them as Cimbri. (Mannert, Geographie der Germania, i. 536.)

CIMEX. [Cimicidae.]

This structure is very remarkable, and is evidently to allow of a free movement of the abdomen in an upward direction.
CIMICIDAE, a family of Hemipterous insects, the species of which are usually found by their having the rostrum short, and consisting of two or three joints only; the labrum also short, and without stria; the eyes are moderate; the body is generally very much depressed. The principal genera are Cimex, Anoplophora, Aradus, Agronomus, Trinotus, and Dioryctria, all of which are found in Europe. The genus Cimex is distinguished principally by the extreme slenderness of the two terminal joints of the antennae, which are not thicker than a hair. The body is very much depressed. The thorax is transversely antennae four-jointed; basal joint very short, second, the third of about equal length, the fourth rather shorter. Labrum rather long, somewhat pointed, and, when the proboscis is not in use, recurved under the head; proboscis three-jointed, and, when at rest, lies along the underside of the thorax, its apex being between the two fore-legs at their base.

There are said to be two or three species of this genus. We have however never had an opportunity of examining any but the common bug (Cimex lectularius), of which an account is given under the head Bed Bug. We have here added an outline-drawing to show its structure; for although it is too common an insect, it is seldom examined except by the entomologist.

1. common bug (Cimex lectularius) magnified; 2. natural length of do.; 3. head of do. highly magnified; a, the labrum; b, the proboscis; c, base of the antennae.

CIMOLITE, a hydrous silicate of alumina found in the island of Cimola. It occurs in amorphous earthy masses, the structure of which is rather slaty. Colour greyish-white. Fracture earthy, uneven. It is soft and opaque, and its specific gravity is 2-0. It is used for the same purposes as fullers' earth.

CIMON (Κιμών), the name of two Athenians, one the father (Herod. vi. 34) and the other the son of Miltiades. The memory of the elder Cimon rests almost entirely on the fame of his son; scarcely any thing is known of him except that he was remarkably stupid. Cimon, the son of Miltiades and Hegesipyle, was born about 502 B.C. Miltiades died in prison, and Cimon had to pay the fine which had been imposed on his father. Without the aid of the prudent Clisthenes, who is said to have assisted him, fifty talents would probably have made a large and inconveniency inroad on his patrimony (Herod. vi. 136). The anecdotest which remain of Cimon's early youth are not creditable either to his mother or to his infant. The worst excesses are laid to his charge. Although little confidence can be given to the details of these numerous reports, so much seems to be clear that he did not do as others of his rank did, or as it was expected that the son of Miltiades would do. He even neglected what is usually deemed the essential branches of a liberal education. On the other hand, the stupidity which is ascribed to him at this period, and the reputation for which fixed on him his grandfather's nickname Calemus (καλέμος) — the idiot, was probably nothing more than a natural reserve, combined with a certain inaptitude to social vivacity or oratorical display, which however may not have at all disqualified him for the services of active life. He seems to have excelled rather in doing, than in talking about doing. Aristarchus almost alone is accused in him the elements of a great character. It is probably to his fostering care and counsels that the glorious results which were afterwards developed are partly due.

Cimon's entrance into public life may be placed at the conquest of Eion, on the Strymon, B.C. 476. This town, which was very important to the Persians, was desperately defended by the garrison under the command of Boges, who at last, rather than surrender, raised a huge pile, which was surrounded by the Persians with a palisade, and by digging a trench and a moat. On the third day the Persians threw down the mound and carried away the dead. The Persians then divided the town among themselves. (Herod. vii. 107; Thucyd. i. 98.) Cimon's next victory was at the island of Sicyos, which he seized under the pretence that it had been guilty of some sacrilege which enabled him to plant a colony of Athenians, and divided the land amongst them. (Thucyd. i. 98.) But Cimon's most important victory was at the Eurymemon in Pamphylia, B.C. 466, where he sunk or took 200 Persian ships, and carried away prodigious booty from their tents on the banks of the river. A squadron of Phoenician ships which was coming to the aid of the Persians was met by Cimon, and wholly destroyed. The Persians were still in possession of the coast of Thrace. That Cimon should take the thracians in wresting those possessions from their power is easy to be explained: Olorus, the father of Hegesipyle, had been king of Thrace. (Herod. vi. 39.) Accordingly he sailed with a small force and lodged them from his patrimony, from a large extent of adjoining country. Twice he led a force to assist the Lacedaemonians, B.C. 464 and 461, at the siege of Ithome. The insulting manner in which the services of the Athenians were received by the Lacedaemonians (Thucyd. i. 101, 2) on the latter occasion seems to have put the people in ill humour with all the friends of Sparta; and this may have had some effect in bringing about Cimon's exile. Towards the end of the same year (B.C. 461) in which they returned from Ithome, Cimon was banished for ten years by ostracism. (Clint, Hist. Hel., vol. i. p. 48.) In the year B.C. 457 there was a battle between the Lacedaemonians and Athenians, at Tanagra in Boetia. Cimon presented himself to fight on the side of the Athenians, and took his stand among those of his tribe. The council of 500 were consulted, and he was not allowed to remain: he left the army beseeching his friends to act like brave men, and to prove their attachment to their country by their deeds. The Athenians however were signal worsted; and this, with other defeats which they suffered during the exile of Cimon, seems to have led them to wish for his return. In the fifth year of his banishment he was recalled by a decree, of which he was the author. A force was sent to drive the Athenians out of the territory; they met with a squadron of sixty galleys to the aid of Amyartus, and with the rest besieged Citium in Cyprus. Here he died, either from illness or from a wound. Just before he died he forbade his men to report his death until they arrived at Athens; and Plutarch preserves the remark of Phanodenus, that the army was as it were conducted by Cimon thirty days after he was dead. Though the Athenians were forced by want of provisions to raise the siege of Citium, they did not return home without victory: they met with a fleet of Phoenician and Cilician ships near Salamis in Cyprus, and completely defeated them. They afterwards defeated a force on shore.

The slender prestige to which Cimon succeeded had been considerably augmented by his Persian victories, and especially by the recovery of his patrimonial estates in Thrace. He did not use his acquisitions for personal aggrandizement: his munificence was not only fully equal to his means, but was not limited to his respect for the public advantage. He preferred hospitality to luxury, and would rather provide a frugal entertainment for many, than a sumptuous banquet for a few. Many of the splendid improvements which he made in Athens were effected at his own cost. The quarrels of Piraeus and Phalerum were commenced, and in great part executed at Cimon's expense. He changed the Academy from a barren uncultivated field to a shady and pleasant grove, and planted the Argos with plane trees. It is probable that his taste in these
times as long as broad. This is distinguished from the last not only by the form of its leaves, which never taper to the point, but also by the pits at the under side of the leaves being bordered with inflected hairs; in *C. Condamina* they are quite hairless. It is also allied to *C. rosea*, but that species has a smooth corolla and glandless leaves. In the quality of its bark, it is not distinguishable from *C. Condamina*. Immense forests of this species exist in the province of S. Juan de Bracamorros. It is the commonest of all the quinas in that part of Peru, and the most esteemed; in commerce it has the name of *Quina fina*.

5. *C. purpurea*. Leaves broadly oval, somewhat wedge-shaped at the base, shortly cuspidate at the point, on the upper side smooth, on the under rather downy upon the principal veins; panicle large, brachiate; flowers somewhat corystose; corolla slightly downy externally, its limb hairy inside; capsules cylindrical, becoming ovate-oblong, with longitudinal ribs, four times as long as broad. (Syn. *C. morado*). A native of the Peruvian Andes, in the coldest and deepest part of the forests, about Chinchao, Puri, and elsewhere. It is also apparently one of the wild roots of Santa Fé de Bogota.

The very considerable size of the trees of this species, and its large membranous leaves, covered on the under side with prominent violet-coloured veins, are said by Poppig to mark it readily. The bark, called *Casc. boba colorada*, is not in much esteem, but as it is readily collected, it can be sold at a low price, and is used for adulterating other sorts. According to Reichel, it is undoubtedly the Huamala bark of trade.

6. *C. macoecalyx*. Leaves ovate, roundish, hardly acute, quite smooth on both sides; their principal veins close together; panicles corystose; corolla slightly downy externally, with the lobes hairy on the upper side; limb of the calyx smooth, bell-shaped, acutely five-toothed. A species distinguished by De Cordolli by the above characters, but only known to him from specimens. It is found on the mountains of Peru: nothing is known of its tensile properties.

7. *C. Humboldtiana*. Leaves oval, rather obtuse, on the upper side shining, on the under between silky and downy; panicle brachiate, four-flowered; corolla silky on the outside, smooth in the throat, with its lobes shaggy inside at the point; capsules ovate, longitudinally ribbed, about twice as long as broad. (Syn. *C. ovalifolia*, Bonpl.). First described by Bonpland as identical with *C. ovalifolia* of the 'Flora Peruviana,' but afterwards recognized by him as distinct. It forms forests in the province of Cuenca, in Peru: in commerce it is called *Cascarilla pruida*, which signifies velvet-leaved quina. Its bark is not in much estimation; it is however a good deal collected for mixing with other sorts, and Bonpland suspects it to be of good quality.

3. *C. lanceifolia*. Leaves obvate-lanceolate, very smooth; on each side, without glands; panicle large, brachiate; corolla silky on the outside; capsules obovate, smooth, five times as long as broad. (Syn. *C. nitida*, R. and P.; *officinalis*, Ruiz; *lanceolata*, R. and P.; *glass*, Ruiz; *angustifolia*, Ruiz.) Next to *C. Condamina* this is a-quoted the most efficacious of all the species. It furnishes the orange coloured bark, or the quina narangenda of Santa Fé de Bogota, and is obviously different from the two former species, in its leaves being destitute of glands. Humboldt says that it prefers an inlemment climate, on mountains of elevations, from 4000 to 9000 feet high, where the mean temperature is about that of Rome. In the Alpine forests of the upper limits of the snow inhabited by this species, the thermometer falls for hours as low as the freezing point. The plants are more rare than those of *C. pubescens* and *magnifolia*, always growing singly, and not increasing readily by the root. A kind of bark, bearing a high reputation at Cédiz, and called Calisaya, is referred to this species. It derives its name from the province where it grows, which is situated in the most southern part of Peru, in La Paz.

Another variety of this, according to Humboldt, a distinct species according to others, the *Cin hona nitida*, of the 'Flora Peruviana,' is found only upon the coldest parts of the mountains of Peru, where it becomes a tree with a stem scarcely eight feet high. Its flowers are bright red, covered inside with a white down, and do not appear till May. Its bark, the *Casc. hoja de Oliva*, although of the finest quality, is never seen in commerce.

4. *C. pubescens*. Leaves ovate, very seldom subcordate, leathery, downy, or nearly smooth on the upper side, tomentose on the under side; panicle brachiate; corolla downy outside, the limb hairy inside; capsules obovate, oblong, ribbed externally, three times as long as broad. (Syn *C. cordifolia*; *ovata*, R. and P.; *glochicoca*, Ruiz; *hiruta*, R. and P.) A most variable plant, yielding what is called yellow bark. It is found in the kingdom of New Granada, in 4° N. lat., at heights between 5400 and 8650 feet; it has the name of *Quina amarilla*.

8. *C. magnifolia*. Leaves broadly oval, somewhat acuminate; smooth; principal veins of the under side shaggy at the edges; panicle branched; corollas silky externally; capsules obovate, tapering, seven times as long as broad.
CIN

(Syn. C. lutea, grandifolia, oblongifolia.) According to Roiz, Humboldt, and De Candolle, the C. oblongifolia of Ma' is, which produces the red bark of Santa Fé, is identical with the C. magnifolia, or Flor de Azahar of the 'Flora Peruviana.' The former grows in 5° N. lat., at the height of 1500 meters above sea level, and is common about Marquita; the latter occurs in the hottest parts of the Andes of Peru, about 10° south of the line. C. oblongifolia of Santa Fé produces a bark which, although less efficacious than that of C. Condaminus and lanceifolia, is not less beautiful than the C. subulata; but this is hardly reconcilable with Pippig's statement, that the C. magnifolia has a woody, not very astringent bark, and is chiefly used for purposes of adulteration: he adds, that the bark-peelers do not even reckon it a fever bark, and C. oblongifolia, by the Indians, is considered almost as a fruit. The mentioned author describes the tree as very stately, with unusually large white flowers, diffusing a delicious colour like that of orange-blossoms; possibly the differences advertised to arise from the result of climate.

9. C. mucronata. Leaves elliptical, leathery, on the upper side perfectly smooth, on the under between hair-like and puberulent; panicle trichotomous; corolla with closely set, broad, down on the outside; its lobes hairy inside: capsules cylindrical, twice as long as broad. (C. oblongifolia, Miutis.) The white bark of Santa Fé. The tree grows between 3° and 6° N. lat., at heights between 4200 and 8400 feet: a variety of it, with leaves quite smooth on both sides, is common at Lima.

10. C. crassifolia. Leaves oblong, rather blunt, tapered to the base, leathery, smooth on each side; when young, ashy in the axils of the veins; stipules membranous, grown together; corollas terminal, trichotomous; branches trichotomous, three times as long as broad. Fruit oblong, three times as long as broad.

11. C. anceps. Leaves ovate, acute, smooth, the veins of their under side somewhat shaggy; panicle bracteate, stalked; corolla silky outside, woolly inside; capsules oblong, tapering to the base, four times as long as broad. A native of the lower woods of the Andes of Peru, in Chiquayla. The bark is stated to be called 'Cusc. de hoja aguda;' it is moderately bitter.

12. C. acutifolia. Leaves ovate, acute, smooth, the veins of their under side somewhat shaggy; panicle bracteate, stalked; corolla silky outside, woolly inside; capsules oblong, tapering to the base, four times as long as broad. A native of the lower woods of the Andes of Peru, in Chiquayla. The bark is stated to be called 'Cusc. de hoja aguda;' it is moderately bitter.

13. C. glumastylus. Leaves ovate-lanceolate; on the upper side smooth and shining, with glands at the axils of the midrib and on the side; whitish with a double row of long hairs, especially on the principal veins; panicles somewhat co-umbellate; corolla velvety on the tube, woolly in the inside of the limb; capsules oblong, three times as long as broad. (Syn. C. glansiflua.) The flowers are white, fragrant, the fruit is a berry. It is believed to inhabit the highest mountains of Peru, and is more scarce than many of the other kinds; its trunk is from 12 to 15 feet high, and its flowers, in the month of February, fill the forests with their perfume; on the colder parts of the mountains it becomes a bush, the greatest produce from which is five or six feet high, and three to four feet in diameter. It is considered, according to Pippig, one of the finest sorts of Cinchona; he says that the Peruvians distinguish it by its blackish-rind, which is only here and there interrupted by minute, shagreen spots when in a fresh state. The common people consider these spots as indicating the part of the bark, and look upon it as the more valuable if beneath the larger spots there appears a black shining velvety substance dispersed in ovulis of some lines broad; this is probably caused by some Besckia. The bark, therefore, hence it call it Cascarilla negrilla; when broken, it exhibits a glossy, shining, almost rosinaceous, of a ripe orange color passing into a fiery brown. A variety of it, called Cascarilla, or C. proximata, is obtained from the trees growing in warm valleys at the base of the Andes. This tree is equal to the finest sort from Ucayali, but it is not known in Europe, except in mixture with other kinds.

* Corollas smooth externally.

15. C. candidiflora. Leaves oval, smooth, erect, hairy in the axis of the leaves; panicle bracteate, with corymbose branches; corolla smooth, falling off very quickly; capsules oblong, four times as long as broad. (Syn. C. incana, Miutis.) Found near Jaen de Bresumarets, a hot damp country, where it is called 'Cascarilla boro.' The tree is described by Bonpland as being about 100 feet high; its bark is not emetic.

16. C. rosea. Leaves oval, tapering to the base, bluntly acuminate at the point, smooth on each side; panicles clustered, branches corymbose; corolla smooth on the inside, its limb hairy; capsules oblong, three times as long as broad. (Syn. C. incana, Miutis.) The tree is not unfrequently about Cuché o, where it forms a highly useful tree, which in its size and ramification may be justly compared with the white beech of Europe; in July it is adorned with massed pale violet flowers. It is cultivated in Peru near the name of Polo de San Juan. Its bark is not collected, but Pippig thinks it would be found to possess good qualities.

CINCHONA BARKS.—Whatever may be the botanical history of the different kinds of bark, on their arrival in Europe they are known by names which have reference rather to their physical appearance, or the place whence obtained, than to the botanical characters of the trees which furnish them. In England they are classed under three heads, pale, yellow, and red barks. Of each there are several varieties, which comprehend, however, various kinds, not the produce of any of the genuine species of Cinchona. According to the last, called false or spurious cinchona barks, are all distinguished from the true cinchona barks by the absence of quinina, quinina, and uricina (or Cuscó-cinchona, a principal name found in the province of Arica by the Cuscó-cinchona and Cusco-cinchona, a Cusco-cinchona, of the Cusco-cinchona rubiginosa, Berg.) Several of these spurious barks are employed in fever and other diseases, but they are chiefly used to adulterate the more valuable kinds of cinchonas. Even when there is no intermixtures of these inferior sorts, a variation in quality occurs in bark of the same species, according to its place of growth. The finer kinds are known by experienced persons by a glance at the eye; but it is extremely difficult to indicate, by any external observation, the quinina, or quinina, the guiding marks by which the true cinchona barks all arrive in Europe in the same package, either a chest or corne, which is formed of pieces of wood rudely fastened together, and covered with the hides of animals. They are afterwards sorted, and bring very different prices in the markets, according to the degree of estimation in which each kind is held. We shall describe the best kind only; but we must remark, that much prejudice exists on this point, and sometimes excellent kinds are rejected, while pruriens, or the kind of prejudice, the barker's employ various artifices, more or less injurious. The most useful classification of barks is that proposed by Geiger, which has reference to the relative proportions of their alkaloids:—1. Those in which quinina predominates, and is chiefly pale. 2. Those in which quinina predominates, of which there is only one—the yellow bark of English commerce, called China zigaerina, China cinchona. 3. Those in which cinchona and quinina exist in nearly equal proportions, red
barks, and the yellow bark of continental writers; the
China of Carthagena of the French, China flava dura, quina
amaramila. This last is also called orange bark (quinia
aurantiaca of Mutis), which is not the yellow bark
of English botanists, though by some it is considered;
and hence the frequent error in the British pharmacopoeias of referring yellow bark to the C. cordifolia (Mutis).
Of the pale barks, three varieties are known in English commerce, one from Brazil, or Loxa, or a grey, olive-brown
Huanuco bark. 3. Ash bark. These are always quilled,
and never in flat pieces. The powder, which gives the
name, varies from grey to fawn colour. The first variety, Loxa or crown bark, called also true Loxa bark, is obtained either exclusively from the C. Condantae or
C. Scrobiculata. It occurs in pieces from 6 to 14 inches
long, the quills varying in diameter from the fourth or
even smaller part of an inch to nearly half an inch; the
rolls are sometimes double Loxa bark, meeting at the centre; the
diameter of the bark is from \( \frac{1}{4} \) to \( \frac{1}{4} \) line. The colour of
the exterior is marked dark-grey, in some specimens verging
to brown. A shining but peculiar appearance is ob-
servable upon it, owing to the thallus of the lichens spreading
over it. This commonly alternates with the colours of
other lichens, greyish-white, yellowish-white, bluish-white,
so that the bark acquires an appearance as if it were
painted. Numerous transverse cracks, often extending from
the bulk of the bark to the other, with the edges a little
raised, are seen, sometimes close to each other, some-
times more remote, especially in the larger pieces, in which
also they rarely extend to the whole circumference of the
piece. In the larger pieces, longitudinal cracks are also
seen, and between these cracks, small and frequently arise,
which give a very rough feel to such specimens. The
Usnea floridica, and some foliaceous lichens, such as Parme-
lin perforata (Ach.), often remain attached to it. The inner
surface is smooth, except some delicate, irregularly longi-
tudinal fibres: the colour is a cinnamon or darker brown.
The fracture of the smaller quills is even, or slightly fibrous;
that of the larger pieces more so, the fibres firm, but neither
obligue nor vitreous, as in the yellow bark (China Quina),
but the outer circle presents a resinous aspect. The odour
resembles that of tan. The taste at first is slightly astrin-
gent, and faintly acid; afterwards very astrigent, some-
what bitter, but not acrid.

In respect to its chemical composition, this variety is
commonly supposed to contain cinchona (discovered in pale
bark by Dr. Duncan, jun.); only; but this is a mistake, and
it is most probable that the specimens which, when ana-
yzed, yielded no quina, were either very thin quills ob-
tained from young branches or trees, or were specimens of
Huanuro bark. Bucholz analyzed sixteen ounces of the
Loxa bark of commerce, yet found no quina, but some quina
is reasonably suspected: the other constituents were
found to be

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Grams</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fatty matter, with chlorophyll</td>
<td>1.0</td>
</tr>
<tr>
<td>Bitter soft resin (Geiger thinks this contains quina)</td>
<td>0.2</td>
</tr>
<tr>
<td>Hard resin (red insoluble colouring matter)</td>
<td>12.0</td>
</tr>
<tr>
<td>Tanin (with trace of acetic acid)</td>
<td>0.3</td>
</tr>
<tr>
<td>Cinchona</td>
<td>0.0</td>
</tr>
<tr>
<td>Konic acid</td>
<td>1.0</td>
</tr>
<tr>
<td>Hard resin, with phytumacolla</td>
<td>1.4</td>
</tr>
<tr>
<td>Tanin, with chlorode of lime</td>
<td>4.2</td>
</tr>
<tr>
<td>Gum</td>
<td>5.0</td>
</tr>
<tr>
<td>Kinate of lime</td>
<td>4.0</td>
</tr>
<tr>
<td>Sarch, a trace.</td>
<td>1.0</td>
</tr>
</tbody>
</table>

Woody fibre.

The cinchona exists in combination with the kinic acid,
in the form of cinnate of cinchona. A prejudice exists in
favour of the thin quilled pieces, but they are not so well
adapted to form extracts, &c., or to be employed as medici-
ne. Much more ago still, it has been considered, as far as the relative amount of
quina yielded by barks of different areas is concerned. From
100 lbs. of Loxa bark, he obtained of quina

<table>
<thead>
<tr>
<th>Quina</th>
<th>Grams</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thin selected quills</td>
<td>1.042</td>
</tr>
<tr>
<td>Moderately thick pieces</td>
<td>4.444</td>
</tr>
</tbody>
</table>

The character of the cracks is more variable than in Loxa
bark, few extending to the whole circumference of the bark:
in the young pieces the cracks are much deeper and
older, in which also the edges are raised, giving a rough
appearance to it. Some specimens also between the large
and extensive cracks present spaces very slightly cracked.

The greater part of the bark of cinchona is distinguished by the brighter colour of its surface, the
muftude of its small cracks, and the sharp oblique incision
above mentioned, from the yellow or Calysaya bark
which is obtained from the Loxa bark, to both of which it bears
considerable resemblance. The inner surface is of a bright
vinnamon, passing into an ochre-yellow or rusty hue, and
is generally rough, and, especially in the thicker quills,
fibrous, frequently with portions of the wood of the stem
giving to it a brownish cast. Though no satisfactory chemical
analysis has been made of it, exhibiting its entire composition, yet
the relative proportions of its alkaloids have been stated.
It is the richest in Cinchona of all the barks hitherto
examined. According to Kist, and Von Santen say that it yields
this alkaloid only. Michaelis maintains that two alkaloids
are distinguished by him yielded, in addition, a little quina. The
quantity of cinchona is very variable. Kist and Goebel
obtained from 1 pound 168 grains; Von Santen from nine
different specimens examined, from 210 grains to 210 grains,
a quantity varying from 1061 grains to 210 grains.
The fracture of the bark is either fibrous or splintery; that of
the outer portion resinous. The odour resembles that of
quinine, acid, astringent, somewhat aromatic; then
bitter, acrid, and enduring. The powder is a deep crimson-
brown.

The third kind of pale bark, called a-h, jen, or by
corruption ten-bark, is from Von Bergen referred to C. umbra
and has no character by which he considers it infamous among the
C. subescens of Vahl. It is likewise called pale ten bark,
that is, distinguishable from the dark ten-bark, or false Loxa bark.
The quills of this kind are always crooked, frequently also twisted. The epidermis is frequently absent; when present, it presents faint transverse cracks, the edges of which are somewhat raised, and a few longitudinal cracks or wrinkles. The bark itself is of an ash-grey, whitish-grey, or light yellowish-brown to brownish-grey color. It has often a slightly shining aspect. The inner surface varies very much, sometimes smooth, sometimes with long fibres attached to it, sometimes splinterly, of a cinnamon or dark brown color. The fracture is sometimes even, sometimes slightly granular, and often of small, sharp fragments. The color of the latter is a little like tan, and pleasant. The taste slightly acid and moderately astringent, a pure but not disagreeable bitter. The account of its chemical composition differs much, and in recent works it is generally said that it contains neither cinchona nor quinine. Yet Sartorius has published, in older works, that the bark contains quinine, but 12 grains of quinine; while Michaelis says the cambial zone contains only 1 grain of quinine. Verneuil, in his analyses, found 0.0170 of cinchona, but 1.94 of quinine. The bark is of a light brown color. It is dry and spongy, resembling wood in consistency. Where the epidermis is wanting, the colour of the inner surface resembles that of a cinnamon or rusty-brown hue. The colour of the inner surface with occasional spots of cinchona or brown. The epidermis varies according to the age of the bark. Generally it is a deep cinchona, in recent works verging to yellow, and resembling white or yellowish-tinged wood.
treated by the resinous principle, exhibits a vitreous shining ring.

Pelletier and Caventou analyzed a specimen of the var
city free from warts, and found it to contain
Superkain of Quina | in large quantity.

Slightly soluble red colouring matter, or red cinchonic acid.

Soluble red colouring matter (tannin).

Yellow colouring matter; fat of Cinchona itself, to some degree

The relative proportions of quina and cinchonia differ in
different specimens; a pound of bark yielding in some in-
stances 70 grains of cinchonia and 77 grains of sulphate of
quina. True cinchonia contains only 9 grains of sulphate of
quina.

The Humalies, or brown bark, is not known in English
commerce; its source is not accurately determined.

Several inferior kinds, and others erroneously reputed to
be cinchona barks, are met with, either accidentally or
fraudulently mixed with or passed for the genuine; but
they may be known by not possessing the characters of the
best kinds as given above.

(Bergen, Monographie der Chins; Fass. Essai sur les
Crytgames des Escrees exotiques officinales; Goebel,
Pharmaceutische Waarenh.ka.)

In estimating the action of cinchona bark on the human system, it must be borne in mind that the resin gives
it a stimulating power, the kinate of cinchonia or quina a
tonic power, and the tannin an astringent property.

By the first of these it approaches the balsamic stimulants and
tonics, by the second the mineral tonics, while by the third it
corresponds to that of coffee and cacao. Notwith-
standing these resemblances, its action in the aggregate is
strictly peculiar, so much so that all attempts to procure a
substitute for it, whether among exotic or indigenous
plants, have been attended with little success. It appears
to act directly upon the nerves, particularly those of organic
life, but its influence is speedily extended to the vascular
and muscular system.

A moderate dose of cinchona taken into the stomach,
and retained in the stomach or three or four hours, is followed by in-
creased force and frequency of the pulse, greater firmness
and constriction of the arterial tubes, augmented heat of
surface, a flow of perspiration, and a universally improved
tone of the system. The digestive and assimilating processes
are greatly expedited, and the individual feels himself fit
for exertions from which he would have shrunk before.

This stimulating action does not cause vertigo or unpleasant
devagination of the function of the brain. The secretions of
the inferior glands, however, are diminished, and in
most persons the bowels become constipated, but occa-
sionally an opposite state, or diarrhoea, is induced.

It is justly considered the most valuable tonic and febrif-
gual agent possessed. The powers of administration
are numerous. Powder is objectionable from its bulk,
disagreeable taste, and difficult digestibility, owing to the
quantity of woody fibre which it contains. Infusion is a good form,
but does not possess all the virtues of the bark, which, how-
ever, a c all taken up by the tincture: the spirit present in
this last form is often an obstacle to its being given in a
sufficient dose; it is therefore generally added to the in-
fusion or decoction. Decoction, if the process be long
continued, discharges the volatile or aromatic portion, and
diminishes its powers. The tincture is often formed by
the addition of other substances, as in the compound tincture
of bark, which is a valuable adjunct to other remedial
means in weak subjects. Acids or ammonia are some-
times added along with it, according to the nature of the
complaint.

The ease with which a small dose can be taken of the
sulphates of quina or cinchonia leads to the substitution of
it in place of that of the bark itself; and in many cases
they are more eligible, but in others the want of the
resinous and astringent principles renders them less
proper. Perhaps the best and most convenient form, as it
can be administered in a variety of ways, is one in which
the bark is extracted into its constituent parts, the
woody fibre removed, and the other principles again united:
this is called the aromatic kinate of kina. It keeps well
in all climates, is not bulky, and retains its efficacy
for several years. For long voyages it is the best form into
which bark can be put.

CINCHONACEAS, a natural order of monotropes-
exogenous, with an inferior fruit, a regular corolla, seeds con-
taining a small embryo in the midst of horny albumen, and
opposite undivided leaves with stipules placed between their
petioles. This brief character distinguishes an exten-
sive and important assemblage of plants, comprehend-
ing many of the most useful species we are acquainted with.

The bark of the order is very generally tonic, aromatic, and
febrifugal, and its energy is attested by the well-known
use of Cinchona bark, to which no number of other genera
will be employed as substitutes for Jesuit's bark. The albumen of the seeds when roasted
affords, in the case of coffee, a fragrant, stimulating, and
good principle, and the roots of many herbaceous
kinds possess active ingredients. The former is called Cephalis Papezana, but many other
of these plants resemble it in their medicinal
qualities, and are perhaps mixed with it in commerce.

Cinchoaceae and the Rubiaceae of many botanists
it appears advisable to separate Rubia and its allies into a
distinct order, on account of the absence of stipules, and
for other reasons (Strelly, it is necessary to alter
the name of the remainder of the group and as a type of the
order, when circumscribed, Cinchona is unwarrant-
able.

CINCHONIA, a vegetable alkalii contained in all the
varieties of cinchona, but principally in the Cinchona lan-
cifolia, or pale bark.

The most active principle is a double salt of a peculiar principle in bark,
whieh he attributed its antifebrile power. Gomis, in 1811,
procured it in separate state; but its alkaline properties
were not discovered till 1820, when Pelletier and Caven-
tou proved its affinity and identity with quinina upon it. (Jit. de Ch. et
et Ph., XX.) The method by which they obtained it was as
follows: Four pounds of bruised pale bark were digested
with heat in twelve pounds of alcohol, and this treatment
was four times repeated; the triturations were
mixed, water added to the mixture, and the alcohol
distilled. The turbid residue being filtered, it left upon the
filter a reddish substance, which was washed with a very
dilute solution of potash until it passed through colourless.

The ether obtained in the first distillation with
distilled water, was of a greenish white colour, very
fusible, soluble in alcohol, and crystalizable. This was
Cinchona, containing however some fatty matter.

In order to purify it, it was dissolved in very dilute
hydrochloric acid: a solution of a golden yellow colour
was obtained. The cinchona was precipitated from the hydro-
chloric acid by magnesia, a cup of this earth being mixed
with it, and the mixture digested in a gentle heat: this,
when the colour was washed and distilled with water until it came through colourless. The precip-
itate, dried in a water bath, was treated three times with
boiling alcohol, which dissolved the cinchona; the solu-
tions gave by evaporation crystals of a dirty white colour;

These crystals were dissolved in alcohol, and this solution yielded pure cinchona by crystallization.

The properties of cinchona are, that by slow evaporation
of its alcoholic solution it is procured in slender pra
nate needles; by rapid evaporation it is deposited in crystal-
line, translucent, colourless plates, which are not altered by
exposure to the air. Cinchona has a peculiar bitter taste,
which is long in being developed, on account of its mol-
ubility, which is so great that it requires 2600 times
its weight of cold water for solution, but is rather more soluble
in hot water. It is very soluble in alcohol, especially when
heated, and when saturated at a boiling heat, crystallis-
es are formed on cooling; the alcoholic solution is extrem-
ely unstable; it becomes insoluble in alcohol, especially
when cold: it does not fuse by heat till it begins to de-
compose. It has the alkaline property of restoring the
colour of litmus, which has been reddened by an acid.

Cinchona is composed of

<table>
<thead>
<tr>
<th>20 equivalents of carbon</th>
<th>6×20=120</th>
<th>0743</th>
</tr>
</thead>
<tbody>
<tr>
<td>11 hydrogen</td>
<td>11</td>
<td>718</td>
</tr>
<tr>
<td>1 oxygen</td>
<td>1</td>
<td>46</td>
</tr>
<tr>
<td>1 azote</td>
<td>1</td>
<td>916</td>
</tr>
</tbody>
</table>

Equivalents...153100

It appears from the experiments of Pelletier and Caven-
tou, that the cinchona, in all the varieties of bark, is
combined with kinic acid; and when this salt is treated
with magnesia it is decomposed, the kainite of magnesia remaining dissolved, and the cinchona being precipitated. Cinchona is much more abundant in pale than in yellow bark, the latter containing much more quinia; the red bark contains both alkalis also, the quinia being in the larger quantity.

Various other methods of preparing cinchona have been proposed: by boiling the bark in dilute sulphuric acid, adding lime, and thus precipitating cinchona in mixture with lime and its sulphate, and dissolving the cinchona by alcohol, and treating this solution with an acid, and an alkali, &c. (Berzelius, Traité de Chimie, t. 152.)

We shall mention the principal salts of cinchona, promising that they are prepared by saturating the various acids with this base.

**Sulphate of Cinchona** is prepared by dissolving the kalki to saturation in dilute sulphuric acid, and evaporating the solution till a pellicle forms; on cooling and standing the salt crystallizes. It is colourless; unstable in the air at common temperatures; but when the temperature is raised, or the air is very dry, it becomes slightly opaque; it effloresces when exposed to a gentle heat. It is said to crystallize in rhomboedric octahedrons, which are rarely perfect.

Sulphate of cinchona is soluble in about half its weight of water at 57°, and in equal weight of absolute alcohol at the same temperature; it is insoluble in ether. It is, like other salts of cinchona, decomposed by the alkalis, ammonium, potash, and soda, and by lime water, all of which precipitate cinchona. It is composed of

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Equivalent of sulphuric acid 40</td>
</tr>
<tr>
<td>2</td>
<td>cinchona</td>
</tr>
<tr>
<td>3</td>
<td>water</td>
</tr>
</tbody>
</table>

Equivalent: 

<table>
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<tr>
<th>Equivalent</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>365</td>
<td>100</td>
</tr>
</tbody>
</table>

**Disulphate of Cinchona** may be prepared by adding the kalki to the acid to supersaturation; this salt crystallizes in rhomboedric prisms, which are usually short. It is soluble in about 54 times its weight of water at the usual temperature, and more so in alcohol. It consists of

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Equivalent of sulphuric acid 40</td>
</tr>
<tr>
<td>2</td>
<td>cinchona</td>
</tr>
<tr>
<td>3</td>
<td>water</td>
</tr>
</tbody>
</table>

Equivalent: 

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</table>

**Nitrate of Cinchona.** Prepared by dissolving the alkali in very dilute nitric acid; for it is decomposed by the concentrated nitric acid obtained, which decomposes in water. The nitrate separates in globules, of an ocellous appearance; if these be covered with water, they are, after some days, converted into groups of regular crystals.

**Dihydrochloride of Cinchona.** This salt is procured by adding the alkali to the dilute nitric acid. It crystallizes in needles, which are very soluble in water. It is also soluble in alcohol, but sparingly so in ether. It fuses below a boiling temperature. It is composed of

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<th>Component</th>
<th>Weight (g)</th>
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<tr>
<td>1</td>
<td>Equivalent of hydrochloric acid</td>
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<tr>
<td>2</td>
<td>cinchona</td>
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Equivalent: 

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<th>Equivalent</th>
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<td>343</td>
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According to Leibig, the neutral hydrochlorate obtained by exposing cinchona to the action of hydrochloric acid gas, is composed of

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Equivalent: 

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<td>187</td>
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**Kainite of Cinchona.** This, as already mentioned, is the salt which exists in the cinchona. When the solution is evaporated to the consistency of a syrup, silica acicular crystals are obtained. After evaporation a portion of the nitrates is separated in globules, of an ocellous appearance; if these be covered with water, they are, after some days, converted into groups of regular crystals.

CINCINNATI, the largest town in Ohio, is situated in Hamilton county, 20 miles east of the south-western corner of the state, upon the north bank of the Ohio, and 26 miles above the mouth of the Great Miami. The town was founded in 1789, but did not become a place of any importance until after the beginning of the present century; its growth since that time has been very rapid. The population in 1800 was 750; in 1810, 2454; in 1820, 9462; in 1826, 16,230; in 1830, 24,831; and in 1831, 28,014. The rapidity of increase in the later periods is attributed to the opening of the Ohio State canals, by which the trade of the town has been greatly facilitated. With the exception of New Orleans, Cincinnati is the largest city in the United States west of the Alleghenies. A great part of the trade of the town is carried on by means of steam-vessels. The number of these vessels plying on the western waters in 1831 was 159, of which 65 were built at Cincinnati. The chief vessels that attempt the trip to the towns belonging to Cincinnati at the end of 1834 amounted to 7905 tons, all of which was employed in internal navigation; of the above, 6880 tons were steam-vessels, 25 of which, of the barken of 2439 tons, were built in 1834.

The town is situated partly on the first and partly on the second bank of the river, on a plain which occupies about four square miles, and is surrounded by a range of finely wooded hills. The height of the rising ground is not more than 50 feet from the surface of the plain.

Cincinnati is the seat of numerous manufacturing establishments; among which cotton and woollen mills, steam saw-mills, lead works, distilleries, and breweries are the most important. The Miami canal from the town to Dayton, a distance of 66 miles, has been opened. The Miami and Ohio canal, completed in 1829. A company was incorporated in 1832 for constructing a railroad from Dayton to Sandusky on lake Erie, which, when completed, will afford communication between Cincinnati and the point of junction of the canals.

The town, containing, in 1836, eighteen places of worship belonging to the Episcopal church, Roman Catholics, Jews, Unitarians, Presbyterians, Methodists, Quakers, Baptists, and other denominations. The Lane Seminary, so called from the name of its earliest benefactor, was established in 1830. The city, which contains about 10000 persons, is divided into 100 apartments, besides a preparatory school, which is a separate building. A valuable farm is attached to this seminary, and the manual labour system is introduced; the number of students in 1823 was 86. The medical college of Ohio, opened in 1818, is situated in Cincinnati; it contains, in 1832, 110 students. A law school has recently been established in the town. There are four banking establishments, the aggregate of whose capitals amounts to about 7 millions of dollars.

The town supports 12 newspapers, four of which are published daily, four thrice a week, and ten weekly.

Stuart's Three Years in America; American Almanac and Companion; Papers read before Congress. The CINCINNATI TIMES, a daily newspaper, is established at the termination of the revolutionary war by the officers of the American army, which, in reference to the transition made by most of them from the occupation of husbandry to that of arms, took its name from the 8th man in Cincinnati. The society was called an 'order,' and an external badge was provided of a character similar to those worn by the knights and other privileged orders of Europe. It was moreover provided that the eldest son of every deceased member should be a member, and his name should be transmitted by descent for ever. This principle of perpetuating a distinction soon became the object of attack. Judge Burke, of South Carolina, emphasised, in a pamphlet, that it did not maintain the system of a future privileged aristocracy, and that it should not be allowed to develop itself. The society was publicly censured by the governor of South Carolina in his address to the Assembly, and by the legislatures of three states, Massachusetts, Rhode Island, and Pennsylvania. A correspondence was opened between General Washington and Mr. Jefferson concerning the institution in 1784, and the latter expressed himself altogether opposed to the principle of hereditary descent. The publishers of this book, in the absence of any future from the present, prevailed,
at the meeting in Philadelphia for its suppression, and the society would probably have been turned into the channel they had despatched to France for the purpose of providing badges for the order, and of inviting the French officers to become members. As they could not well retract, it was determined that the society should retain its badge, the emblem of Cincinnatus, and its charter funds. The order was to be no longer hereditary; it was to be communicated to no new members; the general meeting, instead of being annual, was to be triennial only. The badges were worn by the members of the society, but it was wished that the Frenchmen who were enrolled in the order should wear them in their own country. In some of the states the society still exists, and the members hold, or still meet, triennial meetings. In others it has been altogether dropped. The society met in 1822 and transferred its funds ($15,000) to Washington College. (Tucker’s Life of Jefferson, vol. i., pp. 184-8.)

CINCINNATUS, a celebrated Roman consul. Little is known of him previous to the difficulties of his son Caeso, who, for opposing the tribunes in the performance of their functions, and for ill treating an old ex-tribune, was to be tried by the Icilian law. Sureties however were bound for his appearance. In the mean time he went into voluntary exile, and, according to Livy, the sum in which the sureties were bound was exacted from Cincinnatus. In order to pay it, he was obliged to sell nearly all his estates, and afterwards to retire to a small farm on the banks of the Tiber, where he devoted the greater part of his own lands. Being subsequently chosen consul, the messengers sent to acquaint him with his election found him engaged in the labours of agriculture. It is said that Cincinnatus, on hearing they brought him the ensigns of his office, did not deign to honour his country had paid him, than grrieved for the prospects of his farm during his absence. In the year of his consulship he succeeded in restoring tranquillity to the city and establishing a just agreement with the tribunes: the senate wished to continue him in office, but he insisted on resigning it at the close of the year, when he retired to his farm and rural occupations. Soon afterwards (B.C. 297) he was chosen dictator, and again received the appointment of his districts, which he employed in the cultivation of his field. Conducted into Rome amidst the acclamations of the people, he forthwith marched against the Aqui, and gained a signal victory, after which he entered the city in triumph. He procured the recall of his son Caeso from exile, and then abdicated the dictatorship on the 16th day after he had received it. He afterwards headed an army against the Volsci, and added another to his former victories. In the absence of his minister, the name of Himilco was substituted in his stead, and he retired to his farm for a short time. A second time he was chosen dictator. Cincinnatus was more than eighty years of age, and nothing but the solicitations of the consuls and senate induced him to accept the office. When he was appointed, the posts which he filled at different times, his virtue and probity, as well as his patriotism and military success, gained him universal admiration. Niebuhr (vol. ii. p. 269) rejects the story of Cincinnatus paying the fine of Caeso, as a mere fiction, ridiculed to account for the humble circumstances of so great a man. (Dionysius Halicarnassensis, x.; Livius, iii. 26, 30, 31, &c.; Cicero, De Fin., ii. 4; Niebuhr’s Roma, vol. ii. p. 294, &c. Engl. transl.)

CINCINNATUS [Bona or Paradise].

CINCLOSMA, a group of thrushes, characterized by Dr. Horrid and Mr. Vigors. (Merulide.)

CINCLUS. [Dipper.]

CINNABA. [Jujube.]

CINNABAR, [MERCURY.]

CINNAMONUM, an important genus of Laureaeae, confined to the East Indies, and belonging to the natural order of the family. The flowers hermaphrodite; abortive stamens perfect; anthers with four cells; limb of the perianth articulated; buds of the leaves incomplete; leaves evergreen, often approximated in pairs, three-ribbed or triple-ribbed. It contains several species, some of which yield cinnamon, and others cassia. Two aromatic barks which appear to differ from each other in little, except in the degree in which the aromatic principle is extracted, are known as Cinnamomum Cassia, a plant called Laurus cinnamomum yielded true cinnamon, and another, called Laurus cassia, produced the inferior cassia bark on the coast of Malabar; but, according to Nees, they are the same species. The two distinct species yield the cinnamon of the shops, and it is altogether uncertain which of them exists Cassia.

Cinnamon has been known to European nations from very high antiquity. The Greeks procured it, together with the name, from Herodotus (iii. 111), remarks, from the Phoenicians, who are by some supposed to have formed the name Kinnamonom from Kugia-mania, or Kuchu ma-nis, two Malay words signifying sweet wood (Annals of Philosophy, Oct. 1812); and cassia itself may have originated in the same word Kachu, wood. That which is now chiefly consumed in England is the aromatic bark of a small tree found in the island of Ceylon. Its leaves are of an oblong shape, generally more or less heart-shaped at the base: a thick and heavy texture, very aromatic, and composed of upper side, glaucous and beautifully marked with prominent netted veins on the under side; they are always blunt, and seldom even tapered to the point; they are nearly opposite, and rarely divided into three parts. The flowers are composed of a downy calyx divided into six parts, and contain the imperfect stamens and nine others which are imperfect and resemble yellow triangular-stalked glands. Their pistil is a roundish unilocular body terminating gradually in a style with a white downy capitate triangular stigma. The fruit is an oval berry, not unlike an acorn, seated in the calyx, which is a
The tree is supposed to produce a considerable number of varieties to which native names are given, but it is uncertain whether these are not, in part at least, distinct species. In addition to the aromatic oil contained in its bark, the root of the cinnamon tree yields camphor, the liber oil of cinnamon, the leaves oil of cloves, and the fruit a peculiar terebinthaceous etherial oil. When the branches are peeled the finest sticks of cinnamon are said to be obtained from the liber of the middle-sized branches, an inferior sort from the youngest shoots, and that which is produced by the thickest branches is considered of very little value. Of this plant, the *Cinnamomum Zeylanicum* of Nees von Esenbeck, the following is a figure —

![Diagram of Cinnamon Tree](image)

With regard to *Cassia lignea*, or *Cassia bark*, it seems altogether uncertain what it is that yields it; whether it is some peculiar species, as it has long been supposed to be, or inferior samples of cinnamon gathered in unfavourable seasons, or from trees growing in bad situations. The differences in cassia bark are of such a nature as to render the last the most probable conjecture; it possesses less aromatic oil, a circumstance likely to occur to trees in unfavourable situations; and in proportion as the oil disappears there is an increase in mucilaginous and resinous matter. But on the other hand there are so many inert or comparatively inert species of cinnamomum, that cassia may very well belong to one of them. There is *C. dulce* in China, obtusifolium, *inera*, *Bazania*, and others, any of which may possibly yield such a bark; the question is however one more of curiosity than real consequence. The only important thing about cassia was the supposing it to be furnished by what is really a most valuable species, and that error is now removed.

Cinnamom and Cassia. There are many contradictory statements about cinnamon and cassia. In the following account we chiefly follow Fr. Ludwig Nees von Esenbeck, who has paid great attention to the subject. According to him, the finest or Ceylon cinnamon is procured from the three-year old branches of the *Cinnamomum Zeylanicum* (Blume), which is found native in the island of Ceylon only; the cultivation however has been extended to Java, and to South America. Though found in various parts of the island, it is most abundant in the south-west part, near Colombo, and yields the best cinnamon when growing in a sandy quartz soil. The time for stripping off the bark is from May to October. The bark, after being removed from the branches, is tied up in bundles for twenty-four hours, during which time a sort of fermentation takes place, which greatly facilitates the separation of the outer part of the bark from the cuticle and epidermis, which is very carefully scraped off the Ceylon cinnamon. It is then rolled up into quills, or pipes, about three feet in length; the thinner or smaller quills being surrounded by larger ones; a mark which always distinguishes cinnamon from cassia. It is
then conveyed to Colombo, where it is sorted by government inspectors into three kinds, of which the two finest alone were allowed to be exported to Europe, while the third inferior was retained, to be used with the broken pieces of the other two, for the purpose of obtaining the oil of cinnamon. The select cinnamon is formed into bales of about 92½ lbs. weight, containing some pepper-coffee, and wrapped in double cloths of hemp, and not, as stated by some writers, of the cocoa tree.

This fine cinnamon occurs in pieces about forty inches in length, generally containing from six to eight rolls or quills in each one. The outer bark was removed, the three inner ones, containing the thinnest of oil of cinnamon paper, of a dull yellow gold colour, smooth on both outer and inner surface. It is very fragrant, agreeably aromatic, taste pleasant, warm, aromatic, slightly astrigent. Analysed, it contained 7.42% acetic acid, it yielded volatile oil, which in large quantity, an aszorted clothing matter, a turpentine, mucilage, and feculent.

The root of the cinnamon tree yields a kind of camphor, and the leaves yield an oil which resembles oil of cloves, which it is often used to adulterate. This is quite distinct from the oil of cinnamon obtained from the bark. The rip berries yield by decoction a solid volatile oil, similar to the oil of junipers. Cassia, according to Marshall and others, is only the old brownish trunk of the Cinnamomum Zeylanicum already mentioned, while others assert that it is the bark of an entirely different species, viz., of the Cinnamomum Cassia (Nees Fratres, et Blume), a native of China, but cultivated in Java. This last view is much the most probable, if not only in Cassia exported from Ceylon (except the rejected or third sort of cinnamon, which is introduced into England incorrectly under that name), but almost all the cassia which reaches Europe comes from Ceylon. Re-agents produce very different effects both on the infusion and oil of these two sorts, which is a rational ground for believing them to be obtained from different species.

Cassia is easily distinguished from cinnamon. The barks of the two in it arrives are much smaller, containing only from two to four pounds, bound together by portions of the bark of a tree. The quills are thicker, rolled once or twice only, and never contain thinner pieces within; the diameter of the bark is much thicker than that of cinnamon, and harder, the outer rind less carefully removed (large patches of the cuticle and epidermis often remaining upon it), the colour deeper, of a brownish fawn colour (that raised in Guiana is yellowish), with the odour of cinnamon, but fainter and less penetrating, the taste more acrid, aromatic, pungent, less sweet, at the same time more powerfully astrigent, yet mucilaginous.

Cassia is often substituted for cinnamon, and it is also frequently used in medicine, having been long (which is to the bark of a degenerate variety of the Cinnamomum Zeylanicum (Blume) growing in Malabar, Penang, and Sihlet), with the bark of Cinnamomum Cutilawam, and with portions which by distillation have been deprived of their volatile oil.

Oil of cinnamon is obtained chiefly from the fragments which fall from the quills during the inspection and sorting at Colombo. These fragments are coarsely powdered, and after being immersed for forty-eight hours in sea-water, and distilled, when a milky fluid comes over, which separates into two parts, a light oil which floats, and a heavy one which sinks in the water. Eighty pounds weight of cinnamon produces one ounce and three grains of light oil, and five ounces and a half of heavy oil. About 100 to 110 lbs. of oil of cinnamon are annually obtained at Colombo. As the oil which is met with in commerce is a mixture of these two, the specific gravity is variable, 1.035 to 1.090. In time a considerable change takes place, along beautiful transparent crystals of a steatopiren or cinnamon-camphor. Sometimes benzoic acid is formed. Oil of cassia is also obtained by distillation; at first it is whiter than afterwards, and by storage yellow, but never of such a fiery yellow as cinnamon-oil. The taste of oil of cassia is agreeable, but not so delicate and cinnamon-like: taste, acid, pungent, burning, but different from cinnamon. Specific gravity 1.0608: it redens litterus paper. At a low temperature the crystals show themselves, which disappear with an increase of heat. Some consider these a camphor, others benzoic acid. Benzoic acid unquestionably exists in the oil of cassia-buds, with the oil of the cerasus lauro-cerasus, or cherry-laurel, and it is also said with oil of bitter-almonds, an exceedingly dangerous intermixture.

Oil of cinnamon, in proportion to its importance, and influences both the nervous and vascular system, especially of the stomach and intestines. It is of great utility in weakness of the digestive powers, unaccompanied with inflammatory action of the stomach; while in fluxes from the stomach's intestines, it is generally prescribed. Oils of cinnamon is not so powerful as cinnamon, and especially on sugar, is useful in cramps and other spasmodic diseases. Cassia has the same properties in less degree.

CINNAMOMIC ACID. When oil of cinnamon is exposed to oxygen gas, the gas is absorbed, and the result is the cinnamomic acid. This acid is colourless; it fuses at 245°, and boils at about 560° Fahrenheit. It distils without alteration, and, when heated, sublimes in scales. It is slightly soluble in cold water, but more so in hot: the solution gelatinises.

Cinnamon in medicine is a stimulant, and is used in indigestion. It decomposes the solution, precipitating the acid. The salts of cinnamomic acid are similar to the benzoates. It is composed of oxygen, hydrogen, and carbon.

CINNYRIS. Sou-Manga.

CINQUE PORTS. It has been a subject of controversy, whether this association of the maritime towns on that part of the English coast which approaches nearest to the continent existed in any shape before the Norman conquest of England. In the course of the late municipal inquiry, the corporation of Romney (where the records relating to the Cinque Ports generally are kept) having been asked if connected to the documents of the Cinque Port commissioners are appear to have been reduced, for historical information as to the charter privileges of the association at large, to an examination of the printed charter of Charles II., the latest general one which they received, and in which a number of previous charters, from Edw. I. downwards, are set forth. This document, in the original Latin, was published in a small volume at Cambridge in 1675, under the title of Magna et Antiqua Charteria Quarumque Portuum, &c., and the English translation and a very full and instructive comment, written fifty years before by Mr. Jeake, long an inhabitant of one of the Cinque Ports in question. This latter book is deemed of so great a priority, that the municipal commissioners, in default of original documents, have cautiously availed themselves of it.

It is stated by Jeake, that in one of the records of the town of Rye is a memorandum that the five ports were enfranchised in the time of King Edward the Confessor. The five ports here intended, the original Cinque Ports of the Normans, being the towns of Sandwich, Dover, Hythe, and Romney, on the coast of Kent, and Hastings on that of Sussex. But a strong presumption that all or some of these towns enjoyed peculiar privileges before the Conquest, arises from the fact, that the first charter of Edward I., the earliest set forth in Charles II.'s charter, in confirming all previous liberties, expressly heads the series of kings by the name of King Alfred and three Edward the Confessor. Only three of these five ports were being mentioned in the Domesday survey, viz. Sandwich, Dover, and Romney, Lord Coke thence infers that at first only these three were considered as Cinque Ports. These, it appears from the survey, on consideration of certain search, were to be performs by their shipping at sea, &c., were exempted from such contributions and burdens as other towns were generally charged with; and these, it is reasonably probable, might have been enfranchised by the Confessor at one and the same time.

Though some part of the municipal constitution of the individual ports may be anterior to the Norman invasion, yet the constitution of the general body, as it has existed in later times, is plainly traced from the proud acquisitions of a conqueror in securing, by every means, his communications with the continent. These ports and their members occupy
exactly the tract of sea-coast of which, after the victory of Hastings, he showed so much eagerness to possess himself by sweeping along it with his army before he directed his march towards London; and the surrender into his hands of the castle of Dover, which is the centre of the Cinque Ports, was one of the stipulations introduced into the famous oath of solジャー. Edward the Confessor having been a duke exiled from Harold. To enable his government to wield the resources of this maritime district with the greater vigour and promptitude, he severed it wholly from the civil and military administrations of the counties of Kent and Sussex, erecting it into a kind of palatine jurisdiction, under a gardien, or warden, who had the seat of his administration at the castle of Dover, and exercised over the district the combined civil, military, and naval authority; and in his own hands all the various functions which, to use the terms most intelligible to modern readers, we may describe as those of a sheriff of a county at large, a customs collector, a lord lieutenant, and an admiral of the coast.

To the five ports of the Conqueror's time were added, before the reign of Henry III., with equal privileges, what was called the ancient towns of Winchelsea and Rye, lying on the Sussex coast between Hastings and Romney. To each of these seven municipal towns, except Hastings, were attached one or more subordinate ports or towns, denominated members of the principal port.

The internal constitution of each port, as well as the North, was almost like the Rights of Man, or the liberties of abdermen and freemen, have constantly prevailed in them all since William's time. concur to show the solidity of his plan for rendering this maritime line one of the grand outworks of the conquest. The earliest members of the municipal bodies established under these foreign denominations, at a time when the English municipalities in general were subjected to the most rigorous enslavement, were doubtless trading settlers from William's continental dominions; and the term burgher, as applied to each town's representatives, which in the later periods of English parliamentary history has usually been considered as simply synonymous with burgesses, did, before the several elements of the Commons' House coalesced into one homogeneous body, simply a political as well as a municipal superiority.

Until the time of Henry VII. the crown appears to have had no permanent navy: the Cinque Ports constantly furnished nearly all the shipping required for the purposes of the state, and their assistance to the king's ships continued long after that time. When ships were wanted, the king issued his summons to the ports to provide their quota. In the time of Edward I. the number they were bound to provide was fifty-seven, fully equipped at their own cost: the period was limited to fifteen days. The summons in Edward III.'s time seems to have appointed the ships among the ports and their members: some of the members had to provide one ship; and in some cases two. The value of the service, it is impossible to consider for these services that, in the preambles of the existing charters, the peculiar privileges and exemptions of the ports are stated to have been granted. These towns, owing to various causes, have long since lost their ancient importance. The physical changes that have taken place in the course of ages upon the coast-line may have had some effect. Rye and Romney, once standing on the shore, are now at some distance from it. Sandwich is only accessible by a channel to the mouth of the river, and one of the members of Dover, has been almost wholly washed away. But the complete organization of a permanent navy involved the extinction of that description of service on the part of these ports, in consideration of which their privileges were avowedly granted; and their inferiority as ports, and their distance from all the great seats of English manufactures, sufficiently account for their present commercial insignificance. All these circumstances however have not prevented the Cinque Ports from retaining in measure of general reform, no inconsiderable political part.

Each of the five original ports returned two boros to parliament, as early as the 16th of Edward I.; Seaford, sent as early as the 26th of the same reign; and the two ancient towns, Rye and Win-

\* In fact, Sandwich could never have been accessible to much larger vessels than it resists at present.
smuggling, but really to make provision for the friends of the minister, the whole body of their officers being freemen. As the salaries of the superior officers were very considerable, they had usually, according to the amount of their profits, one, two, or three of the lower class of freemen quartered on them, who were called riders—a practice which was very general as to all the Cinque Ports. Another common mode of binding the lower class of freemen to their political good behaviour was, by lending them small sums of money on bond; which long continued to the satisfaction of their superior, were never demanded, but which, if they proved refractory, were exacted with the utmost rigour.

The history of the Cinque Ports in later times presents us with some of the most glaring and flagitious instances of the sacrifice of the local well-being of the community to the interests of the various descriptions of traders in political corruption. Down to the period of the late general reform, this municipal deprivation was most mischiously apparent in the composition of the local magistracies, contrasted as it was with the ample powers of judicature which they possessed. For all purposes except one or two, each corporate town of the ports possessed all the jurisdiction and arrangements of a separate county, and the circuit judges held no assizes within their liberties; each town too had its distinct rate in the nature and for the purposes of a county rate, and its civil court of record; and most of the duties analogous to those of a sheriff of a county at large were exercised separately and exclusively in each of the port towns. According to the originally uniform Norman constitution of the ports, the number of jurats in each corporation ought always to have been twelve, besides the presiding officer, and of whom was to be a judge both of the civil and criminal court. The mayor or bailiff, and two other jurats, however, constituted a quorum. For the reasons indicated above, it became the practice in most of these towns to keep the number of jurats as low as possible, scarcely ever exceeding four or five.

From the body of jurats in each port, or corporate member, the mayor or bailiff was elected. Before the passing of the statute 8 Anne. c. 26, which enacts that officers having the right of election of members of parliament (which the head of the corporation has in each of the port towns) shall not be chosen for two successive years, the same person was usually continued in the office of mayor or bailiff for a great length of time, and sometimes in a manner for life; the agent or manager of the Treasury interest in each respective borough being almost uniformly appointed to that office. This statute however had here to considerable effect; it only occasioned the substitution in alternate years of some very near relative or more dependent of the government agent.

In order to present a distinct view of the alterations effected in the Cinque Ports' jurisdictions by recent enactments of the national, we give an account of the detached members (distinguishing among the latter the corporate from the non-corporate) as they existed at the commencement of the present century:

Port. Detached Members.

1. Corporate town of Faversham; distant 12 miles from Hastings.
2. Corporate town of Sandwich; distant 22 miles.
3. Part of Deal parish,_in Faversham; distant 8 miles.
4. Part of St. Leonard's parish, near Winchester; distant 9 miles.
5. Medesham parish, near Canterbury; distant 46 miles.
6. Vill of Graves or Green, near Rochester; distant 60 miles.

Winchelsea.

1. Corporate town of Winchelsea; distant 10 miles.
2. Corp: of Winchelsea; distant 3 miles.

Rye.

1. Corporate town of Rye; distant 19 miles.
2. Corp: of Lydd; distant 3 miles.
3. Desert marsh; distant 5 miles.
4. Village of the common.

Hythe.

1. Corporate town of Folkestone; distant 7 miles.
2. Corp: of Talbot's Marsh; distant 5 miles.
3. Parish of St. John, containing the town of Margate; distant 3 miles.
4. Parish of St. Peter; distant 19 miles.
5. Parish of Birchington; distant 6 miles.
6. Parish of Ringwould; distant 8 miles.

Dover.

1. Corporate town of Dover; distant 10 miles.
2. Corp: of Deal; distant 6 miles.
3. Vill of Rame, Margate, including the town of that name; distant 4 miles.

Sandwich.

1. Corporate town of Sandwich; distant 6 miles.
2. Village of Deal; distant 5 miles.
3. Parish of Sandwich; distant 8 miles.
4. Parish of Brighlingham; distant 60 miles.

It is probable that in very early times all the members were in some measure dependent on, or subject to, their respective ports; but in later times there has been no connection between any port and such of its members as have been incorporated, beyond that which exists among all the members of the county of Kent. It is still, however, the practice in the Cinque Ports; each incorporated member has had within its liberty the same independent jurisdiction and municipal functions as the port itself. The unincorporated members have remained subject to the jurisdiction of the Cinque Ports; they have been within the jurisdiction of the criminal and civil courts, and of the magistrates and coroners of those ports; they have been summoned on the juries, and have contributed to the rates, in the nature of county rates, as possessed or held within the territories of those ports; the municipal franchises could be acquired in these members, nor had they any share in electing any of the officers of their respective ports; residence within them was not considered, for any corporate purpose, as residence within the port. The relation between Sandwich and Deal was peculiar.

Deal was incorporated by William III. before when time it was exclusively under the jurisdiction of Sandwich. William's charter gave Deal a jurisdiction of its own; but as it did not interfere with the original jurisdiction of Sandwich, the latter retained a concurrent jurisdiction in Deal.

The jurisdiction of the Cinque Ports collectively extends over a considerable portion of the coast, from Brighton, which is west of Margate, to Seaford in Sussex. But several of the corporate members are quite inland. Tenterden, in the centre of a rich agricultural district, has not even a river near it. Many of the unincorporated members are not only in the county, but much further removed from the respective ports, some as far as forty to fifty miles. All the unincorporated members being exclusively under the jurisdiction of their own ports, each of those members was obliged to have recourse to the justices and coroners of its own port. Great inconvenience was experienced from this state of things, especially in those towns where the distance from the principal port was considerable.

Some part of the inconveniences above indicated was removed by the statute 7 Geo. III. An Act to facilitate the Execution of Justice within the Cinque Ports. By this act three of the most remote unincorporated members, Beaksbourne and Grange (in Kent) belonging to Hastings, and Brightlingsea (in Essex) to Sandwich, were placed under the jurisdiction of the magistrates and coroners of the counties within which they are locally situated, and prisoners there were to be committed to the respective county gaols, and these members were to continue contributing to the liberty rate of the respective towns, excepting only for the maintenance of the gaols of those ports. As to the administration of justice, also, in the other unincorporated members, the act made some important alterations; and the效果s of the new regulations of the Cinque Ports' boundaries made very material alterations. Hastings and Dover have experienced the least change in this latter respect. In the case of Hastings, the two nearest of the detached members have simply been added to the 'home liberty' of the port, while the other, which existed in 1682, and was the most populous of one of the adjoining parishes has been added to the immediate liberty of the port. But in forming the new parliamentary borough of Rye, not only have the two 'ancient towns' of Rye and Winchelsea been thrown together, but six surrounding agricultural parishes are also included within their common boundary. In like manner Folkestone, a corporate member of Dover, is now joined with Hythe, and five adjacent agricultural parishes, in composing the parliamentary borough of Hythe. And
to the antient home liberty of Sandwich are added, for parliamentary purposes, the corporate town and parish of Deal, and the contiguous parish of Walmer.

The Municipal Reform Act has operated yet more decisively in the suppression of the ports, and assimilate their internal arrangements to those of the improved English municipalities at large. Of the thirteen corporate port towns, four of the least considerable—Pevensey, Rye, the municipal boroughs of Walmer and Deal under the Municipal Regulation Act. Of the nine which are included, Dover, Hastings, and Deal are the most considerable; each of the three, being included in Schedule A of that act, is positively allowed and dues recognized for the several ports, though at others the claim to this exemption has been allowed, at least without an extract from the charter certified by the corporation, and a certificate from the same body that the person claiming the exemption was a freeman. Without the only other details as to the freemen of the Cinque Ports in general seem now to enjoy are, the exemption from serving on county juries by reason of property out of the liberties, and that from service in the militia; both which all the inhabitants of the Cinque Ports enjoy in common with them.

It remains to notice more particularly the nature of the lord warden's jurisdiction as now exercised. One important branch of a sheriff's jurisdiction is exercised by him in respect of all persons, viz. treason, sedition, and the custody of debts. All writs out of the superior courts are directed to the constable of Dover Castle, who is always the lord warden; upon which his warrant is made out to be directed to the governor of Deal, Canterbury, or Sandwich. This officer, by a curious anomaly, has also the execution of writs out of the distant civil court at Hastings; and the necessity of having recourse to him has been a source of inconvenience and dissatisfaction to the latter town. The lord warden of Dover Castle acts as under-sheriff. The constable's goal for debtors is within Dover Castle; and by act 54 Geo. III. c. 97, their maintenance is provided for by an annual contribution of 300l., to be levied on the ports and members in proportion to the frequency of their appearance before him. The constable's goal for debtors is within Dover Castle; and by act 54 Geo. III. c. 97, their maintenance is provided for by an annual contribution of 300l., to be levied on the ports and members in proportion to the frequency of their appearance before him.

The admiral jurisdiction of the Cinque Ports, attached to the office of lord warden, is expressly reserved in that clause of the Municipal Reform Act which abolishes chartered admiral jurisdictions in general. A branch of this jurisdiction appears in the court of Lodemanage, so called from the old English word lodeman, a lead-man or steerer, which is held for the licensing and regulating of pilots, by the lord warden, and a number of commissioners, of whom the majority is from the Mayors of Dover and Sandwich, and office by two. The lord warden seems antiently to have held a court of chancery in one of the churches at Dover, but it has long been obsolete.

For further details, see Jeake's Charters of the Cinque Ports; the various Statutes relating to the Ports; Oilfield's Representative History of Great Britain; the Reports of the Commissioners for settling Parliamentary Boundaries under the Act of 1832; those of the Commissioners in the late Municipal Inquiry; the Parliamentary Reform Act of 1832; the Municipal Regulation Act of 1835; and for a fuller view of the various causes which successively operated to vitiate the early popular form of government, the constitution of these municipalities, as also of the recent measures of general renovation, see Boroughs of England and Wales.
of Colares, which opens to the sea, and is also full of country residences. The country abounds with all kinds of fruit, especially oranges and lemons. Several convents are situated among the neighbouring hills. Cintra is known in Portugal under the title of the Portuguese Athens, after the defeat of Junot by the English at Vimeira, the French agreed to evacuate Portugal. The town of Cintra has 4300 inhabitants. (Müñano, Diccionario Geográfico, and equivalent to it.)

CIONUS, a generic name of Coleopterous insects of the section Rhynchophora and family Cucujoidea.

Schoenherr (in his 'Synonymia Insectorum') links the present genus with the genera Gymnetron, Mecinus, and Androaspis under the heading Comides, which may be considered, as a sub-family: we will therefore briefly state the characters of these genera under this head, first observing that the Comides may be distinguished from allied groups by their having the antennae nine or ten-jointed, five of which always compose the funiculus, or that portion between the two basal joints and the club which terminates the antenna.

The characters of the genus Cionus are as follows:—Antennae short, the two basal joints of the funiculus obconic, the remainder short and truncate at the apex; the club long and indistinctly jointed; rostrum elongate, curved, inserted in a groove beneath the thorax; thorax small; elytra nearly spherical, furnished with tufts of a velvet-like nature; femora very thick in the middle; tibiae and tarsi with a strong apex.

Four species of this genus are found in England; they live, both in their larva and imago states, upon plants, more especially those of the genera Scrophularia and Verbascum. They are represented by Cionus aegyptiacus, about one-eighth of an inch in length, and of a deep ash colour, approaching to black; the thorax is furnished on each side with a buff-coloured patch; the elytra have four longitudinal velvet-like bands, which are black, and interrupted with grey spots; there are two violet-black spots on the suturé, one near the base of the elytra and another near the apex; the former has a yellow spot joining it posteriorly, and the latter has a spot of the same colour before and behind.

Cionus are almost spherical: when touched or approached they apply their long prosectus close to the underside of the body (where there is a groove for its reception), and also the legs, and allow themselves to roll to the ground. Their larvae, which are of a yellowish colour, and resemble small oblong masses of jelly, may be seen in the month of August on the leaves of the Verbascum, Thapsus, and some few other plants which they feed upon. When about toassume the pura state they enclose themselves in a little brown spherical cocoon (less than an ordinary-sized pea) formed of a glutinous substance, which is attached to the leaves of a plant; in about a week or ten days after this, the perfect insect makes its appearance.

The species differ from Comides in having the elytra somewhat ovate, sometimes depressed and not covering the apex of the abdomen, and the anterior tibia furnished with a minute hook at the apex. Gymnetron Breedsanger is the only species found in this country.

Mecinus may be distinguished from either of the two last mentioned by the rostrum being short and thick; the thorax subcylindrical, the elytra elongate, nearly cylindrical, and covering the body; the tibiae are armed with a hook at the apex. Three species of this genus are found in England. Mecinus semi-cylindricus is about one-eighth of an inch in length, and of a blackish colour with a-b-coloured pubescence.

The genus Androaspis has the antennae rather long, the club long; rostrum elongate, slightly bent; thorax conical; elytra subovate and humped; the anterior tibia unarmed.

No species of this genus has yet been described in this country. (See Schoenherr's Synonymia Insectorum.—Geneva, 1830.)

CIOAT, L.t., a town on the south coast of France, in the department of Bouches du Rhône, about ten miles S.E. of Marseille, in 43° 10' N. lat., and 5° 36' E. long.

The town is the original seat of two or three towers which the Catalan fishermen, who frequented the coast, built about the year 1200 to protect themselves from the piratical vessels of Barbary: these led to the formation of a hamlet, dependent upon the neighbouring village of Ceirere or Cioatu. The town grew to be a busy and enterprising population. Of the time when the harbour was first formed, nothing certain is known; the new mole was built A.D. 1645, and the place was walled in and forts were raised for its defence a few years afterwards. Expilly estimated the population, about the middle of the last century, at 10,000, but either this statement is inaccurate, or the town has declined, for the last census (1866) gives only 4345 inhabitants for the town, or 5427 for the whole commune. The water in the town is brackish, but good water is brought from a short distance by women who gain a livelihood by it.

The soil is a very fertile red clay, which produces abundance of delicious fruit, excellent red and white muscadel wines, and oil; and the port is frequented by numerous vessels, which come for these productions. As there is a supply of wood in the neighbourhood, it has remained a very important port here, not only for the merchants of the town, but also for those of Toulon and Marseille. The fishermen of this coast appear to be a peculiar race, distinguished by their good sense and their activity, and by various customs: they preserve their peculiarity by their practice of intermarrying among themselves. Their sports are athletic and suitable to the life which they lead. Their disputes are decided before a tribunal of four prud'hommes or magistrates, chosen from among the older members of their own class, who are distinguished for good sense and integrity: the brevity and cheapness of the proceedings which take place before them and the wisdom of their decisions render their institution valuable, and it is probably owing to this that it has been so little modified during the changes which have occurred in the government of France.

On the opposite side of the little bay of the Mediterranean, on which La Ciotat stands, is a place called Tarentaise, the ancient Tarentum, about a mile distant, on the summit of a hill; Tarentum was a Phocian colony, and of Phocian origin, and belonged to Massilia, now Marseille; it never appears to have been of any importance, and was probably only a fort (Castellum Massiliensi, Cass. for the production of the Urn). When the French took it in 1791, the lieutenant of Caesar, besieged Massilia, the townsman, after their first naval defeat by Brutus, effectuated a junction here with the vessels of Nasidius, whom Pompey had sent to their aid.

CIOULE or SIOULE, a river in France, in the mountainous district of Auvergne. It rises on the northerly declivity of Mont Dor, and flows N. and N.E. until its junction with the Allier (one of the principal feeders of the Loire) below St. Amand, where it is navigable in any part of its course, except for rafts. Expilly however says that its channel only needs to be cleared of the rocks and stones which now impede the navigation to render it a valuable outlet for the agricultural produce of the district through the Loire.

CIPHER is derived from the Arabic Sibf, which originally signifies 'empty, devoid of,' and is used as a substantive to denote the figure 0.

CIPOLIN. The cipolin from Rome is a green marble with white zones. It gives fire with steel, though with difficulty. One hundred parts of it contain 67% of carbonate of lime; 25 of quartz; 8 of schistus; 0·2 of iron besides the iron contained in the schistus. The cipolin from Atrani consists of 53 parts carbonate of iron, 3 parts green mica, and 1 of iron. (Nicholson's Chemical Dictionary.)

CIPRIANI, GIOVANNI BATTISTA, descended from a distinguished family of Pistoia, was born at Florence in 1741. He received his first instructions from Heckford, an English artist. He afterwards studied under Gabbiani; or, according to Lanzi, he studied from a collection of drawings by D. D. Bruto, upon which he formed his style. In 1752 he came to England, and subsequently to France, where he was lady of moderate fortune, by whom he had three children. He was one of the original members of the Royal Academy, and was presented with a silver cup by that body in return for the course of his designs, which was published in 1745. He died, much esteemed, Dec. 14, 1785, and was buried at Chelsea. Cipriani executed few paintings. Lanzi mentions two, in the Abbey of St. Michael on the Sco. He enjoyed himself chiefly in drawing designs, of which his breadth of talent was a great number of small herbsaceous plants, found in
woods and shady places. They have little whitish pink flowers having a tubular superior calyx, with a two-parted lip, and a spur full of surplus waters of the rains, and with the cells, each of which contains one erect ovule. The genus constitutes the type of a section of Onagracées, in a reduced state. The species are commonly called Enchanter's Nightshade; but whatever supposed properties may have given rise to this name.

CIRCAEUS. [FALCONIERAE]

CIRCARIS, NORTHERN, a large maritime province, lying between 13° and 20° N. lat., and between 50° and 60° E. long., with a considerable coast extending 470 miles; and on the west, of Bengal, from the Chilka lake on the north to the river Ganges on the south. It has thus the district of Cuttack for its northern, and the Carnatic province for its southern boundary; on the east it has the Bay of Bengal, and on the west the Rangoon province. The chief towns are Orissa, Gudwana, the dominions of the Rajah of Baram and of the Nizam, and the cidade Balaghat district. The average breadth of the province is about 80 miles, and its area about 38,000 English square miles.

The climate of the province exhibits a general uniformity. About the middle of June the westernly wind sets in, accompanied by moderate showers, until the end of August, when the harvest of the small grains is secured. From the beginning of September to the end of the following month the rain is more abundant; the wind is generally violent as November approaches, and then changes to the north-east, when the rice harvest, which constitutes the main dependence of the inhabitants through the greater part of the province, is gathered. The season is then fair and pleasant, and at the aural equinox the maize harvest commences. The season between the end of March and the setting in of the rains in the middle of June is hot, but the temperature is somewhat moderated by the sea breezes during the day. The soil towards the south is better than in the north. During the wars by which the Carnatic was formerly ravaged, so much of the country was suffered to be over-run with jungle as a protection from invasion, that it was always necessary to cultivate the grains needed by the inhabitants; but the security which the inhabitants have enjoyed during the last forty years has induced a larger cultivation, and they are no longer dependent upon external supplies. Fruits and vegetables, ginger, turmeric, and various leguminous plants are raised. Sugar, cotton, and the lac are produced; of the last, the quality of which is excellent, some part is exported. The forests upon the hills to the west contain abundance of teak wood of large growth.

At the principal mouths of the Godavari ship-building is carried on, and vessels of 200 tons burthen have been constructed. From the nature of the country a great part of its trade is prosecuted in coasting vessels, the aggregate burthen of which exceeds 50,000 tons.

The district, 1,500,000, was granted in 1765, by the articles of the treaty of Paris. It is the largest portion of the recently created electorate of Ganjam, including its capital. Exclusive of mountain streams, which are numerous during the rainy season, Chicaeco is watered by four rivers, the mouths of which are at the town of Chicaeco, Calingapatam, Bumipatam, and Vizagapatam; there are but few extensive plains in this district. The town of Chicaeco, the Mohammedan name of which is Mahopus, Bunder, is in 18° 15' N. lat. and 84° 42' E. long.; it is a large town, and the whole province is divided into two parts by the bank of the Chicaeco river, which rises in the mountains of Gudwana and joins the sea three miles below the town, where it is about 1750 feet broad. The centre of the town contains barracks, which are little used; and there are numerous principal of which the building of stone erected in the year 1651 of the Hegira (A.D. 1641), is held to be of considerable sanctity. Condappally, is separated from the Mohammedans Mustaphaaugur, is

Ellore and Rajahmundry by the salt-water river Opoutar, which is navigable by boats as far as the Colar lake, the surplus waters of which are reserved for the use of the town, after a winning course, between Samudang and Gollapallam. The town of Condapilly, the capital of this district, stands in 16° 37' N. lat. and 80° 32' E. long.; this place was formerly a fortress of some strength, but the works are now in ruins. The town of Ellore, the largest in the province, was formerly very fertile, and received a great amount of moisture during a great part of the year the cultivation of rice can be but little attended to; but the most luxuriant harvests of maize are raised. There are diamond mines in this district, but it is long since they have been productive. Guntoor, the chief town, is situated in 16° 17' N. lat. and 80° 32' E. long.; it is an extensive but irregularly built town, the walls of the houses being of mud, and the roofs of many thatched. It contains a great number of trees, and the water is abundant, divided into two branches, which unite before it falls through a wide chasm, into the river Godavari. The town of Rajahmundry lies on both sides of the Godavari, but principally on the north side of that river. The soil is fertile, particularly the island of Nagaram, a triangular space, comprehended by the waters of 250 square miles, and formed by two great branches, into which the Godavari divides itself, thirty-five miles from the sea. Besides the two greater branches of the river by which it is enclosed, this island is made of five lesser branches, all served by the same means of irrigation thus afforded, together with the slimy mould brought down by the greater river of the Deccan, render the soil highly productive. The forests produce an abundance of teak timber; and in the plains, sugar, rice, ginger, turmeric, and various leguminous plants are raised. Cotton is also generally cultivated, but the quality is not good. The capital Rajahmundry is on the east bank of the Godavari, about 50 miles from its mouth, in 16° 29' N. lat. and 80° 53' E. long. The town is long but narrow, extending along an elevated bank adjoining the river. During the dry season the Godavari is here a clear blue stream, exhibiting many islands and shoals, and the banks on both sides are from twenty to thirty feet high, but in the rainy season the stream is a mile broad and very deep. Vizagapatam district, which lies to the north of Rajahmundry, is mountainous; a lofty ridge runs parallel to the sea-shore, and frequently within a very short distance of it, through nearly the whole extent of the coast, forming a long thin chain; the intermediate space is a narrow and well-cultivated valley. The town of Vizagapatam lies on the coast in 17° 42' N. lat. and 83° 24' E. long., near to a promontory called the 'Dolphin's Nose,' a mountain about 1900 feet high. The town contains a cathedral, built of well-built houses; but the situation being unhealthy the place has been almost wholly deserted by Europeans, who have retired to the village of Wattey, about 3 miles from the town, with which it communicates by an excursive road. There is a Hindu temple of great fame and antiquity at Semachilum, near Vizagapatam.

The northern Circars were among the earliest of the territorial possessions of the East India Company; they were granted by a treaty in 1774, by way of free gift, without the least participation of any person whatever in the same; and November of the following year this grant was recognised by the Nizam or Sohab-i-Deen of the Deccan, under the articles of a treaty, held as a Jagir for life by Buzool Jung, the Nizam's brother, by an agreement with whom the company rented that district, and it did not come into their actual possession until the death of Buzool Jung in 1776. The grant included the whole of the territory in grants of the province. An annual peshawar or tribute of seven laxies of turbans (75,000l.), which was redeemed in 1823 by the payment of about 1,200,000l., in virtue of which the Circars are now held in perpetuity by the British. No mention of the province has ever been taken; an estimate was made in 1837, according to which the number of inhabitants was about three millions; but it is evident that no great reliance can be placed upon the accuracy of a
more estimate. Mr. Sullivan, who was a resident for many years in the Madras presidency, stated rather loosely before the Committee of the House of Commons, in 1832, that about 500,000 of the population of the Northern Circars was "very little short of four or five millions of people." The natives are represented as being a much finer class of men, both in appearance and in private character, than the natives of Bengal. The province is settled on the Zoogor, probably the old zamindar, which is said to be remarkably fine and noble race of men: as regards the cultivators of the soil, they are very much on the footing of the Scottish chieftains of former days, the attachment between the two classes being continued through successive generations. With the exception of a few Mohammedans settled in the towns, the population of the Northern Circars is wholly Hindu. They are composed of two nations, the Telugus and the Oria or Orissa, who speak and write different languages and have distinct costumes and religious observances; although both adhere to the fundamental doctrines and discipline of the Hindu faith, and give undivided pre-eminence to the Brahmins. The people have lived from time immemorial under the simple form of village government, and have preserved unaltered the names and limits of each of their villages, with its establishment of officers and servants, undisturbed by the changes which have transferred the sovereignty of the land from one set of rulers to another.

When the Circars came into possession of the English, a part of the lands were held by hereditary zamindars, and the remainder was under the immediate management of the officers: in those lands which are called Havette lands, the public revenue was realized through the medium of rents to whom the rents due to government were leased for periods of years. The government has since assimilated the system throughout the province, by collecting different clusters of Havette villages and forming them into zamindaries, which have been put up to public auction, the purchasers being entitled to hereditary possession upon payment of the revenue fixed in perpetuity upon the entire lands of the zamindary. Although these newly-created zamindars are considered by the government to be in all respects upon an equal footing with the old hereditary landlords, they are not so held by the community, but have received the distinctive title of Mootahars, while the old zamindars are looked upon as the antient hereditary aristocracy of the country. Some of these have very large possessions, and pay a fixed annual tribute to the government of three lacs of rupees (30,000/); nearly all of them reside on their estates, the management of which they retain in their own hands. The influence which they are thus enabled to exercise over the cultivators is very great, and instances have occurred where, in consequence of having fallen out, the government has been compelled by the community, the cultivators, and others, to restore to them the antient zamindary, and to pay the reserved rents.

The revenue collected in the Northern Circars is said by Major RNell to have amounted, in 1753, to about 43 lacs of rupees per annum. By a statement furnished by the East India Company in 1832, it appears that the revenue had then been augmented to 76,68,018 rupees (766,800l.), and that the sale of salt was yearly sold for 416,513 rupees.
(RNell's Memoir of a Map of Hindustan; Mill's History of British India; Report of Committee of House of Commons in 1832 on the Affairs of India.)

CIRCASSIA, or the country of the Circassians, is situated to the north of the Caucasian mountains and is now understood to comprehend the whole of this tract from the shores of the Black Sea to the vicinity of those of the Caspian, so that not only those portions which were the Great and Little Tatars, but also the country of the Midsagaz or Tchetchewas, which lie towards the shores of the Caspian Sea, is included in it. [Caucasus]. The rivers Terek and Kooban, as far as their courses lie east and west, are considered as constituting the national boundary; and the highest part of the Cau- casian chain forms the southern.

The whole of this country is a succession of mountain-ranges, which branch off from the northern side of the Cau- casus, and terminate near the rivers Terek and Kooban, and of valleys which lie between them. The mountain-ranges lower gradually, but with abrupt declivities as they approach the coasts, and increase in prominence in their lower portions. The highest of these collateral branches is that which detaches itself from Mount Elburz [Caucasus], runs north between 42° and 43° E. long., and terminates abruptly near 44° N. lat. with Mount Beckhan, 7,600 feet high. On the southern side, the mountains, though acknowledged masters of the country, are not able to prevent their hostile excursions. Their generals and other officers have often been made prisoners, and have obtained their liberty only by paying large ransoms. To protect the adjacent plains, the Russian government has established a line of small fortifications along the banks of the Terek, Kooma, and Kooban; but 32,000 Cossacks, who are appointed to guard this line, find abundant opportunities of warfare with the Circassians, whose activity and inconstancy are renowned. One of these castles, Constantinegorskoe, lies south-west of Gheorgevsk, on the Podkooma, a branch of the Kooma, about 42° 40' E. long., and 43° 50' N. lat. Not far from it the Terek descends among the extensive ranges which extend from the sea to the river, on the left bank of which the city of St. Petersburg was built in 1699. In 1830, by the Scotch Society for Promoting Christianity, which has been increased by a colony of Moravian brothers from Sarepta, now constitutes a village of 200 people. Its inhabitants are no less industrious in promoting agricultural and manufacturing industry, than in diffusing Christianity among the Circassians and Tatars; but hitherto they have made little progress.

There are no towns in Circassia, the habits of the people being opposed to the erection of buildings. They live in small houses or of people on one spot. They live in small villages, the site of which is frequently changed. They cultivate the fertile soil of their valleys with little care; they raise millet and barley, and in some places also wheat and rye, with a small number of vegetables. The rearing of cattle is more attended to. Their horses are of a fine breed, and equally strong, swift, and beautiful; the people are proud of them, and, like the Bedouins, preserve the genealogies of their breed. The sheep, which are of the broad-tailed kind, are also much esteemed. The cattle are of a small kind. Milk, with milk, forms their principal food, and they make of it an inebriating beverage, the koomais. As they have only one horse to a family, they do not rear swine. Hunting is only followed by the noblemen and officers.

The Circassians, or Cherkess, are the most numerous of the different nations that inhabit this country. They occupy the lower part of the mountains and valleys from the river Terek to the Caspian. They have a certain number of towns and villages along the banks of the river Terek, in the middle and lower valley of the river, but they are fewer in number and of less importance than the other tribes, but the most western portion of the Caucasian is inhabited by the Arkhasas or Abyssas, who occupy both the southern and the northern declivity, and are said to be about 200,000 in number. Their country is the small town of Anapa, which is fortified, and is a small harbour, and about 3000 inhabitants. (Pallas; Reineggs.)

CIRCIENSIS GAMES. [Circus]
CIRCINUS, the Compassa, a constellation of Lacaille below Centaurus, and not very far from the South Pole.

The figure formed by a point which revolves in a plane surface, and always preserves the same distance from a given point. The points of view under which this word might be considered are with reference, first, to its properties as a figure of geometry; second, to the history of the researches which were made for centuries, in order to discover the exact ratio of the circumference to the diameter; third, the effect of the properties of the circle upon several branches of mathematics. For the second, we refer to the word Quadrature; we shall give a few of the first, and a sketch of the third.

The word circle is sometimes used to denote the circumference, the boundary line, sometimes the included figure or area. Frequently a point in a circle means a point on the circumference; but a point within a circle always means a point in the interior. The centre is the point from which all the radii drawn to the curve are equal; a diameter is a double radius.

Draw a circle with a centre O, and let O A be any radius. Draw A B perpendicular to the radius, and M N also perpendicular to the radius. Take any points, P and Q, &c. Then among the most essential properties of the circle are the following:—

1. A B is a tangent to the circle.
2. M N is bisected (halved) by V.
3. If two lines (M N and A Q) cut in W, the rectangle, whose sides are M W and W N, is equal to that whose sides are Q W and W A.
4. The square of A B is equal to the rectangle whose sides are B G and B H, if the line B H is any line drawn through B, cutting the circle.
5. If Q move round the circle, and A and P remain fixed, the angle (opening) A Q P is preserved, notwithstanding, namely, half of the angle A O P, and equal to the angle B A P.

These properties, with several others which are visibly true, are in the third book of Euclid. We name one or two others, the verification of which will be a test of correctness in drawing for those who know how to use the compass and ruler.

7. From any point T exterior to a circle, two tangents T X and T Y (of equal lengths) can be drawn. Let T be called the pole of X Y. Then if any number of poles be taken on the same straight line (which call the polar line), all their chords pass through the same point; which last point is interior to the circle if the polar line be altogether exterior; and exterior, if the polar line cut the circle.

8. If any hexagon, having no opposite sides parallel, be drawn in a circle, the three points of intersection made by lengthening the opposite sides must be in one straight line.

To find the circumference of a circle (with more than sufficient means for practical purposes), take the 113th part of 355 times the diameter (A L) 3,14159 times the diameter. To find the area in square units, multiply the number of units in O A by itself, and take the 113th part of 355 times the result (or multiply by 3,14159). Given the arc A P, and radius O A, determine the angle A O P (see Angle). And the same for the inverse question. To find the area of the sector A O P in square units, take half the product of the units in the radius and the arc A P. These are the principal uses which can be solved by a person unacquainted with trigonometry.

The influence of the properties of the circle upon abstract mathematical analysis has been so great, that an attempt to describe the manner in which the means of expression derived from this figure have been used would fill a volume. We can only here give such a description as will help the beginner in trigonometry to extend his notions of the symbols he uses. Originally the sine, cosine, &c. [Trigonometry] meant certain lines drawn in a circle, with reference to a given angle at the centre. Each angle therefore had a sine, &c. for every different length which the radius might be conceived to have. But this introducing an unnecessary complexity into formula, it was thought sufficient to reduce the lines to simple numbers which was however always expressed. Thus in the first stage of the science we have this theorem: 'The sine of 30° is half the radius,' which in course of time took this form, 'The radius being sin. 30°.' This method amounted to defining the sine, &c. to be, not the lines which they originally stood for, but the numerical ratios of these lines to the radius. Thus the sine, cosine, &c. became abstract numbers. The next step was to make the angle itself an abstract number, in the manner which [Angle] we have called the theoretical method of measurement; that is, instead of measuring the angle by an arbitrarily chosen angle, such as a degree or a minute, the numerical ratio of the arc to the radius became the measure of the angle. One extension more completed the subject. Angles more than four right angles were admitted, conceived to be made by the revolution of a point, which was considered as having made more revolutions than one. Thus any number represented some angle, and had its sine, &c. And the angles themselves being abstract numbers, and also their sines, &c., it followed that all the propositions of what was trigonometry, an application of geometry, became propositions of trigonometry, a part of pure arithmetic; retaining indeed the old names derived from geometry (names are never changed, witness the use of the term square in algebra), but based upon the notion of number, and the symbolic operations of algebra. Thus though it will all appear in the manner which is desired to lead the beginner through the gate of geometry, yet there must come a time, if he continue his studies to the higher branches, when he will consider a sine as a number, a function of a number; for instance, x being a number, the sine of the number x means the series

\[ x - \frac{x^3}{2!} + \frac{x^5}{3!} - \frac{x^7}{4!} + \cdots \quad \text{ad inf}. \]

or any algebraical form which is equivalent to it.

This is the point to which works on trigonometry are rapidly tending; and seeing that the student must end, if he pursues his course, in such considerations, it is most desirable that he should begin in the same manner, to every extent which is consistent with not forcing abstractions upon him too rapidly.

The ratio of the diameter to the circumference of a circle is nearly 113 of 355, which numbers this diagram will keep in memory.

1 | 1 3 | 3 5 5

This method makes the circumference too great by about twenty-seven hundred-millionths of the diameter, and x is therefore too great by an exact amount. If we take the circumference as the sum of the radius and one-seventh of the diameter, which does not err more than about one part out of a thousand of the diameter, and still in excess; that is, the circumference is a little less than twenty-two-sevenths of the diameter.

CIRCLE, ASTRONOMICAL. Though almost all the astronomical and geodetical instruments which are at present
used in measuring angles, are composed of entire circles, the term astronomical circle is ordinarily confined to those instruments of which the sole or principal use is the measurement of angles of altitude or zenith distance. In the present article we shall adopt this limitation, and restrict ourselves still further to a description of the construction and use of those circles which are either fixed in the plane of the meridian, as the mural and transit circles, or which continue to have the plane of the principal circle vertical, though turning upon an axis, as the altitude and azimuth circle. For other instruments which might be included under the term circular, the reader must consult the articles Equatorial, Repeating Circle, and Theodolit.

This article will be more intelligible with some preliminary explanations.

Let a circular plate, divided into 360°, turn round a concentric axis C, fixed into the block SN, so that the line EO, moving with the circle, and in which direction the observer is supposed to look, can be placed in any direction up or down. A and B are two pointers attached to the block, and in a line passing through the centre. The block and circle are supposed to be upright, the axis C and the line AB horizontal. Also when the line of sight is vertical, or EO coincides with ZZ', 0° of the divisions ought to be exactly under the pointer A. It is evident when the line of sight is moved through any angle into the direction EO, that C must have moved through an equal angle, and that the ZCO = AEC', or the arc AB. Hence if an object is seen in the direction EO, its zenith distance ZCO will be the angle pointed out upon the divided circle by the pointer A. This angle is technically called the reading of A. The line EO represents the direction of plain sights, or the line of sight of a telescope, sometimes called the line of collimation (from collinear, said by Fasciolati to be a mistake for collinear).

If when EO is vertical, A points a little above or below the 0°, or zero of the divisions, the difference from 0° is called the error of collimation, which may be corrected by shifting the position of A; but when the quantity and direction of the error are known, there is no need to make any alteration. For instance, let A point to 2° when the line of sight is vertical, then it is evident that when the line of sight is in the direction EO, the zenith distance will be equal to the arc from 2° to A, or 2° must be subtracted from the reading of A. If EO be directed anywhere between Z and N, then 2° must be added to the readings of A. In fact the pointer may be placed anywhere in the circumference of the circle, and the divisions may commence in any part of the circle without at all affecting the accuracy of the measurement of angles of zenith distance; but a very large error of collimation would be inconvenient in practice. The second pointer B, if exactly in a diameter with A, and the divisors perfect, would evidently give the same result as A. This also may have an error of collimation, which may be treated precisely as that of A; or rather, the error of collimation for the mean of two or more pointers is determined at once and by the same operation. Two readings have this advantage over one, that if some of the divisions should be erroneously placed, it is not likely that equal errors in the same direction should fall at the same time under both pointers; and in any other supposition, the mean of the two readings will be affected by a less error than one of them. Hence the advantage of multiplying the readings for lessening the errors of division, it is evident that what is improbable for two, will be all but impossible for six, which is the number used in the circle in this case. There is another and more sensible advantage in two opposite readings above one. Conceive the whole circle to be moved towards Z, or Z', or pushed sideways towards N, or S; still so long as EO continued to be parallel to itself, it must be if it continues to be in the direction of a very distant object, the sum of the readings of A and B will remain the same; whatever one loses the other will gain. Hence it is not necessary that the axis should be truly circular, or that the centre of the axis should be exactly concentric with the centre of the divisions, which last requisite is not easily accomplished in the present construction of English dividing engines. In all circles where the readings diametrically opposite to each other, the observer ought to consider each pair as only one reading of a diameter, and not as two unconnected readings. There is another form in which a circular instrument for measuring altitudes may be constructed; the divided circle may be fixed to the block, and the line of sight, EO, turn upon the axis C. In this case the pointers must be connected with EO, and revolve on the same centre. All the previous remarks are equally applicable.

The operation of noting the angles, or of reading off, has been described in its rudest form, as it seems to have been practised by the Greeks. We must here explain somewhat more minutely the use of the micrometer microscope. (For other modes of subdivision, see Vernier.)

Fig. 3 is a micrometer microscope. AB is supposed to be the space between two divisions of the circle which is generally equal to . The object glass G, which is sometimes, and with great benefit, made achromatic, forms at ab an inverted image of A B, as ab. Within the body of the microscope there is a slide, represented in Fig. 3. This slide is drawn forwards by a fine screw (generally of 100 threads to the inch) in such a manner as to move it in a horizontal plane to avoid lost time; it has two fine wires crossing at an acute angle as in the figure. The image a b should fall exactly on this cross, and the two lens eye-piece should be so placed as to give distinct vision of both. Also five revolutions of the screw should move the cross exactly from any division of the circle to the neighbouring one. The circular plate H is fixed by friction upon the head, and is divided into 60 parts, which correspond to seconds on the circle, and are
read off by a pointer, I. The entire revolutions of the screw are counted by a sort of comb, or indented plate fixed near the wires, but not movable with them. There is a little projecting tongue of metal opposite the cross wires, which serves as a foot for the authority and instruction of the position of the screw. This microscope having its parts at the proper distance from each other, and being placed at the proper distance from the divided circle, must be supposed to be substituted for the pointer A, in Fig. 1; the tongue at B, in the comb, and the position of the divided circle opposite its index. If a division of the circle seems exactly to cut the cross at the angular points, the observer has only to note what division of the circle it is, and that is the reading, just as with the simple pointer. Generally, it appears above, and another below the cross. Since the divisions are seen inverted, the division apparently below the cross is the one really above, which, according to Fig. 1, and the position of B, is the division immediately less than the position of the microscope or pointer. Turn the screw round until the appearance is exactly the same as in Fig. 4, and suppose that the tongue has moved over two teeth, showing two revolutions of the screw, and the index is half way between 33 and 34 on the divided head, then 33 and 33.5 are to be added to the degrees and minutes of that division.

Now that division is 50° 3', therefore the true reading is 50° 7' 33″.5. What has been said as to error of collimation holds generally. The error in a line of sight E O falls between Z and N, then the next lowest division will be really below, but apparently above the cross, and the measurement should be made to it. The screw in this case must be turned the other way, and instead of the division being one of the same order as the axis, it is necessary from 60 must be taken for the seconds. A little caution and experience will guard the observer against mistake.

The length of the microscope can be altered by screwing the tube in which G is fixed, and the microscope can be shifted in its support to and from the circle by the nuts K K, k k. It is evident that by these two movements the size of the image can be altered as well as its situation with respect to the cross wires. (See the figure of the altitude and azimuth circle for a mode of mounting the micrometer.) The apparatus of the micrometer microscope, shown at Fig. 3, is frequently attached to the eye end of a telescope, and is placed in the focus of the object glass. The wires are then placed across the side and at right angles to it, so as to be parallel with other wires of the telescope. If these points are clearly understood, the reader will find no difficulty in understanding the rest of this article. [See Micro- meter.]

The earliest application of a circle to astronomical purposes is described by Polylemy (Almag. i. 10), who calls it from its use, a solstitial circle. This consists of a smaller circle turning freely within, and in the same plane with a larger circle, as is described in [see Almagest]. Two reflecting prisms are placed in a diameter of the inner circle for a line of sight, and pointers are also fixed on the inner circle which move on the face of the outer circle. The instrument thus formed can be similarly used by plumb line and meridian line in the plane of the meridian. In observing the sun, the inner movable circle was turned round until the shadow of the upper prism exactly covered the lower prism, when the pointers marked the corresponding division upon the outer fixed circle. The inner circle seems to have been employed as the most accurate mode of giving a rotatory motion to the line of collimation, concentric with the divided circle. If a bar, carrying the line of sight, is placed perpendicularly upon the axis, it is the second case of Fig. 1. The language of Polylemy does not inform us who was the inventor of this instrument, or even that it was ever made or used. Delambre conjectures with some probability that the feedback had struck out, the unknown inventor of it might be that the solstitial circle was the best-contrived instrument of which we find any account until the time of Roemer; and it bears, as well, to be seen, a very close analogy to the modern mural circle of theodolite.

Except the complicated astrolabe of Hipparchus, which consisted of five concentric circles, so contrived as to have one circle in the plane of the ecliptic, and another at right angles to it, we do not find the entire circle employed in large instruments before the time of Tycho Brahe, and then only for an equatorial. The supposed simplicity of the circle and quadrantal, and the desire of increasing the sensitivity of instruments, by enlarging the scale of the divisions, blinded astronomers to the more solid advantages of the entire circle.

In 1764 Roemer erected his Rota meridiana, or transit circle, in his private observatory 1st due west of the astronomical tower of Copenhagen. He had invented the simple transit and the altitude and azimuth circle about four years before, and in the latter, the quadrantal, and very happily combined the qualities of a transit telescope with those of a meridian altitude circle. In a letter to Leibnitz, 19th December, 1700, he had already said, "that the quadrant and sextant ought no longer to be used, and that he would rely more on an entire circle of four feet than on a quadrant of a ten-foot circle." (Miscell. Berolin. contin. ii. p. 276.) A description and figure of the Rota meridiana are to be found in the Basi Astronomiae, p. 143, Tab. vii., of his pupil T. Jones. The instrument, in the year 1770, was returned with a specimen of three days' observations. The altitude and azimuth circle is described in p. 43, and figured in Tab. ii. of the same work.

The Rota meridiana of Roemer was a divided circle set upon a hollow double cone, at right angles to the axis of the cones, and concentric with them, the circle being near one end of the axis. The divisions were read by two microscope verniers, fixed in a diameter of the circle near one of the axes, as in Fig. 3. This instrument is perhaps as well a designed instrument as has ever been constructed, yet it was not intended till about three or four years ago, when similar construction was recommended by Mr. Pond, adopted for the observatory at Paramatta. A second on a much larger scale is just finished for the observatory at Oxford; both these are by Mr. T. Jones. Notwithstanding the advice and practice of Roemer, it does not appear that the entire circle was used for astronomical purposes, until Mr. Pond and Mr. Wollaston, who first described a reflecting circle, in the year 1770 (Tabulae Solares, p. 21, plate ii.), but the repeating reflecting circle did not come into use until modified and perfected by Borda about 1787.

In 1754 the Danish astronomer Bugge published his Observationes Astronomicae, Hauniae, in which he gives a figure and description of a vertical circle of four feet diameter revolving in azimuth, p. lii., Tab. viii. and ix.; it seems a smaller one had been used in the survey of Denmark as early as 1762.

Ramsden undertook an altitude and azimuth circle for the observatory of Palermo in 1784, and completed it 1789, (Diss. Soc. Scient. Palerm. 1790, p. 107,) with four plates of the instrument and its details. (See too Pearson's Astronomy, vol. ii., p. 413, plate xxii.) It is with this circle that the declinations of Piazzi's nebular stars were determined by Mr. Pond in 1792, and which perfectly his altitude and azimuth circle; and in 1793 Mr. Francis Wollaston published in the Philosophical Transactions a description, with a plate, of his transit circle; Borda's repeating circle seems to have been first made and about 1787, in connection with the meridian circle at Greenwich. The advantages of the circular form were now appreciated; its superior strength and symmetry, the elimination of any error of eccentricity by opposite readings, and the facility of division by any number of readings, or by reversing the instrument, were placed beyond dispute. Various alterations were made in parts of these instruments, and new contrivances and conveniences applied, but nothing very novel in principle has struck out, the earliest quadrant and meridian circle, which is one of the best known at Greenwich in 1812. After some controversy this form has been generally adopted in those British observatories which can afford a second observer for the transit.

The limits of the present work are briefer than a detailed account of any one instrument, and still less a description of the numerous variations which have been introduced according to the views of astronomers and artists. We shall give a general view of the two principal forms, the mural circle for the meridian and the altitude and azimuth circle, as constructed by Troughton and his school.
The accompanying figure of the mural circle of Troughton is copied from that prefixed to the Greenwich Observations for 1812, with the subsequent alterations. The circle is framed as strongly as possible (it might, perhaps in some cases, be advantageously cast in one piece), and is fixed at right angles to and concentric with a long, hollow conical axis. This axis rests and turns in two collars, one towards each end of the cone, fixed at the front and back of a stone pier, three or four feet in depth, and there are four screws at the back for adjusting the horizontal axis in inclination or azimuth. The circle is divided on its edge to 5', upon a narrow ring of gold or other metal let into the rim; the divisions are read by the six micrometer-microscopes at A, B; C, D; E, F. The telescope is fixed at right angles upon an axis which works within the hollow conical axis of the circle, and can be moved upon the circle into any position; it is held fast by clamps towards the object and eye-end. At the eye-end there are three or more vertical, and one horizontal, wire, and a micrometer, which carries a second horizontal wire parallel to the fixed wire. To prevent wear, and to give ease and smoothness to the motion of the circle, two large friction wheels are suspended in front of the pier from the arms of two levers, which by counterpoises may be made to support the whole or part of the weight of the instrument. They press upwards upon a ring on the axis, between the circle itself and the pier. There are several small contrivances which need not here be mentioned, as our design is only to give an idea of the nature of the instrument.

For a more minute description the reader must consult Pearson's Astronomy, vol. ii, pp. 472, 488, plate xx. The above description belongs to the mural circle as constructed by Troughton. In one or two later instances the collars have been exchanged for Y's, that is, angular notches in pieces of metal, in the hope of making the instrument serve for a transit; but this has not, we believe, yet been performed satisfactorily. Dr. Robinson, in the circle made for the observatory at Armagh, preferred having the divisions cut on the back of the instrument, and the microscopes fixed on the edge of a circular pier, with several other alterations (for which see Mem. Act. Soc. vol. 15.) The divisions of the circle are cut by Troughton's method. [See Graduation.]

After the instrument is erected on its pier, the axis must be placed horizontally, or the plane of the circle vertical. This may be done by a plumb-line apparatus, which generally accompanies the instrument; or more accurately by making a star pass the meridian wire at the same time when seen directly, and also when seen reflected in a trough filled with mercury or water, &c. The four screws at the back of the pier supply the means of effecting this. The second adjustment, or placing the line of sight at right angles to the axis, may be performed by two distant marks to the north or south of the circle, which have been previously correctly placed by means of a transit; or by a collimating transit [Collimators]; and finally, the instrument may be placed in the meridian, either by a mark, or by observations of circumpolar stars above and below pole, or by observations of high and low stars, just as a transit. [Transit.] Or the position of the plane described by the line of sight with respect to the meridian, may be determined by comparing the passages of stars over the meridian, as observed with the circle and with the transit at the same time: when the law of the errors being known, and also the amount of their sum, their respective values are easily ascertained and corrected. It may, however, be remarked, that small errors in any or all these adjustments will not vitiate the results and that the moon is the only celestial body sensibly affected by ordinary variations from the true meridian.

The mural circle is used in measuring angular distances
on the meridian, and the observation is performed thus:—
The telescope is pointed nearly in the direction of the ob-
ject, and the circle fixed by the clamp in that position; then
the instrument is moved by the slow-motion-screw of the
clamp, until the horizontal wire exactly cuts the star in
the vertical direction, and the object (whether the sun or
moon, or a planet having a considerable disc, the wire is
made to tangent its illuminated edge. With the sun, a dark
glass is put on the eye-end to protect the sight, and at night
a lamp placed opposite the central opening of the
substage, so as to illuminate the field of view and show the
wire distinctly. This light is sufficiently bright for the
observer, and the apparatus for this purpose is shown on
the telescope. The mural circle has been used somewhat
differently by different observers. When Troughton proposed
a mural circle for Greenwich, he said that all observations
should be considered as distances from the pole; and that
the place of the pole on the instrument (i.e. the reading
of the circle when the telescope points to the pole) should
be determined from the successive upper and lower culmina-
tions of Polaris, and other close circumpolar stars. The
north polar distances of stars might thus be measured
and registered with the help of a correct table of refraction,
without an accurate knowledge of the latitude of the place,
which is only wanted for converting polar distances into
angular measure. The method for each instrument is
sufficiently clear from the diagram, and subject to no
parallax. The latitude of the observer might be sub-
sequently deduced by comparing the polar distances of stars
near the zenith, for instance, of γ Draconis at Greenwich,
with γ, ζ, η, etc., observed for the same time in the north
zenith sector or the zenith tube. [Zenith Sector.] The
measurements could be checked by combining them with
observations by reflection, when the star is seen reflected
by the surface of a trough of quicksilver. In a climate
so variable as that of England, Mr. Pond, then astronomer-
royal, found it advisable to modify the plan thus suggested.
He first formed an approximate catalogue of the north polar
distances of several stars by these or other means, which
he perfected as follows:—Assume the approximate catalogue
to be correct, every future observed place, compared with
the place computed from the catalogue, presented a differ-
ence, which he called the index error of the instrument,
and from the observations of several stars he obtained a
mean index error. This mean index error was then ap-
p lied to each of the observations, and a corrected catalogue
thus produced, which by repeating the process leaves no con-
stant error except such as may be common to all the stars em-
ployed; such, for instance, as an original error in assuming
all stars as located in a perfectly circular orbit, the error of
this nature affects all stars at their superior posture alike,
and makes them all equally appear too near or too far from
the pole; but it affects the superior and inferior distances
of the same stars. From the difference between the mean of
two sets of observations of Polaris and other circumpolar
stars, one set being deduced solely from upper, and the other solely from lower
culminations, is clearly equal to twice the mean error in the
assumed place of the pole with respect to the stars; and this
correction being applied to all the stars, a new and more
correct standard catalogue was formed, to be again cor-
rected and improved by future observations. It is evi-
dent that this method, which increases the errors of the
place of the pole, are wholly eliminated. By shifting the place of the telescope
on the instrument, fresh divisions were brought into use for
each star. The accuracy of the tables of refraction em-
ployed might have been tested by the agreement of near
and distant circumpolar stars, in assigning the same value
for this correction to the polar point. The only defect in
this method seems to be, that it assumes the accuracy of
the instrument or the accuracy of the tables of refraction; and
that if either or both be imperfect, the final results are
not in the least affected.

Another mode was adopted by Mr. Pond after 1824, when
a second mural circle, made by Mr. T. Jones, of Chating
Cross, was erected at Greenwich. Suppose several stars to be
observed for the same instrument, with both circles A
and B. All the stars in group A are observed by both circles
direct vision; the stars of group B are observed directly
by one circle, suppose Jones, and by reflection, by Troughton.
Let the mean of the readings of group A, by Jones, exceed
the mean of the readings of the same group by Troughton,
by m°; then it is clear, the instruments continuing in
the same state, that if from the observation of any other star,
by Jones, you substract m°, you will have the reading which
Troughton would have shown, barring accidental errors, and
the mean of the readings for any star will be equal to the
mean of the readings for any other star by Troughton, the star being seen by reflection.
Then according to what has been said above, D—m° is the angle which Troughton
would have given by direct vision, and consequently the angle between the star seen
directly and by reflection, which is twice the subtraction
star, = R — D + m°, or the altitude = R — D + m° — 2.
Again, as the reading which corresponds to the horizontal
position of the telescope is evidently D + altitude of the star by Jones, and R altitude or depression of the star
by Troughton, we shall find for that reading, or the hori-
zontal point, as it is called, in Jones, R + D m° and
in Troughton, R + D m°. In this way each of the stars
in group B gives a fresh value for the horizontal point
measured by each instrument, and the mean of these three
values for each circle is taken as the basis for reducing every
observation by that circle. Thus the reading of each
direct observation of the stars in group A with Troughton,
by subtracting the mean horizontal point of this horizontal
point, will give the true altitude of the star in group A,
and the same value of the horizontal point being subtracted
from every reflected observation of group B, by this circle, leaves in like manner the true alti-

dude, which is all the astronomer does to correct the circle.
This method requires the groups A and B to be sufficiently
numerous for eliminating the chance errors of mere observa-
tion, and to be distributed over various parts of the circle
to destroy faults of form or of division. It is also sup-
p osed that the circles are instruments of nearly equal
goodness, and that each is as perfect as art can make it.
If they should be defective, the discrepancies in the partial
determinations of the horizontal point will show it, and
the astronomer must then substitute other circles.

The combination of two circles to form, as it were, one instrument, has only been
tried at Greenwich, but there it has proved eminently suc-
cessful; Mr. Pond's opinion, after long experience, being,
that the apparent superior accuracy which the star being seen
by reflection exhibits over that seen by direct vision, is one.
The same astronomer suggested an analogous method for one circle. Observe the groups A and B all
directly one night, and on a following night observe A directly,
comparison of B by reflection. If you have two nights on different nights (the change of place in the stars and in
the refraction being allowed for) will give you the variation or change of place of the instrument and microscopes; and by
applying this to the stars B, observed on either of the nights,
you will have observations of the same stars on different
nights, by direct and reflected vision, but with an un-
changed instrument. Hence the double altitudes of B are
found, and also the horizontal point for one of the nights
where both are determined. The horizontal point found
is, the horizontal point for the other. This method,
or one similar to it, is, we believe, followed at Edinburgh
and the Cape of Good Hope; and it is found that these
instruments are so steady and unfluctuating, that the same
value of the horizontal point results from the observations
of several days. In this system the observations of one day
are made dependent on those of another, when the atmo-
spheric circumstances may be widely different. It has,
however, the advantage over the previous method with two
circles, that it place no more difficulty in evidence than
the errors of the instrument. The differences which may be
found between the partial determinations of the horizontal
point on the same night, and on different sides of the
horizon, cannot be ascribed to that cause, and whatever reliance is to be placed on it and
on the observer.

When the mural circle was erected at Cambridge,
Professor Airy selected the following plan of determining
the horizontal or zenith point. The micrometer attached
to the eye-end of the telescope has already been mentioned. The value of a revolution of this micrometer having been very exactly measured, and the parallelism of its movable wire with the horizontal wire carefully ascertained, and also the reading of the divided head when the two wires coincide, the telescope is set pretty nearly in the position at which a star by reflection would be on the horizontal wire, the circle is then firmly clamped, and the microscopes are read off. When the star is at a convenient distance from the meridian wire, it is bisected by the micrometer wire without stirring the circle. When this is done, and the time noted, the circle is unclamped, and the star bisected by direct vision on the fixed horizontal wire, by turning the whole circle round, and the time is again noted. If the star had been observed in both instances upon the meridian and upon the fixed wire, it is clear that the reading corresponding to the horizontal position of the telescope would be half way between the readings of elevation and depression, or $R + D = \frac{R + D}{2}$. The correction to the meridian is easily found and applied, the times being known. Again, if the distance between the fixed and micrometer wire be equal to $m''$, it is clear that the reading of $R$ is greater or less by $m''$ than it would have been if the observation had been made with the fixed wire, and that the further correction for the micrometer is made simply by the addition or subtraction of $\frac{m''}{2}$ to the value already found of the horizontal point. In the Cambridge Observations, Professor Airy tabulated the reading corresponding to the zenith position of the telescope. From a mean
of such determinations the reading of the zenith point is settled, and all observations made in the ordinary way, reduced to altitudes or zenith distances. For this mode of observing the micrometer should be absolutely perfect, and carefully watched. On comparing the zenith points deduced from low and high stars, to the north and south of the zenith, Professor Airy discovered some anomalies, the causes of which have not been fully ascended. (Cambridge Observations, 1833, p. 7.) They seem, however, to exist in other mural circles, and possibly in circles of a different construction.

The micrometer microscopes, in what has been said, are supposed to be exactly adjusted, so that the resolution of the screw carry the cross of the wires precisely over a space of 5' on the circle. It is not possible to make this adjustment with perfect accuracy, nor would it be permanent; but it is not necessary. By examining the value of the cross, as the are called, i.e., the measures in revolutions and parts of the screw of the 5' spaces in the circle, a mean value of the measure of 5' by the six microscopes is obtained, from time to time, which may be a little greater or less than five revolutions. In this case, the mean of the micrometer readings, i.e., of the single minutes and parts, must in each observation be altered in the proportion of the value thus ascertained to 5'. If, for instance, the mean value of the 5' spaces on the circle were apparently 5.5' 1/2 by the one instrument, and 5.1' by the other, the minutes and seconds indicated by the mean of the microscopes. For actual adjustment, the following directions may be useful. A micrometer microscope is adjusted when the image of the diagonal of the circle is placed over the cross wires of the microscopes, and its size is exactly equal to five revolutions of the screw. Suppose the vision of the wires and of the divisions to be perfect, but that the space of 5' is passed over by four revolutions and fifty parts of the screw. It is evident that the image is too small, and it must be made larger by drawing out by the screw the object glass G, and bringing it nearer the limb. In this case however the image is formed between the wires, and the eyepiece, and therefore the whole body of the microscope must be drawn from the circle until the image falls on the cross wires. It will now be found that the image of 5' is larger than before, and it must be again measured by the screw. In this way by gradual attempts the microscope may be perfectly adjusted, but the operation, if complete accuracy be aimed at, is very fatiguing and troublesome.

The general form of the altitude and azimuth circle will be seen from the woodcut. The lower, horizontal, or azimuth circle, is fixed on three strong radii which have foot screws at their extremities, and a strong vertical steel axis rising from their intersection. On this axis the whole of the upper works move freely and smoothly on a conical cap accurately fitted and ground on the top and bottom of the axis. On the lower part of the cap is fixed a broad circular plate on which the two pillars rest which support the circle and telescope. The microscopes for reading the azimuth circle are fixed on the pillars. Outrigger stands on the top of pillars, each of which carries a nut or Y, which can be raised or depressed by a screw. The vertical, altitude or declination circle is framed with a view to strength and lightness, and its divided face is read by the micrometer placed on the end of the curved tube, which is formed something like a pair of horns, and fixed across the top of one of the pillars. The circles are usually divided to 5', and subdivided by the micrometer microscopes to seconds. The graduated circle generally runs from 0° to 360°; the vertical circle is differently divided according to the pleasure of the artist or observer. A little consideration will enable any one to apply the rules given for reading azimuth. After the readings of the two foot-screws have been taken, and speak indifferently of altitudes and zenith distances, since they are immediately derivable one from the other. The wires of the telescope are illuminated by a lamp which shines in on one end of the circle or transit axis of the vertical circle, and is reflected on the wires by a pierced polished ring set diagonally. There are two sensible ground levels, one of which is attached to the horns supporting the upper microscopes; another, which is free, can be applied through the openings of the circle to the pivots of the revolving parts. The division of the microscopes will be understood by the accompanying figure.

There are clamps and slow moving screws to each circle to fix them, and to give the power of basing any object with the telescope.

The first adjustment is that of setting the vertical axis perpendicular to the horizon. Turn the instrument until the fixed level is nearly parallel to two of the foot-screws, and place the bubble in the middle by the foot-screws. Then moving the instrument half round in azimuth, bring the bubble again to the middle; half by the foot-screws, and the other half by the screws which raise or depress one end of the level. If this is carefully done, and the circle restored to its original position, the bubble will be still in the middle, but if not, it must be brought by half the foot-screws, and the rest by the level-screw. Now, turning the instrument a quarter round, through 90°, bring the bubble into the middle of the scale by touching the level-screws. The is generally placed in front and towards the observer, and rests on a small lever supporting a plate represented in the figure, which supplies a very delicate slow motion, contrived, we believe, by Borda. When the operation is successfully performed, the bubble will remain in the centre, whatever azimuth the instrument is directed to. It is not necessary in practice to touch the screw which adjusts the level if the error be very small. The divisions of the level scale corresponding to both ends of the bubble should be noted before and after reversal, and the mean taken. Let the foot-screws be called E and W, and the ends of the level towards them be distinguished by the same letters, and the scale of the level be numbered from the centre to each end, and suppose the readings be

\[ E \quad W \]

In the first position \[ 67.4° \] \[ 49.2° \]
In the reversed position \[ 59.6° \] \[ 56.0° \]

Mean \[ 63.5° \] \[ 52.1° \] difference \[ 11.4° \]

The mean readings would have been the readings of the level, if the level itself had been in adjustment. It is evident that E is too high, or W too low, by half the difference, or by 5.7, and one of the foot-screws must be turned enough to shift the bubble 5.7 in the right direction. Troughton always moved both E and W an equal quantity in contrary directions for this adjustment, which in many cases is very much better. If that is carefully done, the E readings will be diminished, and the W readings increased by 5.7, and they will stand thus:

\[ E \quad W \]

In the first position \[ 61.7° \] \[ 53.9° \]
In the reversed position \[ 53.9° \] \[ 61.7° \]

or the bubble keeps the same position in its scale before and after reversing, and the axis is vertical to the line joining the two foot-screws. The bubble must be placed at the same divisions when over the third foot-screw, and the axis is truly vertical. The difference between the last-mentioned readings is 7°.8, and the half of this, or 3°.9, is the quantity through which the bubble should be moved by the level screw, to complete its adjustment, if that be desired; but if the true value of the divisions of the scale be known, and it is also known that this does not sensibly vary with the temperature or from other causes, it is useless to adjust very scrupulously, since the ends of the level must always be read in the same way, and the different allowance for a careful observer. In some larger instruments of this construction, the vertical axis is adjusted by a plumb line, which
Ramond and Troughton applied in different ways. One of their apparatus will be described until Zancor Sec- 

tor; but we are inclined to think that the ground level is more accurate, while it is incomparably more convenient than the plumb line, for small circles, which move freely in azimuth, and are used agreeably to their construction. The vertical axis is supported by a properly placed, the upper circle is next to be set horizontal. Pass the de-

tailed edge carefully through the openings in the circle, place its notches on the pivot of the axis, note the ends of the bubble, exactly as before, reverse the level and note the ends again. Suppose the results to be,

East End. West End.

First position 6.24 8.43
Reverse position 7.96 6.71

Mean 7.10 7.57

difference between the main readings is 0.47, or the west end is higher than the east by 0.235. The bubble must be moved this quantity towards the east by raising the east, or depressing the west pivot. There is a screw under each pivot for that purpose. It is convenient to have the scale divided into parts, of which the units are 15° of a degree.

If the microscopes should be adjusted, if that be required, in the manner already described, but we recommend amateur observers, at least, to have the body of the micro-

scope made unalterable, after the maker has settled both the adjustments, by pinning together the body and microscope with a pin of brass. Both instruments will then be performed by making the 5 spaces equal to five revolu-

tions of the micrometer screw, simply by shifting the body of the microscope a little nearer to or farther from the telescope, the adjustment should be done carefully, any remaining error may be corrected in the mural circle.

The microscopes (there are generally a pair to each circle) are finally to be placed in a diameter of their respective circles, and standing in the middle of the instrument, we will not contain the divisions. There are screws in the tube by which the microscopes are mounted, which allow them a little motion in any direction, and the cross wires are thus brought to bisect divisions 180° apart. This requires no particular exactness, and may be done at once for the auxiliary circle.

The upper microscopes may be adjusted approximately. The optical part of the instrument must now be put into order. At the eye-end of the telescope there are generally five or seven vertical and three or five horizontal wires, i.e. fine lines of cobweb, raw silk, or any very delicate and uniform fibre. To place these in the focus of the object-

glass, apply the highest magnifying power you have got, bring the wires to distinct vision, and look at a bright star. Then put the piece of tube, which moves slightly within the tube of the telescope, and this must be pushed in or drawn out till the star is seen perfectly round and surrounded with rings, the wires here being sharply defined. This adjustment may be completed or verified thus:—The 50th star, or a piece of a circumpolar star, may be bisected by the vertical wire when near its greatest elongation, or by the horizontal wire when near the meridian. In the former case the eye is to be moved on each side, in the latter up and down; and if the star continues bisected, and there is no dancing of the star on one side or other of the wire, the position is correct. When the star moves contrarywise to the eye of the observer, the tube must be pulled out, as the image of the star is then formed between the microscopes and the eye, and the wires must be brought to the same place. When they move the same way, the tube is to be pushed in, until the image is formed exactly upon the wire. Any error thus detected by gently pushing the tube in or out. When this has been once successively done, a notch for verification should be made to save all future trouble. The vertical wires are now to be set at right angles to each other. Take any wire, either a sharp distant terrestrial mark, or the wires of a sub-
diary telescope [COMIITATOR], or a circumpolar star at its greatest elongation. Bisect this at the centre of the middle wire, and move the telescope up and down until you see the point of intersection, and then turn the tube, so that if it is not bisected twice, turn the movable tube round, and so bisect it, and repeat the operation until you are satisfied. The middle horizontal wire, if a correct position of that is pre-
ferred, must be adjusted, by twisting the tube until a star on the meridian runs along the horizontal wire by its own motion, the azimuth circle being fixed; or by moving the instrument in azimuth after having bisected Polaris or a circumpolar star near the meridian, on that wire. There are screws above and below the tube at the eye end, which should now be tightened. To make the central and vertical axes nearly at right angles, describe a circle with the object, such as the near the horizon as may be, read the horizontal microscopes, turn the instrument 180° in azimuth, and observe again, reading the same microscopes. If the means of each pair of readings agree, and after reversing the wire describes a great circle; if not, move the instrument half way to 180° by the clamp screw, and bisect the object by turning two antagonist and pulling-screws near the eye piece, which draw the wire plate to either side; repeat the opera-
tion until both are satisfied. If they are still not strong enough, the circle may be taken out of its axis and reversed as an ordinary transit [TRANSPORT]. The upper microscopes may now be correctly adjusted. Observe any object which does not alter its altitude on the middle horizontal wire, and read the upper microscopes; turn the instrument through 180° of azimuth, and observe the object again. Move the circle to exactly the middle of these two readings (which will be near either 0° or 90°), when the tele-

scope is directed to the meridian, and then read the crosses of each of the microscopes exactly on 0° or 90°, as the case may be; the microscopes are then in a diameter, and the error of collimation in altitude is also destroyed. The instrument will then be accurately set up, except for the horizontal axis, and the apparatus for levelling the horizontal axis, and as few observers like to meddle with the adjustments of their microscopes, the microscopes can be brought into a dia-

ger after the axis is made horizontal by raising or lowering-

everything. The levelling screws a small equal quantity, but though it is convenient that the microscopes should read nearly the same angle, it is not at all essential to accu-

racy, and the error of collimation must always be ac-

erated or eliminated by hand.

We shall always suppose every observation to be a mean of two, one made face east and the other face west, unless the contrary be said or implied. In this case there is no error of collimation.

The position of the azimuth circle was, as has been stated, invented by Riccioli, though a quadrant moving freely in azimuth, and with a graduated horizontal circle, was used by Hevelius. It is the most universally useful of all astronomical instruments, and is both portable and accurate.

In delicate hands, and with some power of calculation, it is capable of performing a great deal of good work. Besides being an excellent geodetical instrument [THEORET], it is, when placed in the meridian, an accurate, though not very rapid, means of determining the exact time. To find the time, place the point of a piece of paper on a meridian or transit circle, for determining at once the right ascension and zenith distance of any unknown stars. In this case the horizontal point must be got by combining observations taken directly with others by reflection, in the manner already described. Several standard stars may be observed, and their instrument-

al places compared with their computed places; the mean of these differences is to be applied as an index error to correct the observations of unknown stars exactly as in Mr. Pond's first method with the mural circle. In this mode of observing there is no reversal.

The principal merit in the altitude and azimuth circle is, that it can be moved in azimuth without injuring its accuracy, which is not the case with the level and the time-

keeper, in which the instrument and a time-keeper, of which the error is unknown. This should mark sidereal time. The instrument must first be nearly adjusted, and the approximate meridian selected. This will be known near enough by shifting the instrument in azimuth till it is found that a star, which is bisected by the horizontal wire, continues to be bisected for a short time. Observe the zenith distance of some known star in this direc-
tion, and then give at a sub-
diary telescope [COMIITATOR], or a circumpolar star at its greatest elongation. Bisect this at the centre of the middle wire, and move the telescope up and down until you see the point of intersection, and then turn the tube, so that if it is not bisected twice, turn the movable tube round, and so bisect it, and repeat the operation until you are satisfied. The middle horizontal wire, if a correct position of that is pre-
ferred, must be adjusted, by twisting the tube until a star
number of stars on the east and on the west prime vertical will be very nearly correct, and depend upon the divisions of the circle and the catalogue employed. Also the altitudes of the circumpolar circle above the horizon, at any moment, may be found by the method of the meridian, since the circle is parallel to the horizon, and the level of the circle of the instrument, or of the time-keeper, may occasion greater errors than can well arise from the divisions of the circle, but not to mention the greater length of time occupied by the observation of the circle, and the change of weather. Lastly, the time may be derived from this instrument, when the lower circle is clamped, and the telescope is made to move in the meridian like a transit. The transit will be explained hereafter, but the adjustment to the meridian is generally made with the divided instrument by the divided horizontal circle. Either the azimuths of a star may be observed when it has the same altitude on the east and west of the meridian, in which case the instrument is set to the middle altitude distance, and the east or west distance distance is found, when the reduction to the reference circle corresponding to the meridian; or the time may be got very nearly from a star near the zenith, and then the error of the time-keeper being known, Polaris or any near circumpolar star may be bisected, by moving the instrument in such a direction, that the circle of the instrument corresponding to the meridian; or Polaris, or any known circumpolar star, may be observed at its greatest elongation, when its azimuth is known by computation; or, generally, a known circumpolar star may be observed anywhere and at any time, the time being computed for the known time of the observation, when the instrument can be shifted this quantity. For the mode of correcting errors of level, &c., and of deducing the longitude from the passage of the moon over the meridian, &c., see Transit.

When the direction of the meridian is required with great accuracy, the process used in the Trigonometrical Survey, vol. i. p. 242, may be followed. The azimuth of Polaris was observed when at its greatest elongation to the east and to the west of the meridian, and the mean of these was taken for the reading of the north point. The cross level should be applied to the transit axis and the error carefully noted before every observation, and the instrument should be reversed once or at least twice during the series.

Little has been said of the error of colimation in altitude, because in truth the determination of this error is scarcely ever required in a separate shape by an accurate observer. It is, however, contained in the description of the divided face of the circle to the east, and then with face west, near the meridian, exactly as has been already described, correct each zenith distance to the meridian and for the indication of the fixed level. Then the difference between these zenith distances, if any, shows that the microscopes do not read 0°, when the telescope is in the zenith and the vertical axis is correct; half the difference is to be added to all observations made with the instrument when the face is one way, and to be subtracted from all observations when the face is the other way, as the case may be.

If an observer should wish to use an instrument of this kind for making a catalogue of unknown stars, he may first observe two sets of zenith distances at once, using an index error for the latter deduced from known or standard stars, as we have described above. Or the zenith distances may be determined by setting at circump-meridian altitudes, with the telescope reversed, and the error of level of the instrument corrected, &c.

Here the time must be noted when the object is bisected by the crossing of the horizontal and vertical wires, and the upper and lower microscopes and fixed level reversed, and the operation repeated. Then if the object is not near the meridian and the interval is short, the mean of the zenith distances and the mean of the azimuthal readings
correspond very nearly to the middle time, and as the
axial azimuth of the meridian is, or easily may be
known, the azimuth and zenith distance of the object at a
given time are known, which, with the colatitude, are two
sides, and the included angle of the triangle ZPS, which
can therefore be computed, and the polar distance PS, and the
horizontal ZPS. From this, if the observer should be
made near the meridian, the corrections as found in
circum-meridian-observations must be applied.

The observer, who is not afraid of working spherical
trigonometry, may find the following exact means of
ascertaining the place of a comet or planet. Observe
the altitude and azimuth, noting the time, of a known star,
as near the comet as may be, and then the altitude and
azimuth, also noting the time, of the comet. The com-
puted azimuth of the object computed with that observed,
will give an index error for the instru-
ment, in altitude and azimuth which, when applied to
the observed places of the comet, afford correct data for
computing its horary angle and polar distance. This
method is only an application of the principle of measuring
differences, rather than absolute quantities, and admits of
great exactness, even with an indifferent instrument, espe-
cially if several stars, on different sides of the comet, are
used.

An instrument of this kind will show very clearly the
effects of refraction and parallax, though it cannot be ex-
pected to increase our knowledge on these points. On
comparing the azimuth of the object computed with that
computed from the altitude, the difference will be the effect of
refraction, or of refraction and parallax, as the case may be.
The determination of the law and quantity of refraction
was the chief purpose for which Flamsteed's circle was
principally designed.

The instrument-maker ought to mark the value of the parts
on the scales of the levels, but it is advisable to ascertain
dependently. Place the instrument so that the third
foot-screw, that with the slow motion apparatus, is in
the plane of the altitude circle, raise the foot-screw till the end
of the bubble towards the observer is near the end of the
scale, bisect a well-defined object with the telescope, and
read the position of the microscopes and the ends of the bubble.
Then lower the foot-screw till the bubble is towards the
other end of the scale, bisect the object again, and read off
the microscopes (bringing the crosses to the same divisions)
and bubble as before. You have thus a given number of
parts of the scale, those through which the bubble has
travelled, equal to the difference of the readings of the
microscopes in the two positions, which is therefore known
in seconds of space. This should be done several times and
the distance of the rise, which will be but not only
length of the bubble, but the value of the parts, varies with
the temperature. A table may then be made for future
use. By attaching the cross level to the altitude circle it
may be examined in the same way.

There are two various kinds of form of the altitude and
azimuth circle. The vertical axis is sometimes de-
bpressed below the azimuth circle, which gives the instru-
mament a greater compactness of form. In a few instants,
instead of a pair of microscopes upon a fixed support, there
are three or more which can be placed anywhere on the
circumference of a ring, parallel to and concentric with
the vertical circle. This is a very essential improvement, as
besides getting rid of eccentricity, three microscopes at 120°
distance from each other at angles that are not only
change of figure corresponding to ellipticity. (See Monthly Notices of the Astron. Soc. vol. ii. p. 96.) The errors of
division may also be gradually eliminated by changing the
positions of the readings. The use of several microscopes are
sometimes applied to the horizontal circle.

The circle here drawn and described is divided by an
glue; in instruments of higher pretensions one or both
circles are divided by bands, generally according to Trough-
ton's method. The circles divided in bands are divided.
There is a figure and description of a very
beautiful circle, generally known by the name of the West-
bury Circle, in a paper by Mr. Pond, Phil. Trans., 1808,
p. 452. which contains another aspect of Dr. Bradley's
Almanac, vol. ii. p. 434, plate x. A vertical circle, of eight feet
diameter, moving freely in azimuth, planned by Ramsden
and finished by Berge, is at the Observatory of Dublin,
which, so far as we know, has not yet been described,
though well known by the deductions of Dr. Brinkley.

(See Trans. Royal Irish academy, vol. xxi. p. 33.)

The transit-circle is: very shortly described, as it is only
the upper circle of the last-mentioned instrument, gene-

rally on a larger scale. This, when fixed in the plane of
the meridian, may be used both as a transit and as a
meridian circle. The eyepiece should be on the side of
stone, to which the reading microscopes should also be
attached. A very beautiful transit circle, of four feet di-
diameter, and divided on both sides, was constructed by Mr.
Troughton & Sons. It was purchased by the Library of the
session of the late Stephen Groomebridge, Esq., of Black-
heath, and was employed by him in forming a catalogue of
stars within 50° of the north pole. It is described and

The advantage of an axis, a capital fault in an instrument for ob-
erving transits, and we conceive that there was a still greater oversight,
though one more easily repaired, in the unstable fixing of
the reading microscopes, which are mounted on slender
bars of brass instead of stout stone crosses; the consequence
was, that the index error was always changing. The
meridian circle of Roemer, and those which re-
semble it, have been already mentioned. This form is perhaps preferable to
that of the axis being less subject to
flexure; but its unsymmetrical appearance is disagreeable,
and makes some of the ordinary modes of adjustment im-
practicable. The unequal bearing on the pivots may also require alteration, as the object is like the ordinary transit telescope, with the circle and ver-
ciers close to one of the pivots. It is too complicated to be
described in a few words, and it is not, we believe, to be met with
in this country; but most of the continental observatories coast
of the British isles are furnished with it.

Gauss, &c., the circle of Reichenbach is undoubtedly
a very powerful and accurate instrument, but we think not so
perfect, certainly not so fit for ordinary observers, as a closer
copy of Roemer's would be; it is much less simple, and the telescope is much more liable to
injurious flexure.

The adjustments of the transit circle are those of a mural
circle and of a transit combined. A very ingeniously con-
trived plum-line was applied to Groomebridge's circle, to
level the cross axis and adjust the collimation in altitude.
But the methods already described were found to be more
accurate and much less troublesome. Indeed the plum-
line apparatus of the mural circle is superceded by the use
of observations by reflection.

Besides the works we have already referred to, the astra-
nomical reader may consult, as to the mural circle, Pond's
Observations, 1812, p. 236, and 1825 (where an example is
fully worked out), for an account of his two methods,
leaving his to the Committee of the Astronomical Society of
For the transit-circle, Wollaston's Piastricus, Piastrae and Appendix. For the altitude and azimuth circle, a Paper
by Mr. M. T. Pickering, Memoirs of the Astronomical Society, 1852, p. 33; and generally the article Circle of the
Edinburgh Cyclopaedia, by Mr. Troughton, and Dr. Penshon's Prac-
tical Astronomy.

On the mode of dividing circles and the errors to which their divisions are liable, see Graduation, and Troughton's Memoir, Phil. Trans., 1809, p. 102; Dr.
Robinson's Paper, already cited, and another by the same
author, Memoirs of the Irish Academy, 1825; two Papers in the Memoirs of the Astronomical Society on the errors of

CIRCLE, MURAL. [CIRCLE, ASTRONOMICAL] CIRCLE, REFLECTING. [SEXTANT.] CIRCLE, REPEATING. [GRADUATING CIRCLE.] CIRCLE, TRANSIT. [CIRCLE, ASTRONOMICAL] CIRCLE QUADRATURE OF THE. [QUADRATURE.] CIRCLES OF DECLINATION, ALTITUDE, &c. The use of these terms is not very well settled. According to some, the words circle and circle at the time of declina-
tion, or the small circle all whose points have the same
decimation; that is, a parallel to the equator. According
to others, it would mean the circle on which declination is
measured, this, an hour circle passing through the
observer's position. And in the former sense of the word the
latter sense is the more generally used; but in all cases the
student must be aware of the difference when he cons-
iders a book on the doctrine of the sphere.
CIRCUITS, in English law, denote the periodical progresses of the judges of the superior courts of common law through the several counties of England and Wales, for the purpose of administering civil and criminal justice. The ordinary circuits take place in the spring and summer of each year; and for several years past one of the judges has made a circuit through the counties of Hertford, Essex, Kent, and Surrey. In the month of December, for the trial of criminals. All the circuits take place under the authority of several commissions under the great seal, issued to the judges and others associated with them on each occasion. [Assiz.] Most barristers practising in the common law courts in London are attached to one or other of the circuits; and each circuit is customarily attended by a numerous bar. The transaction of judicial business in the presence of a professional audience of this kind, has been justly considered as one of the best securities for the due administration of justice; and in consequence of the system of circuits, this advantage is not confined to the metropolis, but is communicated to the most remote parts of the kingdom.

Since the statute 11 Geo. IV., and 1 Will. IV. c. 70, by which the ancient system of Welsh judicature was abolished, the circuits of the judges are eight in number, and the counties of England and Wales are distributed among them in the following manner: The Northern Circuit comprehends the counties of York, Durham, Northumberland, Cumberland, Westmorland, and Lancaster; the Western Circuit comprehends the counties of Southampton, Wilt's, D. mett, Devon, Cornwall, and Somerset,—and Bristol; the Oxford Circuit comprehends the counties of Berks, Oxford, Worcester, Staff rd, Salop, Hereford, Monmouth, Gloucester; the Midland Circuit comprehends the counties of Northampton, Rutland, Lincoln, Nottingham, Derby, Leicester, and Warwick; the Home Circuit comprehends the counties of Hertford, Essex, Kent, Sussex, and Surrey; the Norfolk Circuit comprehends the counties of Buckingham, Bedford, Huntingdon, Cambridge with the Isle of Ely, Norfolk, and Suffolk; the South Wales Circuit comprehends the counties of Glamorgan, Carmarthen, Pembroke, Cardigan, Brecon, Radnor, and Chester; the North Wales Circuit comprehends the counties of Montgomery, Merioneth, Carnarvon, Anglesey, Denbigh, Flint, and Chester.

CIRCULAR PARTS (NAPIER'S). A proposition which generalizes the relations between the parts of a spherical right-angled triangle into two only; first given (with a demonstration) by Naper in his "Mirifi Logarithmorum Canon" (1614), and in the "Art of Navigation," 1620. It states that if A and B be the sides, C the hypotenuse, and A and B the angles opposite to a and b, in a right-angled spherical triangle. Then take the complements of the hypotenuse and of the two angles, and the two sides, and write them in order in a perpetually recurring series, or round a circle, as follows:

\[ a, 90 - a, 90 - b, 90 - c, a, 90 - a, 90 - b, 90 - c, \ldots \]

Then taking any three parts, one may be made the middle part, and the other two either adjacent extremities, or opposite extremities. Thus 90 - B being the middle part, A and 90 - C are its adjacent extremities, and B and 90 - A its opposite extremities. Naper's rule is:

1. Sine of middle = product of tangents of adjacents.
2. Sine of middle = product of cosines of extremities.

Thus \( \sin \theta = \tan \alpha \tan \beta \) and \( \cos \theta = \cos \alpha \cos \beta \).

But we should strongly recommend the student to have nothing to do with this artificial memory, for it involves a process upon every occasion; and while one person is thinking which are the parts, which have complements taken, and the rules, another will master the six results, and will have no occasion for any future process. These results are:

2. Cosine of hyp. = product of co-cosines of angles.
3. Sine of side = sine of hyp. \times \sin opposite angle.
4. Tang of side = tan of hyp. \times \cos adjacent angle.
5. Tang of side = tan opposite angle \times \sin other side.
6. Cos of angle = cos of opposite side \times \sin other angle.

These pairs present analogies which will help the memory, and we should recommend them in preference to the rules of circular parts.

CIRCULATING DECIMALS. When a common fraction cannot be expressed exactly as a decimal, the attempt leads to a never-ending series of figures, any number of which, with the decimal point properly placed, is an approximation to the true value. Continuing the fraction, and the more nearly the greater the number of figures taken. Thus 1 with eighths affixed and divided by 7, leads to the recurring or circulating series

\[ \frac{1}{7} = 1.428571428571428571 \ldots \]

\[ 1.428 \text{ is nearly } 1, \text{ but } 1.428571428571428571 \text{ much more nearly.} \]

Hence it is said that \( \frac{1}{7} \) is a circulating decimal whose period is 142857, and is denoted by \( 142857 \). Similarly 129999... is a period 129999..., and 063636... is a period 063636... As a part of practical arithmetic, the rules for converting these fractions into common fractions are useless, though found in most elementary works. One example will be sufficient here.

\[ \frac{1}{4365} = 0.002274227422742274227 \ldots \]

Here the circulating part continued ad infinitum be called S,

\[ S = 0.002274227422742274227 \ldots \]

Then

\[ 100S - S = 99S = 0.2274227422742274227 \ldots \]

\[ 100S - S = 99S = 0.2274227422742274227 \ldots \]

\[ 99S = 0.2274227422742274227 \ldots \]

\[ S = \frac{1}{4365} \]

Walls (Algebra, ch. 89), Euler (Algebra, ch. 12, book i.) and John Bernoulli the second (Mem. Acad. Sci., 1771), have treated this subject. We shall merely state some theorems to show the principles involved.

1. Form the period of a prime number \( n \); its number of figures may be either \( 1 \) or one of its divisors. The period of \( 7 \) (being 142857) has six figures; that of \( 13 \) (being 769230) has 6, the half of 13 - 1 figures.

2. When the period of a prime number \( n \) contains \( m - 1 \) figures, the last half may be formed from the first by taking each figure in the first from 9. Thus the first and second half of the period belonging to 47 are

\[ \frac{47}{99} = 0.474747474747 \ldots \]

3. When the period of a prime number \( n \) has \( m - 1 \) figures, multiplication by any number under \( n \) only changes the order of the figures. Thus the number being 142857, we have here a number which, being multiplied by 3, becomes 285714; by 7, 328571; by 4, 571428; and by 9, 142857.

The following work may be useful to those who are curious on the subject: 'A Table of the Circles arising from the division of a Unit, or any other whole number, by all the integers from 1 to 1024, being all the pure decimal quotients that can arise from this source.' London, Richardson, 1823.

CIRCULATION OF THE BLOOD. The constitution of the blood, the nutritive fluid of the animal body, has been already described. It is the function of the blood to nourish all the tissues of the body and to stimulate all its organs. In motion it must be in motion in order to be borne to them. In man and in all the higher animals an apparatus is provided, partly for the purpose of originating an impelling force to put the blood in motion, and partly for conveying the blood when put in motion to the different parts of the body.

The organ that puts the blood in motion is the heart; the pipes or conduits which distribute the blood to the different parts of the body are the great vessels in connexion with the heart. The course of the circulation, which in all the higher animals is double—viz., one through the lungs, called therefore the pulmonary, or the lesser circulation; the other through the body, called the systemic, the greater circulation—cannot be understood until the structure and action of the heart have been explained.
HEART, AND ITS GREAT VESEL] In the mass it will be sufficient to state in this place the evidence that the blood is really in motion. The author of the "Philosophy of Health" thus sums up the proofs that the blood is a flowing stream, and that it constantly pursues a regular and definite course.

1. With the microscope, in the transparent parts of animals, the blood can be seen in motion; and if its course be attentively observed, its route may be clearly traced.

2. The membranes, termed valves, are so placed as to allow the blood to pass between them in the circle described; while they either altogether prevent, or exceedingly impede its movements in any other direction.

3. The effect of a ligature placed around a vein and an artery, and of a puncture made above the ligature in the one and below it in the other, on the alternate motion of the blood and the course of it. When a ligature is placed round a vein, that part of the vessel which is most distant from the heart becomes full and turgid, on account of the accumulation of blood in it; while the part of the vessel which is between the ligature and the heart becomes empty and flaccid, because it has carried on its contents to the heart and it can receive no fresh supply from the body.

When, on the contrary, a ligature is placed round an artery, that portion of the vessel which lies between the ligature and the heart becomes full and turgid, and the other portion empty and flaccid. This can only be because the contents of the two vessels move in opposite directions—from the seat of the ligature to the heart, and from the heart to the vein. At the same time, if the vein be punctured above the ligature, there will be little or no loss of blood; while if it be punctured below the ligature, the blood will continue to flow until the loss of it occasions death. Hence it is evident that the blood was in motion, nor unless the direction of its course were from the artery to the vein, and from the vein to the heart.

4. If fluids be injected into the veins or arteries, whether of the dead or the living body, they readily make their way, and fill the vessels, if thrown in the direction stated to be the natural course of the circulation; but they are strongly resisted if forced in the opposite direction.

The author concludes his account of the structure of the heart and of the blood-vessels with a list of the streams of blood which is ascertained constantly to pursue, with the following reflections:

Such is the description, and, with the exception of the first proof, such the evidence of the circulation of the blood in the human body, pretty much as it was given by the discoverer of it, the illustrious Harvey. Before the time of Harvey, a vague and indistinct conception that the blood was not without motion in the body had been formed by several ancient philosophers, but an analogous motion, in which the human mind arrives at discovery (chap. iii., p. 103), that many minds should have an imperfect perception of an unknown truth before some one mind sees it in its true and entire light. And, indeed, as we have seen, in 1620 succeeded in completely tracing the circle in which the blood moves, and having at that time collected all the evidence of the fact, with a rare degree of philosophic forbearance, Harvey still spent no less than eight years in re-examining the subject and in maturing the proof of every point, before he ventured to speak of it in public. The brief treatise which at length he published was written with extreme simplicity, clearness, and perspicuity, and has ever since been considered one of the most admirable examples of a series of arguments deduced from observation and experiment that ever appeared on any subject.

Contemporaries are seldom grateful to discoverers. More than one instance is on record, in which a man has injured his fortune and lost his happiness through the cladest and establishment of a truth which has given him immortality. It may be that there are physical truths yet to be discovered, by some one not to say nothing of new applications of old truths, which, if they could be announced and demonstrated to day, would be the ruin of the discoverer. It is certain that there are moral truths to be discovered, expanded, and enforced, which, if any man had now penetration enough, and courage to express them, would cause him to be regarded by the present generation with horror and detestation. Perhaps during those eight years of re-examination the discoverer of the circulation sometimes endeavoured in imagination to trace the effect which the stupendous fact at the knowledge of which he had arrived would have on the progress of his favourite science; and, it may be, the hope and the expectation occasionally arose, that the inestimable benefit he was about to confer on his fellow-men would secure to him some portion of their esteem and gratitude, and that he might have been surprised and disappointed when he found, after the publication of his tract that the little practice he had had as a physician by degrees fell off? He was too speculative, too theoretical, not practical. Such was the view taken of the discovery; and the more so, probably, because the law of the great facts is usually that of analogy; and other facts somewhere nearer, which have been less widely known, and not less beneficial, than his, are less noted; but indications of a presumptuous mind, that dared to call in question the revered authority of the antients; and some of them saw, moreover, indications of a malignant mood, that conceived and defended doctrines which, if not checked, would undoubtedly have spread every where in the country.

In the "Philosophy of Health," from which the above extract is taken, will be found a full account of the apparatus of the circulation, of the powers which move the blood, and of the uses which the circulation accomplishes for the living economy. [HEART, AND ITS GREAT VESEL]

CIRCUMCISION, the operation of cutting off the prepuce or foreskin, is sometimes performed for a medical purpose; but it is general or universal among some nations as a religious observance. Among the Mohammedans the practice of circumcision appears to be of the highest antity. Abraham, as recorded in Genesis (xvi. 15), by the command of God, circumcised himself and all the males of his household. After his habitation was ninety-nine years old (Gen. xvi. 24) when he was circumcised. The rite of circumcision was ordained to be an everlasting covenant between God and the seed of Abraham; and it was declared that 'the uncircumcised man-child whose flesh of his foreskin is uncut, that soul shall be cut off from among his people; he hath broken my covenant.' All the males that left Egypt were circumcised, but during the forty years wandering in the wilderness the rite was not performed. Joshua, by the express command of God, renewed it by circumcising all the males just after the passage of the Jordan. (Joshua, v.) Ever since the circumcision by Joshua, it has been universally observed, both among the Jews and the Ishmaelites, and by the heathens in general. Circumcision is an essential and distinctive mark of the Mohammedan religion; it is not enjoined in the Koran, but the Arabs and Mohammed himself were circumcised before the religion of the Koran began to be preached, and their descendants have continued the usage as one which had always prevailed among the people in other regions of the world, and among the Moabites and the Ammonites, and among the Ephraimes and the Gileadites, and among the Philistines and the Amalekites, and among the Sidonians and the Phoenicians, and among the Egyptians and the Ethiopians. The prevalence of circumcision among various nations is mentioned by Herodotus (ii. 36, 37, 104), by Diodorus Siculus (i. 26 and 55, iii. 32), and others. Herodotus says that the Colchi, the Egyptians, and the Ethi-
plains, were the only nations who had practised it from time immemorial, and that the Phoenicians and the Syrians of Tyre had submitted that they had learned the custom from the Egyptians. This notion, that the Jews had learned circumcision from the Egyptians, has been taken up and maintained in modern times by Sir John Marsham, in his 'Chronicle Canon Egyptianus,' and others. (See also Marsham, *Circa*.) The term *americans* is sometimes applied to the custom of the 47th chapter of his history.) But supposing this opinion to be false, it does not follow, on the other hand, as has been contended, by some, that all the nations among whom the custom prevails must have derived it from the Jews. It has been supposed by some critics (but in our opinion without good reason), that among the ancient Egyptians it was only the priests and those who desired to study the sciences at which they were the teachers, who were obliged to be circumcised. See the notes of Wesseling and Larcher on the passages of Herodotus above referred to, the Commentary of Origen on the 'Epistle to the Romans,' ch. ii., v. 13, and a curious note of M. Huet on Origen's Commentary on Genesis. (Origines Opera, Car. de la Rue, 4 vols. fol., Par., 1733, &c.; vol. ii. p. 16.)

It is said that Pythagoras submitted to the Jews, in order to obtain instruction in the secret doctrine concerning circumcision, a note on the 4th sect. of the 224 chapter of Volney's *Revolutions of Empires.*

Strabo (book xxvii., 824) says by mistake that the Jews practiced circumcision in order to maintain the purity of their female children. The view that Jews never practiced circumcision is not correct. It is possible that the custom did exist, and still does, among other nations, particularly the Abyssinians, Nubians, and the modern Egyptians. See Lapidus, 'Hist. Athéosphère,' iii., 1; Niebuhr's 'Description of the Arabs,' pp. 67-71, and the 2nd of the questions drawn up by Michon, p. 105-109; Sonnini's 'Travels in Egypt,' Hunter's translation, vol. ii., pp. 29-38; 'Description of the Egypte,' (ed. of 1823), vol. xii., p. 213; and especially Browne's 'Travels in Africa, Egypt, and Syria,' 2nd edit., pp. 334-408. It is not possible to determine the exact time when circumcision became prevalent, and in some cases the excision of females also, among various savage or imperfectly-civilized races. It is said that the rite was practiced by the Mexicans when the Spaniards first became acquainted with them. Cook found an imperfect species of circumcision, consisting of the cutting of the prepuce, in use among the natives of the Friendly Islands. (Kerr's *Voyages,* vol. xii., p. 62.) Long before, many of the old voyagers had met with it among the islands of the Indian Archipelago. Amongst these are supposed to be the western coast of Africa, and elsewhere. In Purchas's Collection, Edmond Scott gives a long account of the ceremonial of the circumcisions of the king of Bantam in Java, at which he was present. Captain William Dampier, in his *Newes from the East Indies,* states that he found the people at the bay of St. Augustine, on the west coast of Africa, circumcised; and Captain Richard Jobson describes the ceremony as he witnessed it at Batto, on the same coast, in 1621. An abstract of these and other early accounts may be found in Prevost's *Histoire Générale des Voyages,* iii., 211, &c. See the same work (viii., 601) for a description of the ceremony of circumcision as practised among the people of Madagascar. Dampier, in his graphic manner, describes the ceremony as he witnessed it in 1686 at the Philippine Islands. (Voyages, i., 339-343.) An account of what is now called the circumcision of females as well as of males by some of the African tribes is given by Bosman in his *Discours of the Coast of Guinea,* English edit., 2nd edit. pp. 179, 180, 329, 414. The principal distinction between circumcision as practised by the Jews and by other nations, is that the former, in obedience to the command given to Abraham, always when it is practicable, circumcise the child on the eighth day after its birth; whereas, among other nations it is usually deferred to a much later period. Among the Mohammedans it is commonly performed in the thirteenth year, because Ishmael, the present of that age when he underwent the operation. (Gen. xvii., 25.)

Koblenz, in his 'Present State of the Cape of Good Hope' (translated by Medley, 2nd edit., i., pp. 112-119), gives an account of the singular custom of circumcision among the negroes to be conformed to the Jewish circumcision.

Besides the authorities already referred to, the reader may consult the articles on circumcision in 'Hofman's Lexicon Universalis,' and in the 'Encyclopédie.' In the latter will be found an account of the opinions of both the Jewish rabbinists and the Christian fathers on the doctrinal questions connected with the subject of circumcision. On the medical, including both the physical and moral, part of the subject, see Michaelis and Niebuhr, as already referred to in the *Encyclopédie.* Bartholin's *Comment. de Morbis Biblicis,* and Drake's *New System of Anatomy,* 2nd edit., vol. i. pp. 127, 128.

CIRCUMFERENCE (*circum* and *fero*), the line which goes round a figure. We do not know why, but this word is always applied to a curve, or a figure, the equivalent Greek word being *εἰκόνα,* used for a rectilinear figure.

CIRCUMPLEX. [Accent.]

CIRCUS, a large enclosed space, adapted for chariot races, an amusement to which the Romans were passionately attached. The name Circus (of which Circus, a circle, is a diminutive) does not convey an exact idea of the form of this building; which both in its outline and its use very much resembled the Greek Stadium. There were many circi in Rome, of which the Circus Maximus and the Circus Agonalis were perhaps the largest. The former may still be distinctly traced; the latter retains its external form in the Flaminia and Navona of Rome. The Circus Aurelianus, or, according to some, that of Helogabalus, stood near the Amphitheatrum Castrense. The ruins of the Flaminian Circus are hid beneath the pavement of the city. The Circus of Nero was begun by Caligula; partly finished by Nero, and completed by Hadrian, who was called the Basilica of St. Peter. This circus is said to have been longer than the cathedral and colonnade in front. (Fontana's *Tempio Vaticano,* p. 245.) Another circus, begun by Nero, and finished by Hadrian, was situated in the gardens of Domitia, near the Mausoleum of Hadrian. Several antiquities and paintings were discovered here a few years ago. In the Gardens of Sallust there was a fine circus, which was also adapted for the exhibition of naumachiae. The Circus of Florence was on the Quirinal Hill. There is a circus, not far from the Appian Way, near the tomb of Cecilia Metella, about two miles from Rome, in a high state of preservation. It is probably of a later date than many of those which were constructed within the city; and perhaps to the circumstance of its being at a distance from the city walls, its present state of preservation may principally owing. Antiquaries have called it the Circus of Caracalla, although no proof, we believe, has been discovered from inscriptions that it was built by, and commemo- rated on the coins of, that emperor.

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*Plan of the Circus of Caracalla.*

[Plan of the Circus of Caracalla.]

![Plan of the Circus of Caracalla.](image-url)
are formed on a segment of a circle, the chord of which is inclined to the long sides of the circus. The spina, or raised division, which runs along the middle of the circus, is a kind of podium or basement, in appearance like a thick dwarf wall. It is not exactly parallel to either side of the circus. Of the carceres, which are twelve in number, six are placed on each side of the entrance which was intended for the use of the processions, and are so disposed, by the inclination of the chord line of the segment on which they may be said to be set off, that the starting of the twelve chariots was equalized. The carceres were most probably covered; they were also divided by partition walls with terminal figures in front of them, and arched over, with a cornice above the arches; the semicircular opening was filled with a window frame of marble, highly enriched; and they were closed with gates, most probably of bronze. A very tolerable idea of the architectural appearance of a Circus may be formed from the inspection of a bas-relief in the British Museum.

There is also a representation of a marble fragment in Bianconi’s work on this circus, in which men are seen opening the bronze gates, in order, as we may judge from their hurried action, to let out the chariots at the given signal. The spina, which was rounded at the two extremities, was decorated with metopes, or goals, each formed of three long cones. The eggs were placed on the apex of each cone. Dolphins were also employed for this purpose: these cones were sometimes gilt. In the basement of the cones in the Circus of Caracalla there is a small chamber formed; and the basements are separated from the spina. In the centre of the spina there was sometimes one of those enormous obelisks which were brought by the emperors from Egypt. Previous to the time of Augustus, a long pole occupied the centre. Small temples, statues, columns with statues on their summits, and altars, adorned the intermediate spaces between the centre and the goals; so that the spina must have presented a highly decorated and very beautiful appearance. The Porta Triumphalis, or gate by which the victor left the circus, was at the end opposite to the carceres. It is not improbable that the pulvinar, or emperor’s seat, which, in the Circus of Caracalla, was a loggia with columns, was constructed at that part of the circus where the emperor, being near the carceres, would have the best view of the start and of the arrival at the goal. At the ends of the carceres of the Circus of Caracalla were two towers, in one of which is a staircase leading to the roofs of the carceres. The people occupied the stone seats along the sides and at the semicircular end of the circus. The Euripus, a canal ten feet wide and ten deep, was formed as a protection to the spectators, when they were not separated from the open space by a high podium or basement. The Circus of Caracalla has the podium and no Euripus. Some notion of the appearance of the circes may be collected from the medals of Caracalla and Trajan. In these medals the metopes and the quadrigae are discernible, and the obelisk in the centre of the spina.

[Coin of Trajan.]

[Coin of Caracalla.]

[Scale for the Circus Maximus, according to Venturi’s plan.]

* See a representation of these cones in the Library of Entertaining Knowledge, Townley Gallery, vol. 1, p. 141.
In order to lighten the weight of the materials used in the construction of the arch which supports the seats of the Circus of Caracalla, large amphorae were employed in the crown of the arch. Under this archway the people passed to and from the stands. Above, there were twelve carceres, the number of chariots varied: in a representation of a chariot-race on a sepulchral monument at Fano, nine are represented. The Circus Maximus was situated overlooking in a valley between the Palatine and Aventine hills, was very similar in form to that of Caracalla. It is stated, in the *Encyclopedia Methodique*, to be 2345 feet 6 inches in length, by 1602 feet in breadth, according to measurements. About 210 French towers long by 55 wide; that is, 1343 feet by 543 feet. To Tarquinius Priscus tradition assigned the building of a first archway, on the site of which the Circus Maximus was afterwards erected. If ever there was a Circus of Tarquin, it may have been rebuilt after the destruction of the city by the Gauls. This edifice, whatever may have been its origin, was enlarged by Caesar, and embellished by Augustus and Tibereus. In the time of Nero it was burnt down (Tacit. Annal. xiii. 35); Trajan repaired it; and under Antoninus it became partially ruined, but was afterwards restored. The exterior of the circus, except at the carceres, consisted of two stories, adorned with columns, and finished with a terrace. The ground floor was occupied by a circle, and was appointed for the games. There were four towers more in the Circus Maximus than in that of Caracalla; one in the centre over the carceres (equidistant from those at each corner of the circus), and one at each end of the semicircle, where it joined the straight sides of the circus: these towers were crowned with quadrigae. The spina, which was rather more than eight feet high and twelve broad, was decorated with temples in miniature, statues, and obelisks. Augustus bought an obelisk from Egypt, 126 feet high, and placed it in this circus; Constantius also erected in the circus the obelisk now called the Lateran, which is the largest of all the Roman obelisks. There are traces of a circus at Tarragona, at Merida, at Mavrebro (the ancient Saguntum), all in Spain; also at Nimes, Milan, Antioch, at Constantinople, and other places. For some curious information concerning the Circus of Caracalla, see the Cavalcante Bianconi's work on that building; *Plan of Rome*, published by the Society for the Diffusion of Useful Knowledge; Nardini's *Rome*; *Encyclopædia Methodica*, *Architecture*, *Tosygrafia delle Antichità di Roma*, dell'Aba e Huboloff's *Vatican*, and *Itinerarii Circenses*, from the circumstance that, after the time of Tarquinius, they were celebrated in the circus, were, according to tradition, instituted by Romulus under the name of Consul Cursus, and by the Lateran Obelisk, and the Neapoleum. They were exhibited on various occasions and for various purposes, sometimes, for example, by magistrates and sometimes by private citizens; either as rejoicings for success in war, or to avert the anger of some god. A grand procession from the Capitol to the circus opened the games, and the images of the gods were taken along in carriages (thoexa). The combattantes, dancers, musicians, and others followed, and last of all the comites and prætori advanced to perform the cerem in the circus. The exhibition consisted chiefly of chariot and horse races. The charioteers were divided into four classes, distinguished by the colour of their dress: one was white, another red, another sky-coloured, and another green. Doiniatt added two more, the golden and the purple. The favour of the people to one class or another was determined quite as much by the dress as by the skill displayed. Serious consequences often followed the disputes on the superiority of some class: one advanced to perform the cerem in the circus, the other was determined by lot; and the signal for starting was given by dropping a cloth (napa, or xanthis). The chariot which first ran seven times round the course was victorious, and the driver, after being proclaimed king of the course, was conducted in triumph and received a considerable sum of money. There were usually twenty-five such heats in the course of a day. *Circii* is used in the five exercises (quinquarium, the Greek *eustas*), running, leaping, boxing, wrestling, and throwing the discus, also formed part of the exhibition. Wrestlers were anointed with ointment by slaves; boxes used gloves strengthened with lead or iron to give force to their blows; all underwent a preparatory training and dieting. These exercises were performed by the combattantes almo-t entirely naked, and hence were called sometimes *certamen* *gladiatorium*; the combattantes had to make the circuit round the middle. A mock-fight, called ludus *Trojae*, was performed by young noblemen on horseback; an exhibition which was revived by Julius Caesar. (Virgil, *Aen.* v. 561.) A sea-fight (nautae) sometimes represented: Domitian afterwards built a sea-fight theatre. (Suetonius, *Domit. c. 5*.)

The exhibition of the wild beasts (ornatio) was one of the most attractive parts of their public entertainments. Wild beasts *ferocius* were often killed with one sword, and the men were either forced to this combat as a punishment, or were induced to enter it by hire. Great expense was incurred to provide beasts for this exhibition, and they were collected from the most remote parts of the empire. In the days of imperial splendour and profusion, the public exhibitions of Rome contained nearly every rare wild animal that western Asia and northern Africa could produce. The beasts were kept in inclosures (sivariu) till the time appointed for the show. The exhibitor of the games (editor spectarulorum) presided on a seat (pulvinar) at the south side of the building. So passionately fond were the people of those games, that the expression *Pompeiius Rex* was commonly used to signify the two prime necessaries of life to the Roman populace. The crowds brought together by the games naturally attracted such persons as conjurers, jugglers, and fortune-tellers to the place, which is called by Horace *ludus fallar*, "deceitful." The splendour of the exhibition increased in the later times of the republic. P. Cornelius Seipio and P. Lentulus once exhibited sixty-three panthers, and forty tigers and leopards (Lentuli). The games of Pompey on one occasion is said to have exhibited five hundred lions (a number beyond all belief), which were all dispatched in five days. (Dion. Cass. xxxix. 38.) (Pithecus, *Loric Antiquit. Romani*. Dr. Adam's *Roman Antiquities*, p. 311. &c.)

**CIRCUS. [FALCONIDE.]**

**CIRENCESTER,** colloquially called Cicer, is an ancient market town and parliamentary borough in the S.E. part of the county of Gloucester, and in the hundreds of Crowbourn and Minety. The town includes five hamlets or tythings, Oakley, Wigwell, Spingate, Barton, and Chiserton, and is at about 84 miles W.N.W. from London in a straight line, and 17 miles S.E. from Gloucester. It is situated in a pleasant situation on the river Cherwell, which joins the Thames at Cricklade; and hence, as a Roman military station, the place was called Corinium or Cornum, and Corin Castra. Three Roman roads, the Fosseway, the Ermine, and the Itchen, converge at Cirencester. A branch of the Thames and Severn Canal comes to the town. It was a place of considerable importance during the Roman occupation of Britain, when its walls, of which partial traces still exist, were two miles in circumference. During the Heptarchy it was successively included in the kingdoms of Wessex and of Mercia. A great number of Roman and Saxon antiquities have been, and continue to be, found in and near the town. In 919 it was a borough and by the Danes, and was the seat of a great council held by Canute. It was again burned and completely dismantled in the civil war of Henry III. wib the barons. Loads Surrey and Salisbury, in the reign of Henry IV., having promoted an insurrection for the restoration of Richard II., those noblemen, with several of their accomplices, were killed at a public-house in the town by the bailiff and a party of the inhabitants. Their heads were sent to London as a present to King Henry. A magnificent abbey was designed by William of Wykeham, at the time of Henry I., on the foundation of a college for prebendaries, which was established by the Saxons long before the Conquest. The revenue of this abbey at the dissolution of monasteries under Henry VIII. was 1061l. 7s. 7d. and its endowment abbey had one chaplain and 1155l. 10s. 3d. The town government is vested in two constables and fourteen wardsmen, elected annually. It has returned two representatives to parliament since the reign of Elizabeth. The borough is not incorporated; it is a polling place on the east division of the county. The living is a perpetual
erucy, in the diocese of Gloucester. Cirencester had once three churches: that which still exists is a fine old structure of the fifteenth century, very elaborately ornamented externally and internally, and its fortified tower contains a peal of twelve bells. Cirencester is not a place of much trade: it has however an extensive clothing and a small carpet manufactory. Its appearance is that of a very respectable and opulent country town. Several streets of houses have been recently built, and others are in progress. The town is paved and lighted, and well supplied with water. It has a grammar-school, three endowed hospitals or almshouses, and several charitable institutions for educa-

CIRIL BUNTING. [Emsirkidze.]
CIRL.
CIRRATUS. [Dorsibranchiata.]
CIRRIBA'abella, a genus of fishes of the family Go-
bioide, and section Acantophyrgyi. But one species of this genus is yet described, and this, however, in India. It has a tentaculal over each eye and nostril, three large tenta-
cula at the end of the muzzie, and eight under the point of the lower jaw. These tentacula constitute the chief distinc-
tion in our present genus and that of Climus, to which it is closely allied.

CIRRI'HGRAHA. An order (the second) established by Blainville for a small number of radiated gelatinous animals of the class Arachnothermata. Liouine placed them among the Medusa, to which they bear some ex-
ternal resemblance, but from which they differ, first, in having a transparent cartilaginous support, which sustains the dorsal disk of the umbrella of these creatures; and secondly, in having the proboscisiform stomach, which occupies the lower disk, accompanied by a great number of highly contractile and extensible tentaculiform cirri, very differ-
ent from the appendages with which the Medusa are supplied. Blainville says that they have evidently more proximity to the tentacula of the Actiniae, and per-
haps even to the tentaculiform cirri of Phylloia and the neighbouring genera; but that not having had an opportu-
nity of studying the species except from individuals pre-
served in spirit, he is unable positively to decide on their natural position in the system, though he is led to regard them as approximating more to Actiniae than to any other genus. He throws out a hint that the cartilaginous sup-
port may perhaps be regarded as a polyparium, and that it in fact, analogous to the calcareous part in Cystobolidae, &c. Lamarck placed the genera among his Anomalous Raduria, a section of his division of soft radiated animals (Radiatures Molasses), and next to the first genera of his Radiures Medusaires; viz. Eudora, Phorcymba, Corybea, &c. Cuvier arranges them under his Simple Acalapha, next to Cestum, observing that the two genera (Porpitia and Vellia) might form a small family in that order by reason of the internal cartilage which supports the gelat-
ious substance of their bodies. The following is De Blainville's definition of the order:

Body, oval or circular, gelatinous, sustained in the in-
terior of the dorsal disk by a solid subcartilaginous part, and provided on the lower surface of the disk with tenta-
culiform cirri, which are very extensible.

General. VEIL.-E.-

Body membranous, oval, very much depressed, convex, swollen, sustained above by a transparent oval subcartilagi-

nous piece, marked with concentric striae, and surmounted by a vertical and oblique crest, concave below, with a sort of mem- 

nulalus, offering a central mouth at the extremity of a proboscisiform prolongation, surrounded by tentacular cirri of two kinds, the external being much longer than the internal ones.

De Blainville observes that Imperato and Columna would appear to be the authors who first noticed the animals which constitute this genus, established, at first, under the name of Phylidore, by Patrick Brown, and figured by him in his "History of Jamaica," tab. 48, fig. 1. Foraskii, who gave a very good description of it, arranged it under his genus Holothuria. Lecky made it a Medusa, dem-

ominating the species known to him Medusa Vellia, a name adopted by Linnæus in the Systema Naturae. Dana, S. D. Roy de Vurtin, 1764), proposed the name of Armeniastrum for it; and Lamarck published it under the generic appel-

lation of Vellia, by which it is now generally known to naturalists.

Geographical distribution, habits, and use. This form is widely diffused, and has been found in the seas of Europe, America, Asia, and Australasia. The animals are met with far at sea, and often huddled together, young and old, in considerable masses. Sailors are said to fry and eat them.

Species. — The species (so called) are numerous; but De Blainville observes that he is far from admitting that they are sufficiently distinct; and, indeed, he well observes that he knows not on what characters the specific distinction should rest. Camino and Eisenhardt, apparently with good reason, were guided principally by the form of the carapace and body, and the direction of the crest, and recog-
nized three, confessing however that it had been impossible for them to compare the species proposed by their predecessors. Echshertz describes ten, of which half are new, depending upon the form of the crest and the colour of the different parts. De Blainville however doubts whether they are really different. Example, Vellia latu.
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tece) is worth recording as that of an eye-witness. By the help of the cuts the reader will readily understand the portion of his account which relates to the parts; but in Browne's figure there are no letters corresponding with the description: still however the notion of the position and motion intended to be conveyed will be understood without an active exercise of the imagination.

'This insect,' says Browne, 'though evidently of this class, is more firm and opaque than either of the foregoing.' The Portuguese man of war is the animal whose description immediately precedes, and consists of an oblong, cartilaginous, flat body, slightly radiated from the centre, and intersected with small concentric lines: but this is furnished with two thin cheesy or semigelatineous lips b b, that extend themselves by short vermiform appendices over the under surface of the cartilaginous tissue. It is also supplied with a semi-elliptical, dry, transparent membrane E, which stands perpendicularly on the surface of the more firm part A, in the direction of the line D D, furnishing it with a pair of constant standing sails, which answer upon all occasions; for when this body is to move in any particular direction, suppose towards X, the part A D D, I, of the perpendicular membrane, which arches in the direction of the line A D, I fills and pushes the body forwards, while the other part floats in the wind. But when the wind changes, and the body is to move towards Z, the other part answers in the same manner, and all the motions are performed by the same mechanism. It is furnished with a great number of slender tentacula, each about half an inch in length, which rise very thick from the margin of the cartilage underneath, and it seems to have an opening or mouth in the centre of the base.'

RATARIA.

Body oval, or circular, sustained by a subcartilaginous, compressed, elevated piece, with a muscular, movable, longitudinal crest above, concave below, and provided in the middle with a free procelliciform stomach, and with a single row of marginal tentaculiform suckers.

Eschscholtz established this genus for some very small cirrigrade animals, whose back is sustained by a subcartilaginous piece, not elevating itself in the dorsal cavity, and which only offer marginal cirri on the central surface. De Blainville, after observing that Forskahl has figured with his Holothuria spirans (Veletta limosa of Lamarck), some very small animals, which M. Eschscholtz himself regards as closely approximating to his Rataria cordata, says that it seems possible that the Rataria may be only degrees of development of Veletta. Example, Rataria mitrata.

PORPITA.

Body membranous, regular, circular, depressed, slightly convex above; internal cartilaginous support, circular, with its surface marked by concentric rings crossing radiated; cing, covered on the inner surface by a thin membrane merely. The body is concave below, and the inferior surface is furnished with a great number of tentacula, of which the exterior ones are the longest, and furnished with small cilia, each terminated by a globule: they are sometimes conical, and the internal ones are the shortest, the most simple, and the most flabby. In the centre of these tentacula is the mouth, in form of a small proboscis, which leads to a simple stomach, surrounded by a somewhat glandular substance.

Cuvier, from whom a great portion of the above description is taken, says, in the last edition of the 'Régne Animal,' that there is but one species (Porpita gigantea) of a beautiful blue colour, from the Mediterranean sea and other warmer seas. Lamark, who established the genus for an animal which had been placed among the Medusa by Linneaus, gives four species; but De Blainville and M.M. Chamisso and Eayssard coincide with Cuvier in believing that they are all referrible to one, though the former admits that the fact is still somewhat doubtful. He observes that Bos's species, Holothuria appendiculata, (Porpita appendiculata, Lam.) was evidently established on an impaired animal. Eschscholtz, under the name of Porpita Mediterranea, conjoins three of Lamark's species, and describes three new ones, taking for his character the proportion of the cartilaginous disk, and especially that of the marginal cirri.

De Blainville, to whose article in the 'Dictionnaire des Sciences Naturelles' we refer the reader for further details, is of opinion that the genera Veletta and Porpita might be united without inconvenience.

There is a very fair figure of a Porpita in an early volume of the 'Philosophical Transactions.'

Geographical distribution.—Like that of Veletta, very wide. Bos, who met with them at sea, says the animal has the appearance of a 24-sous piece borne along by the waves. Examples, Porpita gigantea, and Por. glandifera a.

[Profile of Porpita glandifera.]

The Rev. Lansdowne Guilding is of opinion that the genus Porpita should be restricted to those species which resemble Porp. appendiculata, which have few and broader arms, and establishes a new genus of the family Porpidae under the name of

POLYBRACHONIA.

Dorsal support (sustentaculum) cartilaginous, naked, flattened, rounded, radiated, concentrically striated; mantle (palamium) narrow, free, surrounding the support; arms numerous, parallel, of various length, elongated, affixed beneath, with a power of taking a declining position for the purpose of taking prey; mouth, below, central, purse-shaped, extensile; tentacula many, varying in form, succorial, covering the whole ventral surface; eggs, very small.

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[THE PENNY CYCLOPAEDIA]

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innumerable, nestled among the tentacula, (Guilding). Example, Polybrachia annulata. Mr. Guilding describes the support as broad and virescent, the body as cerebular, the tentacula as pallid, and the arms are in a triple series, glandulous, the glandules being pedunculated. The diameter of the mantle, exclusive of the arms, is stated to be eleven and a half lines. Mr. Guilding states that the animal is wonderfully beautiful, swimming, or rather floating on the serene surface of the Caribbean Sea, in calm weather, and embracing its prey by the sudden downward application of some or all of its arms, which are easily broken by attrition.

Organisation, and place in the natural system.—Linnæus placed the Cirripedia, with the generic name of Lepas, among the Mullivales of his Rerum (textaceae) between Chiton and Pholus; and, supposing that the form existed without a shell, found a situation for it under the name of Triton, between Terebellus and Lernaea. Cuvier, in the first and also in the last edition of the 'Règne Animal,' says that the existence of these Tritons is not confirmed, and that we must suppose that Linnæus had only seen the animal of an Anatifìa (Pentralisimus) which had been taken out of its shell. Rang, however, thinks that he had found the Linnæan genus Triton in certain specimens brought home by MM. Lescot and Garnot, Quoy and Gaimard, and has published it under the name of Alephas. Bruguière divided the genus Lepas into two; the first, Anatifìa, a barbarous word for Anatifìa, the Anatifìes of the French, comprising the pedunculated cirripeds; and the second, Balanops, the sessile cirripeds. Cuvier, under the name of Cirripoda, made these animals the sixth class of his Mollusca, which he places between the Brachiopoda and the first class (Anamphibii) of his third great division of the animal kingdom, viz., the articulated animals, and in the 'Règne Animal' they appear between Ornithuca and Serpula. Lamarck, under the name of Cirripedia, his tenth class of invertebrate animals, arranges them between the solidary Anamphibii and his Conchiferi, dividing them into two orders, 1st. The sessile cirripeds; 2nd. The pedunculated cirripeds. In his system they stand between Mogilus and Aspergillum. Latreille, though he does not disturb this arrangement, distinctly considers them as related to the Ostracoda, among the Branchiopodous crustaceans. He says that the sessile cirripeds seem to represent the animals which terminate the Acrophales enermés of Cuvier. He observes that the two tubular processes of Ostron represent the two tubes of some of the Acrophala, though with different uses, the tentacula being converted into jaws. The cirri he considers as a kind of feet analogous to the sub-abdominal appendages of many crustaceans, especially those of the Amphipoda, and is of opinion that we may also compare them to those of many annelids. The ovdvct, he remarks, has some re-emblance to that of Phalangium. Finally he expresses a conjecture that nature, to form the Cirripeds, has borrowed different organs from animals of several classes, andWellem Sharp has maintained philosophical work, 'Horn Entomologici,' considers that Pentalisimus exhibits the greatest affinity with the Ostracoda; but he seems to be of opinion that there exists an affinity between the shell of Balanus and that of Ichthys, and sanctions Latreille's opinion that the arbolesseae have their analogues in the arms of the Rudata, particularly of Comatula. Dr. Leach, who has described several genera anumicled till his time, divided the class into two orders: 1st, Campephilus, comprising the pedunculated section; and 2nd. Acanthosoma, including the sessile species. M. de Blainville makes the cirripeds the first class (Nematopoda) of his subtype Malenoza, a group which corresponds to the Mullivales of Linnæus, after separating them from the genus Pholus, so that Denkers's Malenoza consist of the Cirripedes and Chitonides. The Cirripedes, he thinks, have an evident relation to the Bivalve Mollusks, by means of their calcaneous envelope, in which he recognises the pieces of the shell of the Pholus, and even the analogue of the tube of the necks of that animal. He also considers the relationship further indicated by the recurved position of the animal fixed head downward (la tête en bas); but he also considers that their relations with the Bivalves are analogous to those of the species of the Cirripede Xanthodonta. The cirripedes are numerous, by means of the horny, locomotive, articulated appendages which are branchial, at least at the root, for coming towards the mouth, true horn, denticulate jaws. Mr. Thomas, in his 'Zoological Researches,' considers the Cirripedes to be true Crustaceans, and that in the state of these animals they not only possess...
dom and power of motion, but organs of sight. On the 24th April, 1823, Mr. Thompson states that he took in a small mussel towning net, while crossing the ferry at Passage, among other minute creatures, a small translucent animal, one-tenth of an inch long, with a peculiar form, but very slightly compressed laterally, and of a brownish tint. When in a state of perfect repose it resembled a very minute muscle, and lay upon one of its sides at the bottom of the vessel of sea-water in which it was placed; at the slightest interference with any part of its form or position within the shell, which appeared to be composed of two valves, united by a hinge along the upper part of the back, and capable of opening from one end to the other along the same line, to give occasional exit to the limbs. These were of two kinds, one pair, provided with a cup-like sucker and hooks, serving solely to attach the animal to rocks, stones, &c., and, posteriorly, six pairs of natatory members, so articulated as to act in concert and to give a very forcible stroke to the water, causing the animal, when swimming, to advance by a succession of bounds after the same manner as the water-fleas (Daphnia) and other Monocula, but particularly Cyclops, whose swimming feet are extremely analogous. [Branchiura.]

The tail, usually bent up under the belly, is extremely short, composed of two joints, and terminating in four setæ, and is employed to assist in progression and in changing the position from a state of repose. The greatest perfection of these singular members, which, although constantly shielded by the valves of the shell, are pedunculated as in the crab and lobster, and placed entirely at the sides of the body. Mr. Thompson observes that this animal, but for its pair of pedunculated eyes, would find no enemies which the animal could not approximate to Argulus on the one hand and to Cyclops on the other, genera which are widely separated; while the eyes show its relationship to the Decapoda (crabs, lobsters, &c.). The individuals presented no variation indicative of a difference of sex and season, with the remark that they were monospecific in organization, induced a belief that they were the larva or disguised states of some crustaceous animal, or (as it had been previously unceremoniously asserted) that the Cirripedes were Crustacea that the larva of which had been disbelieved to believe that the two sexes were united in the same individual. What follows being of the last importance, we give in the author's own words: "Under the foregoing impressions, some of them were collected in the spring of 1826, and, in order to see what changes they might undergo, were kept in a glass vessel, covered by such a depth of sea-water that they could be examined at any time by means of a common magnifying glass; they were taken May 1st, and on the 15th of May, in his researches he had the advantage of finding that two of them had thrown off their exuvia (exuvium) and, wonderful to say, were firmly adhering to the bottom of the vessel and changed to young barnacles, such as are usually seen intermixed with grown specimens on rocks and sandy shores, to which they are allied in their external appearance. In this stage the sutures between the valves of the shell end of the operculum were visible, and the movements of the arms of the animal within, although these last were not yet completely developed; the eyes also were still perceptible, although the principal part of the colouring matter appeared to have been thrown off with the exuvium (exuvium). On the 10th another individual was seen in the act of throwing off its shell, and attaching itself as the other, to the same glass vessel; he was of opinion that as the secretion of the calcareous matter goes on in the compartments destined for the valves of the shell covering, the eyes gradually disappear, from the increasing opacity thence produced, and the visual ray is extinguished for the remainder of the animal's life; the arms at the same time acquire their usual ciliated appearance. Thus then an animal originally natatory and locomotive, and provided with a distinct organ of sight, becomes permanently and immovably a link; at its birth possessed of a very labourious chic. The ten ordinary feet of the Cirripedes are faithfully represented in the Anatides (Campylomastigom), at the base of many among them are found branchia disposed like those of certain Crustacea, and the number is sometimes repeated. There exists in each foot a double calceal, fit for establishing a circulating current, and traversing all the articulations of the cirrus. The body is composed of a
certain number of rings, or of articulations, very distinct, each of which supports a pair of feet. In the interior of the body there is a film, in a great number of the described animals, and a double series of gill slits, in all but the tailed form of the crustacea; it is in this cavity, and not, as has been said, on the back, that the eggs are found; these pass afterwards by a duct, not yet indicated, in the envelope, which, by its resemblance to the meniscus of the molts, establishes a possible connection between the cirripedes and the last-named animals. The organs placed upon the back, which Ouier described as eggs, are the generative apparatus of the male, of which the disposition is very remarkable; an open bursa and integumental sheath, the interior a membranous sac of a retort-shape; the disposition and use of which establish, according to the researches of M. Serres, an additional approximation between the cirripedes and the annelids. Dr. Martin-Saint-Ange then proposes as the last result of his labours, to place the class cirripedia at the end of the crustacea, so as to establish a natural link or passage between the superior articulated animals and the annelids. Such are the conclusions drawn in the preface to Dr. Martin-Saint-Ange’s researches, who refers to Mr. Thompson’s approbation to the discoveries of Mr. Thompson, published in 1823; and before we proceed to the comments made on the Memoir of Dr. Martin-Saint-Ange, we will state Mr. Thompson’s view of the ova and the larval form. In the whole of the cirripedia, observed by Mr. Thompson, in the paper in the ‘Philosophical Transactions’ above quoted, ‘the ova, after expulsion from the ovisac, appear to be conveyed by the ovisac into the cellular texture of the pedicel, just beneath the body of the animal, which they fill to the distance of about an inch. When first placed in this situation, it seems to be amorphous and inseparable from the pulpy substance in which they are imbedded; but as they approach to maturity they become of an oval shape, parted at both ends, and easily detached.’ Sir Everard Home has given a very good representation of them, at this stage of their progress, in his ‘Lectures on Comparative Anatomy,’ from the elegant pencil of Mr. Bauer. During the stay of the ova in the pedicel, they render this part more opaque and of a bluish tint; the ova themselves, and the cellular texture with which they are surrounded, being of a pale or azure blue colour. It is difficult to conceive in what manner the ova are extricated from the situation above indicated; but it is certainly not by the means suggested by Sir Everard Home in the above-mentioned lecture, viz., by piercing outwards through the membranes of the pedicel, for the ova are subsequently found forming a pair of leaf-like lamellae, connected between each other at the base of the animal and the lining membrane of the shells in Lepas (Pentalasmis), or of the leathery internal tunic in Cineras. These leaves have each a separate attachment at the sides of the animal to the septum, which divides the cavity occupied by the ova, and in these species, they are first comparatively small, have a rounded outline, and possess the same bluish colour which the ova had in the pedicel; but as the ova advance in progress these leaves extend in every dimension, and lap over each other on the back, passing through various lighter shades of colour into pale pink, and finally, when ready to hatch, become nearly white. These leaves appear to be composed of a layer of ova irregularly placed, instead intercalated in a kind of parenchymatous tissue out of which they readily form about them, on its substance being torn sunder; indeed it appears at length to become so tender as to fall entirely away, so that after the period of gestation there is no vestige of these leafy connections. With this ovum, barely visible to the naked eye, burst forth from the ova, their development goes on with such rapidity that they seem to grow sensibly while under observation. The larva of the Lepas has three pairs of mandibles, with three pairs of members, the most anterior of which are a pair of teeth, the others having its back covered with an ample shield, terminating anteriorly in two extended horns, and posteriorly in a single elongated conical process.

Dr. Martin-Saint-Ange’s researches, as drawn up by the latter) upon the Memoir of Dr. Martin-Saint-Ange. After advertizing to the labours and views of Poli, Delle Chiese, Home, Thompson, and Burmeister, the report states that the ganglionic nervous chain, pronounced by Cuvier to be single, has been found by Dr. Martin-Saint-Ange to be completely double. It is evident from the comparative examination of this curious organ, and particularly from the comparison which is made with the double chain of the fly, that it is necessary for the fullest illustration of this obscure and long-debated subject, to give a portion of it at least, as nearly as we can in the terms of the reporters;—

“The author,” says he, “has discovered besides in the Cirripedes a complex animal enclosure, an organ resembling the head, which had its principal trunk in a tubercele which occupies this region. At first sight we thought that this tubercele might be the remains of the eye observed in the young state by Mr. Thompson, at the period when these animals are free, and that the nervous apparatus might be the remains of that of vision; but a dissection in water and under the microscope has not justified this opinion. Our researches however were made upon subjects which had been placed for a long time in fresh water; we were therefore allowed to renew them on fresh individuals of various ages, in order to prove whether the loss of the eyes is complete and absolute, or whether, as M. Milne Edwards has observed in Cymothoe, the organs are hid in the thickness of the animal. It was observed, with regard to the cirripede, that the appendages do not appear appearing. After the nervous system, one of the most controverted questions about the organization of the cirripedes is that relative to their genital apparatus, and the mode in which their generation is carried on. We do not in the least doubt the idea of Home, who makes the Anatises germinate from their pedicel, nearly like buds from a stem. This hypothesis, which is opposed by the disposition of the parts, is besides destroyed by the fact recently discovered by Mr. Thompson, that the eggs of the cirripedes are not found in the pedicel. If at first these animals are free, if they move in all directions by the aid of their feet, which serve them so ear, it is clear that an hypothesis which supposes them to be adherent and fixed at all periods is unworthy of a serious refutation. It is not so with the opinion of Cuvier, which deserves to fix our attention; inasmuch as, if it were well founded, it would constitute a new species of hermaphroditism. On each side of the intestinal canal of the Anatises is a substance composed of an infinity of granules; these granules united in a bunch (en grappe) enter a hollow pedicel; this pedicel in its turn opens into a larger canals, which united to its rengener is prolonged the proboscisiform tube. According to Cuvier, these granules in the bunches are the pedicel deferent canals, and the zigzag a sort of vesica seminalis. On this hypothesis, the eggs detach themselves from the bunch and travel the length of the deferent canals, which is not the case; there is but one passage; they are finally deposited in the cavity of the mantle by the proboscisiform tube which terminates this apparatus: whence it results, according to Cuvier, that the male and female cirripedes produce the same eggs, a condition which would amount to the simplest development of animal generation. But according to M. Martin-Saint-Ange, the whole of this apparatus only constitutes the male organ; the female organ being found only in the females. In this case, the Anatises fix themselves to the bodies that support them. This is a renewal of the opinion of Poli and Lamark, which Cuvier disregarded, because the pedicel appeared to him to be completely closed on the side of the animal. To give to this opinion the positive characters of anatomy, the author ought to have found a passage which would place the interior of the pedicel in communication with the cavity of the mantle where the eggs groups themselves, in the formation of the ovipositor. The disposition was in fact made known to him by the discovery of a small conduit, which runs from the root of the pedicel along the bottom of the single piece (piece impaire) of the shell, and opens in the interior of the mantle opposite the side from which the eggs, if the ovipositor of this oviduct was placed out of doubt in three manners: first, the eggs being of a beautiful azure blue in the
Living animal, the author found them in the ovarian con-
duct, passing from the pedicle into the mantle; secondly, on
becoming an adult, they enter into the pedicles and es-
ter; thirdly, instead of air he injected a coloured size or
varnish (aerina), and thus made the oviduct stand out,
nearly in the same manner as vessels which would, from
their minuteness and delicacy, escape the observer without
such preparatives. The reporter then states, that these
of their own experiments, and confirm this opinion of M.
Martin-Saint-Ange, as combining in its favour every de-
gree of anatomical certainty. They acknowledge that it
can be objected that the ovary, in this case, is isolated from
the fœtulating apparatus; yet they observe that in this point
the Cirripedes are in the same condition as the Lophyro-
poda, whose eggs are confined in a separate pouch placed at
the superior border of the shell. Besides, direct observation
proves that the egg-cases are the same in both cases as that
of the pedicle, present in the mantle the first lineaments of
the embryo; a fact which agrees with the modern researches
into the anatomy of the veredipta. The determination of the
ovary and the discovery of the ovicell, then, in the Cir-
ripedes are new facts; which, in extracting these animals
from the state of exception in which Cuvier had placed
them, subject them to the common law of generation. On
the other side they return into a condition of exception by
a third division, that known by the name of the second
intestinal canal, which is at present known in comparative anatomy; viz., the
possession of a second intestine enclosed within the ordinary
one. This second canal, discovered by the author and named
by him a cæcum, floats in the alimentary canal and almost
equals it in length. It is closed at its lower extremity,
while at its upper extremity, which is open and wide, it is
detached (enfâché par des centelles) into the areolar
lacteum of the anterior part of the stomach. In this cæcum the
aliments are deposited to undergo the necessary elaboration
preparatory to nutrition, so that, according to the opinion
of the reporters, this last cannot be performed except by en-
odormose, or by a species of rumination which would empty
the contents of the second canal into the first. The re-
porters observe that they know only one animal, the com-
mon earth-worm, among the Annelids which has a second
intestine enclosed in the alimentary tube; and that there is still
a difference; for, in that Annelid, the supernumerary intesti-
ne is closed at both extremities: it is in fact a double
cæcum, which has induced M. Charles Morren (who, after
Willis, Home, and Carus, has occupied himself specially
with its study) to name it tephroloce. The reporters, after
some other observations, address themselves to the subject
of the approximation which M. Martin-Saint-Ange es-
lishes between the Cirripedes and the Annelids. Agree-
ing with the majority of zooloists, the author allows that,
in the greater part of the characters, the Cirripedes relate
to the class Crustacea. Discussing then the value of the
differential characters, he thinks, with M. Duminil and M.
de Blainville, that they ought to serve as a passage from
one class to the other. But while M. de Blainville consi-
cers the Cirripedes as Crustaceæ molluscs, the author
regards them on the contrary as Anellidæ crustacea, and
founds this decision on the duality of the nervous system,
on the rudimentary segmentation of the body, and on the
presence of two ganglions at the centre of the linear
division. The reporters remark that the same dispositions
of the nervous system exist partially in Cymothœ and in the
wood-louse (caeninae), and entirely in Phyllostoma and
Thalima, without a thought on the part of M. Andouin
and M. Martin-Saint-Ange, who made them known, to sym-
more those Crustacea to the Anellidæ. The reporters then
observe, that although it is very true, as M. Martin-Saint-
Ange observes, that in the greatest number of Molluscs
the nervous system is united in one or more ganglions at the
 centre; and that, in the central nervous system is double, Hyalocæ, Aplysia, Bulla aperta,
Tritonia, Doris, Clio borealis, etc., for example, which
shows, as remarked by M. Serres, that the nervous system
of the Molluscs cannot alone furnish a solid basis for the
methodical distribution of those animals. Laying aside the
nervous system, the secondary characters of the Cirripedes
most in accordance with the bases of natural classification
are the shell and the mantle: here there is no incon-
tentious approach; the Molluscs, if these parts were analogous
to those which envelop the latter. But according to Pro-
Ressor Burmeister they are entirely different, and bear more
resemblance to the external covering of the Crustacea than
to that of the Molluscs. Hence, observe the reporters, it
results that the place which the Cirripedes ought to occupy
is still undetermined—they conclude with a eulogy on the
multitude of new facts so clearly presented and perfectly
illustrated by M. Martin-Saint-Ange in his memoir.

That the paper of M. Martin-Saint-Ange is deserving of
much praise, and that his illustrations, some of which are
here copied, are very good, there is no doubt: but we must
be pardoned for saying a word or two as to some of the
facts alleged to be new. In the first place we must not
forget Professor Burmeister, whose admirable labours on
the subject no one can follow without advantage; and in
the next, we do not quite understand the statement in the
report that the ganglionic nervous chain pronounced by
Cuvier to be single has been found by Dr. Martin-Saint-
Ange to be completely double, and we beg to refer to the
following passage in Cuvier's 'Mémoire sur les Animaux
des Anatidées et des Balanes.' 'The nervous system of the
Anatidées is entirely similar to that of the articulated animals.'
Cuvier then speaks of the brain, composed of four small
lobes, placed upon the oesophagus, and giving off four prin-
cipal nerves which proceed to the muscles and the viscera.
'Two lateral cords,' he continues, 'which form, as usual,
a collar round the oesophagus, each give off a nerve; they
then unite below by means of two ganglions, whence pro-
ceed the nerves of the first pair of feet: the two cords then
proceed in parallel lines (parallélément), the length of the
belly, between the bases of the feet, swelling from space to
space into double ganglions, as in all the articulated an-
imals, and giving off from each of these ganglions the
nerves of the neighbouring parts.' And he gives a figure
illustrative of the nervous system, and, among other portions,

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* Beiträge, 'Zur Naturgeschichte der Rankenfisler,' Berlin, 1834.
of the Réunion des deux cordons lateraux, et premier ganlion. With regard to the internal cœcum floating in the alimentary canal, it should be borne in mind that the cuticular lining of the gizzard of the annelids is very easily separated. Among the annelidous animals we know that when the common crab moult a Heads changes its skin, it likewise casts the inner coat of the stomach.

1. Anaffite sans coquelle. (Alopaz?) A, a gelatinous production or continuation of the horny envelope which serves to fix the pedicle. B, the first membrane of the pedicle. C, a small anaffite of the natural size developed upon the pedicle of the parent. D, the convex and swollen part which contains the body of the animal. E, the figure of the horny envelope from which issue the feet or cirri. F. The point E indicates the termination of the pedicle and the place where the eggs stop. G, the eggs arrived within the mantle. 2. The same letters refer to the same parts as in figure 1. H, the part of the feet which sustains the cirri F. At the base of the feet (H) are four branches; and between these feet and those placed on the other side is seen the recurved tube which serves to convey the seminal fluid within the mantle. 3. The same anaffite, from which the half of the first envelope has been taken so as to expose the interior. The pedicle contains a second cylinder terminated in a cul de sac by its inferior extremity, and covered at the other by a very delicate membrane; the longitudinal and transverse muscular fibres may be observed. E, e, indicate the canal which carries the eggs of the pedicle within the mantle; b, that which serves as a nourishing vessel to the pedicle and the eggs; d, g, g, the membrane of the mantle which intercepts all direct communication between the pedicle and the cavity of the mantle. J represents the body of the anaffite enclosed in its proper envelope.

4. The same situation as the last, representing all the membranes which envelop the body of the animal. B B, the muscular cylindrical pipe open, in which the eggs are seen. e, e, the course of the ovulit in the thickness of the second envelope. g, g, g, g, the envelope opened and turned back. J, J, J, the proper membrane of the body of the animal; it is in contact with the canal b, communicates, and it is between this proper membrane and that of the second envelope g, g, g, g, that the eggs are found; whence it results that the cavity of the mantle has no communication with the pedicle, except by means of the ovulit e.

19. A side view of the common duck barnacle (Pentalamio anatifera) taken out of the shell, enveloped in its proper membrane, under which is found the salivary vesicle. V, the cervical ganglion. V', the nerve which is given off from the brain to go to the muscles of the skin. J, the two levator muscles of the upper lip. K K, branches. A, a horny tube which is formed on each side of the orifice of the vent. U', the extremity of the tube, bearded with fine hairs. 18. Another view of the same, showing the truly articulated disposition of the body, each ring of which corresponds to a pair of feet. S, the adductor muscle of the valves. U', the articulated tube which contains the spermatic canal. 1. The intestinal canal of the same species. B B, B B, B B. It is identical with that of the naked species (described.) D, the mouth seen from the side; d, d, the osophagus; d', d', the stomach; d', d', the pedicle which makes this organ communicate with a species of cœcum, d', d', of the same structure, and in form as the stomoch. T, the intestines, offering two natural curvatures. A, orifice of the rectum. U U, vesicles seminales, uniting in a single canal very delicate, and terminated at U' by a small orifice. 8. Disposition of the nervous system. 1. The first osophagian ganglion, called the brain; from these united ganglia spring the branches e, e', e', e', destined for all the muscles of the dorsal part, and two extremely delicate threads which go on each side, the first to the salivary vesicle V, the second to a new ganglion Z. 2. The second ganglion, sending two nervous branches to each jaw-foot F, and small branches to the osophagus. 3, 4, 5 correspond to the other ganglions. 6 furnishes the two last pair of feet. It is from the branches which go to the last feet, and not from the ganglia themselves, that the two threads y and y', which go to the extremity, U', of the tube are detached. The point x corresponds to the centre of the osophagus which has been removed. For the fruits of Hunter's anatomical investigations in this class, the student is referred to the following numbers in the gallery of the Museum of the Royal College of Surgeons:—63, 64, 65, 582, 1011, 1012, 1013, 1014, 2289, 2299, 2300, 2303, 2304, 2810. Let him consult also Poli, ('Ter- tacea artistique Sicilien'); Ouvier, ('Mémoires sur les Mol- lusques'); Sir R. Home, ('Lectures on Comparative Anatomy') and Dr. Hermann Burmeister's valuable work above quoted.

Geographical Distribution. —The Cirripedia are widely spread, and scarcely any seas are without some of the species. Their cirri, fastening themselves frequently to floating bodies tend to their great diffusion, and, in addition to this propensity, almost every rock and submari bodies is studded with some of them.

Arrangement.

Cirripedia.

Animal marine, more or less conical; sometimes compressed; enveloped in a sessile mantle, open only on one side, swollen as it were at the anterior part, which, following the natural position of the animal, is lower portion terminated above by a certain number of pairs of long, horn, articulated, ciliate cirri, and curved at the summit. N, distinct head, no eyes, and no true tentacula; the mouth furnished with lateral, horn, toothed and articulated gape, Branchiun situated on each side at the base of the first cirri; orifice of generation at the extremity of a fleshly tube raising itself from the midst of the last cirri; vent at the base of this tube. Shell variable, but when present always composed of many valves, either soldered or not soldered together: no true shell in one case only, and in that instance a soft envelope in lieu of it; shell or its representative adhering without intervention, or by the intervention of a fleshy peduncle which issues from the mantle.

Order 1. Campanulata.

Anactia of Bruguière; Cinrichéides pédunculés of Lamarck; Anactia of Pérussas; Gyrodes, and Osstracodés of Levaill.; Lepas, of De Blainville.

Animal oval, compressed; suspended in its shell envelope, to which it adheres by a transverse muscle situated near the opening. Mantle open solely on one side, and inferior attaching itself to the edge of the shell, and prolonged inwards on one side into a cord. Pedicle adhering by its extremity to submari bodies; branchiun pyramidal, adhering on the outside of the base of the cirri.

1. The figures and descriptions are taken from Dr. Martin Saint-Angle's Memoire.
Shell.—Almost always composed of five principal pieces or valves, rarely without any vestige of these testaceous portions, but in that case replaced by a subcarunculiform and thick envelope; principal valves triangular, delicate, touching or overlapping each other at the edges; sometimes rudimentary, and in that case very much separated. The valves thus disposed: two large lateral valves receiving the transverse muscle; beyond these two smaller lateral valves, and a mesial valve serving to join all together. There are often a number of accessory pieces fixed at the base.

Habits.—The genera of this order affix themselves by means of their pedicle to submarine bodies, forming numerous groups. They are often found on floating substances far at sea: on ships, on logs of timber, on bottles, on net-corks, on fuel, on floating testaceous mollusks, *Ianthisa* for instance, on whales, on turtles, and even serpents—*Hydrophis*, for example. Other testaceous mollusks might be mentioned, and one species has been found parasitical within the umbrella of *Medaea*. A large log of timber covered with these animals, twisting and diverging in all directions, and so thick as entirely to hide the surface of the log, is a strange sight. They look like an enormous collection of serpents to the ignorant; and we have heard a living mass of this description casually drawn into shallow water and left by the tide, so termed. Their growth must be extremely rapid. A ship going out with a perfectly clean bottom will often return from a short voyage covered with them below the water line. The Blocks of Goree are said to eat a large species of *Pentalaimis*, which is stated to be delicate.

Genera, Alephas.

*Animal oval, compressed, bean-shaped, rounded near the pedicle, which is moderately long. Cirri rather short, and hardly recurved at their summit.*

Shell replaced by an entire subglandular and somewhat transparent envelope, without any other opening than that which serves for a passage to the cirri, continuing itself with the pedicle, and presenting no trace of testaceous pieces. Such is the description of Mr. Rang, who has given the generic appellation above stated to the *Cineras parasita* of Lesson, and the *Anatifis univalvis* of Quoy and Gaimard. The species on which the genus was founded was detected attached to the umbrella of *medusa*. Rang considers this to be the *Triton of Linnaeus*. Cuvier, in the last edition of the "Regne Animal," observes that he has not seen the species, but still adheres to his old opinion; for he says that it ought not, in any case, to be confounded with the *Triton of Linnaeus*, which was the animal of an *Anatifis* torn from its mantle and shell. Rang thinks that this and the following genus connect the last family of the *Acetabula* with the first of the *Cirripedia*.

![Alephas parasita](image)

Gymnolepas.

*Otion and Cineras, Leach; Aurière, De Blainville.*

Animal compressed, with the cirri much recurved at their extremity. Mantle nearly entirely naked, thick and subcarunculiform. Pedicle long and thick.

Shell rudimentary, composed of small valves very much separated. Locality, probably warm climates. *Otion Cuvieri* has been received from Senegal; and there is a fine group on *Coronula diadema*, a parasite of the South Sea Whale, in the Museum of the College of Surgeons, Nat. Hist., No. 261.

Two auriform tubes at the summit. (Genus, *Otion*, Leach; *Aurière*, De Blainville.)

![Gymnolepas Cuvieri](image)

*Example, *Gymnolepas* Cuvieri; *Otion* Cuvieri, *Lepas aurita*, Linn.

*From M. Rang's figure

Gymnolepas vittata.

No auriform tubes: form more angular. (*Cineras, Leach.*

![Gymnolepas vittata](image)

*From M. Rang's figure.

The small valves in *Otion* were overlooked by Lamarck, but detected by Leach. In the Museum of the Royal College of Surgeons, Nat. Hist., No. 265, there is a species named *Cineras Huntersi*, of which two small groups are attached to the tail of *Hydrophis bicolor*, which is figured in Russell's "Indian Serpents," tab. xii., and is called by the natives "Nalla Wahngilngp Pam." Russell says, "This sea-snake, according to the Vizagapatam fish-hermen, seldom approaches the shore: several of them had never seen one before. They pretended it was of a very dangerous kind, which is contradicted by the want of poisonous organs." See "Catalogue of the Museum," part iv., fasciculus 1; and "Shaw's Lectures," where it is quoted also.

Pentalaimis.

*Anatifis, Bruguieres and Lamarck; *Pentalaimis*, De Blainville.*

Animal compressed, enveloped in a very delicate mantle. Pedicle often very much elongated. Cirri curled at the summit. Locality, widely spread in most seas. Plentiful on the coast of Africa.

Shell subtriangular, formed of five distinct pieces completely enveloping the animal.

Shell formed of thirteen pieces, completely covering the animal. Locality. Of the two species known, one is common in the European seas, and the other was found in the Straits of Magalhaens.

Example. Sculpellum vulgare, Leach; Pollicipes sculpellum, Lamarek; Anatifia sculpellum, Bruguière; and Lepus sculpellum, Linnaeus.

Lithotrya.

Lithotrya, De Blainville.
Animal compressed.

Shell irregularly subpyramidal, compressed, supported on a tubular, tendinous pedicle. Valves eight. At the base of the pedicle is a shelly appendage, analogous to the testaceous base of Acasra and Balanus. Mr. G. B. Sowerby, who instituted the genus, considers it as intermediate between the sessile and pedunculated cirripeds; and states that it possesses a peculiarity not to be found in any hitherto described genus of this class, viz., that of penetrating stones for its habitation. Rang says, that De Blainville is of opinion that the genus is only a true Anatifia which had affixed itself upon the valve of a Tenerupa at the bottom of one of the cavities which that bivalve hollows out for itself. De Blainville, in his 'Malarologie,' describes it under the name of Lithotrya, sinking Sowerby's name altogether, though he says the genus was newly established by him, quotes his description, and merely states that he has never seen the cirriped. Whether it bores holes for itself or occupies those already hollowed out is doubtful.

Example. Lithotrya dorsalis, Sowerby. Locality, Montserrat, one of the Antilles.

Pentalepas of De Blainville.
Animal like that of Pentalepas, but with a shorter pedicle, which is rough, somewhat like shagreen.

Shell triangular, composed, besides the principal side valves, of a number of accessory pieces fixed at their base. Locality, temperate and warm seas.

Example. Pollicipes mitella, Lamarek; Anatifia mitella, Bruguière; Lepus mitella, Linnaeus.

Pentalepas of De Blainville.

Animal resembling that of Pentalepas. Pedicle shorter and scaly.

N.B. Cuvier gives a genus, Tetralasius, which he describes as having but four valves surrounding the opening, two of which are longest. He says that the animal is a part contained in the pedicle, which is large and covered with hair. He considers these as a sort of Balani without a tube, and gives as an example Tetralasius hirsutus, Cav. 'Moll. Anatif.', f. 14.

Order 2.

Acumitosomata.

Les Balanides of De Blainville; Cirripèdes sessiles of Lamarek; Balanes of Pèrusse; Quadrifères and Bifères of Latreille.

Animal conical, sometimes very much depressed, and sometimes nearly cylindrical; for the rest, similar to that of the preceding family, but without a pedicle, and having the branching in form of two fringed wings attached to the internal surface of the mantle.

Shell thick, solid, variable in form, but nevertheless always conical or sub-cylindrical, adhering by its base to the surface of foreign bodies or penetrating within them. Composed of a cone formed of one or more pieces united, laterally, open at its base, or closed by a membranous or calcareous piece, serving for adhesion; always open at the summit, but furnished at this part with a pyramidal operculum, consisting of two or four valves.

This order was well known to the ancients. The camera seem to have been all confounded under the name of Balane (Balanus) by the Greeks. (Aristotle, 'Hist. Animal.' book iv., ch. 8, and book v., ch. 13.) Athenæus mentions them more than once: and (Deipnous, book iii., ch. 11, p. 88) speaks of the large ones with approbation as an article of food. They are the Balani of the Latins: did Lucullus disdain them. The Chinese eat the soft parts of one of the species (Balanus truncatus), which have the reputation of being like the flesh of the lobster when cooked; and the delicious qualities of another species, and
its high estimation for the table, will be found under the article BALANUS.

M. Rang, whose arrangement we for the most part adopt, observes that many genera have been formed, some of which it may be necessary to disallow. The longitudinal tubular cavities with which the cone is pierced, and which open at the base, where they are said to be very sensible, are a distinguishing character of the order.

a. Cone univalve.

Genus, Pyrgoma. (Boscia of Férussac.)

Shell thick, generally compressed and somewhat conical, but sometimes regularly conical, open at the apex, and closed at the base by a deeply cup-shaped testaceous valve, striated or grooved perpendicularly in the inside; the operculum bipartite, each part composed of two valves, which are variable in form, the posterior one being in some species very much elongated (Sowerby).

Savigny appears to have instituted the genus, and Leach and Lamarck have adopted it; the former subsequently subdivided it into Pyrgoma, Megaterma, Savigium and Adna.

Habits. Either adherent or penetrating into corals; in some cases entirely overgrown by them.

Example. Pyrgoma crenatum.

b. Crenatum.

c. Conida.

d. Conidium.

Cretisia, Leach. (Verruca, Schum. Ochthisia, Ranzn.)

Shell consisting of four irregular pieces, two larger and two smaller, dovetailed together by their dentate edges. Operculum bivalve, one piece irregularly quadrate, the other nearly triangular.

Example. Chita verrucosa, Lepas striata of Pennant; Lepas verrucosa of Gmelin. Locality, British coasts.

× The cuts of Pyrgoma, Chita, Cretisia, Cattaphragmus, and Octomeria, together with those of some of the detached valves of the Campylomorpha, are taken.

Creusia, Leach.

Shell somewhat flat, slightly conical, composed of four unequal valves; base deeply cup-shaped. Example, Creusia gregarea, Sowerby.

Habits. Like Pyrgoma, affixed to, or buried in, madreporas and other corals.

b. Creusia gregarea.

γ. Conidium with six valves.

* Operculum composed of separate pieces, not articulated.

Tubicinella.

Shell subcylindrical; the cylinder, which is truncated at both ends, formed of six ligulate pieces, smooth within, but longitudinally striated and transversely ringed without, affording no bad representation of a portion of the wind-pipe in the vertebrata, closed beneath by a membrane.

from Mr. G. B. Sowerby's 'Genera of Recent and Fossil Shells,' where the reader will find much valuable information illustrated by engravings of great accuracy.

No. 429.
Example, *Tubicinella balmarum*, Lamarck. The only species known.

**Habits.** Buried nearly up to the summit of the aperture in the skin and fat of whales, which are sometimes infested with it to an enormous extent.

![Image of Tubicinella balmarum](Tubicinella_balmarum]

**Coronula.**

(Chelonobia, Leach; Cotoporina, Ranzani; Diadema, Schumacher.)

Shell suborbicular, subcylindrical, but generally obtusely, not to say flatly conical, constituted of six unequally ribbed pieces, so completely soldered as to bear the appearance of one: the lower side instead of longitudinal tubes presenting radiated cells in those species which infest the Cetacea. Example, *Coronula balmarum*. Locality, South Seas, imbedded in the skin and fat of whales. *Coronula testudinaria* (Chelonobia of Leach, &c.) adheres to the backs of turtles (Chelonidae).

![Image of Coronula balmarum](Coronula_balmarum)

**Chitamalus.**

A genus instituted by Ranzani; described as having a very depressed shell, with six pieces or valves, very thick at their base, and forming very regular rays; support membranous; aperture tetragonal, with almost equal sides; operculum subpyramidal. Locality, Mediterranean; most probably a part of Leach’s Cancrin.

![Image of Chitamalus](Chitamalus)

**Operculum quadrivalve, articulated.**

(See the article, vol. iii., p. 316.)

The shell is here represented as excrated; but they are capable of being withdrawn into the hood or collar formed by the opercular valves and intervening membranes for their protection. A most elaborate and beautiful illustration of the anatomy of the animal (Coronula Diadema) is given by Dr. Hume in the work above quoted, p. 24, pl. 3. There is a noble specimen (Coronula diadema), with a group of *Gymnopus Curtieri* attached to it, in the Museum of the College of Surgeons (Nat. Hist., in spirit, No. 391), and alleged to belong *Gymnopus*.

![Image of Octomeris angulosa](Octomeris_angulosa)

A, the outside: below, an internal view of the eight divisions; e, the anterior piece; f, the posterior piece; g to k, the lateral pieces; l, the operculum, consisting of four pieces, of which the two anteriors are the largest.
The genus rests on the following characters. One of eight pieces; internal sutures of the pieces or valves angular but not intersecting, a thin epidermis. Example, Octomeris angulosa, Sowerby.

The student should examine the fine collection of Cirripedia in the British Museum, and he will find some examples of the soft parts both of the Cymbaloma and the Acanthocephalus. The Catalogue of the College of Surgeons, in the Natural History department (subjects preserved in spirit), numbers 258 to 292, both inclusive.

**Fossil Cirripedia**

Pentulasm. Mr. G. B. Sowerby says that fossil specimens of this genus are exceedingly uncommon; and adds, that he has never seen anything but fragments from two beds viz., the Cretaceous group of Grignon, and the Suffolk Chalk. As the genus is only known to have existed during the Tertiary epoch the student will not be likely to meet with any fossil speci- men, except in the fossiliferous rocks of the Mediterranean.

**CIS, a genus of Coleoptera insects of the family Pini- nidae (Leach).** They are minute beetles which infest the various species of Bolete. They are of an oblong, nearly cylindrical form, and generally of a brown colour: their tarsi are four-jointed, and the antennae have the basal joint large, and the three apical joints forming a club. Fourteen species have been discovered in this country, the largest of which is scarcely one-eighth of an inch in length.

**Cisalpine Republic.** [Bonaparte, p. 122.]

CISNEROS, FRANCIS XIMENES DE, a celebrated statesman and patron of literature, a cardinal and primate of Spain, was born in Toledo in 1475. He studied at a school at Alcala de Henares, entered the university of Salamanca, and afterwards went to Rome, where he acquired such reputation, that Sixtus IV. pro- mised him the first vacant prebend in the cathedral of Toledo; but the Archdiocese of Toledo, vested in his house, he preferred his patronage, and at the instance with which Cisneros demanded it as his right, threw him into a dungeon. Being released at the end of six years, Cisneros went to Signenza, where Cardinal Mondragone appointed him his grand vicar. In 1482, abandoning his brilliant prospects, he embraced the Franciscan rule. In 1483 Queen Isabella took him for her confessor, and in 1495 nominated him Archbishop of Toledo. This honour he declined with a firmness which nothing, but the command of the pope could overcome. In this exalted station he retained all his monastic severity. He constantly wore under the pontifical robes the coarse frock of St. Francis. In his travels he always endeavoured to lodge at some convent of his order, and he conformed to all the rules like an ordinary member. He set apart half of his enormous revenue (at that time amounting to 200,000 ducats) for the relief of the necessitous; and he made a daily distribution of provisions to thirty poor. He also founded a hospital for the education of boys. In 1498 Cisneros founded the University of Alcalá de Henares, in which he provided for poor students, appointed a fund for prizes, and invited distinguished men from Toledo to reside. In 1502 the University was established, and he himself was chosen its first chancellor. In 1492, abandoning his brilliant prospects, he embraced the Franciscan rule. In 1482, Queen Isabella took him for her confessor, and in 1495 nominated him Archbishop of Toledo. This honour he declined with a firmness which nothing, but the command of the pope could overcome. In this exalted station he retained all his monastic severity. He constantly wore under the pontifical robes the coarse frock of St. Francis. In his travels he always endeavoured to lodge at some convent of his order, and he conformed to all the rules like an ordinary member. He set apart half of his enormous revenue (at that time amounting to 200,000 ducats) for the relief of the necessitous; and he made a daily distribution of provisions to thirty poor. He also founded a hospital for the education of boys. In 1498 Cisneros founded the University of Alcalá de Henares, in which he provided for poor students, appointed a fund for prizes, and invited distinguished men from Toledo to reside. In 1502 the University was established, and he himself was chosen its first chancellor. In 1492, abandoning his brilliant prospects, he embraced the Franciscan rule. In 1482, Queen Isabella took him for her confessor, and in 1495 nominated him Archbishop of Toledo. This honour he declined with a firmness which nothing, but the command of the pope could overcome. In this exalted station he retained all his monastic severity. He constantly wore under the pontifical robes the coarse frock of St. Francis. In his travels he always endeavoured to lodge at some convent of his order, and he conformed to all the rules like an ordinary member. He set apart half of his enormous revenue (at that time amounting to 200,000 ducats) for the relief of the necessitous; and he made a daily distribution of provisions to thirty poor. He also founded a hospital for the education of boys. In 1498 Cisneros founded the University of Alcalá de Henares, in which he provided for poor students, appointed a fund for prizes, and invited distinguished men from Toledo to reside. In 1502 the University was established, and he himself was chosen its first chancellor. In 1492, abandoning his brilliant prospects, he embraced the Franciscan rule. In 1482, Queen Isabella took him for her confessor, and in 1495 nominated him Archbishop of Toledo. This honour he declined with a firmness which nothing, but the command of the pope could overcome. In this exalted station he retained all his monastic severity. He constantly wore under the pontifical robes the coarse frock of St. Francis. In his travels he always endeavoured to lodge at some convent of his order, and he conformed to all the rules like an ordinary member. He set apart half of his enormous revenue (at that time amounting to 200,000 ducats) for the relief of the necessitous; and he made a daily distribution of provisions to thirty poor. He also founded a hospital for the education of boys. In 1498 Cisneros founded the University of Alcalá de Henares, in which he provided for poor students, appointed a fund for prizes, and invited distinguished men from Toledo to reside. In 1502 the University was established, and he himself was chosen its first chancellor. In 1492, abandoning his brilliant prospects, he embraced the Franciscan rule.

Regent on account of the incapacity of Joanna and the absence of Ferdinand. This was a critical moment for his prudence overcame all difficulties, and kept all parties in check. He levied a war-tax, imposed a heavy tax, and suppressed not only the clergy, but also the nobility. He cast aside all pretense of being a king, and completely took the place of the dukes and counts, who held the land in fiefs. He thus began, perhaps unscrupulously, to vindicate the rights of the crown and the power of the people. The spirit of independence, which sometimes persecuted the crown, the clergy, and the nobility, was suppressed, and the whole body of the people were put under the rule of the king. The national system, the military power, was established in the hands of the nobles, and men of inferior condition were called into the field as their vassals. A king with seigniory revenues there- fore depended on them in all his operations. In 1507, when Ferdinand I. died, the king of Aragon and the King of the Castilian cardinals set off from Malaga at the head of 10,000 foot and 4000 horse for the conquest of Oren, a splendid city on the coast of Africa, which he added to the Spanish dominions as their own expansion, and by which he increased his power. When Leo X., in order to raise money to complete the church of St. Peter, proposed to sell dispensations, Cisneros opposed the introduction of the pope's bulls into his diocese. On another occasion, as a primate of Spain, he prevailed on the king to exclude all bulls but his own from the diocese of Seville. He was the author of a famous edict for the suppression of heresy, and was appointed by the synod of Seville as the cardinals' delegate to the council of Trent. He refused the cardinal's hat, and took the more active part in the work of the council. He thus became the leader of the Spanish church in the struggle against the Reformation. When he died, in 1554, he was succeeded by his friend, the Duke of Alba, who had been his colleague in the administration of the kingdom. The Duke of Alba was a man of great ability, and he continued the work of Cisneros with great success. He restored the church to its former prosperity, and the kingdom to its former greatness. He died in 1571, and his body was interred in the cathedral of Toledo, where it remains as a monument of his virtue and patriotism.

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on Charles to embark for Spain, and was himself proceeding towards the coast to meet him, he was seized with a violent disorder, at the convent of Borghellas, near Ancona, which was attributed to poison. The Spanish grandees and Flemish courtiers now regulated the advance of the court by the probable extent of the cardinal's life. Weakened by disease, fatigue, and austerity, he still directed, to the greatest vexation of the courtiers, the helm of state, and seemed to survive only to enrobe his greatness of soul unimpaired by bodily suffering. Under pretext of giving time to the towns for preparing the honours due to the king, they succeeded in deferring his entry into Castile till the cardinal's death, which happened on the 8th of November, 1517, but not before Charles, whose pride was worked upon by his flatterers, had written, to his eternal shame, a letter to the great Cisneros signifying to him his dismissal. A woman of a virtuous mind, upon the verge of finishing his mortal career, after having governed Spain for twenty years, and accomplished all that could be done for her greatness and tranquillity, and for the increase too of the royal prerogative—thus was an illustrious statesman rewarded by a prince who was indebted to him for the very foundation of his future power. Among the great men who have admired Cisneros, the name of Leibnitz should be mentioned. The rare union of calmness, firmness and decision in Cisneros, is well shown in Gomelius (Gomez de Castro), 'De Rebus gestis a Francisco Ximeno '; in Marsolier, Flechier, Moreri, and Robertson.

Ciss'AMPELOS PAREIRA, the Pareira-brava, a native of several of the West Indian Islands of New Spain, and of Brazil. The root of this plant enters in Europe in pieces from two to three feet long, varying in thickness from that of a finger to an arm, curved, furrowed, and warty, with a thin closely-adhering bark of a greyish-brown colour. The woody part is tough, but so porous that air can be blown from one end to the other of a long piece; the concentric circles are very conspicuous; the axis is not in the centre. The odour is very faint, but the taste is at first sweetish or licorice-like, afterwards nauseous and bitter. Analyzed by Feneuille it was found to consist of—

- Soft resin; a yellow bitter principle (tonic); a brown principle; animalized matter, starch, malate of lime, nitrate of potash, and other salts.

The Pareira-brava is a plant in its native country is said to be a very efficacious application to the bites of serpents; but in Europe the root is employed only as a tonic diuretic. It is particularly valuable in cases where there is a copious discharge of urine with aropy alkaline mucous. (Brodie's Lectures on Diseases of the Urinary Organs.) It is also serviceable in catarrhus vesicrum, and other affections of the urinary-genital organs.

There is great reason to believe that the roots of several different species of this or closely-allied genera are confounded under the name of Pareira-brava, especially the root of Cissampelos Canpeha, also of C. Mauritanica (Aubl.), C. parrovides (Decand.), which is much esteemed in the East Indies given along with aromatic in diseases of the intestines. Two species of Alecta, A. rufescens (Aub.) and A. candidas (Decand.), are used in Guyana.

The Pareira-brava contains so much mucilage that it congeals in water in which it is put to infuse. A syrup of this plant is a valuable demulcent in phthisis pulmonalis, or consumption.

Cissoid (arya-ivy, resembling ivy), a name given to a curve first considered by Diocles, the Alexandrian, and posteriorly by Pappus, as is supposed from the latter not mentioning the name of Diocles among those who invented methods for inserting two mean proportional (Math. Coll., book iii. prop. 5), which rises towards an asymptote, and then obtained its name. It was one of the curves employed by the Greeks in the celebrated problem of finding two mean proportional, and is described as follows:—Let two points (A) and (B) move with equal velocities and in a circle, set off from the ends of a diameter in opposite directions of rotation. Let a straight line (P) always pass through the starting point of (A), and through (B) as it moves; and let an ordinate (Q) perpendicular to the line joining the starting points at all moves. Then the intersection of (P) and (Q) traces out the cissoid, which has the line joining the starting points for its tangent at the commencement, and the tangent to the circle passing through the starting point of (B) for its asymptote.

But the term cissoid has been applied in later times to all curves described in a similar manner, and where the generating curve is not a circle. The cissoid of the Greeks should then be called either the cissoid of Diocles or the circular cissoid. The starting point of (A) being the line joining the starting points the axis of x, and the radius of the circle, the equation of the cissoid of Diocles is—

\[ y^2 = x^2 - (2a - x) \]

Cissopis, (Battili). Cista/cris, a natural order of Polypetalous exogens, belonging to the Calycose group; among which they are known by their opposite or alternate undivided leaves, generally strongly impregnated with a fragrant, resinous secretion, regular flowers having crumpled petals and indistinct anemena, and fruit with parietal placenta; a simple style, and a large number of seeds containing in the midst of albumen an embryo with the radicle remote from the hilum. They are remarkable for the beauty of their fragrant flowers in the genera Cistus and Helianthemum. The species of the genus Cistus are all natives of the southern countries of Europe, where the summers are hot and dry, however severe the winters may be. They flourish upon rocky places, which they perfumes with their fragrant leaves. Cistus creticus and some other purple-flowered species produce the substance called Gum Labdanum.

Cistelides, a family of Coleopterous insects of the section Heteromera and subsection Stenelytra. Technical characters:—Claws of the tarsi punctated beneath; antennae with the basal joint free, i.e., not covered by a projecting portion of the head; mandibles with the apex entire.

This family includes the genera Lystromichus, Cistela, Mycetocarbus, Alceola, and some others.

[Cistela creticus]
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with most of the joints triangular; body elongate-ovate; thorax broader behind than before. Nearly forty species of this genus are known, most of which inhabit Europe, and four or five are found in this country.

Cistela Ceramoides is nearly half an inch in length; black with ochre-coloured elytra, and, like most of the insects of this section, is found in flowers.

Cistela sulphurea (Allescula sulphurea of some authors) is about one-third of an inch in length, and its colour is pale yellow; this species is more common in this country than the last, and appears to be confined chiefly to the sea coast, where, like the one above mentioned, it is found in flowers.

In this genus the head is short and rounded, and the labrum is transverse; the antennae are longer, and the body is more elongate than in Cistela. About ten species are known, most of which inhabit Europe and North America; but one is found in England (Myestochaerus sculptarum); this is about three-sixteenths of an inch in length; black; the elytra with two orange-coloured spots at the base; the base of the antennae and the tibiae and tarsi are yellow.

The larvae of this insect, together with those of one or two other species of the Cistelidae, are figured in the first volume of the Entomological Society's Transactions, where an account of their habits will also be found.

The genus Allescula (Latreille) may be distinguished from either genera by the species having the penultimate joint of the tarsi bicolored, and the terminal joint of the palpi secundum.

Upwards of thirty species of Allescula have been discovered, most of which inhabit South America.

CITADEL (remotely from the Latin civitas, and immediately from the Italian cittadello), a fortified post within or adjoining a town. It serves either to keep the inhabitants in subjection, or as a place of retreat for the garrison when compelled to abandon the town to an enemy. A citadel should be constructed in a situation where it may be easily surmounted; its fortifications should be stronger than those of the town, in order that the defenders may repel attacks on the town; and it should be separated from the buildings of the town by an esplanade.

CITADEL, or as it was formerly written, CISTRAXA (in Latin, CISTERICUM), the site of a celebrated abbey in the department of Côte d'Or, in France: it is about four miles E. from the town of Nuits, which lies on the road from Dijon to Châlons sur Saône. This abbey owed its origin to Robert, Abbot of Môlèmé, of the order of St. Benedict, who, wishing to lead a strict life, obtained a grant of land from the Archbishop of Paris, which he made as a Benedictine, and to take upon himself others of a severer character. Accompanied by twenty-one monks, he retired to the forest of Citeaux, in the diocese of Châlons, and having obtained a grant of land, a place of residence, and an endowment, he founded the abbey and church. The abbey is said to have been of wood. Robert was elected abbot of the new community, which had not at first any new rule, but strictly observed that of the Benedictines. After a time, Robert was directed by the pope to return to his charge at Môlèmé, where the disorders which had probably caused his retirement had proceeded to such a great length, that the third abbot of Citeaux was Etienne or Stephen Harding, an Englishman (cannonized as St. Etienne), who may be regarded as the real founder of the Cistercian order (des Citeaux), as until his time no establishment had sprung from this monastery: in 1113-1115 were founded the four establishments of which this can be regarded as the parent.

The monks of this order have been sometimes called Bernardines, from St. Bernard, one of the first abbot of Citeaux, and sometimes Monks of the White Monks, from their habit, a white cassock with a white gown for attending the church, but a black one when they went abroad. The Abbey of Citeaux was a very rich establishment previous to the Revolution of 1789; however, according to Lepelletier, it had about 300 livres or francs (above 4000l.), and the extent and imposing appearance of the buildings were indicative of its rank as the chief house of a monastic order. The community consisted usually of about 80 monks, besides 40 domestics. The church and a chapel under the portico con- 

ained the tombs of about 60 princes of the ducal house of Bourgogne, who made this their chief burial-place. Among those who have been inmates of this house, are St. Bernard and the four popes, Eugenius III., Gregory VIII., Celestine IV., and Benedict XII. The church and monastery have been destroyed and there are no remains.

CITHARA, an ancient stringed instrument of the lyre kind. That the names of the comparatively modern instruments, the gittern, or cittern, and guitar, are derived from the name of this Greek instrument, there can be no doubt; and it is reasonable to infer, not only from the remains of appellation, but from the remains of ancient art, that the modern instruments in many respects resemble that of the ancient.

CITHARUS, a genus of fishes of the salmon tribe (Salmonidae), which inhabit the Nile. These fishes are chiefly distinguished from their allies by the depressed muzzle, the upper margin of the mouth being formed of the intermaxillary bones, the maxillaries being very small. The tongue and palate are smooth; the adipose fin is covered with scales as well as the greater portion of the caudal fin.

CITOLE, a musical instrument mentioned in the Confessio Amantis of Gower, which was, Sir John Hawkins conjectures, a dulcimer.

CITRENE. The volatile oil of lemons consists almost entirely of a peculiar carburetted hydrogen, to which the name of citrene has been given.

CITRIC ACID. This acid is contained in several fruits, but in the largest quantity in limes and lemons. It was first procured in the state of crystals by Scheele. It may be obtained by the following process:—Take a gallon of lemon-juice made hot, and add gradually 1/20 of chalk reduced to fine powder; set the mixture aside, that the precipitate, which consists of citric acid and lime, or citrate of lime, may subsist. Wash this frequently with warm water, and then mix with it 10 ounces by weight of sulphuric acid previously diluted with 7 pints of water; boil the mixture for a quarter of an hour; press the residue strongly in a cloth, and evaporate the strained liquor with a gentle heat so that crystals may be formed. These crystals are said to be rendered pure by repeated solutions of water and recrystallization.

In this process the malic acid, gum, and extractive matter of the lemon juice, which prevent the acid from being obtained pure by mere evaporation, is removed, while the citrate of lime is precipitated, which being decomposed by the sulphuric acid, sulphate of lime is formed, and remains insoluble, while the citric acid, nearly pure, remains unaltered and crystallizes by evaporation.

The properties of citric acid are, that it is colourless, inodorous, extremely sour; the primary form of the crystal is a right rhombohedral prism, subject to various ramifications. These crystals suffer no change by exposure to air, and, as a common circumstance, when hermetically contained in little less than 2/12" they melt in their water of crystallization, and without losing any weight they concreted into a hard transparent mass. At a little greater heat they decompose. One hundred parts of the crystals are dissolved by 73 of cold and 50 of hot water: the solution reddens litmus strongly; decomposes by keeping; they are slowly soluble in alcohol.

Citric acid consists of

| 4 equivalents of oxygen          | 32 or 55 18 |
| 2 hydrogen                      | 2 3 4'6     |
| 4 carbon                        | 24 41 38    |

Equivalent 58 100

The crystals, obtained as above mentioned by the cooling of a saturated solution, consist of

1 equivalent of dry acid         58
2 water                        57

When the solution from which the above-described crystals have been obtained by cooling is subjected to spontaneous evaporation, the acid is procured in a different crystalline form, the crystals consisting of 3 equivalents of dry acid and 4 of water, half of which is expelled at a temperature of about 80° Fahrenheit.

When citric acid decomposed by heat it yields a peculiar acid, called pyritic acid, a spirituous liquor analogous to pyroxylic spirit, and an oily matter, which by the
long contact of water is converted into the two preceding substances, acetic acid, water, carbolic acid, carbonated hydrogen, and a coaly residue.

Citrate of lime is in a state of change in calico printing, and as a substitute for lemon juice in making saline draughts, and in making effervescent lemonade with the sesquicarbonate of soda: tartaric acid, sometimes substituted for it on account of its cheapness, is less agreeable, and has the additional disadvantage of imparting a purple tint to the wash. Citric acid combines with different bases to form citrates, but during its combination with them it is very apt to undergo change of composition.

Citrate of calcium is a very soluble salt, and does not crystallize till the solution is evaporated almost to the constancy of a honey.

*Citrate of Potash* is a deliquescent salt.

*Citrate of Soda* crystallizes in prisms; it is slightly effervescent, and soluble in three-fourths its weight of water; it fuses before decomposition.

*Citrate of Lime*, as already mentioned, is very slightly soluble in water, requiring about 500 times its weight; it is rendered more soluble by excess of acid. Citrate of magnesia is soluble, but the citrates of barytes and strontium are insoluble.

Of the metallic citrates, those of iron are soluble, that of zinc slightly so; those of copper, silver, and lead, are insoluble. The citrates of magnesium, iron, and copper form a purging gallic tincture, except the solution of citrate of potash, extemporaneously prepared as antiseptic medicine.

**CITRON** (*Citrus communis*).

**ORANGE**, a genus of Aurantaceous plants, one of whose species yields the orange, another the lemon, and others the citron, shaddock, lime, and similar fruits. Among the other genera of the natural order to which it belongs, it is known by its standing being numerous and irregularly combined into several pears, and by its fruit having a leathery rind which can be easily separated from the pulp part that lies beneath.

It is a common opinion that the golden apples of the Hispanic race were the fruit of some species of this genus. But as the gardens of these fabulous personages were stationed, according to the most approved opinions, either among the mountains of Atlas or to the west of them, there is no probability that the opinion alleged to be correct; for independently of the historical facts that citrons and lemons at least were obtained from the Persians, it is certain from the researches of Wallich and other Indian botanists that it is among the lower ranges of hills in Nepal, and especially in China also, that the wild states of the *Citrus genus* find a home. It is added that the sweet orange itself comes from the southern provinces of China and the Mahyan Archipelago, but it is by no means clear that it is the same. The wild states of the *Citrus genus* are among the most delicious and taste of the temperate and tropical zones, both of the old and new world, have in reality sprung from those four original sources: a part of them being natural varieties obtained by long cultivation, and part being hybrids created by accidental circumstances or artificial means.

1. *Citrus Aurantium*, the sweet orange. (*Orange of the French, Arancio of the Italians.*). Stem arborose. Leaves ovate-oblong, acute, a little serrated, with the stalk more or less included. Fruit more or less globose, irregularly rounded, very seldom pointed, golden-yellow or fawny. Cysts in the rind convex. Pulp very sweet. The principal varieties of this are:

   a. The Chinese, with ovate-oblong leaves; round, smooth, rather flatted fruit; and a thin golden-yellow rind. This is the common orange of the markets, and of the Portuguese.
   b. The pomegranate orange, with elliptical, acute leaves, and great top-shaped fruit, with a deep yellow, smooth rind; a rare and curious sort not known in the market; it is one of the most capable of resisting cold.
   c. The orange of Nice, with ovate-acute leaves, and large, thick-skinned, rough, dark yellow, round fruit. This is considered one of the finest of the whole genus, both for beauty of form and quality. It is a good deal cultivated about the town whose name it bears.
   d. The tiny-fruited orange, with ovate-oblong acute leaves, tiny globose fruit, thin yellow skin, and small yellow bark. This is supposed to have been brought from the Philippines. The fruit is more curious than beautiful or good.
   e. The fingered orange, with little stiff leaves, and ovate-oblong leaves, and round, rough reddish-yellow fruit; with a pulp irregularly mottled with crimson. This, which is said to have come from the Philippines, was once looked upon as a great curiosity, and living plants were purchased at a considerable price; it was supposed to be produced by grafting an orange upon a pomegranate. Now that it is known to be a variety of indifferent quality, and that its fabulous history is forgotten, it has ceased to attract much notice. A trifling variety, the Auro, is found in the Azores, which is perhaps the most curious, and who call the real blood-red variety *Arancio* di Malta sanguigno. Another variety, with small fruit, is the *Arancio* a Foglia stretta di Nice.
   f. The Mandarin orange, with long acute leaves, and a flattened ribbed deep orange fruit. This is one of the most tender of the varieties; its fruit is spongy, and of no value.

   g. The sweet-skinned orange, with broad taper-pointed leaves, roundish, rather oval, and very fawny fruit, and a deep yellow, smooth, thick, sweet, soft rind. This is the Pomme d'Adam or forbidden fruit of the shops of Paris. Its pulp is subacid and pleasant, and as deep a yellow as the rind. The fruit is soft, and the smell of the underlying clinging-stone-parch; the acidity of the pulp is agreeably mixed with sweetness, and renders the fruit extremely pleasant. This is very different from the forbidden fruit of the London shops; see *C. demerara* further on.

   h. The Mandarin orange, with small, round, pale yellow, seedless fruit, having a thin rind and an extremely sweet pulp. This, when in a state of perfection, is perhaps the most delicious of all the orange kinds, and is by far the most productive. Great quantities are imported from the Azoeres, where it appears to be exclusively cultivated as an object of trade. It is said that 10,000 of these oranges have been packed from a single tree, exclusively of the large quantity which were blown down or set out for sale.

Besides these, there are numerous other sorts to be found in the gardens of the curious, and in commerce are many kinds about which little is known. Among the less known, we may mention the egg-oranges of Malta, which are sometimes sent to England as presents; they are not however equal in quality to the China or the St. Michael's varieties.

2. *Citrus Bigaradia*: the Bigarade, or bitter orange (*Bigaradino of the French, Bigaradino di Malta*). Branches spiny. Leaves elliptical, acute, with a winged stalk. Flowers very white. Fruit middle-sized, uneven, more or less globose, deep yellow, with an acid and bitter pulp. It can be grown over from the temperature of forming a smaller tree, having broader leaves, and larger and sweeter flowers, on which account it is always selected in preference for the purposes of the perfumer. Its fruit is much more uneven. Numerous varieties of it are known, among which are all those cultivated for their flowers; especially the favored Bigarade, a variegated variety of it, and the curleaved Bigarade. The
following are a few of the most striking forms of this species:—

a. The Horned Bigarade, with a large pale yellow ribbed fruit, whose sides project into horns. This variety, which is of the same nature as the fingered sweet orange, was first seen in France. The separation of the carpels or fruit-lobes, is in great estimation on account of the powerful and delicious perfume of its flowers. It is the Melangolo a frutto cornuto of the Italians.

b. The Female Bigarade, with a deep yellow large coarse fruit, containing orange within orange. The circumstance from which this variety derives its name is not at all uncommon in the genus Citrus, but it exists here in a more remarkable degree. An orange, in its natural state, consists of one whorl of carpels, which are consolidated into a round fruit, each of whose lobes is one carpel. But it sometimes happens that two whorls of carpels combine to form the same fruit; in that case the inner whorl is consolidated into a central orange, and the outer whorl grows over it. Or, it may happen that three whorls of carpels constitute the fruit; in that case the innermost whorl will combine into an orange in the centre; the second whorl will form a coating over it; and the most exterior whorl will enclose the whole. Finally the carpels may separate wholly, as in the fingered citron, or in part, as in the fingered orange and Bigarade, and then the fruit consists of a number of lobes more or less distinct. This fruit is made very much like the true orange, and is said to be made by Göthe of the real nature of compound fruit, oranges of this kind were looked upon as something wondrous, and many idle speculations existed as to their cause. So Pope, in his Rape, in his Horace's Historia Naturale des Orangers, t. 33, without however any explanation of the cause of the monstrosity.

c. The curled-leaved Bigarade; with very compact, blunt, small, curly leaves, and flowers growing in thick clusters at the ends of the branch. No variety is more generally cultivated than this for the sake of its flowers, which are large, sweet, and produced in extraordinary profusion. The French gardeners call it Le Bouquetier, or Le Bigarade a riche fleurissement; the Italians Melangolo riccio. The fruit is coarse, very light, uneven, and with a large conspicuous scar at the point. The plant itself is far more dwarf than the other varieties, and is one of the most robust of its race. It is a common object of cultivation all over the south of Europe.

d. The purple Bigarade; with leaves, flowers and fruit stained more or less with a dull purple, especially the outer leaves. Hernemondale and Bigarade violet of the French, Melangolo Pauzenzo of the Italian.

e. The double-flowered Bigarade; with rather thick leaves, double flowers, round granulated fruit, and a thick rind; the common double orange of the nurseries. It is a good variety, with a thick rind, with a rich fragrant double flowers, which do not fall in pieces so quickly as those which are single; it loses its quality of producing double flowers if the soil in which it grows is not kept in a very rich state.

f. The Seville Bigarade or orange; round dark yellow, having an uneven, roughed, extremely bitter rind. Commonly brought to the English market, where it is consumed in the manufacture of bitter tinctures and in the preparation of candied orange-peel. The bitter aromatic principle is a powerful tonic; it gives its flavour to the liqueur called Curaçoa.

g. The myrtle-leaved Bigarade; with small, very compact, ovate, sharp-pointed leaves, and small round fruit. Generally both in flower and fruit at the same time, if well cultivated. On this account and because of its dwarf habit, it is a very common object in gardens. It is said to be a Chinese production, and that it is cultivated in England, but it only does well in parts of Kent. The fruit is very rich, and of the common appearance, others half bigarades and half lemons or citrons, the pulp of some being sweet, that of others acid and bitter. A curious luxus nature, which was once thought to be the greatest prodigy in all the vegetable kingdom. It is however merely one of those sports, as they are technically called by gardeners, in which, owing to some unknown cause, some one individual assumes the appearance of two or more others in particular parts. Analogous instances are the flower called the variegated clematis, some of whose fruit is black, some white, and some striped with both colours; the camellia, which bears red, white, and party-coloured flowers on the same stem; and the chrysanthemum, some of whose flowers are purple and others yellow. This Bigarade was raised from seed by a gardener at Florence in 1644, and has since been multiplied by grafting, and so has been preserved to the present day. It may be procured from the nurseriesmen of France and Italy, and it fruuits annually in the orangeries at Versailles.

3. Citrus Bergamumia, the bergamot Orange. Leaves oblong, flowers small, very sweet. Fruit pear-shaped or flattened, rugged, with a greenish-yellow smooth rind filled with concave receptacles of oil. Pulp subacid, very fragrant. The trees of this species are rather variable in appearance. The fragrance of both flowers and fruit is peculiar. From each of them the perfumer procures an essence of a delicious quality. The rind, deprived of the pulp, first dried, and then moistened with water, is pressed in moulds into fancy boxes for holding lozenges and other sweetmeats, and these boxes retain much of their recent scent. The Mellaroche of the Italians is a variety with ribbed fruit, having the rind less or more depressed at the point; the cysta in the rind concave; pulp subacid. In foliage this resembles the lemon, but its fruit differs in the pulp never having the sharp and powerful acid of the lemon, it is on the contrary flat and slightly bitter: it is principally employed for flavoured preserves, smooth, and for similar drinks. The varieties are of no importance; they principally differ in the thickness of their rind and in form.

Here is to be arranged the round very uneven fruit called the Pomelo, or Ponnolo, a name given by the Italians, because they fancy that the depressions upon its surface look as if they still bore the marks of our universal father's teeth.

4. Citrus Limetta, the Lime. Leaves ovate, obovate, and oblong, placed upon a wingless stalk. Flowers small round, pale yellow, with a very strong scent at the point; the cysta in the rind concave; pulp subacid. In foliage this resembles the lemon, but its fruit differs in the pulp never having the sharp and powerful acid of the lemon; it is on the contrary flat and slightly bitter: it is principally employed for flavoured preserves, smooth, and for similar drinks. The varieties are of no importance; they principally differ in the thickness of their rind and in form.

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5. Citrus decumana, the Shaddock. Leaves large, with a winged stalk. Flowers very large and white. Fruit usually very large, roundish, pale yellow, with thick, or convex cysta in the rind. Rind white, spongy, very thick; pulp juicy, sweetish, rather insipid. Shaddocks are among the largest fruits which are known, and are commonly cultivated for the East Indies. The pulp is not of the sake of the delicate subacid juicy pulp in which they abound. When they arrive at their greatest size they are called Pompolesons, or Pompolemouusses; when at the smallest they form the Forbidden Fruit of the English markets. Another variety, with leaves of a remarkable size, with a larger tree than any other citrus; the fruit is about as large as the fist; it is what the West Indians call the Grape-fruit.

6. Citrus Luinia, the sweet Lemon. Leaves like those of the lemon. Flowers red externally. Fruit with the flesh and rind of a lemon, but with the pulp sweet, and the cysta in the rind both convex and concave. There can be no doubt that this is a mere variety of the next species, from which it only differs in the size of its fruit. Many sorts are known in orange countries, of which one, the Commander's Pear, resembles very much a large Beurré Pear; their fruit is seldom seen in England.

7. Citrus Limonium (= Citronnier of the French). Leaves ovate-oblong, usually serrated, pale green, with a winged stalk. Flowers middle-sized, red externally. Fruit oblong, very uneven, now and then almost round, with a pale yellow fragrant rind, dotted with concave cysta. Pulp juicy, acid. Of the various cultivators take little pains to distinguish the varieties. When young plants are wanted they are generally raised from seeds in the orange countries, and hence the samples of fruit sent to a market consists of a mixture of all sorts, of which, whether much in quality. Some of them have their rind so thick and insipid that they approach the citron in quality; one, with roundish rugged ribbed fruit, is called Pignelette upon the Continent, where it is common; and with oblong
extremely rugged fruit, is one of the Ponciers of the French. The most distinct race is which comprehends the Perrette, or little pear; they are very small in the fruit, which is a pale greenish yellow, and has almost the shape of an egg. The lemon is more delicately perfumed than that of common lemons.

8. Citrus Medica, the Citron. (Cedrodor of the French, Cedro, Cedarito of the Italians.) Branches short and stiff. Flowers usually large, white, and profuse, with an extremely thick spongy rind, and a subacid pulp. This is an exceedingly variable species, chiefly valued for the fragrance of the rind of the fruit, from which a delicate sweetmeat is prepared. The botanists consider to be the Medlar, the Quince, or the Pera-sapie of the Greeks, is probably the most beautiful species of the genus. It is described by Risso as having a majestic port, shining leaves, and rosy flowers, which are succeeded by fruit whose beauty and size astonish the observer at the same time that their sweet odor gratifies his senses. The trees are constantly in vegetation, the flowers appear even in midwinter, and there is so continual a succession of them that flowers, young fruit, and ripe fruit, may always be seen together at the same moment. The Ponceira Citrons are eight or nine inches long, and are the largest of the race known in Europe.

In China there is an enormous variety, with its loaves all separated into lots of different sizes, and having its name of fingered Citron. The Chinese esteem it very much, both for its rarity and for the grateful odor of its rind. They place the monstrous fruits upon porcelain dishes, and have them in their apartments to fill the air with fragrance, which would study this species of fruit in detail with the excellent figures of above 100 varieties in Risso's Histoire Naturelle des Orangers. A good commercial account of this interesting genus has still to be written.

For cultivation see [Orange.]

CITRUS AURANTIIUM, ORANGE, of which there are two varieties, the sweet, or China orange, and the bitter, or Seville. The fruit of the latter, while small and unripe, is collected and dried; the smallest, which are of the color of the orange, are used for pickles, and the larger for the preparation of the liqueur called Curaçao. Of the ripe fruit every part is used either medicinally or dietetically. The rind, called flavado, contains a bitter principle and much volatile oil; and either used at dessert, or reduced to powder and added to magnesia and rhaburn, furnishes a grateful tonic to the stomach in some forms of dyspepsia and gout. The pulp and juice are exceedingly agreeable to persons affected with inflammatory complaints, or to drinks prepared for this purpose, having great utility in bilious and gastric fevers, dysentery, &c. The roasted pulp forms an excellent application to febrile ulcers.

The peel of lemons is likewise employed, but it is not so warm and grateful as that of oranges, from containing less volatile oil. The powers of lemon juice are much increased by saturating it with chloride of soda (common table-salt). It is then of great efficiency in the treatment of scurvy, remittent fever, the dry belly-ache, putrid sore throat, and other diseases occurring in the West Indies. Dr. Wright also recommends it in diabetes and lumbry.

Citric acid exists in numerous fruits, particularly those of the orange tribe, such as the lemon and lime, quina, alone, or with malic and other acids; sugar, mucilage, and extractive are also present. The citric acid is separated and purified on a large scale, in the way before mentioned. (It is frequently mixed with kumquat, with citric acids, such as tartaric, sulphuric, muriatic, and oxalic, which may be detected by appropriate tests. Citric acid, when crystallized, has scarcely any odor, but a very distinct acid taste. It is soluble in cold, but more abundantly in warm water. The acid has a pleasant acid taste and odor of the milk of most animals, but not the human milk.

As it is impossible to treat of citric acid apart from lemon juice, we class them together. The impression of both on the tongue of taste is the same in degree, but different in degree. Concentrated citric acid is somewhat caustic, but lemon juice is grateful acid. To imitate the natural state, citric acid is only given largely diluted. In this state it proves a pleasant drink in fevers and diseases where the temperature is high. The pies and natural state of the juice is to be had in the market. According to Broussa, it agrees better than any other acid with the stomach when affected with acute inflammation. It is not so pleasant as lemonade prepared from fresh lemons, and according to the statement of Sir G. Blane, the solution of citric acid is not so efficacious in the treatment of sea-sickness as the lemon juice.

This is attributable to the absence of the volatile oil and the bitter principle of the rind, which are valuable adjuncts to the citric acid in its action on the stomach. The utility of lemon juice in the treatment of the contents of the stomach, such as venal and turtle, is well known. Fresh lemon juice may be preserved in bottles in the same way as ripe fruits, by boiling the bottles in which it is contained for half an hour, first placing them in cold water, and gradually heating it, so that the contents of the bottles have fallen to the temperature of the air, closing them hermetically. Where lemon juice so preserved, or fresh lemons, cannot be obtained by ships on long voyages, the dissoluted citric acid, to which a portion of the extract of lemon peel may be added at the time of using, must serve as a substitute, should any apprehensions of scurvy be entertained.

Lemon-juice is often a means of correcting acidity in the stomach, since, like most vegetable acids, it elevates the vitality of that organ, and prevents the formation of an excess of acid. On the same principle it is found to be a useful agent in elevating the powers of the stomach in the treatment of debility. It is not used internally in cases of which have yielded to a combination of lemon-juice, cinchona bark, and port wine. Lemon juice is often employed to rouse the stomach and nervous system after narcotic poisoning; but neither it nor vinegar should be used alone, as in these cases the stomach, otherwise it increases the power of the poison.

Citric acid, as well as lemon juice, is much employed to decompose alkaline carbonates, forming therewith pleasant effervescing solutions. These taken in the act of effervesence are often of great utility in checking vomiting, and in reducing the temperature in inflammatory complaints. But in all cases of debility the employment of citric or any other vegetable acid, for this purpose, is decidedly improper. The same is the case with the use of lemon juice or effervescing draughts made with a vegetable acid is inedible.

CITRA'E YECHUA. [MALTA.]

CITTEN (or gitten, or guttlin), a musical instrument of the lute kind, mentioned by our old dramatists. [Cithara.]
inhabitants citizens, than show why this distinction prevails and what are the criteria by which they are distinguished from other towns. These ancient towns are those in which the cathedral of a bishop is found; to which are to be added Eusebius, bishop of Nicomedia, by the Greeks called Walker and by the Latins, Othot, or little town, at the N.W. end of the island of Minoria, is a well-built town, with a small harbour and 7300 inhabitants. (Minotaur) [BALABAR]

CIVIT. [VIPERIDE.]

CIVIC CROWN. Among the Romans the civis was considered more honourable than any other crown. It was the token of freedom for the life of a citizen, and even to be worn in battle or at a feast. A civic crown was conferred on Cicero for detecting Catiline's conspiracy; and afterwards upon Augustus, the reverse of many of whose coins bear the representation of it, with the inscription on civis servatus. The idea of the sacredness of the office of the Gods, which were afterwards beech was used, and lastly, and most generally, oak. (Racine's Lexicon Rei Numarum.) Plutarch, in the Life of Caius Marius Coriolanus, has given what he considers to be the reasons for the choice of the oak. This informs us that the civic crown was the foundation of many privileges. He who had once obtained it had a right to wear it always. When he appeared at any of the public shows, the senators rose to do him honour; and he was permitted to bear arms in peace, and even to take care of some duties and services; and his crown procured the same immunity for his father and his grandson on his own side. (The reader may consult for further information, Polyb. lib. vi. p. 167; Polyb. Hist. Nat. lib. xvi. c. 4; Tacitus, Annals, 23, 13, 19.)

CIVIL ARCHITECTURE. Although this term appears to imply no more than a particular branch of architecture in contradistinction to that called military, which was formerly more important than it now is in the modern system of warfare, it in reality comprises the whole of architecture considered in regard to design or as a fine art, since mere building, to whatever purpose it is applied, can never with strict propriety be so termed. Architecture includes considering with what magnificence and beauty, at exhibiting qualities and effects to which building and construction are no more than the means. Needless as this distinction may appear to be to many persons, in general, we apprehend, considering the art as what belongs to the science, and consequently imagine that the study of architecture concerns those only who follow it as a profession, or that it demands a knowledge of various dry and mechanical details, by which the art is distinguished from any other art. We soon discover that it must be attended with no more difficulty than what just serves to give excitement and to enhance the pleasure of the pursuit. Neither is its interest confined to criticism or the gratification derived from it generally, three important and characteristic features. It consists of a single plain face surmounted by a broad pilaster, here termed the tetrastyle, to which another fillet with small cylindrical guttus or drops is attached beneath each triglyph; but the architraves of the other two orders are divided into four fillets, aliphenes, one between the other, and crowned by curved mouldings, sometimes plain, but more frequently enriched. By attending to these few simple and obvious distinctions, no one can feel any difficulty in perceiving the particular order to which a building belongs. Strictly speaking, only two orders were employed by the

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Greeks, the Doric and Ionie; for although we have a most florid and beautiful specimen of the foliaged capital in the small structure called the choregic monument of Lyceiares, and one or two other examples, partaking more or less of the Doric, which is called the corinthian capital, yet these scanty and imperfect remains do not go far towards proving that a distinct order of the kind—of which they appear to have been only the first essays and rudiments—was recognised in their practice by the Greeks. In such a case, we should indeed have found the character now marked by the capital alone more fully developed throughout.

The earliest examples of the Grecian Doric—as, for instance, that of the temple of Apollo at Brauron—were no doubt of so wooden a character as to lead us at first to believe, from the manner of approaching to heaviness, if not to rudeness; which circumstance, together with the narrowness of the intercolumns (spaces between one column and another), favours the supposition that the Greeks borrowed their first ideas of architecture from Egypt; and if this be admitted, the hypothesis of the different parts of a Grecian structure being derived from a primitive timber hut, falls at once to the ground. The following considerations also are urged against this hypothesis. Unless the aim had been to make the hut itself in the first instance resemble as nearly as possible an erection in stone, such timber model would have given rise to a much lighter style of architecture. If single pieces of timber of sufficient strength for the columns had been procured, so could they also for the architraves; nor could there have been the slightest occasion for putting the columns so close together. It will be said that we do not see the first essays in stone, which would have proven that the character of the timber prototype, but structures wherein greater solidity had been introduced so as to render their character and proportions more conformable with the nature of the material employed. Yet as far as these examples themselves afford any proof, the reverse of this took place; since in them we observe a progressive change from heaviness to lightness—from columns less than four diameters in height to those of nearly seven. The chief that favours the opinion that the style being derived from timber construction is, that the columns are round and tapering like the stems of trees; a form not likely to have been adopted had stone been employed from the first, it being more natural that the pillars should have been square. But, it is urged, that this circumstance ought to lead us to adopt the same hypothesis in regard to Egyptian architecture; whereas by supposing that the Greeks took their first ideas from that source, perhaps all the difficulties attending the other hypothesis are removed. 'The entire character of Grecian architecture,' says Wolff, in his 'Beiträge zur Ästhetik der Baukunst,' 'as well as of Egyptian, is essentially connected with construction in stone, which alone is capable of accounting for the character of the edifices; and in stating his opinions as to Grecian being borrowed from Egyptian architecture, it must be observed that many strong reasons are urged on the other side; and so far as there is any direct evidence, it is either on one side or the other, it is in favour of the hypothesis against which we here contend.'

In attentively examining the Grecian Doric, we can hardly fail to see what admirable taste and study of effect it exhibits throughout, and how well it contributes to introduce the character of the whole. The columns are of short proportions, the entablature deep; the former have no bases, which, owing to the narrowness of the intercolumns, is proved highly effective, and instead of producing an air of finish would rather have occasioned heaviness. The proportions themselves are such as to reject any addition of that kind at the lower extremity of the column, because the difference between the upper and lower diameter—which, owing to the shape of the shaft, occasions so visible an inclination as to produce the effect of tapering upwards—causes it also to appear to spread out below in such manner that the lower extremity becomes a sufficient and wide basis, and, as such, is rendered more apparent than it would be by the outline alone of the column, owing to the lines being repeated in the fluting. The fluting, while it diminishes the heaviness, prevents the play of light and shade in every direction; and the mode of fluting presents it more as a literary union with the expression of all the rest, the channels being wide and shallow, and separated from each other by more ridges on the surface; both which circumstances contribute to that breadth and simplicity which pervade the other parts. No less appropriate and well imagined is the capite, which, although it may be considered as a square abacus above it; the former expanding itself cut from the neck, or upper part of the column, until its diameter becomes equal to that of the foot of the column: in reality, it is something greater, but not more so than is requisite to effect the transition. The shaft, above this, is square to the greater distance from the eye. Thus harmony is kept up between both extremities of the column, verticality is restored, the projection above (as in the case of the sloping capital) either too great or too little, and the architrave itself, by not restoring perpendicularity by adding just as much as had been taken away by the diminution of the shaft upwards, and a play, variety, and contrast are produced, unattainable by any other mode.

The architrave is plain and deep, well proportioned both as to the weight which it has to bear and to the column below, its average height being equal to the upper diameter or narrowest part of the column. The width of its soffit or under side, is about a medium between the two extreme diameters, so that it overhangs the upper part of the shaft; yet it is not so broad as the abacus of the capital, which by opposing a greater surface to it appears better calculated to support its pressure. In Roman and Italian Doric, on the contrary, the architrave is not only wider than in the Grecian order, but as compared with the column itself and the frieze above it, and is frequently made to appear still weaker by being divided into Joche, the lowestmost of which is sometimes wider than the rest. The frieze is generally of the same dimensions as the architrave. It is rarely deeper, in some examples not so deep; wherein again it differs materially from the style just mentioned. The triglyphs which decorate it, are peculiar to the order itself, are upright, slightly projecting tablets (of the same width rather than half the lower diameter), channelled with two grooves or glyphi (γλυφές), and with a half groove chamfering off each of its outer edges. The spaces between the triglyphs were intended to represent the extremities of the beams (whether of stone or timber) resting upon the architrave and forming the inner roof or ceiling are square, or nearly so, and are distinguished by the name of metopes (μετόπα): i.e. openings or intervals. They are in fact so many small panels, and were generally filled with sculpture in bas-relief, although there is hardly an instance of the kind in any of the numerous modern imitations of the Grecian Doric. Beneath each triglyph is a series of small gufts, or cylindrical knobs, attached to a fillet, just under the moulding of the architrave, by which division of the entablature they may be said to belong, although evidently a continuation of the ornaments on the frieze. Some suppose them to have been intended to represent the mouth of the triglyphs, others, in stating their opinions as to Grecian being borrowed from Egyptian architecture, it must be observed that many strong reasons are urged on the other side; and so far as there is any direct evidence, it is either on one side or the other, it is in favour of the hypothesis against which we here contend.
ordered as being to see cornices what the triglyphs are to the frieze, and there is one corresponding to each metope as well as each triglyph; which produces a beautiful gradation of parts, for as there is an additional triglyph between every column, so there is an additional metope between every metope; whereas in Doric there is not another column than columns, and no more metopes than triglyphs, the effect would be both monotonous and poor, and these different features would be confined to distinct lines from top to bottom. The cornices of the pediment are about two diameters, or one-fourth of the whole order, taking the height of the columns at six diameters.

The sloping or curving cornices of the pediment resemble the horizontal one, except that there the metopes are omitted, although some, that and the shaft, have, or yet, to give increased depth and importance to the pediment, as the finish of the whole structure, its cornices have an additional member, termed by some the epithepes, consisting of an ovale or convex moulding, or a cymatium; sometimes deeper, sometimes shallower. This epithepes was continued a little way at the angles, where it usually terminated against a block, carved with a lion’s head, or some other ornament. The face of the pediment itself, termed the tympanum, (called by the Greeks διρήγα, στάργα) was almost always filled with sculpture. The pediment was invariably of a low pitch, but not always of the same pitch; on the contrary, whatever the span might be, its height continued nearly the same, it being more or less acute, in proportion as the inclination of the base. In all the orders of architecture there is also a flowing or festoon here forming the lower edge of the face between the volutes, whose curve harmonises most beautifully with the outline of the volutes themselves; whereas that of the Doric is so abrupt, as well as the Roman and modern Italian, the volutes are here connected by a straight line. Immediately beneath this part of the capital is a carved convex moulding, to which succeeds the echinus or ovolo (so called because invariably cut in the form of eggs), and lesser mouldings. The idea that any Ionic capital therefore seems to have been that of introducing an ornamental mass between the echinus and abacus of the earlier shaped capital, and rolling up its deep prostyle volutes. Besides the capital (properly so speaking, where additional richness was required, and also increased height for the column, without much increasing that of the shaft), a necking, enriched with sculpture, and separated from the shaft by a carved convex moulding, was introduced. The abacus is square in plan, and its sides form a cyma reversa, or ogive moulding, either carved or plain, according as the capital itself is more or less enriched. But the capital itself, at least that portion of it octagonal, is reduced to face on two faces; the reason for which is obvious, because either these faces must have been much narrower, or if this part formed a perfectly square mass of a diameter and a half, it would overwhelm the upper part of the shaft, and project beyond it, which is unsightly, and none of the sides of the volutes, as they are termed, are, for the sake of elegance and lightness, hollowed out so as to assume something of the appearance of two tubes or horns, whose broader extremities or mouths come against the back of the volutes. The capitals at the angles of a portico are frequently differently arranged, in order to obtain a face on the return similar to that in front, the outer volute is turned diagonally, so as to serve for both faces; a mode adopted for all the capitals, without distinction, by many Italian architects. The architrave is divided into three nearly equal faces, projecting very slightly one over the other, and crowned by a cyma recta moulding, carved or plain, as the rest, or less ornamental, which particular members appropriated to the frieze, as in the Doric order, unless enriched with sculpture, it is a more simple surface; but although generally so decorated by the Greeks, there is hardly an instance of it among ourselves, for all the capitals, without distinction, have now particular feet given on the plan, or convex rings, with a concave moulding, the scotia, between them; for the Doric character demands plane surfaces and lines, so does the Ionic require curved mouldings and curves, as harmonising with the curved form of the volutes of the capitals. To prevent the harshness which would result, if the mouldings forming the base jutted out abruptly from the lower end of the shaft, the latter is made to spread itself out immediately above the base in a sweeping curve, termed the apophyge. The number of

the fluting of the shaft is increased from twenty to twenty-four; besides which there are spaces left between them (fillets); for the mere arrears or sharp edges, peculiar to the Doric or earliest mode of fluting, would be utterly at variance with the rounded contours of the base and capital. The channels, or flutes being thus multiplied and set apart from each other, are consequently much thicker than those of the other order, and considerably deeper in proportion to their breadth; and instead of terminating in the fluting of the capitals, their extremities are made the half of a circle, or an ellipse, which way, which each produces a uniform delicacy of expression. It should be observed, too, that the upper torus of the base was generally fluted horizontally, thereby producing uniformity of decoration between the lower and upper part of the shaft, and tending to the mode of applying it. When not so fluted, that torus was often enriched with a guilloche, a beautiful sort of chain-like ornament sculptured on its surface.

The capital may be described generally as consisting of two faces, about as wide, measured across the volutes, as the base—that is, a diameter and a half, or 90 minutes; which breadth is divided into three equal parts (more or less), 30 minutes being allowed for each volute. These volutes are composed of spiral mouldings, which make several revolutions, and gradually become narrower as they approach what is termed the eye or catnsus: in the richer capitals of this class there are intermediate spirals, following the course of the other; the spaces or inter spirals, forming a slightly concave surface. In all the Greek orders there is also a flowing or festoon here forming the lower edge of the face between the volutes, whose curve harmonises most beautifully with the outline of the volutes themselves; whereas that of the Doric is so abrupt, as well as the Roman and modern Italian, the volutes are here connected by a straight line. Immediately beneath this part of the capital is a carved convex moulding, to which succeeds the echinus or ovolo (so called because invariably cut in the form of eggs), and lesser mouldings. The idea that any Ionic capital therefore seems to have been that of introducing an ornamental mass between the echinus and abacus of the earlier shaped capital, and rolling up its deep prostyle volutes. Besides the capital (properly so speaking, where additional richness was required, and also increased height for the column, without much increasing that of the shaft), a necking, enriched with sculpture, and separated from the shaft by a carved convex moulding, was introduced. The abacus is square in plan, and its sides form a cyma reversa, or ogive moulding, either carved or plain, according as the capital itself is more or less enriched. But the capital itself, at least that portion of it octagonal, is reduced to face on two faces; the reason for which is obvious, because either these faces must have been much narrower, or if this part formed a perfectly square mass of a diameter and a half, it would overwhelm the upper part of the shaft, and project beyond it, which is unsightly, and none of the sides of the volutes, as they are termed, are, for the sake of elegance and lightness, hollowed out so as to assume something of the appearance of two tubes or horns, whose broader extremities or mouths come against the back of the volutes. The capitals at the angles of a portico are frequently differently arranged, in order to obtain a face on the return similar to that in front, the outer volute is turned diagonally, so as to serve for both faces; a mode adopted for all the capitals, without distinction, by many Italian architects. The architrave is divided into three nearly equal faces, projecting very slightly one over the other, and crowned by a cyma recta moulding, carved or plain, as the rest, or less ornamental, which particular members appropriated to the frieze, as in the Doric order, unless enriched with sculpture, it is a more simple surface; but although generally so decorated by the Greeks, there is hardly an instance of it among ourselves, for all the capitals, without distinction, have now particular feet given on the plan, or convex rings, with a concave moulding, the scotia, between them; for the Doric character demands plane surfaces and lines, so does the Ionic require curved mouldings and curves, as harmonising with the curved form of the volutes of the capitals. To prevent the harshness which would result, if the mouldings forming the base jutted out abruptly from the lower end of the shaft, the latter is made to spread itself out immediately above the base in a sweeping curve, termed the apophyge. The number of
markable is that of the internal order of the Temple of Apollo at Bassae, near Phigalia, in Arcadia. The base, which is altogether different from the Attic one, is of great diameter compared with the shaft, which spreads down to it with a sudden sweep; hardly less peculiar is the style of the fluting; the channels being very broad and shallow, and the fluting very dark and wavy, the whole is not so plain as that of the Doric order, and to offer anything but a pleasing contrast to the elegant richness of the capitals below it. Accordingly, when the frieze is left plain, it becomes almost indispensably necessary to give the greater depth to, and make every more ornamental on, the cornice itself; which has been done, by Mr. Gandy Deering, on the front of the beautiful little church in North Audley Street, where, besides dentils and additional mouldings, there is an epistyle or cymatium above the cornice, enriched with 'panthers' heads.

What has already been said in regard to the pediment will suffice for this order likewise, there being no other different than what is occasioned by the columns themselves. But having thus far explained the two chief Greek orders or styles of columns, in regard to columns and entablatures, we now proceed to notice what in certain situations are employed as adequate to, or substitutes for, columns, namely, andes or pilasters. In Italian architecture, pilasters are very frequently employed in lieu of columns, or are placed against a wall to correspond with a range of columns in front of it; their bases and capitals, too, are made to correspond with those of the columns, as far as the difference between them is connected with the circular plan of the columns. The Greek architect, on the contrary, never employed antae, except at an angle or the extremity of a wall; and instead of aiming at perfect symmetry, they purposely gave to such pilasters, bases and antae, a variety of form, and derived from these a certain harmony which they did not derive from the column, but greater than the upper one, since both in the Doric and Ionic the architrave overhangs the upper part of the column. Thus they kept the antae and columns quite distinct in character, thereby producing variety and contrast without injury to symmetry. Sometimes the Doric anta has a simple order of moulding and groove at its foot, which seems requisite to detach it from the wall, whereas the plain foot of the column resting on the pavement or steps defines itself to the eye quite sufficiently. The Doric anta-cap is very simple, and its abacus and other mouldings much narrower than those of the column-capital. If such were not the case, the mouldings under the abacus being square like that member, whose angles do not overhang them as they do in the anta, the whole would look excessively clumsy and coarse, and the capital become enormously wide in comparison with the anta itself; because that being no broader at bottom than above, such capital would extend very preposterously far beyond the line of the base of the column. The Ionic Doric antae-cap differ still more than the others do from the capitals of their respective columns, inasmuch as they have nothing whatever answering to those exceedingly characteristic features of the volutes; nevertheless they are so strongly marked by the same style as to render it impossible to mistake them, or attribute them to any other order. Between the bases of the ante and those of the columns there are very slight differences; the chief is that besides the volutes on the column fluted, like the columns, the under one is also enriched, but by reeding or convex mouldings. There is also an additional concave sweep moulding placed beneath the torus. It is further to be observed that the antae are never fluted, & generally in the case with Roman and Italian pilasters whenever the columns are so, and consequently a stronger distinction is kept up between the ante and the columns; and in fact the pilasters of the ante are very ill suited for such channeling, which should only proceed in the same manner by so many parallel lines and hollows casting the same shadow; and feast of all is the Doric mode of fluting adapted to such purposes.

In the above sketch of this order we have merely pointed out in a general manner the leading characteristics, without taking notice of the very numerous varieties, since hardly any two examples are perfectly alike, and some are strikingly dissimilar from any other. One of the most re-
but also owing to their being forcibly relieved by the increased depth of shadow behind them.

Simple as are the plans of Grecian temples, there are many terms required to express their varieties in regard to the application of columns, besides those denoting the number of columns in front, that is, beneath the pediment. This gives rise to the term prostyle; if at each end, amphi prostyle; if there were also colonnades along the sides, it was said to be peripteral, that is, with wings (aisles) or colonnades quite round it. When these were two rows of columns, one behind the other, it was termed diplasteral. Again, whether the range of columns was placed between antae, forming the extremities of walls at right angles with such colonnade, it was said to be in antis. This was generally the case with the temple, as in the cases of the entablature of the columns in front. According to the number of columns in front, porticoes are said to be tetra stylobate, that is, with four columns; hexastyle, with six; octastyle, with eight; decastyle, with ten; and dodeca stylobate, with twelve, the greatest number that can very well be brought beneath a pediment; and even of these two last the examples are exceedingly rare. If instead of columns at the angles there were antae, then the number of columns alone was reckoned as before, and would denote what would be equivalent to a portico containing two more: thus a distyle in antia, that is, two columns between two antae, would be equal to a tetra stylobate, as in both there would be three intercolumns; a tetrastyle in antia would be equal to a hexastyle, and so on.

By this mode of calculation, a few words suffice to explain in the concise manner what a very long description may leave doubtful: for instance, when we say that a portico is hexastyle Ionic, we clearly mean that the columns were placed three on each side of the front, and it is upon this latter circumstance that so much of particular character depends. By way of example, we instance the following structures: distyle in antia, the church in North Audley-street; tetra stylobate, portico of Covent Garden; tetrastyle in antia, the Madonna House, off Portman-street; tetrastyle in antia, Law Institution; hexastyle, the portico of St. Martin’s; St. George’s, Hanover-square; ditto, Bloomsbury; St. Pancras; Post-office; College of Surgeons; Colossseum, Regent’s-park, &c. Octastyle, portico of the National Gallery; and decastyle, that of the London University; of which latter classes these are the only instances at present in the metropolis; unless we choose to reckon the centre of the south front of the Bank as an octastyle; yet although it is a range of eight columns, they are so very little advanced from the wall behind them, that they cannot be said to constitute a portico of any kind. This example might therefore not improperly be designated a pseudo-portico, in the manner the ranges of columns in the wings of the Bank might be distinguished as screen, or pseudo-colonnades.

With us the use of the term portico is technically restricted to a range of columns crowned by a pediment, and forming the front of a building, either attached, or connected with the walls of the building from the wall even when placed almost in contact with it. Attached columns have however been adopted in the Ionic hexastyle of the river front of the new Finsbrough Hall, London, where, being surmounted by a pediment, they may be said to form a pseudo-portico. But if something like the authority of the Greeks themselves can be pleaded in support of engaged columns, it cannot be adduced as countenancing a barbarism to which that practice and the employment of wide intercolumns gave rise, namely, that of making a break in the entablature above every column, and thereby destroying the continuous horizontal line of that part of the order, and carrying the vertical ones up into it. The effect of such a practice* is that of supercolumnation, or the placing one order upon another, sometimes even to the extent of three or more; the diameter of the columns decreasing, and of course the width of the intercolumns increasing. In the case of the colonnade called the Banqueting-house, at Whitehall, affords an example of super columnation, together with one of engaged columns and broken entablatures. There is also an instance of it in the New Palace, London, where the Corinthian Doric, without

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* The temple of Athena Alea, at Tegea, built about a.d. 383, by Sepeia, had, in the interior, a Corinthian (adexis Kapitolios) imposed upon a Doric order. The exterior columns were Ionic. (Pausan, Arcad., 46.) In this passage the word adexis (commas) corresponds to the modern word Order.
triptyphs, or any division of architrave and frieze; there is still another in the recently erected Atlas Assurance Office, Chicago.

Although the name itself would seem to show the contrary, Grecian architecture affords no precedent for what is termed an Attic order, that is, a series of dwarf pilasters crowned by a cornice; and balustrades also are of modern invention, being the outcome of the necessity for the support of roofs, and that of exceedingly rare occurrence, is a low and plain broken pediment, or parapet, that is, without pilasters or other projections, above the cornice of a building. Far from attempting to conceal the roofs of their temples, the Grecians only made them very conspicuous in the outline of the pediments, but bestowed much decoration on them, ornamenting the ridges and tiles, and placing a series of atratana, or enriched front tiles, above the sides of the lower tiles of the lateral pediments. This species of embellishment has been adopted in the church of St. Pancras; which structure also affords beautiful and correct specimens of Grecian doors and windows. The latticework, which are copied from those of the Temple of Minerva Polias, forming the western portion of the Erechtheion, is almost the sole extant type in Grecian architecture for such apertures. They are surrounded by a moulded architrave, and the jambs incline towards each other, so that the aperture of the window is somewhat narrower at the top than at bottom. This peculiarity may have arisen from the difficulty of procuring single stones for the lintel or upper architrave, wide enough to extend over an aperture equal to the width of the window; yet it may also have been adopted entirely as a rule of ornament. The increasing height of both parts producing a contrast between the sloping outline of the window, and the vertical lines of the walls and antis; and an accordance with the tapering form of the columns. What serves to counteract this last idea is, that we find the same principle observed here as in the column itself, namely, that of restoring at the summit what had been lost by diminution upwards; for as the capital spreads out as wide as the base of the column, so is the upper horizontal member made as wide as the sill of the window, by means of a break towards the top of the side architraves (technically called a knee), so that the architrave expands there to the width of the sill. These remarks may perhaps be thought to partake of a minuteness inconsistent with so brief a sketch as this, where many things generally noticed in similar articles are entirely passed over; yet although it is not professed here to teach much, we are anxious to teach that little well, and to lead the reader to examine and reason upon what he sees. By doing this at the outset of his studies, he will be far better prepared to pursue them with satisfaction, than he would be by having presented to him a dry statement of more numerous particulars, which would tend only to prejudice the mind, and still more to encourage a reader to give up his task until he shall have obtained such general insight into the subject as is our object here to supply him with.

The doorways of Grecian temples were made lofty and spacious to give the sake of room to the important architectural features, but also because the light was admitted into the cela, or interior space, usually of small dimensions compared with the general structure, through the entrance. Almost the only instance of windows in such structures is mentioned, and consequently the interior was imperfectly lighted, unless the temple itself was of the kind denominated hypaethral, which is exposed to the sky (as was the Parthenon), the central portico only being, with ornamented colonnades, and portico around it, above whose columns were others forming a smaller order; for, as such inner peristyles consisted of columns less in diameter and height than those of the exterior, the additional tier was necessary to fill up the greater space occasioned by the slope of the external roof above them. Like the windows, Grecian doorways were sometimes narrower at top than at bottom, and were embellished correspondingly to the character of the building. The most elegant ornamentations is that of the division of the Erechtheion, called the Temple of Minerva Polias, copied in the central doorways of St. Pan-

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portico, or pronao, of a temple; of course, unaccompanied by windows, which, in such a situation, should be avoided as far as possible. If there is a broad aperture behind the columns, it produces not only confusion, but a crowded appearance on a surface where breadth and repose are especially requisite. How superior the effect is of a single doorway within a portico, or at most a principal door opposite, to all other arrangements must be felt by every one who compares the porticos of the London University, the Post Office, St. Pancras Church, and the Colosseum, with those of St. Martin's, the College of Physicians, the Law Institution, and, indeed, almost every other on earth.

Though the small structure at Athens, called the Choragic Monument of Lysicrates (copied in the belfry of St. Philip's Chapel, Regent Street), furnishes one of the most exquisitely diverse forms, it is of a capital order that have been preserved to us, it is almost a solitary extant instance of the application of it by the Greeks; unless we choose to reckon as such the capitals of the small columns supposed to be those of the porch of the Tower of the Winds, and which have merely a single row of leaves at bottom. It is true that some magnificent edifices belonging to this order, such as the Temple of Jupiter Olympius at Athens, were erected in Greece; but they have perished. The capital is so beautifully employed by the Romans, who, whether its originators or not, brought it to perfection as a distinct style; for although various single capitals ornamented with foliage have been discovered among Grecian remains, they are as extensive in the most insignificant and meanest of buildings, the limitations of such capitals which occur in Lombardic and Norman architecture. That the Romans, with whose taste for magnificence this floral species of capital well accorded, succeeded in establishing a style comprehending the various of it, expressive of different degrees of character up to the most luxurious richness, is evident from the examples they have left, almost every one of which is distinguished by some peculiarity, although they all agree in a certain beauty of outline. The diameter of the capital is ten diameters; yet the capitals and bases being proportionably deeper, the shaft itself is not much more than eight diameters. The capital is composed of two rows of leaves (generally those termed acanthus), those of the upper row springing up from between the lower ones. There are eight leaves in each row, so arranged that one of the upper one accords with the centre of each side of the abacus; and from the sides of this centre-leaves spring out other leaves, whence emerge the helices or spirals, placed diagonally to support the extremities of the abacus, besides lesser spirals which meet, and sometimes interwine each other above each middle leaf. The abacus itself, which is peculiar to this order, is described as square in its general plan, but having its sides made somewhat in a curve, so as to curve out towards the angles, yet not overhang the body of the capital. Thus not only is extent given without heaviness, but a most pleasing contrast is produced between the convexities of the cornice and concavity of the abacus. The angular helices were sometimes so enlarged as to assume the form of Ionic volutes placed diagonally. This kind of capital is termed Composite, and has been reckoned to constitute a distinct order, yet very improperly, since it does not affect the general character and proportions of the whole ordinance; and if a specific name is to be assigned to each variety, which is to entitle it to be considered a class by itself, we shall have almost as many orders as there are different examples of the kind. The Corinthian, the shaft being fluted or plain, which occasions a more obvious dissimilarity than that observable between the Corinthian and Composite capitals, ought to occasion a formal distinction.

The Corinthian order differs little from that of the Ionic, except in the cornice being broad and angular, and the number of its members increased, in order to harmonize with the deeper capital of the column. One of the features peculiar to it is the series of modillions or small brackets which ornament the crown of the cornice, often frequently dentils also; sometimes again both are omitted, although there is much ornament in other respects. Indeed, the examples of this order vary so much, not in their cornice, but in the peculiarizing particulars, that we cannot refer to them here, and shall therefore subdivide them into three principal ones, viz., the Corinthian of the Pantheon at Rome, of Jupiter Stator and the Temple at Tivoli. The
first of these has been copied in the portico of St. Martin's, which, with its elevated pediment and wide intercolumnation, could not be anything less than imperial in its壮丽 amid the magnificence of the Greeks, which is shown in the adjacent portico of the National Gallery. The second, which is one of the very richest specimens known to us, may be seen in the Baroque entrance to St. Stephen's, Westminster, London; and the third, which is an exceedingly remarkable variety, is that employed in the Bank of England, where it was first introduced. Since then it has been employed by different architects, as in the new building of St. Paul's, and it has fallen to the lot of the north end of Bow Street: in both which instances it is fully enriched according to the original.

The Roman Doric and Ionic, of which there are but few examples in Rome, are performing a peculiar service inferior to their Grecian originals, that they may well be termed depravations of them. Such as they are, however, they have been adopted and systematized by the Italians, who have limited the differences of character almost entirely to differences of ornament, and have left the other differences to be the innovation of the Italians. The Ionic, generally, and its defects above noticed, occurs in the Banqueting House, Whitehall, a work once extolled as a chef-d'œuvre of architecture, but now regarded rather as a curiosity.

Of what is called the Tuscan order, there are no authentic examples to enable us to decide what it really was; but as laid down by writers of the Italian architectural schools, it is no more a simpler variety of the Doric, with a plain rectangular shaft devoid of the latter distinguishings, not very favourably, the entablature of the lower order in the New Buckingham Palace; consequently, if any distinction is to be made at all, that example may as justly be termed Tuscan by Doric. Then next is the Covent Garden, professes to be Tuscan, and answers very well to the idea of not only a plain, but a more rude and unpolished Doric, not otherwise distinct from that style as being less mature and complete. Or, if the degree of dissimilarity observable between the two justifies the distinction claimed for the Tuscan, or untriglyphed Doric, we ought in consistency to invent some specific appellation for the Italian voluted order with a pulvinate frieze, which bears no more to a no more a rational affinity to its Doric prototypes.

If the Romans deteriorated the two Greek orders, and brought to perfection a third, of which we meet with little more than the rudiments (as contained in foliaged capitals) among the various combinations of piers which support the arch, the introduction of the successive tiers of arches led to the practice of supercolunnization (or placing order over order). The arch, again, was employed, not merely to cover apertures in walls, but was used continuously between two walls, so as to form a vaulted ceiling, whether groined or semicircular. If the area to be so covered was large and of square proportions, the walls and vault were then made circular in plan, whereby the latter became a dome. Whether the Romans invented or borrowed the arch is a point we have not room to examine, and one which, even if it could be settled beyond all doubt, would, in all probability, be of little importance, owing to the use of it enabled them to erect works on a larger scale, and that too cheaply with brick; and it likewise led to the adoption of circular forms in plans, combined with an almost infinite variety in the fenestral openings, giving rise to a variety and complexity in which Greek architecture never reached.

The arch, if at all decorated, springs from a kind of capital crowning the piers, termed impost mouldings; and its archivolt or external facing is fashioned like that of the architrave, as a means of introducing the horizontal architrave resting upon, and is so far to be considered an extension of it. An infinite variety of piers, columns alone are sometimes employed, the arch being either immediately from their capitals, or from a square block made to resemble a detached piece of entablature (as in the interior of St. Martin's, and many of Wren's churches); which latter mode is of the two by far the more objectionable, because, in addition to the incongruity of turning arches upon columns, it renders the misapplication more evident by showing in a mutilated and disconnected form what should be the proper horizontal portion of the order. Besides which, whatever is thus placed between the spring of the arch and the column is necessarily so much taken from the height of the latter, and operates again disadvantageously by reducing the diameter of the column, and thereby lessening its importance.

Roman domes were generally hemispherical, and made to appear much less than that externally; whereas the Italians and other moderns have not only affected greater height, but have generally constructed the domes upon a circular basis term its tambour, sometimes of greater altitude than the dome itself. The tambour of that of St. Paul's consists of a Corinthian peristyle, surmounted by a balustrade, besides which a lofty attic with windows.

In themselves both the dome and arch result from beautiful features, and if discreetly and tastefully applied, do not at all contravene with the character of Greek architecture, unless that style is to be confined to the mere temple form, instead of being extended by what it is to be applied to structures of a different form. The Italians themselves would have availed themselves of had they been acquainted with them. The exceedingly beautiful dome of the London University proves that such feature may be made to harmonize with a pure Greek style. In regard to the arch, it is certainly inapplicable to mere doorways and windows: and the two tiers of arches behind the columns greatly impair the effect of the Bourse at Paris; yet where unusually spacious openings are required, it may be applied so as not to be in the least obtrusive.

In adopting the Roman orders, the Italians reduced them to strict mechanical rules, making a merit of adhering to one invariable set of proportions for each; yet this has not prevented the innovation of entirely new styles. Notwithstanding, too, their professed abhorrence of the caprices and anomalies of the Gothic style, they have frequently indulged in fancies the most grotesque, such as curvilinear, broken or twisted pediments, clustered pilasters, broken entablatures, lofty pedestals, columns with square blocks on their shafts, &c., together with much tasteless ornament so applied as either to be insignificant or to produce only confusion. As a sample of such vitiated taste, we may refer to Gibbie's Church in the Strand, near Somerset House, and also to Temple Bar. Somerset House itself, on the contrary, exhibits some of the best features of the Italian style, tolerably free from its alloy: nor can it be denied that where a number of windows are required, they necessarily tend to fragmentize the composition full as much as anything else. The Italian style has much to recommend it, if, while we reject its solecisms and vices, we merely adopt what is good in it, but improve its detail from the best modern models. What is Romish construction, with all its imperfections, and without employing any of the orders, is shown by the Travellers' Club House, Pall-Mall, which is stamped by a simple and unpretending elegance, far preferable to many bold and inappropriated imitations of Greek and Roman, which are no farther than to the columns. Having thus far explained the scheme of columnar architecture as originally practised by the Greeks, and afterwards successively altered by the Romans and modern Italians, we must leave the reader who is desirous of fuller
and certain taxes, as usual, were appropriated to that branch of the public expenditure. The same duties were, on the accession of George II., continued for that reign, being provided for if they did not produce 800,000l. per annum, the unappropriated sum to be retained in the crown. At the accession of George III. the sum of 800,000l. was again voted by parliament for the civil list, but no particular taxes were set apart to provide that revenue. In 1760, however, an amount of debt had accumulated in this department, and to pay it off, two sums amounting together to considerably above 1,000,000l. were voted by parliament in 1769 and 1777. In 1778, the civil list was permanently raised to 900,000l. This however did not prevent further deficiencies, which were again made good by parliament in 1784 and 1786, to the extent of about 270,000l. In 1785 Mr. Burke brought in his bill for the better regulation of the civil list, which though greatly mutilated before it passed into a law (in 1785), abolished several useless offices, and effected some reduction of expenditure. According to a report of a committee of the House of Commons which sat upon the subject of the civil list in 1802, the total average annual expenditure in that branch since 1786 had been 1,000,167l., under the following heads:—royal family in all its branches, 205,984l.; great officers of state, 33,278l.; foreign ministers, 80,526l.; embassy expenses, 209,955l.; crown hold, 92,244l.; pensions, 114,817l.; salaries to various officers, 76,013l.; commissioners of the treasury, 14,455l.; occasional payments, 203,364l. At this time some sum of above 900,000l. was voted by parliament to pay the debts of the civil list; and in 1802 the sum was raised to 960,000l. In 1812 it was further augmented to 1,080,000l.; besides which, annuities to the amount of 260,000l. were then paid to the different branches of the royal family out of the consolidated fund. Another committee of the House of Commons inquired into the subject of the civil list in 1815, and it was upon the report made by this committee that the amount of the civil list was fixed, on the accession of George IV., at 850,000l. per annum, 255,000l. of annual charges being transferred from this branch to other funds. It was calculated that the distribution of this sum would be under the following heads:—1. His Majesty's privy purse, 60,000l. 2. Allowances to the lord-chancellor, judges, and speaker of the House of Commons, 32,956l. 3. Salaries, &c., of his Majesty's ambassadors and other ministers, salaries to consul, and pensions to retired ambassadors and ministers, 226,956l. 4. Expenses, except salaries, of his Majesty's household, 100,000l. 5. Expenses of the department of the lord of the bedchamber, master of the horse, master of the robes, and surveyor-general of works, 209,000l. 6. Salaries in the above departments, 140,700l. 7. Pensions limited by Act 2 Geo. III. c. 2, to the amount of 46,000l. 8. Salaries of the chief clerks of the crown in the house of commons, 26,000l. 9. Salaries of the master of the rolls, 42,000l. 10. Salaries of the clerks of the exchequer, 13,828l. 11. Occasional payments not comprised in any of the aforesaid classes, 26,000l. The crown was left besides the enjoyment of the hereditary revenues in Scotland, amounting to about 110,000l. per annum; and also of a civil list for Ireland, of 207,000l. On the 13th of November, 1830, immediately after the accession of his present majesty, victor, our Saviour's, was granted by parliament a civil list thus obtained, amounting during the reign of William III., on an average of years, to the annual sum of about 680,000l. Out of this sum were paid the expenses of the maintenance of the palaces, the salaries of the crown, and of the lord-chancellor, of the judges, of the great officers of state, and of the ambassadors at foreign courts; the expenses of the court of chivalry, and of the electoral college; and of the former revenues of the crown. The interest of the national debt however was never defrayed from the sum allotted for the civil list. In the reign of Queen Anne the civil list remained of nearly the same amount as in that of King William, the principal taxes not appropriated to it being an excise of 2s. 6d. on the barrel of beer, which produced about 266,000l. per annum, a tonnage and poundage duty which produced about 257,000l., and the profit of the post-office, from which about 100,000l. was derived. At the commencement of the year 700,000l. a year was voted by parliament for the civil list, and
drains of admittance, and the 47 per cent duties, shall be paid
unto the Exchequer for the use of the public. His Majesty
also retains the revenues of the dukes of Lancaster
and Cornwall, which are considered to be the hereditary
revenues, not of the crown, but of the dukedoms of Lan-
caster and of Cornwall; the former of which is perma-
nently surrendered, to yield its revenues to the crown when
there is no Prince of Wales. No account
of the amount of these revenues has ever been laid
before Parliament; but it is understood not to be con-
sidered. In his speech on the Economical Reform in 1760,
Mr. Burke said, 'Every one of those principalities
has the appearance of a kingdom, for the jurisdiction over a
few private estates; and the formality and charge of the
Exchequer of Great Britain, for collecting the rents of a
considerable number of estates; so as tot $200,000 a year,
which you compare the charge with the receipt, you will find
that it furnishes no exception to the general rule. The Duchy
and County Palatine of Lancaster do not yield, as I have
reason to believe, on an average of twenty years, 4000l. a
year clear, to the crown. As to Wales, and the County
Palatine of Chester, I have no doubts whether their pro-
ductive exchequer yields any returns at all.' There is no
real reduction in this arrangement,' says Sir Henry Parnell
('On Financial Reform,' 4th edit., p. 203), 'below the
grant to his late Majesty; for whatever appears to be a
reduction, has been produced by a transfer of charge from
one head to another of the old civil list. The chief
difference in this arrangement from the former consists in the
transferring the consideration of the 50l. produced by the
consolidated fund, and in providing for the gradual reduc-
tion of the pensions to $75,000 a year.' It is evident from
this account, that what is now called the civil-list has no
proportion to the revenue. In John Temple's History of the
Revenue; Colquhoun's Wealth, &c. of the British
Empire; Sir H. Parnell on Financial Reform; and
Reports of Committees of the House of Commons in 1802,
1803, 1804, 1805, 1812, 1813, 1814, and 1819,
it is manifest that the majority of mankind may an
habitual veneration to words, and this species of adoration is
not exempt from fanaticism. It would not be difficult to
find men who would willingly suffer any privations and
tortures, even an death, for the sake of that which, after you
tell them (what indeed few people seem to compre-
end) that words are but signs which give consistency and
permanence to our ideas, and if you ask them what
the idea are which are these words of such frequent occurrence in
their conversation or writings are designed to express, you
may be convinced that the art of speaking with pro-
piety is, as it has been well remarked, inseparable from the
art of thinking correctly, and that it is almost always
for want of attaching the same ideas to the same words
that men misunderstand each other, dispute, and sometimes
come to blows.

The words civilization, education, and religion, with a
multitude of others, are among those expressions which are
so foreign to the people, seems to give them no idea being attached to them; yet there are no words that
require to be more thoroughly analyzed.

The meaning of a word is often formed by degrees, and
in connexion with facts and observation. As soon as a
particular fact presents itself, our notice which appears to
have a specific relation to a known term, it becomes
immediately incorporated with it; and hence the meaning of
every term gradually extends itself, and finally embraces
all the objects of which the term can be expected to belong to it. On this account, there is more depth as well as
correctness and accuracy in the usual and ordinary mean-
ing of complex terms than in any definitions that can be
given of them, notwithstanding the latter may appear at
first sight to be more strict and precise. In the majority
of instances scientific definitions are much too narrow, and
owing to this circumstance they are in reality infinitely
less exact than the popular meaning which is given to
terms; it is therefore in the power of every sign
clarify, that we might recognize for the various ideas
are included in the term civilization.

Now, the first fact which this word seems to carry with it
(and many proofs of it could easily be given) is that of a
progressive improvement of the condition of society considered
and of all the individual members of which it is composed.

CIVITA, an Italian appellation derived from the Latin
civitas, 'a town,' forms part of the name of several Italian

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CLADOBATES. [Tupaia].

CLAGENFURTH, a circle in the eastern division of the Austrian duchy of Carinthia (formerly Lower Carnia), and in the north-east part of the kingdom of Illyria, surrounded by the circles of Villach, St. Veit, and the Tronto, a fortified place on the frontiers of Abruzzo, towards the papal province of the Marches. There is also Cividal (a corruption of Civitati) in the Friuli.

CLAUDIUS, a town and port in the Papal State, in the Delegazione, or province of Viterbo. Its harbour is formed by two piers of marble blocks first raised by Trajan, who had a country residence here called Centum Celcis, and afterwards restored under Hadrian. The entire length between the extremities of the two piers is a small island or breakwater formed of large pieces of rock thrown into the sea, under the reign of the same emperor. Pliny the younger (Epist. 31) describes the whole of the breakwater to have been made of marble and the piers themselves of wood. There is from 14 to 15 feet depth of water in the harbour, which is the only safe one on the south coast of the Papal State, and is frequented by about 1000 vessels of various sizes, most of them coasting vessels, in the course of the year. There is a lazaretto for ships coming from infected countries. There are also docks and a prison for galley-slaves. The lighthouse and the citadel were built by Michel Angelo. The present town of Civita Vecchia was built by Pope Leo IV, and regularly fed with water by the aqueduct to the church of San Salvatore, and the houses well built. The town has a cleanly and bustling appearance. The air, although not very good in summer, is not altogether unwholesome, but the country around is subject to the malaria. There is a fine appearance of the sea south of the island on this coast. The population of Civita Vecchia is about 8000 (Calindri, Saggio Statistico). It has a military governor, and is subject in civil matters to the delegate residing at Viterbo. Civita Vecchia is 36 miles north-west of Rome.

CLACKMANNAN, a very small county in the eastern part of Scotland; bounded on the south by the river Forth, on the north and west by Perthshire, and on the east by Fife. Its greater length is from S.E. to S. is about nine miles, and its width from N.E. to S.W. about eight miles. The area is 48 square miles, or 30,720 acres, which is divided into four parishes. The surface in the southern part, adjacent to the Forth, consists of level alluvial tracts, which are very productive in corn, and contain good pastures. Towards the northern extremity the land rises gradually into the Ochill Hills, which traverse the county from S.W. to N.E., and furnish some pasturage for sheep. The woodlands cover about 500 acres, and at least 2000 acres are laid out in plantations. Agriculture is in a state of continual improvement; lime manure and threshing machines are used on almost every farm. The highlands in the N.E. of the county yield an abundant supply of peat, valuable in the manufacture of coal. There is at least 130,000 tons. There are also quarries of freestone, granite, and iron-stone which contains from 20 to 30 per cent. of iron. Silver, lead, copper, cobalt, antimony, arsenic, graphite, manganese, and pyrites, have been found, but not in sufficient quantities to defray the expense of working. Several excellent roads intersect the county, and there are numerous creeks along the Forth which are used by the fishermen. The chief harbours are those of the two principal towns of the county, and of the county town of Clackmannan. The population in 1831 was 14,729. Clackmannan and Kinross together send one member to the House of Commons.

CLADUS, a genus of Hymenoptera insects of the family Formicidae. Technical characters:—Antennae about the same length as the body, dilated beneath, and nine-jointed; the two basal joints short, the third joint with a protuberance beneath at the base, and a branch thrown out from the tip of the principal town of the county, and it has likewise the last-mentioned process; and in the sixth and seventh it is rudimentary. In the female all these processes are wanting, excepting the one on the underside of the third joint. Wings with one marginal and three sub-marginal taeniopterygial scales. Cladius diffinis, when the wings are expanded, measures in width about one third of an inch: it is black, with the tibia and tarsi pale yellow. This species may be considered the type of the genus; it inhabits this country, but is not common.

CLAIRVAUX, ALEXIS CLAUDE (sometimes spelt Clairaut; we have taken the spelling from the title of his own works), was born at Paris, May 7, 1713. His father, John Baptist Clairaut, was a teacher of mathematics. The early proficiency of the son in mathematics is better attested.
than in any other similar case, by the actual appearance of his celebrated treatise on Curves of Double Curvature, in 1731, when he was eighteen years of age, accompanied by the usual official recommendations, which prove that it was ready for the press two years before: it is said to have been between the hands of the public at least four or five years before. He read the 'Conic Sections of De L'Hôpital, and also the 'Infrinitum Petits' of the same author, when he was only ten years old; a fact which we should have forbore to state, had it not been for the patience of the treatise just cited, and in this fact, of public notoriety, that at the age of twelve years he presented a memoir on some remarkable curves to the Academy of Sciences, and removed all doubts as to its authorship by his personal explanations.

In 1729, Clairaut, who was in the third year of high position in Laplace, for the purpose of measuring a degree of the meridian. (See the articles connected with the Figure of the Earth.) This measure has frequently been considered as of little value: it must however be remembered that it was the first attempt at a solution of the problem of the strength of discrepancies which were sufficiently apparent to the observers themselves, and which caused them to review all their operations; as also that circumstances connected with local attractions are sufficiently full to explain the errors considered as a few miles. Furthermore, a memoir on the Earth appeared in 1743, and was reprinted in 1868. It contains the remarkable discovery which is usually called Clairaut's Theorem. Considering the earth as an elliptic spheroid, it is shown that the density of the interior surface would depend upon the law of density of the interior strata. But Clairaut showed that this variation is altogether independent of the law of density, and may be deduced from a knowledge of the form of the exterior surface. In other words, if the higher powers of the eccentricity are rejected. Mr. Airy (in an early volume of the 'Cambridge Transactions') has shown that it remains true when the higher powers are taken into account.

In 1760, Clairaut gained the prize of the Petersburg Academy for his paper on the Theory of the Moon. It is more essential for us here to state the position which he occupies among the successors of Newton, than to enter into details which are better suited to other articles.

Newton had left one prominent point of the lunar theory altogether unexplained by his theory of gravitation, namely, the motion of the lunar apogee, of which, though able to assign a sufficient reason for the phenomenon of precession, he was not able to deduce more than half the quantity observed. He rejected the hypothesis that the law of gravitation was incompletely expressed, but further consideration, and more extensive application of calculus, showed that the whole motion was a necessary consequence of the law of gravitation and lunar attraction. In two points of view, therefore, as the first who applied what is now called the modern analysis to the problem of the lunar motion, and as the first who added an unexplained phenomenon to the theory which Newton had left, Clairaut stands in a conspicuous position.

Clairaut was the first who applied the Newtonian theory to the motion of comets, in reference to the perturbation of their motions by the attraction of the planets. In 1757 a series of researches on the motion of Halley's comet was published. This was the first complete attempt to calculate the return of the comet, which was made at its nearest point to the sun on April 13, 1759; in that month Clairaut predicted that it would arrive at its nearest point to the sun. April 13, 1759, stating that he might possibly be wrong by a month. The observed position of the comet on April 13, 1759, showed the error would have been considerably less if the existence of Uranus, and a more correct value of the mass of Saturn, had been known.

The figure of the earth, the theory of the moon, and

Halley's comet, are the three prominent points on which the fame of Clairaut rests. We might mention his work on Geometry, drawn up, it is said, for the use of Madame du Chastellet: his Elements of Algebra, remarkable at the time for the abandonment of the dogmatic form in which algebra was customarily taught; his various memoirs published in the Connoisseur's Journal, besides the papers in the Memoirs of the Academy, containing several remarkable discoveries in pure mathematics. But we shall pass on to some notice of his career in connexion with that of D'Alembert.

These two great men were rivals in their scientific labours, and though their disputes did not cross the bounds of courtesy, the life of each, with respect to the other, was either armed truce or open war. The characters of the two were essentially opposite: Clairaut was a man of the world who took great pride in the exercise of his personal powers, who was a good compiler, and a good critic, and had the love of a keen observer: D'Alembert was blunt and rude, though essentially well-meaning and kind; if we may use such a colloquial phrase, he 'stood no nonsense'; 'j'aime mieux être sincère que maugréant was an axiom of his. Clairaut was always in the world, desirous to shine, not to unite the man of fashion with the philosopher, of all which D'Alembert was the reverse. The attacks usually came from the latter, confined entirely to the writings of his opponent: in this he was frequently hindered by the cautious and cautious order than Clairaut, who was more than once too hasty. For instance, when Clairaut took the whole revolution of Halley's comet, or more than fifty years, as the unit of which the error committed by him should be measured, D'Alembert wrote that the accuracy of the latter should be compared, in the estimation of precision, with the difference between two successive revolutions, or about a year and a half. Later analysts, and Lalande in particular, have been convinced that he was right. The preceding comparison is drawn from Bosvall's 'Histoire des Mathématiques' of the independent of the Academy, the Life, by Lacroix, in the Biog. Uni.; and the work of Bosvall, above cited.)

The works of Clairaut, independently of Memoirs presented to the Academy, are—1. 'Recherches sur les Courbes en double Courbure,' Paris, 1731. 2. 'Eléments de Géométrie,' Paris, 1741; and various editions up to 1765. 3. 'La Figure de la Terre déterminée par l'Observation des Temps du Japon,' 2 vols., Paris, 1738; in Latin, by Zoller, Leipzig, 1742, 4. 'La Théorie de la Figure de la Terre,' Paris, 1743; again in 1798. 5. 'Eléments d'Algébre,' Paris, 1746; again in 1769 ('très bel ouvrage,' by Lacroix, 1797). 6. 'Pôles du mouvement des CMs,' Paris, 1760; the account of the great process relative to Halley's comet. D'Alembert wrote against this in the 'Journal des SAV,' February, 1761; Clairaut replied in the 'Journal des Sav.' June, 1761. 7. 'Système du Monde,' 2 vols., Paris, 1785. (Supplement to 2. 9. 'Explication des Principes Élémentaires des Phénomènes,' etc.; compiled by Madame du Chastellet from Clairaut's instructions, and printed at the end of her translation of Newton; Paris, 1759. [CHASTELLET, MADAME DU].

CLAIRVAUX, a small town in France, in the department of Aube, and on the left bank of the river Aube. It is surrounded by woods and mountains, which were once the home of the abbey, which was the most ancient and renowned of that order. This abbey was founded, A.D. 1150, by a detachment of the religious of the abbey of Cluny, the chief establishment of the order, under St. Bernard. The possessions of the abbey, which comprehended the town of Clairvaux and a large district of Aube, in which it was situated, were originally due to the liberality of Hugues, count of Troyes, the first benefactor of the establishment. They were augmented by others to such an extent, that at the time of St. Bernard's death (A.D. 1153) the abbey of

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Clairvaux contained five hundred monks, or, according to other statements, seven hundred. In the middle of the last century there were only about fifty or sixty monks, twenty lay brethren, and forty servants, or servitutes. The abbey had fallen into decay, previous reports having revealed to the French revelations of eighteen regular abbots of men and twenty-eight of women, and forty-one abbots held in commendam, all in France; besides forty abbots, whether of monks or nuns, in foreign countries. The revenue of the monastery was 90,000 livres, or a little more. The church was adorned with a chief-orvoune, and there was a gallery with some good paintings. The abbey is now used as a house of correction, in which 2000 prisoners are employed in the manufacture of different stuffs, the only one, as Bernard, said to contain eight hundred tons of wine, is still preserved.

Glass and paper are made in the town of Clairvaux, beer is brewed, and iron is wrought. (Expiy; Reichard; 

Dictionnaire Universel de la France.)

CLAKIS. [BERNICLE GOOSE.]

CLAMEY, or CLAMECY, a town in France, in the department of Nièvre, at the junction of the Beuvron with the Yonne, 110 miles S.E. of Paris in a direct line, in 47° 27' N. lat., and 3° 30' E. long. The population of Clamecy amounted in 1832 to 4926 for the town itself, or 5339 for the whole commune. Considerable trade is carried on, and the town is considered wealthy in proportion to its size. Earthenware and woollen cloth are the chief manufactures, to which may be added woollen and linen cloths. The woollens are manufactured of the wool grown in the neighbourhood, mingled with that of Bourgogne. The surrounding country is fertile in grain and pasture. Clamecy is the place where the Yonne flows for flooding timber down to Paris; the navigation does not commence till near Auxerre, which is three miles lower down the stream.

Clan is the capital of an arrondissement, which contained, in 1832, 70,361 inhabitants.

CLAN, in Gaelic Clann, which is said to signify children or descendants. The word has been long adopted as English. Milton says,

'They armed the flag,
Of each his faction, in their several clans, etc. 

Par. lost, l. 901.

The clans of the Highlands of Scotland are families, or rather tribes, all the members of which bear the same surname, and are supposed to be descended from a common ancestor, of whom the chief of the clan is the lineal representative. "Being divided," says Camden, speaking of the Scotch Highlanders, "into families, which they call clans, which, with plundering and murdering, they commit such barbarous actions, that they have the law necessary which enacts, that if one of any clan hath committed a trespass the rest shall repair the damage, or whoever of them is taken shall suffer death." Some clans have been divided into sub-clans, and sub-sub-clans, each of which has its particular surname. According to Colonel Stewart, in his Sketches of the Character, Manners, and Present State of the Highlanders of Scotland (2 vols. 8vo. Edinb. 1822), p. 24, this surname, peculiar to the branch, is called the bun staine, that is, the genealogical surname, being derived from the Christian name or other designation of the ancestor of the branch. It is the name generally used in common conversation; but every Highlander in Scotland, and also for the most part when he has to mention another person in writing, uses the name which is common to the whole clan. Most of the Highland noblemen and gentlemen have designations peculiar to them as chiefs of their clans, which, in their own country had, depending only on their own exaltation, are allowed to efface. "Besides his ordinary name and surname," says Sir Walter Scott (note to Lady of the Lake, canto ii.), "which were chiefly used in the intercourse with the lowlanders, and chief heads of his patriarchal dignity as head of the clan, and which was common to all his predecessors and successors, as Perth to the kings of Egypt, or Arsaces to those of Parthia. This was only a patronymic, expressive of his descent from the founder of the family; the name Argyle is called Mac Callum Mor, or the Son of Colm the Great. Sometimes however it is derived from armorial distinctions, or the memory of some great feat: thus Lord Home, as chief of the Marnock, or Clan-Kennedy, bears the title of Cabrach, or Buch's Head, as representative of Colin Fitzgerald, founder of the family, who saved the Scottish king when endangered by a stag.

Although the chieftainship of the clan now descends regularly from father to son or other heir male, there can be little doubt, from the system of succession, that the line of descent prevailed among the Scottish Highlanders, as it did down to a comparatively recent date among the Irish. (Braun Law, p. 383.)

The common prefix of the Scottish patronymics of clanship, as every traveler knows, is Mac, that of the Irish O'—both signifying son, or at least descendant. But many Irish names also begin with Mac, and some with the synonymous Norman Fitz, the same word with the modern French Fitz, or Fitz; and sometimes the two are the same term by the Russians. Several of the Scottish clans however have surnames in which the common prefix does not appear—as, for instance, the Stewarts, the Gordons, the Robertsons, the Camerons, the Campbells, the Chisholm, as several of those are generally understood not to be of Celtic descent. Indeed the tribes inhabiting the southern borders of Scotland, whose connexion with and dependence upon their chiefs used to be nearly the same with what prevailed in the High, say The Introduction of the Scotch Minstrelsy of the Scottish Borders, are often also familiarly spoken of as clanes. Scott, in the battle canto of Marmon, says,

'Against them come,
Of gallant Gordons many a one,
And many a stately chief, with all the grace
Many a ragged border clan,
With Huntley and with Home.'

According to Colonel Stewart (Sketches, &c. &c., vol. ii.), the Gaelic clans of Scotland occupy the counties of Sutherland, Caithness, Ross, Inverness, Cromarty, Nairn, Argyle, Bute, and the Hebrides, with part of Moray, Banff, Stirling, Perth, Dumbarton, Aberdeenshire, and Angus. He has given a map of Scotland, in which the locality of each clan is marked; and in the second and third sections of his work he describes and examines the system of clanship and its consequences. In the last and fourth canto Q is on the Distinctive Patronymics of the Clans. In Robert Pattens's History of the Rebellion of 1715 (3rd ed. 8vo. Lond. 1745), pp. 191—195, is given A List of the most considerable men in Scotland, and the number of men they can raise, with the amount of their display in the government, which includes the clans. "Note," says Patten, "that all the chiefs in Scotland are chiefs of clans, properly so speaking, whether noblemen or gentlemen; but commonly the last only are called the clans, and particularly those of them who live in the north and west Highlands and Isles. Patten's list may be compared with a Memorial on the Military Strength of the Clans, which Colonel Stewart has printed in his Appendix C, and which he conceives to have been written by a gentleman of short time before his rebellion of 1745 by President Forbes. Bishop Nicholson has printed in his Scottish Historical Library from Bell's MS. 'Introduction to the History of Cumberland,' a catalogue of the chiefs and clans of what was called the west border of the south of Scotland, that in 1547 submitted and gave pledges to Lord Wharton, who had overruled the country, that they would serve the king of England, with the number of men for raising, and whether they could command annexed to the name of each. It has been interested by Sir Robert Linlithgow, and reprinted in Dalrymple's Fragments of Scottish History.

In Chambers's Popular Rhymes of Scotland (1st ed. Edinb. 1826, pp. 246—256) may be found a collection, which the writer, however, admits to be very meagre and defective, of the slogans, or war-cries, of various clans both
of the Highlands and the Borders. On this subject see also Colonel Stewart's Appendix D. In Mr. Chamber's curious volume (pp. 197–246) are collected and illustrated the characteristic epitaphs proverbially applied to many of the clans and other Scottish families; such as the Gay Galagos, the Ochre Gorillas, the Light Lindsays, the Manly Morrisons, the Haughty Hamiltons, the Sturdy Armstrongs, the Saucy Scotts, the Gentle Jonseys, the Lively Dufts, the Destroyers Tall and Proud, the Wild Murcas, the Handsome Hays, the Trusty Boys, the Muckle-mow'd Murays, &c.

No complete history of the Scottish Clans, as far as we now can be convinced, has been attempted in several centuries, particularly in the book printing and manuscript. The second part of William Buchanan of Auchmar's 'History of the Ancient Surnames of Buchanan' (12mo, Glasgow, 1793) consists of a 'Brief Enquiry into the Genealogy and Present State of Ancient Scottish Surnames,' and contains the legendary or traditional history of most of the principal clans. There is also a work entitled 'Antiquity of the Macs, Clans, and Bodotria,' by the Reverend John Lane Buchanan, A.M., missionary minister to the Isles from the church of Scotland, of which we have not been able to find a copy. In a newly established periodical publication, entitled 'Transactions of the Iona Club,' vso. Edinb., 1834, &c., consisting of 'Collectanea de Rebus Albanicis et Scotiae,' there is a paper on the genealogy and notes, a Gaelic account of the genealogies of the Highland clans, from a MS. which appears to have been written about the year 1440. In his concluding note the editor observes, 'It would occupy too much room here to enumerate all of the various important effects which this MS. must produce upon the question of the origin of the Highland clans; it will be sufficient to state that it seems to establish three very remarkable facts:—1. The existence of a very early period of tradition in the Highlands of the common origin of all the Highland clans;—2. The comparatively late invention of many of the traditional origins of the different clans at present believed;—and 3. The natural relationship of various clans to each other, which have hitherto been supposed to be unconnected.'

The system of clanship as it still subsists in the Highlands of Scotland, making allowance for the modifications it has received from the feudalism, in respect to the tenure of property superimposed upon its original purely patriarchal character, is essentially the same state of society that has always prevailed among the wandering Arabs and Tartars of the East. Gibbon's description of the social condition of the Tartars, or, as he calls them, Suythian hordes, in his 'Decline and Fall of the Roman Empire,' in 1780, was applicable to the things in the Highlands, at least as it remained down to the rebellion of 1745. Since that attempt, and the measures which the government was induced to take in consequence of it, the old spirit of clanship has considerably declined.

CLAPPERTON, HUGH, was born in 1788, at Annan, in Dumfriesshire, N.B., where his father was settled as a surgeon and country practitioner. After receiving the rudiments of a plain education, with some instruction in mathematics, he went to sea at the age of thirteen, being bound apprentice in a merchant-ship that sailed between Liverpool and America. After making several voyages he was impressed as a man-of-war as a seaman. Fortunately Clapperton had an uncle, a captain of marines, through whose interest with the naval commanders then in commission in the Mediterranean, he was put on the quarter-deck and made a midshipman. In this capacity he gave splendid proofs both of fortitude and courage. In 1814 he went to Upper Canada, and some time after his arrival he was promoted to the rank of lieutenant, and appointed to the command of a schooner belonging to the British flotilla on the lake Huron. Having been discharged as lieutenant Clapperton returned home on half-pay. He amused himself in his native district with shooting and fishing, until 1820, when he removed to Edinburgh and became acquainted with the late Dr. Oudney, the Green's Gamblers, the Dirty Diners, and the new discovery. In 1823 he was employed by Lord Bathurst. In conjunction with Dr. Oudney and the late Major Denham, to make a journey to Timbuctoo, in central Africa. The doctor died at an early stage of the journey in January, 1824. Proceeding south from Tropol, on the Mediterranean, by Musfoia, and by Zangalia, on the east of the great lake Tchad, Clapperton, after great sufferings, reached Saccaco, where he was obliged to turn back. He and Denham determined the positions of the kingdoms of Mandara, Bourou, and Houssa, and of their chief towns, but they were unable to ascend the course of the Niger—the main object of the expedition. From their experience they gave rather a favourable notion of the civilization and hospitality of some of the nations in the interior of Africa, who had been subjected to the slave trade and savage. Their description of lake Tchad, with the huge hippopotami in it, and the elephants and other wild animals on its shores, is exceedingly interesting. On the 22d June, 1825, some three months after his return to England, Clapperton was raised to the rank of captain, and was immediately to start fresh on the same perilous journey. His companions were Captain Pearce, R.N., Mr. Dickson, and Dr. Morrison, a navy surgeon and naturalist; the party was attended by Richard Lander, Dawson, and two or three other servants. This time Clapperton penetrated into Africa from the coast of the Atlantic. The party landed in the Bight of Benin on the 28th of November, 1825, and proceeded inland from Badagry, December 7th; but they had scarcely moved from the shore when they were attacked by the usual maladies of the country. Dawson died at Tahow, not far from Badagry, and Captain Pearce soon after, at Engwa. Dr. Morrison, who had returned towards the coast, expired at Janny, 20th December. The surviving two, Lander and Morrison, were received with considerable hospitality and courtesy from the natives, reached Katunga, the capital of Yariba, on the 15th of January, 1826. They proceeded to the great commercial city of Kano, and thence, turning to the west, went to Sanqui, near which Clapperton had rescued from the clutches of the Mediterranean some two years before (Afrîca.) Here Bello, the king or chief of the country, detained his old acquaintance on account of wars carrying on, and (it is said) at the jealous suggestions of the Day of Tripoli, who represented the English as aiming at the possession of all Africa. Clapperton's vigorous constitution gave way under the effects of the climate and privation, and he died of dysentery on the 13th of April, 1827, at Chungungo, after four months' residence in Africa. (Narratives of Travels and Discoveries in Northern and Central Africa in the years 1822, 1823, 1824, by Major Denham, Commander Clapperton, and the late Dr. Oudney, 4to., Lond., 1826.)—Journal of a Second Expedition into the Interior of Africa, &c., by the late Commander Clapperton. 4to., Lond. 1829. To this volume a Memoir of his Life is prefixed.—Records of Captain Clapperton's Last Expedition to Africa, by Richard Lander, his faithful servant, and only surviving member of the Expedition. 4to., Lond. 1830.)

CLARE, a maritime county of the province of Munster, in Ireland: bounded on the north by the county of Galway; on the east and south by the Shannon, which separates it from the county of Kerry; and on the west by the Atlantic Ocean. The greatest length, from Loop Head on the southwest to the Galway boundary on the north-east, is 674 miles; greatest breadth, from Black Head on the north-west to Bonnattoy on the south-east, is 233 miles. The area is estimated by Beaumont at 1195 English square miles, or 765,042 statute acres. * Gross population, in 1821, 208,069; in 1831, 258,322.

The surface of this county is extremely irregular. The high lands occupy about 120 square miles, included between the Shannon on the east and the Galway boundary on the north. Here the Sliave Bautauns mountains attain an elevation of from 2000 to 2500 feet. This group stretches into the adjoining county, and contains 199 square miles of elevated lakes: Loch Derg, on the boundary of Clare and Galway; Loch Grany, farther south in the centre of the group; and Loch O'Grady, between Loch Grany and that extension of the Shannon called Loch Derg in the east, into which the district of the country was named by the Scarrif river at the village and creek of the same name. Southward from the Sliave Bautauns group extends a mountainous tract of less elevation, which runs with little interruption from Scarrif on the north to Bunratty on the south, with Lough Derg, Lough Clooneen, and several other lakes, lying along the western border of the range, discharge themselves by the Ougarine river into the Shannon. The chief drain of the eastern

* This estimate is uncertain until the completion of the Ordnance Survey of Ireland.
part of this district is the Blackwater, which falls into the Shannon a little above Limerick. West of these groups, and occupying the central district of Clare, there is a comparatively level country stretching north and south, the waters of which, collected from Lough Inchiquin, Tedahe, Inishcrone, and others, flow down by the large, the Limerick, Ballinasloe, and the small, the River Cloney, about the centre of the county and form the Fergus, a fine navigable river, which, augmented by the Clareen at Ennis, the county town, flows due south by Clare, and, after forming numerous and excellent anchorages, unites with the Shannon about eight miles west of Bunratty. The junction of these rivers forms a very noble expanse of water. The remainder of the county, from Lough Bunage to Clanderaugh in the south-east, and from the high lands, the waters from which flow chiefly into the Atlantic by the Dunbeg and Ennisistrymont rivers. Of these heights the principal is Callan mountain, rising westward from the Milltown, a small but flourishing coast town situated about midway on the western line of sea coast. Clare has a much greater extent of coast line than any other county in Ireland. From Scarriff, on the Shannon, to Carraroe, on Galway bay, the whole length of coast line is 230 English miles, of which about 140 lie along the Shannon, and 80 on the coast of the Atlantic. This coast, from Black Head on the north to Loop Head on the south, a direct line of nearly 60 English miles, has only two harbours, and is capable of ships of more than 50 to 100 tons. With the exception of the small bays or fishing stations of Kilkee, Dunbeg, Milltown and Lisconnor, the whole coast is iron-bound. The Reverend James Kenny, in his statistical account of the union of Kilnamona, Clonlara, and Kilkeel, says that the merest wisp of a signal torch with which Moher is erected was found by measurement to be 909 feet high, and that the rock somewhat to the eastward proved upon the same measurement to be 1009 feet high. The cliffs average 100 feet in height, and in some places, as at Ballcan, and Moher, present a face of rock of 300, and even, it is said, of 1000 feet, against which, during a gale, the waves of the Atlantic beat with astonishing fury. Numerous islands and detached stacks of rock mark the devastating effects of those storms, and give discerning navigators frequent warning of the dangers from the manuscript.

During a storm from the Atlantic the waves have been driven from the bay to the top of the cliff at Kilkee, a height of more than 100 feet, and, rushing down the green fields which back the precipice, have fallen into the little river at the inland foot of the hill. (Two Months at Kilkee, etc., Dublin, 1836.)

Where there is a beach, as at Moore Bay and Dunbeg, the swell causes a constant surf. As boats built in the usual manner could not live in such a sea, the people of the district employed a sort of form, i.e., a canvass spread on a wicker frame, called a corragh, similar to the rude vessel used by the ancient Britons. In these they frequently go 50 or 100 miles out to sea, and venture with little risk and aboard that can be considered as a piece of cloth, spread with hot pitch, to carry on from the outside. From the dangerous character of the coast, there is no way of obtaining a ball near the rocks and about the sea, and at all seasons, the sea cannot be counted secure. ‘I will here observe,’ says Captain Mudge, in his report (1831-2), ‘that this part of the Shannon is exposed to the whole ocean swell; the sea, which sets in such a continuance of southerly or westerly winds, battles all description, especially when accompanied by the “rollers.”’

There is a periodical visitation of such times the swell will break in 12 and 13 fathoms water, or wherever there may happen to be any foul ground. Eastern trade, where the entrance is ten English miles in width, begins to contract; but after sweeping in a comparatively narrow and very deep channel round the peninsula of Clonareagh, between which and the shore of Limerick lies a spacious bay, from three to five miles in width, the channel is at its entrance ten miles farther inland. The entrance of the Fergus lies between Inismurray island on the west, and Rinasna point on the east. The estuary is here five miles wide. Towards the head there are three small islands, and two larger ones, which are eight considerable ones covering about four square miles. These islands are surrounded with weed and sandbanks, and the ship channel to a breadth of about three-quarters of a mile. The channel is safe for killing sixteen feet of water: and on the mud banks at either side a ship may at all times go with safety. The tide here seldom runs more than 24 miles per hour. In this channel there are good anchorages in from three to six fathoms water. The existing dangers and drawbacks are so trifling that a very small expenditure of money would render the Fergus, from its junction with the Shannon to the bridge of Clare, one of the safest and best navigations in Ireland. From this point the route is by the Old and New Lough Fergus, and from Clare to Ennis the Upper Fergus. The Upper is a deep and quiet piece of water, more like a large canal than a river. It is separated from the Lower Fergus by a ridge of rock on which the buttments of the bridge of Clare are erected. The signal tower above the signal tower. The river constantly full and navigable to Ennis, the county town, three miles distant. The least water in any part of the Upper Fergus during summer is 13 to 14 feet, and generally 19 to 25, and the average width of the river 150 feet. By connecting the navigations of these two natural canals, Ennis would be brought into an easy and cheap communication with Limerick, and the immense expense hitherto incurred by the farmers of Clare in transporting their produce to Limerick would be entirely avoided. This reduction is affirmed that an outlay of 400l. 50l. would give the merchants of Ennis the means of avoiding 12s. 6d. per ton carriage on grain which they now export from Limerick. So great was the importance of land carriage in this district, in 1836, that coal, burnt in Limerick at 22s. per ton, cost in Ennis 35s., while all the iron brought from this town, a large county, incurred the enormous charge of 6d. per hundred for carriage alone.

As such a sum was a great imposition, a few attempts have been taken up with great spirit by many of the influential resident gentry, and a final report is now in course of being made on this branch as well as on all the other improvements in the navigation of the Shannon by commissioiners appointed by Government. Ennis point is the Ouganne, up which the tide flows to Six-mile Bridge, but the vicinity of Limerick renders its navigable capabilities of little importance. One suburb of Limerick lies in the county of Clare, as well as the lines of canal by which the navigation of the Shannon is continued from that city to Killaloe. The whole of the shore of Loch Derg from Killaloe to Scarriff might be rendered available for stations of commerce, but the present trade on the Shannon, although it is not yet sufficiently extensive to bring these capabilities into use. It has been proposed to cut a canal from Scarriff by Loch Grane by the valley of the Seven Baulgs mountains and the flat country beyond to the bay of Galway; and also from Poolanisherry, bay near Kilrush, the flat tract of bog that extends northward to Dunbeg on the Atlantic, so as to give access to the Shannon to vessels navigating that country, without doubling the dangerous promontory of Loop Head; but no attempt has yet been made to carry either scheme into effect.

The roads of this county are perhaps worse than in any other county of Ireland, which is chiefly attributable to the deep sand in which it is situated. Roads and bridges were formerly applied. The evils of this system are now removed by the appointment of a county surveyor, who superintends the application of the public money, and without whose sanction no pre-entiment can be levied. Considerable sums have latterly been advanced by the Commissary.
The rest of cor래스es varies from 3 to 7½ guineas per Irish acre. Another
principal single crop is oats, which is produced on land fit for pasture,
and is often used as feed for the dairy cattle. A smaller amount of
barley is grown, but only in the coastal areas where the climate is
more favorable. The agricultural land is well drained, and the
farmers use plows made of iron or steel. The amount of
hay and straw produced is considerable, and is used both for
feeding the animals and for fuel. The farmers also grow
vegetables in their gardens, and the most common are
potatoes, onions, and carrots. Tobacco and hemp are
also grown in small quantities.

The county has a good
system of roads and
bridges, and the
transportation of goods
is facilitated by the
railways and canals. The
principal canals are the
Grand Western Canal, the
Grand Western Canal, and
the Limerick Canal. The
railways connect the
county with the rest of
Ireland and England.

There is a good
network of schools in
the county, and
the education system
is well developed,
with both primary and
secondary schools
available. The
schooling is free for
all children, and
the government
provides funding
for the education of the poor.

The

county

has

a

rich

heritage,

and

there

are

several

historic

sites

and

monuments,

including

the

Bunratty

Castle

and

the

Bunratty

Fen.

The

county

is

also

known

for

its

countryside,

and

there

are

many

opportunities

for

hiking,

walking,

and

cycling.

The

local

economy

is

based

on

agriculture,

manufacturing,

and

tourism.

The

agricultural

sector

is

the

largest

employer,

and

the

county

has

a

good

supply

of

farm

labour.

The

manufacturing

sector

is

small,

but

some

industries

are

located

in

the

county,

such

as

textiles,

food

processing,

and

chemicals.

Tourism

is

a

growing

sector,

and

there

are

many

attractions

for

visitors.

Governance

is

done

through

the

local

authority,

and

the

county

is

divided

into

several

administrative

units,

such

as

towns

and

parishes.

The

local

authority

is

responsible

for

providing

services

such

as

education,

health,

and

waste

management.

There

is

a

good

network

of

local

roads,

and

the

county

is

well

served

by

public

transport,

such

as

buses

and

trains.

Public

services

are

provided

by

the

local

authority,

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is

a

good

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infrastructure.

The

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authority,
whether the wood be sound, marks the spot with a spade, and proceeds to raise the timber at his leisure. Fir, oak, and yew, are the chief sorts of bog-wood found.

Agriculture, although rapidly improving, is still in a backward state. Green crops and artificial grasses have been only lately introduced to any considerable extent. The breed of sheep remains in many districts unimproved, from a prejudice against the mutton of the finer-haired kinds. The quality of the wool is inferior. The custom of fattening choice heifers for slaughtering has prevented the attention that ought to have been paid to providing superior breeders. The improved breed is however extensively kept, and meets with some demand, and the old Irish kind is now unusual. Bulls have been imported by many of the resident gentry from Leicester, Warwickshire, and other grazing districts in England; and the black cattle now sent to market from their prime grazing-lands are of a very improving breed. In the grazing districts along the western coast it is usual to stall the cattle during the greater part of the winter months, as the pasture is completely withered by the violence of the sea-storms that beat on these exposed uplands; but this expedient is very different from any regular system of stall-feeding. The bad state of the roads still renders the employment of asses and panniers not unusual, and in general the small farmers' horses are badly fed and worse appointed.

The year is an excellent opening for the establishment of fisheries along the whole of the coast from Kilrush to the bay of Galway. Salmon are taken in great quantities at the mouth of the Sluragh or Dunbeg river. The banks of Baltray afford excellent turbot, cod, haddock, ling, dory, mackerel, whiting, and pollock, in great abundance. In the mouth of the Shannon is a regular station for the herring fishery. The oyster-beds of Burren are celebrated in the Dublin market. Crabs, lobsters, and shrimps are caught in all the creeks; and the cliffs along the whole western coast abound with samphire, dilisk, slone, and Carrigreen moss. Vast quantities of sea-weed, which forms the best manure for the slaty soil adjacent, are thrown up by every tide on the different beaches and creeks.

There are no manufactures, except of home-made frieze for the use of the penansary; and the commerce consists chiefly in the export of provisions. Grain and pigs are the articles usually shipped from Carrigaholt, Kilrush, and Clare, which are the only exporting towns in the county.

The exports of the county at large, in the year 1831, as estimated by Captain Mudge, are as follows:—

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wheat</td>
<td>24,000 barrels, or 3,000 tons.</td>
</tr>
<tr>
<td>Oats</td>
<td>96,000</td>
</tr>
<tr>
<td>Barley</td>
<td>10,000</td>
</tr>
<tr>
<td>Hens</td>
<td>50,000</td>
</tr>
<tr>
<td>Butter, bacon, and cattle, not known.</td>
<td></td>
</tr>
</tbody>
</table>

Large quantities of grain are sent over land to Limerick; pigs also are driven over land in great numbers.

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The civil history of the county of Clare abounds with interest, but we can only glance at the chief events. Originally it formed part of Connaught, but in the year 298, Lugad or Lewy, surnamed Mannan, one of the Dal-Cassian successors to the monarchy of Leath Mogh, finally settled the land of his kingdom to the limits fixed between Owen More and Conn, about the close of the second century, and thus included it in Munster. The territory corresponding with the present county of Clare, together with the original patria of the tribe of Cas, east of the Shannon, was then called Tusaidh Muin or Thomond, that is, North Munster, a name which afterwards distinguished it from Jar Muin, or Ormond, and Des Muin or Desmond, two other divisions of Munster to the east and south. This ancient Thomond extended over the present counties of Clare, Tipperary, and Limerick nearly, and was ever after accounted the especial patria of the tribe of Cas, who are distinguished in Irish history as the descendants of the descend-
visted into modern Thomond on the west, and Ormond on the east; and of this latter portion his younger brother Brian, surnamed 'of the Mountain,' was king at the accession of Donnell the Great. Donnell, all in hisdownloads, put out his brother's eyes, and had himself proclaimed king of all North Munster. He married the daughter of Dermot Mac Murrough, king of Leinster, the inviter of the adventurers under Strongbow; and being also at war with Rode
town, he was too weak to form a power that could readily avail itself of the proffered assistance of Robert Fitz-Stephen, when sent as an ally by his father-in-law Dermot. By this means the English gained their first footing in Munster. At this time, to make an effective assistance against his great enemy, Donnell did homage to Henry the Second soon after his landing at Waterford, upon which an English garrison was planted in Limerick; but the year after, repenting of his allegiance on some provocation received, he went into Connaught, sailed the castle of Kilkenny, which he destroyed, and de
teated the English of that part of the country in several engagements.

In the year 1543 Morogh O'Brien, after a fruitless attempt at raising a general rebellion with O'Neill, O'Donnell, and O'Conor, came in and made his allegiance to King Henry the Eighth, renouncing the name of O'Brien, and taking the title of Earl of Thomond, with the style of Baron of Clare, Connaught, and Kerry. But as he surrendered all his possessions to the king, and received them back by an English tenure, as also did O'Neill and Mac William Burke, who were at the same time, and on similar terms, count of Tyrone and baron of Macnamara. By the same act this was supposed by many to agree to the future Irish language, to bring up his people in the practice of husbandry and tillage, and to pay none but legal rents, &c. From him descended in a direct line the family of Inishfallen, of whom different branches in the subsequent wars, particularly Murrough, the first earl and fifth baron Inchiquin, a celebrated parliamentary and royalist general in the wars from 1641 to the Restoration. See after this, the earl of Thomond so well known in the shire of Cork. An act for the division of Connaught into counties having passed (11 Eliz, c. 9), Sir Henry Sidney (others say Thomas earl of Sussex) plotted out six counties beyond the Shannon, of which Clare was one. Its first division was into eight baronies, and some of the names and boundaries from the present. They were laid down in accordance with the possessions of the then principal families, namely, the Macnamaras and O'Gradys on the west, the O'Heareys and O'Dwyers on the east, the Mac Mahons and O'Deas on the west and south, and the O'Brien's of the earl's immediate connection in the central baronies. One hundred and seventy-two castles are enum-
nerated in this early survey, of which twenty belonged to diocesan houses and the rest chiefly to O'Rourkes and the barony of Burren or Gragans alone. Upon the petition of the second earl of Thomond, 1601, the county of Clare was again made part of the province of Munster, also claimed by the English, and continued in the same circu
titles until the latter year of the last century. The ad
dhesion of Lord Inchiquin, the most influential person in Clare, to the British interest during the wars from 1641 to the Restoration, prevented this part of the country from being the scene of any military importance. Such as did occur were in connexion with the history of Limerick. Pursuant to an ordinance made for the sa-
fification of adventurers and soldiers, by the English parliament, 1651, a distribution of the land of all Connaught, including this county, called the mile-line, from its being in breadth nowhere less than four miles from the sea, beyond which in the interior the dis
possession Irish were to be located, and in which, as a large portion of the bounded Irish and the sea, the advent
turers and others were to have their portions. This plan of wholesale transplantation was never fully carried into effect. The property of the county cannot be looked on at all self-sustaining. Even the disposal of the new forfeitures, amounting to 72,246 profitable acres, Irish measure, valued at 12,060l. 17s. per annum, introduced a new and permanent proprietary. This great tract of country was principally the estate of the

battle of Aughrim. He was grandson of Sir Daniel O'Brien, who had forfeited the same estates in 1641, and had afterwards been restored and created baron of Mogarta and Viscount Clare by Charles the Second in 1662. The other principal baron in the county is the late Duke of Devonshire, Mac Namara, Donogh and Tige O'Brien, and Redmond Ma
grath. The rebellion of 1798 scarcely extended to this county. During the present century Clare was for a time very disordered, but the country is now happily at peace. The Clare election of 1825, in which a Roman Catho
lc was returned to the imperial parliament previous to the removal of the disabilities affecting that part of the population, will form an important epoch in Irish history.

Antiquities.—There are round towers at Scattery Island, off Kilrush (120 feet high), a known landmark in the navi
gation of the Shannon, at Drumcliff in the barony of onich, at Dyne by, and formerly at Kilnaboy in the barony of Inchiquin, and at Innis Callaire, an island in the creek of Scariff, on Lough Derg. The abbey of Ennis, which the famous Tenlogh O'Brien enriched in 1306 with bells, crosses, rich embroidery, and painted glass windows (Annals of Innisfallen and Catherinburg Porey-
debach), is still standing. The abbey of Quin, in the barony of Bunratty, about five miles east of Ennis, is a noble pile of black marble, for the building of which, in the thirteenth century, the ancient Macnamaras, the mac namaries, the shane or sheen, they have been created a prince by the pope. Bishop Pococke describes it as 'the finest and most entire monastery in Ireland.' The ruins on the islands of Innsie Scattery and Quin's Callaire are also of great interest to the antiquary. Cromleches are numerous, and the tombs of this famous Macnamara, Callian, with its Ogham inscription, is still the subject of inquiry and dispute. There are still standing 118 castles, and raths in all directions. The original documents by which different parts of Clare were granted to the English, the English law are extant, particularly the rentals of Macnamara and O'Brien. Numerous Irish MSS. relating to this county are in existence, still untranslated. There is no portion of this county having affixed materials for Clare county history; yet the only work hitherto published on the subject is the meagre 'Statistical Survey,' by the agent of the Royal Dublin Society.

The character of the people is like that of the Irish peasantry in other counties, with this unfortunate distinction that almost all the authorities concur in representing the peasantry of Clare as addicted to giving untrue testimony in courts of justice.

Educations.—The dioceses in which this county is com-
bprehended stand only 24th and 25th among the 32 dioceses of Ireland. The number of schools in 1820 was 215; in 1821 there were 8159 males and 3794 females under instruction. As the returns of the Commissioners of Public Instruction for 1834 have been published, reference to the earlier re-
sions, see KILLFENORA AND KILLALOE, within which dioceses Clare is comprehended.

The county expenses are levied by grand jury assess-
ments. The annual accounts for the year 1827, on a return of twenty years to 1829, about 28,000l. The mode of apport-
ment is liable to many objections, which the Ordnance Survey now in progress is expected to remove. A map of the county, on a scale of one inch and a fourth to an Irish mile, was executed in 1787 by Mr. Henry Pelham: it is not accurate.

(Statistical Survey of the County of Clare; Parochial Survey of Ireland; Beautifull's Memoir of a Map of Ire
dl and coasts; Cox's History of Ireland; references to Lieut.-

ware, Innsie's Ireland in 1834; Reports of the Record Comis-
sion for Ireland; Parliamentary Reports and Papers; MSS. in British Museum and in Library of Royal Irish
class; Original Communications.)

CLARE IRE. For 1624, the number of families, by two and a half in breadth, lies off the coast of the county of Mayo in Ireland. It is situated about midway between Achill island on the north, and barony of Morisk on the south, and in the middle of the estuary of the River Eelel, which is part of the estuary of the Atlantic. The island rises to the height of 2400 feet towards the west, where its shores are very precipi
tious. It is included in the parish of Kilgeever and barony of Morisk, and in 1821 contained 257 houses and 1935

inhabitants, 1615. In 1834 there were on the island two schools in connexion with the Board of National Education,
eductioning from 80 to 120 young persons. This island has been described as to a height of four inches to the mule, by Mr. Bald. The model is in the possession of the Royal Dublin Society. (Reports &c., Bald's Map of Mayo.)

CLARE, ST. NUNS OF THE ORDER OF, otherwise called Poor Clares. The Nuns of the Order of St. Clare were instituted by that person at Assisi, in Italy, according to Nowicki, about A. D. 1212. This Order was confirmed by Pope Innocent III, and, after him, by Pope Honorius III, A. D. 1221, and was afterwards divided into a stricter and a looser sort. (Newe. Report Ecclesiast., vol. i. p. 562.) 'St. Clare,' says Tannier, 'was born in the same town and lived at the same time with St. Francis, and her nuns observing St. Francis's rule, and wearing the same clothing. The Franciscan nuns were often called Minories, and their house without Aldgate (London), the Minories.' They were probably called Poor Clares from their scanty endowments. They were brought into England by Blanch, queen of Navarre, who was wife to Edmund earl of Lancaster, Leicester, and Derby, under a licence from King Edward I, A. D. 1253, and were seated in the house already mentioned, without Aldgate. Besides this, there were only three other houses of this order in England, viz., Waterbeach, and Denny in Cambridgeshire, and Brusyard in Suffolk. The total of the clear revenues of this order in England, at the suppression of religious houses, amounted to no more than 545l. 10s. 6d. (Monasticon Anglicanum, vol. vi. p. 1584; Hasted, Not. Nat. Hist. Berks, Pref. p. 12—50; Dr. Fly's Account of the Abbey called the Minories, Archæolog. vol. xv. p. 92—113.)

CLARENCUS, the name of one of the provincial kings-at-arms in the Heralds' College. It is uncertain when this office was first created. Anson and Edmondson think it probable that it was by Edward III, but Noble thinks it was by Henry V, who, preferring the herald of his brother Thomas, Duke of Clarence, constable of the army, created him a king-at-arms, by the title of Clarencus, and placed him south of the part of England under his care. William Horse-holow was so created by Henry V, and Roger Lygh by Henry VI. Afterwards it sunk into the office of a herald only, but was again revived in the reign of Edward IV. In favour of William Hawkeslow, who had however the west of England only allotted to him as a province. Sir Thomas Holme, knight, who succeeded to the office in 1476, appears to have had first the west, and then the south of England, as the district in which he was to give armorial bearings.

The Arms of Clarencus are, Argent, St. George's Cross upon a chief gules a lion of England crowned with an open crown. The Badge is the same, an escucho, crowned with a crown of a king of arms, upon a green ground on one side, and on the other, the royal crown upon a white ground, pendent to a gold chain, or simple ribbon. (Noble's History of the College of Arms, &c., London, 1804, p. 61 et seq.)

CLARENDO LORD. [Hyde.]

CLARENDO, THE CONSTITUTIONS OF, were certain declaratory ordinances agreed to at a general council of the nobility and prelates assembled by Henry II. at his palace or manor of Clarendon, in Wiltshire, in the year 1164. These ordinances were sixteen in number, and were intended to define the limits between civil and ecclesiastical jurisdiction, to prevent the further encroachments of the clergy, and to abolish the abuses which had arisen from the grasping and increased usurpations of the pope. (Howell's State Trials, vol. iii. p. 546.)

CLARET, a name used in England to denote the red wine of Medoc, or, more correctly, a mixture of that wine and some other description, generally either the wine of Benecarlo, in Spain, or some full-bodied wine, the growth of the southern departments of France, in order to suit the taste of English consumers. The word claret, from which the name is derived, is used in France to signify those wines which are rose-coloured, and the name, as understood by us, is not known in that country.

CLARIFICATION, the process of rendering a fluid clear by separating the substances which, being suspended in it, render it turbid. A distinction has been made between true clarification, that is, the separation of the corpuscles which form a mere mechanical operation, while clarification is dependent upon chemical action. In most cases however clarification hardly sustains this character. In clarifying, or, as it is termed, fining, beer, a solution of isinglass or gelatin in stale beer is employed, which carries down the matters that render the beer turbid. Bullock's blood is used as a clarifier, but more formerly than at present: when mixed with syrup, as the solution of sugar is called, it is coagulated, and carries the impurities along with it; and when they adhere to the surface of the fluid they are skimmed off together. While these and other powerful substances as clarifiers or gelatine or clay will in some cases mechanically carry down the impurities of liquors, and render them clear.

CLARINET, a musical instrument made of wood, similar in shape to the oboe but of rather larger dimensions, and having a fixed mouth-piece containing a reed, which forms the upper joint of the instrument. It was invented at the commencement of the last century by Denner of Nuremberg, though it has not been in general use more than a quarter of a century. The clarinet gives out all the diatonic-chromatic scale, but the same instrument cannot be used in all the modes, or keys; hence in the orchestra three instruments are employed, of different dimensions, namely, a, a ', and an a clarinet: that of a is preferred by performers, because more mellow in tone, and more manageable as regards fingering. The compass of the clarinet is from x, the third space in the base, to c in altissimo.

But in the orchestra it is seldom required to go higher than c in alt.

The sounds between the lowest note (x) and b, the third treble line, are called Chalumeau notes, or notes resembling an ancient rustic instrument so named, which was formed of reed.

BASE CLARINET. This was invented, in 1828, by Streitwolf, an instrument-maker of Göttingen. It is made of wood, and played on in the same manner as the common clarinet. Its compass is four octaves, and it descends to b below the base staff. In length it is two feet eight inches.

CONTRA-BASE CLARINET. The same ingenious artist subsequently produced a double-base clarinet, which stands in the same relation to wind instruments of wood that the contra-bassoons (double-bassoon) does to string instruments, and promises to become very useful in the orchestra. Its form and manner of fingering differ but little from those of the base clarinet: in size it is not larger than the bassoon, and in compass is four notes lower.

CLARION, a kind of trumpet, very shrill, and not now in use.

CLARKE, DR. SAMUEL, was born in October, 1675. at Norwich, where, at the free school, he was distinguished for his progress in classical studies. He entered, in 1691, at Caius College, Cambridge, and applied with great success to the mathematics, under an able tutor, Mr. afterwards Sir John Ellis. The text-book then used in the university was a rugged system, and an unapproachable treatise of the Cartesian system. Clarke, at the age of 21, after closely studying and justly appreciating the reasonings of Newton's Principia, which had then just appeared, published a more classical version of the text of Rohlau, with numerous critical notes, which, added to the use of replacing the Cartesian system into disrepute by exposing its fallacies. After passing through four editions as the university textbook, it gave place, as Clarke desired, to the adoption of the Ignatian system in the treatment of the question. He now went through a diligent course of biblical reading, in the original languages, in the course of which he carefully studied the early Christian fathers. On his ordination he was introduced to Dr. Moore, bishop of Norwich, by Whiston, whom he became particularly intimate, as domestic chaplain to that bishop for two years. In 1699 he published three essays on Confirmation, Baptism, and Repentance, together with Reflections on Toland's Amyntas, concerning the uncanonical Gospels.
Two years afterwards followed his 'Paraphrase of the Four Gospels,' which induced Bishop Moore to present him with the living of Drayton, near Norwich. In 1794 he was appointed to preach the Boylan lecture at Oxford, when he chose for his subject 'The Being and Attributes of God.' The satisfaction which he gave on this occasion led to his residence at the All Souls' College, Oxford, where he delivered lectures on the evidences of natural and revealed religion. These discourses were arranged and published as a continuous argument, and passed through several editions with successive improvements. Clarke's mode of demonstrating the existence of God by a process of reasoning from an à priori axiom, is precisely that of Spinoza, against whom the argument of Clarke is especially directed. Both take the same point of departure, and agree that, since something does exist, an entity was ever-existing, extended and immaterial, the same and permanent, and the same in time and space, or duration and extent (for each of these pairs of terms is used without distinction), have always existed, the conception of their non-existence being impossible. It is then considered that, as these are only attributes or qualities, they must necessarily imply a co-extensive substance which attributes them are: a necessary and eternal Being is therefore acknowledged by both, but as to the nature of this Being they differ entirely. Spinoza, like Descartes, includes this eternal and necessary substance to be the universe itself, material and mental (re móni), which he declares to be the great and only God in whom we live, and move, and have our being. (Compare the passage of Pope's 'Essay,' 'All are but parts of one body,' etc.) The various quality which in the substance, of which duration and extent are the attributes, is an immortal and spiritual Being: this metaphysical notion is evidently derived from a passage in a scholium of Newton's 'Principia,' to which the friend Whiston, in signing to his personification of eternity and immortality certain moral attributes in accordance with his metaphysical hypothesis, admits that intelligence, in which lies all the difference between the Theism and Atheism, cannot be demonstrated by any reasoning à priori, but must depend for proof on the à posteriori evidence from observation and induction (prop. 8). According to his premises, he cannot, by logical sequence, avoid landing himself on the same ground with Spinoza. 'It must be owned,' says Sir James Mackintosh ('Dissert. Ency. Brit.'), 'that he is compelled to assume what the laws of reasoning required him to prove;' that if, the existence of a Being extraneous to the remainder of the universe was demonstrated on this subject, 'One of the principal was 'An Inquiry into the Ideas of Space, Time,' &c, by Bishop Law. The most subtle scholastics, Albert, Aquinas, and Scotus, rejected the à priori proof as an obvious perversion of princi; and many modern writers regard the performance of Clarke as a failure. Pope, who on several occasions says sarcastic things of Clarke, alludes to it in the following passage of the 'Dunciad,' b. iv, l. 455:—

We nobly take the high priori road,
And reason downward as we doubt of God.

The 'Evidences' met with equal opposition. The foundation of morality, according to Clarke, consists in the immutable relations, determination of things. The last expression being of frequent occurrence in this discourse acquired a fashionable usage in the ethical vocabulary of the day. Regarding of moral sentiment, so fully developed since by Shaftesbury, Hutcheson, and Addison, and contained in the MS. of which this paper is a fragment, the criterion of moral rectitude is in the conformity to, or deviation from, the natural and eternal fitness of things: in other words, that an immoral act is an irrational act, that is, an act in violation of the actual state of things, which renders moral philosophy to mathematical certainty was characteristic of that age, and led to the formation of theories remarkable more for their ingenuity than utility. Dr. Price is an apostate for the moral theory of Clarke, and among its opponents we may instance Sir James Mackintosh ('Dissert. Ency. Brit.').

In 1796 Clarke obtained, through the influence of the rector of St. Bennett's in London. He published in the same year an answer to the treatise of Dr. Dodwell 'On the Soul,' in which that divine contends that it is not immaterial, and therefore not susceptible of re-joinders followed on each side. (See Kippis, Biog. Brit. [Coll. ANTHONY].) Clarke at this time published a Latin translation of the treatise 'On Optics,' by his friend Sir Isaac Newton, who in acknowledgment presented him with 300l. for this valuable undertaking. Clarke procured for him the rectorship of St. James's, and a chapelanship to Queen Anne, which induced him to take his degree of D.D.; and it is said that no such logical or spiritual student was ever sent to the Schools of Cambridge as that which occurred on this occasion between the two professors, James, who, in concluding, exclaimed, 'Professò me probo exercitus!' The theses sustained by Clarke were, 'that no spiritual article of Christianity is contrary to reason,' and that 'free agency is indispensably essential to moral and religious conduct.' In 1712 he published his edition of Caesar's 'Commentaries,' in folio, with notes, and some fine engravings. The same year appeared his treatise 'Of the Three Divines,' a work which involved him for the remainder of his days in controversy, in which his principal adversary was Dr. Waterland. The Lower House of Convocation, in 1714, complained to the bishops of the heterodox and dangerous tendency of its doctrines, and was prevented from its publication by the authorities. It is said that he was sorry for his offence, and hoped that his future conduct would occasion no further cause of complaint; an act for which he was sternly reproached by his more courageous contemporaries. His proceeding is given in the 'Apology for Dr. Clarke,' 1714. His favourite subject was the doctrine of philosophical liberty and necessity; on which he began, in 1715, to carry on an amicable controversy with Leibniz. The papers written on this subject were all printed, in 1717, in English and French, and dedicated to Queen Caroline, who is said to have carefully examined each MS. previous to publication. In adverting the doctrine of free will, Dr. Clarke had constantly in view the subversion of the writings of Spinoza, which contain, says Dr. Reid, in his 'Essays,' the 'greatest and most tenable system of necessity.' The death of Leibniz left the controversy undecided, and Clarke soon afterwards resumed his argument in reply to the 'Philosophical Inquiry concerning Liberty,' by the friend of Locke, Anthony Collins. Dugald Stewart, having himself adopted the antiquarian doctrine, insists upon Clarke's having gained a great victory over Leibniz and Collins, and that his argument is the most important and powerful of all his metaphysical writings; but many competent judges are of a different opinion.

In 1718 he occasioned a scandalous controversy about the primitive doxologies. Dr. Robinson, bishop of London, put this question before a pastoral letter of his, to which the clergy from adopting the Arian modifications of Dr. Clarke charging them, as they hoped to obtain God's mercy, to hold them in great abhorrence, as emanating from a strong de fusion of pride and self-conceit. Several pamphlets by Latton and others appeared on this occasion. In 1724 Clarke obtained the mastership of Wigston Hospital, and published a volume of seventeen sermons. On the death of Newton he declined the offer of the mastership of the Mint. At this time he published 'The Philosophical Transactions of the Royal Society of London,' a paper on the velocity and force of bodies in motion. In 1729 appeared his edition of Homer, with Latin version and notes, which is still used in schools. The last nine books were not prepared by Clarke. He resigned the mastership of the Mint, or was retired, on the advice of statesmen of his friend and biographer Bishop Hoadley. The moral character of Clarke is admired by all his biographers: his temper was remarkably mild, and his manners modest and unassuming. As a writer he was unaffected; very accurate, but monotonous, tame, and jejune. Voltaire, not without propriety, calls him a modell d raisonement. He was a wary and very skillful disputant, well disciplined in the scholastic logic. Inferior to
Locke in comprehensiveness and originality, he was greatly superior to him in acquisitions, being eminent as a divine, metaphysician, and philologist. Having in his "Difficulties and Discouragements in Studying the Scriptures," says that Clarke possessed every possible good quality.

(Kippis's Biog. Brit.; Life by Bishop Hoadley: Historical Memoirs by Whiston; Dissertations by D. Stewart and Mackintosh, in Ency. Brit.)

CLARKE, EDWARD DANIEL, LL.D., &c., was descended from a literary family, and born at Willingham, in Huntingdonshire, England, in 1739. In 1757 he entered the grammar-school of Turnbridge, at that time under the direction of Dr. Vicesimus Knox. At this early age he showed a fondness for experimental philosophy and physics, but was otherwise an indolent student. In 1768 he went to Oxford, where, as a member of a poor clergyman, he was for some time in very straitened circumstances. Having taken his degree he was engaged by the duke of Dorset, in 1796, as tutor to his nephew, Mr. H. Tufton, with whom, in the course of the following year, he made the tour of Great Britain. Clarke had always been fond of books of travel, and this journey confirmed his passion, and led to his first essay in travel-writing. He published his journal, but without his name, and was pleased with it. The edition, which was in 2 vols., 8vo, with plates in aquatint, is now extremely scarce. In 1791 he made a trip to Calais, and seems to have been delighted beyond measure at putting his feet on French soil. The following year he engaged as a travelling companion to Lord Berwick, with whom he went through France, Switzerland, and Italy. He returned to England at the end of 1793. In the course of the following year he went again to Italy by the Rhine and the Tyrol, and returning again to England he was chosen fellow-lect of his college, a barren honour without any emolument. For want of a better occupation, he for some time thought seriously of joining the Shropshire militia, in which he was offered a lieutenant; but in September, 1794, he became tutor in a distinguished Welsh family (that of Sir Thomas Mostyn), with whom he resided some time in Wales, where he made the improved acquaintance of Mr. Pennant. He was afterwards connected in the same manner with the family of Lord Uxbridge, with a member of which he made the tour of Scotland and the Western Isles in 1797. In all these excursions he kept journals, and practised himself in the art of observing scenes and objects, and describing them. About this time he was elected fellow of his college, and being, in addition, appointed bursar, he took up his residence at Cambridge at Easter, 1798. In the spring of the following year he set out with Mr. Cripps, a young man of fortune, on a tour to the Mediterranean. On the arrival of the English party, which was at first intended to occupy only six months, was continued through more than three years and a half, during which master and pupil travelled Denmark, Norway, Sweden, Russia, Prussia, Russia, Turkey, Greece, Asia Minor, Syria, Palestine, part of Egypt, Greece, Turkey in Europe, and finally returned from Constantinople, across the Balkan mountains, through Germany, France, &c., to England. In consequence of their donation to the University of Cambridge, and other merits, Clarke received the degree of LL.D., and Cripps that of M.A. Among their valuable donations was a fragment of a colossal statue of the Euxinean Ceres, of the best period of Grecian art, and was very estimable for its condition of the ancient sarcophagus, generally but incorrectly called that of Alexander the Great, now in the British Museum. He made considerable collections of medals, minerals, and rarities, and of the latter he studied from Prof. John Stield in the Crimea. The valuable collection of MSS. which he had made during his travels, he sold to the Bodleian Library, Oxford. In 1807 he began, at Cambridge, a collection on mineralogy, which had become his favourite subject; and at the end of the following year the University established a regular professorship of mineralogy in his favour. Having been ordained in 1805, he received the college living of Harlton, and about four years later he obtained the living of Rusham from Sir William Rush, whose daughter he had married in 1806. From the time his life was almost entirely passed at Cambridge or in its immediate neighbourhood. In 1810 he published the first volume of his Travels; the second volume appeared in 1812, the turn in 1814, the fourth in 1816, and the fifth in 1819. A concluding volume, edited by Robert Southey, was brought out after his death, making the sixth volume, 4to. His Travels, by which he is chiefly known, are the most popular of his works, and are written in a style which invariably captivates the reader. Full of enthusiasm and penetrated with a peculiar charm over all that he describes; but unfortunately, his judgment was not sufficiently formed by proper discipline, and neither his observations nor his conclusions can always be relied on. His essays and discourses in physics have frequently appeared in "Annals of Philosophy," which contain his accounts of the blowlamp, cadmium, &c. In 1803 he published 'Testimonies of different authors respecting the colossal Statue of Ceres,' and in 1815 'A Dissertation on the Sarcoagus in the British Museum.'

He died at Pall Mall, London, on the 9th of March, 1822, and was buried in Jesus College Chapel on the 18th of the same month. (Life and Remarks of Ed. Dan. Clarke, by the Rev. William Ooter, M.A., two volumes, octavo, London, 1825.)

CLARKE, ADAM, LL.D., a highly respected minister among the Wesleyan Methodists, not long ago deceased, the author of various works held in very general esteem, and in several points of view a somewhat remarkable character.

He was born in or about the year 1762. His parents resided in the North of Ireland. "They appear to have been a religious family, in whom the young man who was a native of Scotland, was herself deeply impressed with a sense of the value of high devotional sentiment in union with religious knowledge, and she acted accordingly in the influences which she sought to communicate to her son."

Of education, properly scholastic or systematic, he appears to have received little or none. The effect of this misfortune of his early years is perceived in almost all his writings, as well as in his whole character. He has related of his mind: "The want of it gave a character, and that not a favourable one, to the learning which it is admitted by all that he did by his own unwearying exertions afterwards acquire."

As soon as his mind began to develop its peculiarities, it appeared that Dr. Clarke was extremely eager after knowledge, and possessed within himself resources which would enable him to overcome very formidable obstacles. When he was placed with a linen general tone and character of his mind, the method of life which he had been marked out for him. This method of life, which he had selected as his own, was in fact a circumstance which is highly characteristic: that at a very early period of life he took from the Hebrew writers, as his favourite motto, the words, "Through desire a man has given himself seeketh and intermedleth with all wisdom."

Methodism had been introduced into the part of Ireland in which he resided. His father and mother belonged to that society. There was a Mr. Breeden, one of Mr. Wesly's earliest ministers, who was a friend and the religious instructor of the family, to whom at this period of his life he seems to have owed much.

The union of considerable natural powers with no mean attainments, coming into the world the son of a housebreaker, of which he lay, and of the love of study with a mind eminently devotional, pointed out this young man to the Methodist preachers who frequented his father's house as a person who might be useful in the ministry among the people with whom his family had formed their religiousconnexion. One of them was so impressed with the persuasion that this was the course of life pointed out for him, that he communicated the circumstance to the great father and director of Methodism, that Clarke was removed to England, and was admitted into the school which Wesley had founded at Kingswood near Bristol.

He now found himself in circumstances more favourable for the gratification of his desire to acquire varied knowledge. He was not far from 18, when he was removed to Oxford, but his new situation gave him time, which is what a man disposed as he was chiefly wants. Besides what formed the kind of instruction which was imparted to the students in
this school, he undertook to teach himself other things: and it was while he was engaged in Hebrew Grammar and the study of that language, which was the commencement of that course of oriental study in which he was to live much of his life, and made as it is believed, great progress.

The time soon came when he was to leave this school, and enter on the duties of an itinerant or travelling preacher. He was inclined to relate with pride and pleasure that he received his commission to go forth from the mouth of Mr. Wesley himself. There was a peculiar and touching affectionateness in the old man's benediction.

The circuit, as it is called, to which he was appointed was a circuit of the county of the greater part of Wiltshire, and the greater part of Berkshire. Thus, in 1782, he became a Methodist preacher, and so continued to the time of his death. In the first twenty years he resided in various parts of the kingdom, but after was for the most part, in or about London, or at an estate which was purchased for him in Lancashire.

In his ministerial character he was singularly acceptable and useful. His preaching attracted crowds. He advanced in influence and reputation in the body of Christians to whom he belonged: and for many of the latter years of his life he was regarded as one of the chief lights and brightest ornaments of that religious community.

If this had been his only claim to distinction, then little more than the name of Dr. Clarke would not have appeared in this work or in the margin of the pages of the historical dissertation which has been written of him. His death is an event of more importance than has hitherto been given him. We have already intimated that he was eminently desirous of knowledge of every kind and nature, and while leading the laborious life of an itinerant preacher, he was always studious in the way of discursive reading, as well as for much steady application to his philological studies, especially those of Oriental literature. He first gave public evidence of those studies in the year 1802, when he published, in six volumes, his book entitled 'A Bibliographical Dictionary.' This work gave him at once a literary reputation, and it may fairly be said to do him no small honour; not that we mean to represent it as to be placed on a level with the works of De Brey and his school; but it has had its influence, both in the way of original researches like the work of our own Ames and Herbert, but it is a most convenient book for the English student, who found nothing like it in the literature of his own country, and which contains a great body of information well arranged concerning books and authors to which no other easy access was presented. The book had, we believe, an extensive circulation.

A Methodist preacher possessed with a taste for careful researches, of which this book was indicative, was a phenomenon that had not before presented itself. It was regarded, we believe justly, as manifesting that a taste for human learning was beginning to prevail in a class of men whose profession might seem to have been calculated to prohibit such occupations, and of whom at least it might be said that they so exerted other objects and other principles that learning merely human was defeated of its just appreciation. We wish that the biographers of Dr. Clarke had informed us how this work was received by his brethren in the ministry, and especially by his elder brethren. He gained however by it a certain reputation among another class of men, the bibliographical and philological inquirers of his time. He began also about this period his attempts in the way of his acquirements in Biblical knowledge and in Oriental literature. On his coming to reside permanently in London, the Bible Society brought him into connexion with some of the dignitaries of the church. By their means he was able to give him access to several persons of literary pursuits, and at the same time an easy access to books. He was admitted a Fellow of the Society of Antiquaries. The University of St. Andrews, however, had bestowed on him the degree of L.L.D. Some time after he became a member of the Royal Irish Academy.

But the most extraordinary circumstance in his literary history remains to be mentioned. The Board of Commissioners of Schools selected Dr. Clarke as a proper person to superintend the publication of the new edition of Rymer's 'Fœdera,' with the preparation of which they were charged.

This was a great and difficult undertaking; for it was not that mere retyping the work of Rymer, but a large mass of new materials were to be found and to be incorpor-
ac accumulated a good library, including many manuscripts, and had formed a small museum of natural curiosities. From 1823, when he left Lancashire, Dr. Clarke resided at Haydon-Hall, in Middlesex, about seventeen miles from London. He died of cholera on the 26th of August, 1832, the only person in his family who was carried off in that terrific visitation of the nation's visitation.

CLAUDE. Claude Gellée, called Claude Lorrain, was born at Champagne, in Lorraine, in 1600. His parents were very poor, and it is said that he was originally bound apprentice to a tanner. At the age of twenty, being an orphan, he sought a home at the house of his elder brother, who was in business, as a carver of wood, at Friburg. A relation, who was a travelling dealer, observing some indications of a love for the fine arts, persuaded his brother to allow Claude to accompany him on his travels, but he was somewhat unceremoniously deserted by his relative, but received pecuniary assistance from his brother. Seeing some paintings by Godfrey Weals which pleased him, he determined to go to Naples, where that painter then resided, to obtain the benefit of his instruction. At the expiration of two years he returned to Rome, attracted by the fame of Agostino Tassi, upon whom he studied with unwearied diligence. Having acquired some repute, he made the tour of Italy and France, and part of Germany, staying occasionally for some time at different places to replenish his purse, and paying a visit to his native place. He appears to have frequently suffered through various misadventures, but always returned to Rome, during his whole time in Italy.

On his return to Rome he was received with a general welcome, and a wide and increasing demand for his pictures. Commissions came to him from numerous places, and from many illustrious persons of the principal countries of Europe. He died in 1682. Claude is an instance of what may be done by a constant and diligent study of nature, and by unwearied manual practice. It was his custom to spend great part of his time, often whole days, from dawn till night, in watching the changes of the effect on earth and sky. He has left proofs of the painstaking labour with which he studied the details of a picture in finished studies of leaves and flowers of fruit. By these means, although he is said not to have shown any particular quickness in his early progress, he acquired such mastery of hand and eye as produced him fame, wealth, and the rank of the first among landscape-painters. He painted for his study a landscape, composed of many views, taken in the Villa Madama, with an infinite variety of trees, which he kept as a store of natural objects. He refused to sell it, even when Clement IX. offered to cover it with pieces of gold. This picture, which was a gift of Esther and Alasuerus, it is said to have mentioned the English Queen. He used much to make drawings of his pictures in a book, in order to prevent their being pirated. He left six of these registers, which he called his 'Libri di Verita;' one of them, well known by Earlom's engravings, is in the possession of the Duke of Devonshire.

His coloring is rich, powerful, and brilliant; his tints are varied as in nature itself. His sérul in perspective is perfect; the fore-ground stands out with the force and brightness of an Italian sunshine: the distance recedes clear and wide, till the blue hills and blue sky meet in harmonious contrast, or melt into the rich, warm, dewy atmosphere of Rome. His architecture is light and fanciful, and sometimes mingled with magic, which is graceful and moving. The water ripples and undulates in the tumultuous light, or lies calm and glassy, with deepening shadows. His composition is a singular union of freedom and symmetry. If his landscapes have a fault, it is that the graceful is too invariably selected; a trifle of roughness, or irregularity, would add to the interest of the picture. His figures are very poor, which he freely admitted, saying he sold the landscape and gave away the figures gratis, which struck great compliance with his mild and amiable character. He left his property to two nephews and a niece, his only surviving relations.

CLAUDE JEAN, born in 1619, at Sauveterre, near Agen, was the son of a modest clergyman, and was himself brought up to the church. He distinguished himself by his controversial learning, and was appointed professor of theology in the Protestant college of Nismes, which place he filled for eight years. At the end of this time the vexations of the government authorities obliging him to abandon his chair, he went to Paris, where he was seen after appointed to the church of Charenton in 1666. In this situation he showed himself by his writings one of the ablest champions of the Protestant doctrines, an antagonist not unworthy of Bossuet, Arnauld, Nicole, and other distinguished Catholics. In 1669, he published his "Histoire du Pape en Perpétuité de la Bénédiction et de la Sacréité," 2 vols. In 1673 appeared his "Défense de la Réformation, ou Réponse aux Prétendus légitimes de Nicole." In 1681 Claude had a controversial conference with Bossuet after which he published his "Conférence de Bossuet." The conference as usual led to no approximation between the contending parties. In 1685 the Revocation of the Edict de Nantes by Louis XIV. obliged Claude to seek refuge in Holland, where he was well received. On his return to Rome, both in his personal character, and the Prince of Orange granted him a pension. He died not long after in 1687, much regretted by his co-religionists as one of their ablest and most estimable advocates. His "Plaintes des Protestans cruellment opprimés dans le Royaume de France" was published after his death, as well as other posthumous works, chiefly on theological and controversial subjects. He left also some sermons. His style though simple was vigorous, being sustained by his strong mind, and the genius of the age. Devize wrote a biography of Claude, Amsterdam, 1687. His grandson, Jean Jacques Claude, was one of the earliest pastors of the French Protestant church in Threadneedle Street, London, and conducted the rejected tour.

CLAUDE ST., a town in France, in the department of Jura, on the bank of a small stream called the Bienne, which flows into the Ain, a feeder of the Rhone. It is 240 miles S.E. of Paris in a direct line, in 46° 23' N. lat., and 5° 32' E. long. This town owes its origin to the retirement of the Saints Roman and Lupicin (the latter bishop of Versoii, or Besancon) to the deserts of Mount Jura, in the fifth century. The sanctity of these Saints, who were brethren, drew around them a number of kindred and followers. With other establishments arose in the neighbourhood of their retreat. In the eighth century St. Claude, archbishop of Besancon, came to end his days in one of these monasteries, which afterwards took its name from him, and thus the town acquired its present designation. The abbey of St. Claude was of the Benedictine order, and the monks were obliged to make proof of noble descent before they could obtain admission into the establishment. The community possessed immense wealth; it is said by Le Vallee (Voyage dans les Departiments)—no very trustworthy authority, indeed—to have had a revenue of 100,000 écus, or about 12,500l. The monks, before the suppression and sale of the establishment, possessed each had his distinct portion of the revenue. This monastic institution was the last in France which held its vassals in a state of villainage, and whoever was resident a year in their domains became their serf. It was not until the reign of Louis XIV. of France that the feudal powers of the vassals were entirely suppressed. The abbot was lord of the town. In 1742 this abbey was secularized, and erected into a bishopric; the bishop and chapter succeeding to the rights and many of the usages of the abbey and monks. St. Claude is built on the foot of a mountain, one of those amid which it is placed, and at the confluence of the torrent Ison with the Bienne. It is surrounded by walls, which include a part of the adjacent mountain, but cannot be considered as entirely fortified. The population of the town in 1791; but a sum of 750,000 francs (about 30,000l. granted by the consular government, and numerous collections made all over France, enabled the inhabitants to rebuild it on a much more regular plan.

The inhabitants amounted, in 1832, to 4710 for the town, or 5222 for the whole commune. They are busily engaged in the manufacture of toys and trinkets in tortoiseshell, horn, ivory, bone, box and other woods: beads, needles, pins, musical snuff-boxes, etc. There are also five other manufactures which are among the articles made here. The trades of the town have direct commercial intercourse with foreigners. Several have establishments at Beauretre; they import goods from all parts of France, and manufacture for the home market, a large public school, and several other useful institutions.

The inhabitants are hardy and industrious, and much fat, as much marble is quarried in the neighbourhood, and pretty good ochre is procured. Peat for fuel is also obtained. The arrangement of St. Claude contained, in 1832, Digitalized by Google
CLAUDIUS NERO, the son of Drusus Nero, the brother of Tiberius, and of Antonia Minor, the daughter of M. Antonius the Triumvir, by Octavia, the sister of Augustus, was born at Lyon s. c. 10. [Augustus.] In his youth he was sickly, weak, and timid, which made his mother say that he was but the half-finished sketch of a man. Augustus, particularly fond of him, used to call him misellus, little wretch. He was left to the care of Tiberius, and the freedmen of the palace, and little notice was taken of him under Augustus and Tiberius. He lived in privacy, and appears to have applied himself with perseverance to the study of literature. In his old age, he wrote, with the assistance of Sulpicius Flavius, a history of Rome, in 43 books, which is lost. He suggested the addition of three new letters to the Roman alphabet, and when he enforced the measure during his reign, after which they fell into disuse, but still appear in the Tacitus in the old inscriptions (Annal. xi., 14). He also applied himself with much perseverance to the study and practice of oratory, and Tacitus has transmitted to us a favourable specimen in a speech which he delivered before the senate when emperor, in favour of the Gauls, who were asking to be admitted to the rights of Roman citizens. (Annal. xi., 24.)

When Caligula, who was the nephew of Claudius, became emperor, he took his uncle as his colleague in the consulship, a. d. 37. After the expiration of his consulship Caligula again withheld into privacy, from which he was dragged by some mutinous soldiers, who were overrunning the empire, and thought the death of the new emperor desirable; he discovered Claudius concealed behind a tapestry, and trembling from fear. They raised him on their shoulders, and carried him to the camp, where he was proclaimed emperor by the troops, a. d. 41, against the wishes of the senate and many of the citizens, who were for restoring the republic.

This was the first example of that baneful practice, which the soldiers so often repeated, of disposing of the imperial power. Claudius, who was then 50 years of age, began his reign by acts of justice and of mercy; he recalled exiles, restored to the rightful owners much property which had been confiscated under Tiberius and Caligula, rejected the honours and titles which the flattery of courtiers would have bestowed upon him, and, finally, he procured a aqueduct for a fresh supply of water, which still bears his name, constructed a harbour at the mouth of the Tiber, and began the emmision of the lake Fucinus. (Orelli, Corpus Inscriptionum, vol. i., p. 229.)

The death of Stilicho (a. d. 408) was followed by the ruin of his favourite. Hadrian, the successor of Stilicho, had formerly been the subject of a satirical epigram (Epigr. 25, in some editions 30,) of Claudian, and he now began to watch for a favourable opportunity of revenge. The emperor, having come, experienced it well; it was clear that his attempts to conciliate Hadrian were ineffectual, and that he finally fell a victim to his resentment.

It has been a subject of dispute, whether Claudius was or was not beloved by the people. It seems, however, that they have given rise to the supposition that he was, have been attributed to him erroneously; they are clearly the work of another writer.

Claudian's poetical merits, though not of the highest order, are considerable. He does not excel in the chaste and severe beauties of the older poets whom he aspired to imitate, nor is he remarkable for great invention or a lofty imagination; but in what may be called the picturesque style he is surpassed by none. He joins the smallest details of a scene into a sort of a correct form; amplified and ornamented with all the graces of fiction. The most prosaic topic in his hands is invested with the charms of poetry. An elegant and harmonious versification always delights his reader. 'In the decline of arts and of empire, a native of Egypt, who had received the education of a Greek, assumed in a mature age the familiar use and absolute command of the Latin tongue, so abused the heads of his feeble contemporaries, so perverted himself, affords a scene of a sad and a correct form; amplified and ornamented with all the graces of fiction.' (Gibbon, Decline and Fall, chap. 30.)

Claudian's principal poems are, 3 books De Raptu Proserpinae; 3 books De Laudibus Stilichononis; 2 books In Rufina; 2 books De Betho Gildonicus; 2 books De Betho Gildonicus, &c. The best editions are those of Gesner and Burmann. Claudian is included in Weber's Corpus Poetarum Latinorum. Frankfort, 1833.
CLAUDIUS, or CLODIUS, ALBINUS, a native of Aedumetum, in Africa, served with distinction under Marcus Aurelius and Commodus in various parts of the empire; in Asia, in Gaul, in Germany against the Frisians, and lastly in Britain. When Avidius Cassius, governor of Syria, revolted against M. Aurelius, Albinus, who commanded the troops in Britain, checked the revolt which was beginning to spread among his soldiers. In consequence of this service he was raised to the consulate, together with Pompeianus, the emperor's son-in-law, A.D. 176. When Septimius Severus became suspected of aspiring to the empire, Commodus, with the view of strengthening himself, offered to Albinus, who was then commanding in Britain, where he had succeeded Pertinax, the title of Caesar, which Albinus declined. After the assassination of Commodus and of his short-lived successor Pertinax, Didius Julianus being made emperor by the praetorian guards of Rome, who now assumed the right of disposing of the empire to the highest bidder, three commanders of the legions abroad, Albinus in Britain, Severus in Illyricum, and Pescennius Niger in Syria, stood forth to dispute this right; and the corresponding argument of the will of their own soldiers. Severus, who was the nearest to Rome, marched upon the city, upon which the senate proclaimed him emperor, and the praetorians made way for him by assassinating the unfortunate Julianus. Severus while on his march had written to Albinus, proclaiming him Caesar, and adopting him as his successor. This time Albinus accepted the title, which he assumed publicly at the head of his legions; and the senate confirmed it, after the accession of Severus. But the new emperor having first overthrown his competitor Pescennius Niger, resolved to rid himself also of his dubious associate Albinus; who, having discovered his intentions in time, passed over into Gaul, where he was proclaimed emperor, and strengthened himself by fresh recruits. Severus hurried from the east against this new enemy, and after several partial engagements a great battle was fought near Lyon, in February, A.D. 197, in which Severus was worsted at first and wounded, according to Spartanus, but succeeded in rallying his cavalry, with which he gained the victory. The soldiers of Albinus having taken refuge within Lyon, that city was invested, stormed, and burnt, by the troops of Severus. Albinus, according to Dio, killed himself, and his body was carried to Severus, who had the head cut off and taken to Rome, and the body thrown into the Rhone. Severus, with his characteristic inhumanity, put to death the wife and children of Albinus, and ordered a general proscription of all his friends, who were numerous in Gaul and in Spain, and even at Rome. Albinus appears to have been a man of considerable talents and information. He was a distinguished commander, and had many partisans among the senators, but was harsh and even cruel in his military discipline: and is said by Capitoilinus to have been an enormous glutton. (Herodian, Dion, and Suetonius; and Julius Capitolinus in the Historia Augusta.)

CLAUDIUS, MARCUS AURELIUS, surnamed GOTHICUS, was born in Illyricum A.D. 214, served in the army as tribune under Decius, was afterwards governor of his native province under Valerianus, and after the death of Galienus in 268, near Milan, was proclaimed emperor by the army. The choice was immediately approved by the Senate. Claudius began his reign by defeating the usurper Aureolus, who had revolted against Gallienus, and had taken possession of Milan. Aureolus was killed in the battle. Claudius afterwards marched against the Germans, who had entered Italy, and defeated them on the banks of the Benacus (Lake of Garda.) On arriving at Rome, he was received with great honours, and applied himself to reform many of the abuses which existed in the administration of the empire. In the following year he marched against the Goths, or Scythians, who had invaded the provinces of Mœsia, defeated them with great slaughter, and made a vast number of prisoners, whom he distributed over various provinces as labourers. In consequence of this victory, he assumed the name of Gothicus. In the year after A.D. 270 he died at Sirmium, in Pannonia, of a contagious disease which had spread in his army, after a short reign of little more than two years, during which he exhibited virtues and abilities that entitle him to be numbered among the best emperors of Rome. The Senate named his brother Quintillus his successor, but the army was displeased with the choice, and, upon which Quintillus was killed, or killed himself according to others. (Trebellius Pollio in Historia Augusta.)

CLAUSENBERG (Kolos), a county in the west of Transylvania, in that part of it called the 'land of the Magyars,' which is one of the four divisions of the principality. It has an area of 1861 square miles, and contains 100,000 inhabitants, who are chiefly employed in rearing cattle, in agriculture, mining, and a few manufactures, and trade. It has one royal free town, five market-towns, 292 villages, and thirty-five preda, or privileged settlements, and is divided into six 'processes.' The chief rivers are the Stamô and Kolda. It is very mountainous: the most notable points are Varatik, Trugassa, Yladiassa, Balamisarca, and Kalota. It abounds in horses, oxen, sheep, goats, and swine; also in honey and corn, and produces salt, gold, iron, and some wood.

CLAUSENBERG (Kluss, Kolosvár), a royal free town and capital of the principality of Transylvania. The town was founded by the Romans, who gave it the name of Claudia, whence its Latin designation Claudiaopolis. In 1178 the new town was enlarged by a colony of Saxons, who from its locality called it Clausenburg, from the old word Klaus, which signifies a mountain defile. The citadel, which lies on a hill, was not erected till 1721, since which date commodious barracks have been made in it. Owing to its flourishing trade and manufactures it was formerly one of the principal towns of the country. Settlers flocked to it from all parts, till the place becoming too crowded, the new-comers were obliged to take upon their abode in the neighboring villages, which form the greater part of the town. Clausenburg is situated on the river Szamos, in the midst of a romantic valley, surrounded with mountains, and studded with fields, gardens, and vineyards. It is surrounded with lofty walls and towers, and is divided into the inner town and six suburbs: the former consists of the Over (Altburg), or old town, and Ujvar, or new town, and though of small extent has a very pleasing appearance. It has some handsome streets and houses, and a large market-
place, 500 paces long and 560 broad. There are also several churches and monasteries, of which the Roman Catholic cathedral, erected in pursuance of a vow of King Sigismund in 1339; it is 94 paces long and 34 broad, and contains some fine monuments. Of the other churches, five are Roman Catholic, several Protestant, and one Greek Catholic. The Roman Catholic, or Oriental Consession have their distinct places of worship.

Clausenburg contains an academic lyceum, having 185 students, with a public library attached; a Roman Catholic gymnasium, with 276 pupils; a reformed college, with 369 pupils; the house of industry for poor men and women, established by an American lady; an orphan asylum, with 400 inmates; a hospital; and various other institutions. The smoking rooms in the Casino, containing the assembly rooms, the profits of which are devoted to purposes of charity; a large national theatre, and several public gardens around the town, one of which is called the "People's Gardens." Among the other buildings is the old castle, which is now in ruins, the town-hall in the market-place, and numerous palaces belonging to the higher nobility.

Clausenburg is the seat of the government of Transylvania, one of the counties of the Protestant and Greek-Catholic communions, the board of education, and other public departments. Being a Fiskal-gut or Taxal-Ort (that is, a place having its own independent jurisdiction), it is not included in the jurisdiction of the province, but all its civil and other administration is under the jurisdiction of the county magistrates. It contains 20,000 inhabitants, who are chiefly Hungarians, intermixed with Saxons, Armenians, Greeks, and Jews. There are few mechanics, and it has little trade. The chief exports are salt, corn, woolens, earthenware, and paper. It is the birth-place of the celebrated Matthias Corvinus, king of Hungary. 46° 53' N. lat., 23° 48' E. long.

CLAUSLAGIA. [Lumina].

Claustrum St. George, a Hanoverian Landrodtrei, or Baileywick of the Harz, the largest and most important of the mining towns of the Harz, is an open place built upon two naked eminences, and separated from Zellerfeld (a town of 4000 souls) by the rivulet called Zellerbach. It is the seat of administration for the mining districts of Hanover, and lies at an elevation of 1170 feet above the sea, and about 50 miles S.E. of Hanover. The adjacent parts abound in ores. The streets are straight and broad, and planted in lines, one of the best communications which can be discovered in a badly paved street. It contains two churches, an orphan asylum, a mint, in which about 700 ducats and 400,000 dollars are annually coined, and public offices, a mining academy, to which a seminary for teaching forest economy is attached, with a gymnasium, the members of which are judges in the native jurisdiction. It contains factories of iron ware, yarns, woolens, camlets, &c., and several elementary schools. In the immediate vicinity are the richest mines of the Upper Harz: their chief products are annually ore, 25,000 tons; copper and lead, 2400 tons; copper and lead, 2400 tons; iron ore, 28,000 tons; silver, 2000; and copper, 2400 tons of lead and litharge: they employ upwards of 2000 workmen. The number of houses in Claustrum is about 850, and of inhabitants about 8900. 51° 48' N. lat., 110° 20' E. long.

CLAVAGGELIA (Zool.), a genus of testaceous acephalous animals established by Lamarck in the fifth volume of the 'Histoire Naturelle des Animaux sans Vertebres,' published in 1818, and arranged by him under his Tubicolae, under Aspergillum and Pestalona. He described four species of testaceous animals, all of which he called Testi. He also mentioned a fifth species named "Nanaus du Musée," where he had figured the first of them under the name of Pestalona echinata. Lamarck thus defines the genus:-"A tubolar, shelly sheath, attenuated and open at the extremity, terminated posteriorly in an ovate subcompressed club beset with tubular spines; the club presenting on one side the one valve fixed in its wall or substance, while the other valve remains free in the tube."

The genus was only known in a fossil state to conchologists, when Mr. George Sowerby, to whom students in this department of zoology are much indebted, observed in the British Museum a recent specimen, which he at first thought might be an Aspergillum, inclosed in a mass of stone. On application to Mr. Challenger, that gentleman sent to Sowerby to examine it more closely, and on scrutinising some of the investing stone, the latter found Clavaggella lata above alluded to, the soft parts of which were placed in spirit by Mr. Cuming soon after its capture. He found the following to be the relative position of the animal:-The upper valve was joined to the tube, which is consequently the anterior part. The heart and rectum are the side where the valves are con-
nected by the ligament, or the dorsal part. The visual mass projecting towards the opposite or neutral side. The siphon extending into the commencement of the calcareous tube, or that of the anal and branchial chamber. The fixed valve, which covers the rough surface of the porous rock or coral, like the tiling of a chamber, and afford a smooth polished surface for the support and attachment of the animal, is the left valve: the right valve is connected with the soft, uncalcified and cartilaginous, in order to assist in the excavating and respiratory actions.

Skene.—The shelly substance of the fixed valve passes with the formation into that of the tube; a slight ridge circumscribing the entry of the tube into the chamber indicating the line of separation, unless the extent of the valve be limited to that of the internal nacreous deposition. The tube of an oval form, 7 lines by 5 in diameter. The calcareous layer is equably triangular, with the angles rounded off, about the thickness of a sixpence, moderately concave towards the soft parts, and striated only in the direction of the layers of incrustation on the outer surface, as in most of the Polyzoa. Bivalves of the by de Blainville. The layers gradually increase towards the dorsal edge for a little more than one half of the valve, beyond which the layers continue of almost equal thickness. This growth of the valve,' adds Mr. Owen, 'corresponds to the direction in which the chamber is enlarged, which is principally on the dorsal, dextral, and anterior sides: now this is the mode of enlargement best adapted for the full development of the ovary; so that it was necessary to assign to it an adequate time to accomplish its way into the rock without material increase of size, leaving behind it a calcareous tube, which marks its track; after which it becomes stationary, and limits its operations to enlarging its chamber to the extent necessary for the accomplishment of the great object of its existence.'

Mantle, and Muscular System as ancillary principally to Respiration.—Mantle enveloping the body like a shat sac, but perforated for the siphon and foot, the opening for the latter being a small slit. There is a small oval for the purpose of an analogous orifice in the corresponding part in Aspergilium, viz. that which is next the sunken siege-like extremity of the tube, and by which he supposes the water necessary for respiration to be received when the retracting tide leaves exposed the expanded siphonic extremity. Mr. Owen is of opinion that this cannot be its use in those species of Claegella which exist at depths too great to allow of their being ever left with the siphonic aperture out of water; but that it is simply the mouth of a constricted cavity, at the neighbouring cavities of the rock, by means of the calcareous tubules, the formation of which is determined by the proximity of these cavities. When therefore the Claegella is in a state of reaction of its muscular mass has forcibly expelled the branchial currents from the siphon, as was observed by Mr. Stutchbury, the space between the free valve and the walls of the chamber would be simultaneously filled, either by water rushing in through the tubules, or forced out from the branchial cavity through the small anterior orifice of the mantle. To assist this operation there is a developmental power of the muscular system, which is remarkably powerful. The impression of the great or posterior adductor is carried two lines beneath the surface of the chamber posteriorly, but gradually rises to the level of the valve. The impression of the smaller anterior adductor is more faint, and is continued into the sinuous palial impression, which follows the contour of the anterior margin of the valve as about two lines distance from it. In the free valve the last two muscular impressions are separate. The outer dermoid layer of the mantle is extremely thin, and, where it does not line the valve, is molten, and dark spots, less numerous than those on the skin of Cephalopods, and visible under the microscope, a glandular appearance. The muscular layer, after forming the siphon and its retractors, is confined to the anterior part of the mantle, where it swells into a thick column, and is divided into the finger-like, branchless fibres, and forming, Mr. Owen supposes, one of the principal instruments in the work of excavation. No fibres could be detected in other parts of the mantle; nor, observes Mr. Owen, could any be expected in a mantle which had no use to be served. The siphon, in the contracted state, formed a slightly-compressed cylindrical tube, half an inch in length, and the same in the long diameter, traversed longitudinally by the branchial and anal canals, separated from each other by a muscular septum, extending to the anterior extremity of the mantle; the two canals separate externally towards one another, leaving an intermediate space on both sides the body, which exposes part of the gills and labial tentacles. The muscular wall which bounds the anterior part of the body's sides is oval, one inch three lines long, eight lines broad, and varying in thickness from two to three lines: it is smooth and convex externally, and hollowed out within to lodge the visceras at the base of the foot, for the passage of which it leaves the small orifice above mentioned. The marginal attachment of the valves are more or less irregular: that affixed to the free valve is the broadest, being at the ventral extremity three lines in length. Mr. Owen thinks that it may here be regarded as a third adductor: posteriorly it is continued into the small anterior adductor to the mantle.'

Branchial and Circuating System.—The gills have the same nimated structure as that observed in other bivalves. They are broad and short, corresponding to the form of the animal, and the laminae, not thin compressed layers, but columnar, compressed in a fibrous manner, and with the same degree of circular mass, are arranged in three layers instead of two, on either side of the foot. They take their origin between the labial appendages, at the sides of the mouth, extending backwards towards the inner orifice of the respiratory tube, where they meet, join, and terminate in a point which is unattacked for about one-eightheenth part of the entire gill. The branchial veins are continued from the concave side of the gills, a few lines behind their anterior extremities; these veins are separated into two compartments, corresponding to the auricles, which compartments communicate together at the apex of the ventricle, from which the principal artery is continued. (Owen.)

Digestive System, according with the structure of the same in other bivalves of the same class. The mouth, a subterminal, without mastoictic or salivary organs, is bounded by the upper and lower labial processes which are continued in the form of two transversely striated pointed tentacles, by which either side; these prehensile, sensitive, and, according to Mr. Owen, used for gathering the small animal-currents into the two respiratory lines in length, and about one and a half line in breadth. The cephalopagus, after a course of two lines, dilates into a stomach, the sides of which are perforated by the large hepatic ducts. The intestine, after a course of eight lines, forms a small consume about one line in length: this Mr. Owen observes, may be taken for a pancreas: or perhaps is the analogue of the blind sac containing the peculiar amber-coloured style which projects into the pyloric end of the digestive system. This little cecum, in the specimen dissected, contained the same brown granular material as distended the rest of the canal. The intestine, after making three close turns upon itself in the mass of one and a half line, passes, in immediate contact with, but not through, the heart, and then below posterior adductor, to the posterior office of the anal tube. The exterior of the intestine has an irregular honey-combed appearance, from the close addition of the anastomoses in the udder. The liver has the same divided follicular structure and green colour as in the other Bivalves. (Owen.)

Nervous System.—A large and conspicuous ganglion is situated at the posterior part of the base of the foot, just above the orifice of the anal tube. Two tubules, one from this ganglion, on either side the foot to the mouth other branches radiate in the opposite direction to the siphonic and adductor muscles. (Owen.)

Generative System.—The ovary, of a grey colour, forms a mass at the dorsal aspect of the body above the great ad-
ductor muscle, and extending ventrad on either side the \textit{oesophagus} and stomach to the opposite end of the base of the foot. All this mass of intestinal folds, hepatic follicles, and sex was covered by a thin membrane. The little muscular process or foot which passes through the anterior slit of the mantle is but four lines long, and half a line in breadth: its possible use may be to apply a solvent to the rock in which the chamber is excavated. (Owen.)

\textbf{Habits.—} Mr. Broderip observes that we are left to conjecture the causes which operate to determine the animal in the choice of its abode, if indeed it can be called choice, for most probably \textit{Clavagella} is the creature of circumstances, and if, soon after its exclusion from the parent (when Mr. Broderip supposes it to be furnished with its two valves only, and to float free, with, perhaps, some voluntary impulse), it arrives at the vacant hole of some small \textit{Petricola}, \textit{Litobolus}, or other perforating \textit{Tectecea} which suits it, one valve soon becomes attached to the wall of the hole, and then the animal proceeds to secrete the siphonic sheath or tube, to enlarge the chamber according to its necessities, and to form the shell, perforated, tubular plate which is to give admission to the water at the practicable part of the chamber. How the excavation is carried on is also doubtful. The chambers of the individuals of \textit{Clavagella Australis}, described by Mr. Broderip, were formed in a siliceous grist, those of \textit{Clav. elongata} in an \textit{Astronemura}, that of \textit{Clav. lata} in a calcareous grit, and those of \textit{Clav. Medesiana} in an argillo-calcareous tufa. 'If' says the author last mentioned, 'the excavation be the work of a solvent secretion, it must be a solvent of extensive power. The situation of the glands, detected by my friend Mr. Owen, leads me to think that they minister in some way to this operation; and I do not see how the anterior or greater end of the chamber can be operated on by mere mechanical attrition with such parts as must have been contiguous to it. It has been objected that any solvent which would act on a calcareous rock would equally act on the calcareous shell of the animal; but there is, perhaps, more of point than of strength in this objection. Without laying too much stress on that law of nature by which chemical and vital forces are placed in a state of hostility, and which may or may not be applicable to such a substance as shell, the gland, for the secretion of the supposed solvent, as well as the organ for applying it, may be so placed as that the solvent shall only come in contact with the inorganic or dead substance to be acted on without touching the shell. Again, it has been asked, what solvent would act equally on a calcareous and on a siliceous substance? To this it may be answered, first, that it is not pretended that the nature of the supposed solvent is known; secondly, that, in siliceous grists, there is more or less calcareous matter by which the mass is held together, and that the solution of the calcareous particles would be followed by the disintegration of the stone. ***

*One observation, arising from the various depths at which the recent species have been found, will not, perhaps, be deemed irrelevant. \textit{Clav. Australis} was so near the surface at low water, that it was detected by its ejection of the fluid; \textit{Clav. elongata}, from the nature of the coral in which*

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*John Hunter's paper in the 'Philosophical Transactions' for the year 1774, 'On the Dejection of the Stomach after Death,'" and Shaler's '\textit{Skeletomuscle on that organ, will readily occur to the physiologist.}'}
it was chambered, could not have been living far beneath the surface; whereas the part of it which lay a few feet up from the sea, was more than a dozen feet deep. Any inference, therefore, as to the state of submergence of a rock during the life of the fossil species of *Clavaquella* which there occur, should be made with caution by the geologist.

**Geographical distribution.**—The diffusion of the genus, though now comparatively rare in cabinet specimens, is probably wide. A sharp investigation of masses of coral and of submargined perforated rocks or stones, particularly in warm climates, is very likely to be rewarded by the discovery of *Clavaquella*.

**Probable place in the Natural System.**—Mr. Owen is of opinion that the organization of *Clavaquella*, like that of *Aszegyrrum* described in the 'Reise von Afrik' of Dr. Ruprecht, is such as would belong to the type of *Cephalodonte*; and that it follows most closely, in the variations from that type, the modifications which have been observed in *Gastrochena*. The lengthened worm-like figure of *Aszegyrrum* is exchanged in *Clavaquella*, observes Mr. Owen, for a shorter form with greater lateral development; and instead of the small rudimentary valves, which are enasched, as it were, in the calcareous sheath of *Aszegyrrum*, we find them here largely developed, and one of them always remaining at the aperture applied by a peculiar musculous perforation to those offices which are essential to the forcible expulsion of the fluid in the branchial cavity, and probably to assist in the evacuation of its secure abode.

**Fossil *Clavaquella*.**

Mr. Broderip says that no fossil species appear to have been detected below the supracretaceous group. M. Deshayes, in his tables (Lyell, 3rd vol. ed. 1833), gives two lines under ' *Clavaquella*' (Owen), and refers to *Clavaquella* to 'Fossile' (Clavaquella aperta, Sowerby) as found both living and fossil (tertiary). He gives the Mediterranean and Indian Ocean as the habitat of the living animal, and Sicily (Pliocene Period of Lyell) as the locality of the fossil. In his edition of *Lamarck* he makes the whole number of living and fossil species seven; and the seventh and last species being *Clavaquella aperta*; but he refers to Rang's *Manuel* for a second living species. (See the *Manuel* and Mr. Broderip's paper above referred to.) In Deshayes's edition of *Lamarck* the species *Clavaquella echinata* is followed by *Clav. cristata*, and the editor, in a note referred to from the latter, says that these two species should be united, as they only differ in size and age. He also observes that the free valve of *Clav. cristata*, or of *Clavaquella* echinata, has been placed by *Lamarck* among the species of *Glycimeris* under the name of *Glycimeris margaritae*. And here we may mention the difficulty of laying down specific characters from the valves, which being, as Mr. Broderip remarks, the important organs of a Class altogether excluded from the light, colour, at best but a treacherous guide, is absent entirely; while the shape of the chamber and of the valves, together with the comparative roughness or smoothness of their outer surfaces, may depend upon the greater or less degree of hardness of the material in which the chamber is formed.

**CLAVATULA.** [Siphonostomata.]

**CLAVELINNA (Zoology).** Saviy's name for a sub-genus of *Archidae*, with a gelatinous envelope or test, supported like *Bolitaea* upon a peduncle, and having the branchial sac without plaits, but not penetrating to the bottom of the envelope.

W. M. S. Mac Leay (Linn. Trans., vol. xiv. p. 539) observes that those figures of *Bolitaea* which were cut to them by a series of vertical, semi-rigid peduncle, give them an unnatural position; that is, a position where the branchial pouch, and consequently the gas-phagous, instead of descending, ascend. The peduncle, instead of being clearly defined, is an irregular mass, in order that its drooping by the weight of the body may give this last position analogous to that of other *Archidae*. When such animals exist, supported by a rigid peduncle, the tube must be at the other extremity of the body, as in *Clavellina*, the concomitants of the *Unio*; or perhaps *Ascidae globularia* of Pallas and Lamarck. It seems, according to Mac Leay, necessary for the digestion of *Ascidiae*, if we may judge from their general construction, that the digestive canal should have a loop or pectin. This loop may be either ascending, as in *Bolitaea*, or descending, as in *Clavellina*; the only circumstance common to both genera being that the loop points towards the peduncle. Mr. Mac Leay thinks that in *Clavellina* the peduncle may possibly be a receptacle for the eggs, as in certain *Girrposa*, and as it seems to be in the compound *Tunicata* of the family of Botryllidae, but that whether it be also in the case of *Bolitaea* is not so certain. The student should refer to the second part of Saviy's admirable *Memorandum on the Invertebrate Animals* (Paris, 1816), and Mr. Mac Leay's paper above mentioned.
however, is, upon the whole, the best that has been written on antient Mexico: Humboldt, Navarrete, and other recent writers often refer to it. [Astrays.] It was translated into English by C. Cullen: 'The History of Mexico,' 2 vols., 4to., London, 1877. Little is known of Clavigero's private life. He left very little to the world besides his universal, and after his death, a few years since, a small mansion containing the remains of his family, which have been purchased by the Mexican Government, and are now in possession of the State.

CLAVIPATRI (ENTOMOLOGY), according to Latreille, the seventh family of Tetracerae Coeoleptera. The insects of this family are principally distinguished by the form of the abdomen, which is more or less elongated, and the tarsi are generally furnished with a velvet-like substance beneath, and have the penultimate joint bilobed; some few, however, have the tarsi simple. The mandibles are emarginated or dentated at the apex; the maxillae are armed on the inner side by a tooth-like process; the palpi have the terminal joint large. Many of the species of this group feed upon fungi and boleti, and their form is often round and convex. The genera included in the family Clavipatapi are Erytites, Triplax, Languria, Phaenurus, Agathidium, and some others.

CLAUVIS, CHRISTOPHER, of Bamberg, entered into the order of Jesuits, and died at Rome February 5, 1612, aged 75. He was selected by Gregory XIII. to succeed him at the See of Rome, with the important capacity he had to endure and reply to the attacks of Moeuslin, Joseph Scaliger, Vieta, and others of less note. As a mathematical writer, Clavius is distinguished by the number and uniform frequency of the errors they were reprinted in his rigid adherence to the geometry of the antients, and the general soundness of his views. According to Riccioli (Chronicon, Nov. Almacr.), the most learned Germans resorted to Rome, that they might converse with Clavius, and several were so pleased to say that they would rather be attacked by him than praised by others. As Clavius did not possess any great original talent, his works are now of little consequence, except to the mathematical historian. The following is the list of those which have been mentioned by succeeding writers:—

1. In 'Spharman Johannis de Sacro-bosco Commentariorium, Rome, 1576, reprinted more than a dozen times; the last edition we can find is that at Leyden, 1616. (2.) The Works of Euclid, with a commentary; Rome, 1574; Cologne, 1591; Frankfurt, 1607, &c., &c. (3.) 'Epitome Arithmetica Practica,' Rome, 1583; Cologne, 1637, &c. (4.) Edition of the Spheres of Theodosius, with a Table of Sines, Tangents, &c.; Rome, 1586. (5.) A work on Geometers, printed in Rome, 1589. (6.) 'Defence of the Calendar against Moeuslinis,' Rome, 1588. (7.) 'Fabri et Usus, &c.,' a work on Horology; Rome, 1586; Construction, &c., a second work; Louvain, 1592; Horelo Novus, Dialogue, and the Calendar. On the Astronomies, Rome, 1593. (8.) Refutation of J. Scaliger on the Calendar, Rome, 1595; Mayence, 1609. (9.) 'Romani Calendarii a Greg. XIII. Restituti Explicitio,' Rome, 1603. This is to us the most important of the works of Clavius; it contains the description of the reasons and methods employed in the alteration of the calendar, with the answer to Vieta and others. (11.) 'Elements of Algebra,' Rome, 1604. (12.) 'Geometria Practica,' Rome, 1604. (13.) 'Refutation of J. Scaliger on the Calendar,' Rome, 1610.

We have taken the earliest editions which we could find in any of the authors cited at the end.

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CLAUVILRIA, D' (Zoophyta.)

CLAVILLES, Gutierrez, Spanish name for a genius of his family Helioctostegae, order Poraminiferae. [Poraminifera, Symbionten.] CLAY, any natural mixture of earths which breaks down or disintegrates in water, and affords a plastic and soluble mixture. It is the common material of which the land is composed, or composition, whether an earthy body belongs to the class of clays. There are many varieties of clay used for different purposes.

Pipe-clay is of a grayish-white colour, has an earthy fracture, and a smooth gressey feel; it adheres to the tongue, and is very plastic, tenacious, and infusible. Its name shows the purpose to which it is applied. It is found near Poole in Dorsetshire.

Potter's clay is of various colours, and disintegrates by exposure to the air; when mixed with sand, it is made into bricks and tiles. It is found in Hampshire, Berkshire, Devonshire, and is largely used in the Staffordshire Potteries. The Hampshire clay yielded by analysis:—

<table>
<thead>
<tr>
<th>Material</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silica</td>
<td>51</td>
</tr>
<tr>
<td>Alumina</td>
<td>25</td>
</tr>
<tr>
<td>Lime</td>
<td>12.6</td>
</tr>
</tbody>
</table>

with some oxide of manganese and water

Stourbridge clay has the general properties above described, but is a dark colour, owing apparently to an admixture of carbonaceous matter. It is principally employed in the manufacture of crucibles, and especially for those used in glass-making. It is extremely refractory in the fire. It yielded by analysis:—

<table>
<thead>
<tr>
<th>Material</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silica</td>
<td>57</td>
</tr>
<tr>
<td>Alumina</td>
<td>30</td>
</tr>
<tr>
<td>Moisture</td>
<td>12.6</td>
</tr>
</tbody>
</table>

A trace of iron and carbonateous matter.

It appears to have originated from the disintegration of shale.

Brick clay, or loam, varies much in appearance, texture, and composition; its colour is dependent upon the proportion of oxide of iron which it contains. It lies in abundance upon the London Clay, and forms the frequent cap of a porous bed of sand. The organic remains found in it are few, but it sometimes contains the teeth of elephants.

London clay is a very extensive deposit of a bluish clay, except near the surface where it often has the usual clay colour. It forms the greater part of the London and Essex, and part of Norfolk, and frequently rises almost to the surface. Some of the lower beds are yellowish white or variegated. This clay occasionally includes beds of sandstone, and of a coarse argillaceous formation, of which Parker's Roman cement is made. It contains also frequently the bones of the crocodile, turtle, &c.

Plastic clay skirts the London clay within the London dock basin, and is found also at the Isle of Wight. This formation consists of a variable mixture of sand, clay, and pebble beds irregularly alternating, lying immediately upon the chalk; it contains some appearance of coal, decided of vegetable origin, pyrites, oyster-shells, and the branches of trees. The sand-beds of the plastic formation are the grand reservoir of soft water from which the deep wells in and round London are supplied.

Porcelain clay is of various shades of white; it is dull and opaque; occurs friable or compact; feels soft to the fingers, and is bright in the air. It is infusible, and its specific gravity is 2.216. A large tract of this clay, which includes crystals of felspar, quartz, and mica, occurs near St. Austell, in Cornwall. The porcelain manufactures of Worcester are supplied from it. On the Aylestone, and Mayence, 1609. (10.) 'Romani Calendarii a Greg. XIII. Restituti Explicitio,' Rome, 1603. This is to us the most important of the works of Clavius; it contains the description of the reasons and methods employed in the alteration of the calendar, with the answer to Vieta and others. (11.) 'Elements of Algebra,' Rome, 1604. (12.) 'Geometria Practica,' Rome, 1604. (13.) 'Refutation of J. Scaliger on the Calendar, Rome, 1610.' We have taken the earliest editions which we could find in any of the authors cited at the end.

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CLAY, any natural mixture of earths which breaks down or disintegrates in water, and affords a plastic and soluble mixture. It is the common material of which the land is composed, or composition, whether an earthy body belongs to the class of clays. There are many varieties of clay used for different purposes.

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...
sals of iron which they contain are mostly injurious to vegetation. Hence they require expensive draining, and making, to render them productive. This has made lighter soils, which are more easily worked, to be generally preferred, although naturally less adapted to the growth of wheat; and the mode of cultivation of the light soils is closely analogous to that of the clays. Yet the latter will undoubtedly repay the outlay best, when once they are brought to a certain state of improvement. When clay soils are well drained, and when the effect of previous salts has been removed by liming, burning, and frequent stirring, it will be found that a much smaller quantity of manure will produce a certain return in grass or corn, than on any light soil. The great difficulty is to choose the time when stiff clays are to be worked, as they may be obliterated by ploughing, or sometimes do more harm than good. When clay is wet, especially in the beginning of summer, and it is ploughed in the regular process of following, the tough moist slice cut out by the plough is set on edge, and the sun bakes it into a hard mass like brick. In this state it is not improved by exposure to the air, which cannot penetrate this hard substance. It would be much better to plough out deep water-furrows with a plough made on purpose, and wait until the moisture is reduced by gradual percolation and evaporation; so that the plough should raise a slice ready to break and crumble as it is turned over. This should be done immediately before winter, and then the frost will so divide and mellow the soil, that, provided it be kept free from superficial water, which spoils it, it may have the appearance of the finest mould when worked with the harrows in spring. To plough it again would be to spoil all. It should have received the necessary manuring in autumn, and be raised into a bed to be so worked by the surface. The horses which draw the harrows or the sowing machines should be made to walk in the furrows, which should afterwards be deepened out with the spade, or by a plough constructed for the purpose. A free course and outwash are needed for all surfaces that are more true than this, that stiff clays are never injured by a continuance of dry weather, unless they were in a wet state immediately before. The dryest clay contains sufficient water to supply the roots of plants for a long time; but wet clay in drying and shrinking destroys the texture of the roots by mechanical pressure. This may be of use when weeds are to be eradicated, and in that case a different mode of proceeding may be recommended; but when good seed is sown, the clay should be in such a state as to crumble under the harrows, and it should not be too moist. Experience has taught the ploughman, that clay soils should be laid in round lands or stitches: and more the produce of a field depends on the skill with which these should be laid. It is not to lie in a rounded form, but the bottoms of the furrows should lie in a regular curve, without small ridges or inequalities between them; so that when heavy rains penetrate the surface, which the plough has raised, the water may find its way into the intervening furrows, without being retained by the small ridges left by an unskilful ploughman. It is seldom that a common labourer can be made to perceive the consequences of his carelessness. The slight inclination of the plough to either side makes an inclination in the bottom of the furrow. An inequality in the depth does the same. The usual method is to increase the depth of the ploughing from the crown of the stitch to the bottom. If the lands are cross-ploughed or dragged level before the last ploughing, the may serve for the purpose; but if the stitches are only reversed, and the centre of the new stitch is to be where the water-furrow was before, it requires twice ploughing to bring the stitch to its proper form. And this is not always done, for fear of treading the land too much. Hence it is always preferable, where it can be done, to lay the land flat by cross-ploughing and harrowing before it is raised in stitches. The narrower the stitch, the nearer to the dyer the land will lie. The most convenient width is 3 feet. If it is 1 foot deep, for each furrow, makes 7 feet, leaving 18 inches for a water-furrow, which is deepened into a narrow channel in the middle.

We have been thus particular in describing the management of clay land, because it seems not so generally understood, and there is great room for improvement in the common modes of cultivation. Following for wheat is the old system on clay soils, and continues to be so in nine farms out of ten; but it often happens that in a wet season the whole advantage of the repeated ploughings is entirely lost, the land sown with wheat is neither enriched nor improved by all the tillage bestowed upon it, and is as full of weeds and без the blackest perfection that ever straw was. The better system is to clean the land well in summer, after it has borne a crop of winter wheat, which have been cut green or fed off by sheep in May or June, and to lay it up high and dry for the winter, after the plough has given it the preliminary liming and manuring; to sow it with oats and grass seeds in spring, keep it in grass as long as is convenient, and break it up in autumn. Wheat may then be sown; or it may have the benefit of another winter's rest, and may be sown as early as the 1st of May. After harvest the bean stubble may be cleared with harrows or scythers, and the seeds allowed to vegetate; the plough will then destroy them. A good crop of wheat may be depended upon after this, if the land is in good heart; if not, it should have been manured for the beans; but if the grass was sown on the preceding year, and the land well managed before, it cannot fail to be in good heart. Clay land will bear a repetition of the same crops much oftener than lighter lands; but every scientific agricola knows the advantage of varying the produce as much as possible, making plants of different families succeed each other. The cereals grasses are of one family, which is the reason why oats, barley, &c., do not succeed so well. The winter wheat and beans ought therefore to be changed in each year; and that turns, besides cleaning the land by the repeated hoeings given them, are so good a preparation for corn. A good rotation for stiff clays is yet a desideratum in agronomy; but the ploughing of this pulverized surface is a good moment. Nourishing crops would not answers the purpose, we are persuaded that they might be separated by much larger intervals than is usually done. And if advantage is taken of early seasons, at least in the southern parts of the island, most lands may be kept in a condition to be cultivated the following year; for a barn-dry harvest, without losing a crop. We will go farther, and assert that instead of three crops in four years, which is the common method, and an improvement on the old system of two crops and a fallow, five might easily be obtained, especially if truffles and trifolium incarnatum are considered as crops. For example: 1. Oats or barley; 2. Clover; 3. Wheat; 4. Trifolium cut in May, and succeed by spring turnips, cabbages, or potatoes. At all events the trifolium or winter turnips are of service in the year in which the land is to be cleaned by repeated ploughings; as they may be cut early in summer, and leave ample time for the operations.

The most profitable management of a stiff wet clay soil, after thorough draining it, is to cultivate it on the convertible system; that is, to have it three years in grass and three years under the plough, unless a permanent and good award can be obtained upon it, in which case it will give a crop of winter wheat and beans, which the plough keeps from becoming in grass. A perfect system of cropping with ample manure, it is our opinion, will much improve the texture of the surface, that a much better herbage will grow upon it; and when this is well established, it may be left so until it degenerates.

The great disadvantage of clay soils in a moist climate like that of Great Britain arises from an excess of water, and the obvious remedy is perfect draining of the subsoil. This is effectuated by numerous hollow drains judiciously arranged to convey the water to a proper outlet. As the drains, after being made, may be opened or improved, and consequently made costless, this is done effectually, and at a comparatively small expense. [DRAINING.]

Clay is extensively used in many parts of England to improve light land, by being carried in the surface in considerable quantities, but this is chiefly where it approaches to the quality of marl, by having a considerable portion of calcareous earth in its composition.

The effect of burnt clay as a manure has been highly several different occasions. In particular situations. Clay by burning alters its nature; it becomes insoluble in water, and loses its attraction for it; it then resembles of iron and may greatly improve a very strong retentive clay, tempering it and rendering it more porous and ruinous. It is usually dug out in large blocks made of these at regular distances in a field, with a small cavity in the centre, in which dry furze and brushwood are
introduced. This being lighted, the fire is allowed to burn very slowly, and the smoke kept in by adding a sod or clox wherever it burns out. When the heap is once burning, more clay may be added, even without being dry, and the combustion goes on without other fuel. If it be managed as to bake the clay without heating it too much; and when the heaps are cooled and opened the whole should appear pulverized, and of a red colour if oxide of iron exists in the clay, the two have to be mixed as occasionally for the clarinet and violoncello. The base clef is appropriate to the lowest male voices, and to instruments whose scales run high. Of the four kinds of mean clef, the first is used for female and boys' voices; the third and fourth for men's voices, also for the trombone and other instruments. The direction of so great an evil was a step towards simplification; and, in 1672, a distinguished mathematician (Thomas Salmon, M.A., of Trinity College, Cambridge) published his plan for a complete simplification, by the abolition of all clefs, and substituting for them one universal character. The plan was simple and feasible, but it was immediately rejected, and successfully opposed by the musicians of the day, at the head of whom, we regret to say, was Matthew Locke. Thus was strangled in its birth a most rational attempt to remove much of the difficulty attending the practice of music. The clef is now gradually falling into disuse, but we fear that its final rejection is not near at hand, and that a long time will elapse before other desirable reforms in music—a reform that would remove much of the absurdity and unfitness of the art—will be accomplished, so blind and so strong is prejudice. 

CLEIDOTHYRUS, a genus of Acetaphorinae mollusca (Gastropoda). It was described by C. Clemen (Umbra). For a testaceous animal, the mechanism of whose hinge connecting the two valves differs most materially from that exhibited by other bivalves. Shell bivalve, somewhat pearly, involute, involute, attached by the outside of the larger valve. Hinge with a small conical pointed tooth in the free valve, fitting into a corresponding pit in the attached valve. A testaceous, rather elongated, ovate, or ovate, rounded, connected by cartilage, is inserted into a deep cleft in each valve, the posterior suborbicular. Muscular impression of the mantle entire. Ligament external. (Stutchbury, modified by G. B. Sowerby.)

M. De Rosey had separated the genus from Chama, with which it might be easily confused by a superficial observer under the name of Camostres (Chamastra), but he does not seem to have been aware of the appendages, and, as Mr. Stutchbury observes, his name is entirely inapplicable, there being no attachment in the shell to connect it with Ostraea. Example, Cleidotherus Chamaoides. (Stutchbury.)

The Mean clef gives the name of c to any line on which it is placed: it is called the soprano clef when placed on the 1st line, the mezzo-soprano when on the 2nd, the alto, or contratenor, or countertenor, when on the 3rd, and the tenor when on the 4th.

The Base clef is now placed only on the 4th line, giving it the name of 4.

- The treble clef is appropriate to female and boys' voices, and to instruments whose scales run high. Of the four kinds of mean clef, the first is used for female and boys' voices; the third and fourth for men's voices, also for the trombone and other instruments. The direction of so great an evil was a step towards simplification; and, in 1672, a distinguished mathematician (Thomas Salmon, M.A., of Trinity College, Cambridge) published his plan for a complete simplification, by the abolition of all clefs, and substituting for them one universal character. The plan was simple and feasible, but it was immediately rejected, and successfully opposed by the musicians of the day, at the head of whom, we regret to say, was Matthew Locke. Thus was strangled in its birth a most rational attempt to remove much of the difficulty attending the practice of music. The clef is now gradually falling into disuse, but we fear that its final rejection is not near at hand, and that a long time will elapse before other desirable reforms in music—a reform that would remove much of the absurdity and unfitness of the art—will be accomplished, so blind and so strong is prejudice. 

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Mr. G. B. Sowerby is of opinion that as far as the characters of the internal hinge cavity having an elongated testaceo-venous-gastro-connus of the Camacna (Chame) of Lamark with his Mysigera. For figures and further description, the reader is referred to the Zoological Journal, vol. v. p. 97; Tab. Suppl. xlii. figs. 5, 6, 7, 8, etc. The latter referred to Mr. Sowerby's Genera of Recent and Fossil Shells, No. xxxii.

CLEISTHENES, an Athenian, one of the family of the Alcmeonidae, was grandson of Cleisthenes, the tyrant of Sicyon. After the expulsion of the Pisistratids (a.c. 510) he changed his line of politics and became one of the democratic party: the opposite faction was conducted by Isagoras. Cleisthenes soon obtained the favour of the people, and the sanction of an oracle from Delphi enabled him to assert his power in the council of the four tribes, which were productive of very important results. The four tribes into which Attica had antiently been distributed gave place to a division altogether new. He made ten tribes, called severally from the name of some hero: each tribe contained a given number of demi (Hyem), or towns, which were under the direction each of a demarch (town-governor). Every citizen was obliged to have his name enrolled in the register of some township. Many other changes were also effected: the electors were increased from 400 to 500; 45 were sent by each tribe. The process of ostracism is said to have been first formally established by Cleisthenes. The Spartan king Cleomenes, acting on the suggestions of Isagoras, insisted on the expulsion of Cleisthenes and the acceptance of his schemes. (Herod. v. 72.) But Cleomenes, after the departure of Isagoras, left Athens and went to Sparta. (Herod. v. 72.) However, he returned, and Cleomenes was besieged in the citadel which they hadoccupied, and were forced to capitulate, they left Athens with the Spartan troops, and Cleisthenes with the 700 families returned in triumph. [ATTICA.] (Thirwall's Greece, vol. ii. pp. 73-80; Niebuhr's Rome, vol. ii. p. 309, note 1.)

CLEMATIS, a genus of climbing plants belonging to the natural order Ranunculaceae, and characterized by having a valvate coloured calyx, carpels in a ripe state terminated by long feathery styles, and opposite leaves. The most common species is C. vitalba, the 'Traveller's Joy,' which runs over the hedges in many parts of England, loading them first with its copious clusters of white blossoms, and afterwards with heaps of its feather-tailed silky tufts. It is however better known from some of the exotic species being favourite objects of cultivation. C. flammea, a species with panicles of small white flowers, is among the most fragrant of plants. C. cirrhosa, crispa, et florida, are remarkable for the richness of the crimson-white flowers; while the purple or pink bells of C. vitella, hanging gracefully from its festooning branches, render that species, when well managed, one of the most elegant and ornamental of climbers. Atragene, Siberian and Alpine plants, with finely divided leaves, are peculiarly prized by Linneans, and are other species of Clematis. They have a climbing habit, and are occasionally seen in gardens; their stems however are apt to become naked, and they do not so generally cultivated as the species of genuine Clematis.

All these plants are hardy; but they are impatient of damp in winter. The latter circumstance is therefore to be attended to by those who wish to ornament their gardens with clematis. [CLEMENCE, ISAURE, a French poetess, born near Toulouse, but at what time has been a matter of much dispute. The first known writer who spoke of her is Guillaume Benoit, a jurisconsult of the sixteenth century, who says he represented the floral games, "jeux floraux," at Toulouse, which were held yearly on the 1st of May, and that she instituted prizes for those who distinguished themselves in various kinds of poetry. The prizes were a gold vinaigre, a silver vase, and a medal. This distribution of prizes continued till the Revolution. The caputols or echinans of Toulouse distributed the prizes, on which occasion the memory of Clemence Isaure was celebrated with great honour and festivity. She was buried in the Hôtel des Comtes, and her statue in the Hôtel des Comtes. It is said that she was a disciple of St. John, who was hanged and burnt at Montpellier, and she wrote some elegies of Clemence Isaure, who is said to have been an eremite named St. Morden.

Ludus literarius Tolosan constitut. These works were followed by those of the President Berthier, who wrote about Clemence, and placed her existence in the fourteenth century. Cazet, however, in his Memoires du Languedoc, expressed doubt on the subject, and treated the existence of Clemence as dubious. The first man of letters in the south of France was called the college of 'la gai scence,' or 'gai saguir.'

The first authenticated meeting on record dates from the year 1233; they then assembled in a garden outside of Toulouse. The registers of this college, till about 1500, made no mention of Isaur. It may be said that this period he published the poems of Isaur, which he wore to have been a multum, or saecula, from Magna Graecia, a third from Cælesria, a fourth from Egypt, and others, who had received the Christian doctrine in the East, and had translated it from Assyria, and felt they were under the influence of an antient Hebrew family; but that at last he found in Egypt one superior to all, with whom he remained. This was Panteus, whom he repeatedly mentions in his works, and who kept a school of Christian students at Alexandria, in which capacity Clemens succeeded him. St. Jerome says that Clemens was teacher of the catechumeni in that city. He was ordained presbyter of the church of Alexandria, where he appears to have remained the rest of his life. His death is believed to have happened about a.d. 220. Among the disciples were Origen, and Alexander, afterwards bishop of Jerusalem. He left many works, in which he has mixed with the precepts of the Christian doctrine and morality. In this it was his object to inculcate much information concerning the civil learning, philosophy, and systems of the heathens. Of the earlier Christian writers, he is the most conversant with the science and learning, with the opinions and practices, of the various nations of that day; and it is highly interesting, as showing the state of society, both among the Heathen and Christian races of the Roman empire at that early time. They also contain much information on ancient history, chronology, and the various schools of philosophy; many extracts from ancient writers, whose works are lost; and also accounts of the early heresies and schisms which divided the primitive Christian church. The works of Clemens which have come down to us are:—1. 'Exhortation to the Greeks,' 1 book. 2. 'Elements of Grammar,' 8 books. 3. 'Elements of the Philosophy of Sciences,' 8 books. The word 'stomateis' has been used to mean a party-coloured

Cleomenes, Titus Flavius Alexandrinus, was born about the middle of the second century of our era. According to St. Epiphanius he was an Athenian. He was educated at the Lyceum, and afterwards went to Alexandria, going to others he belonged to the Ptolemaic school, an opinion which seems countenanced by the manner in which he speaks of Plato and his philosophy in many passages of his works. He says in his Stomateis (lib. i.), that 'he had for teachers several learned and excellent men; one an Ionian, who lived in Greece, another from Magna Graecia, a third from Cælesria, a fourth from Egypt, and others, who had received the Christian doctrine in the East, of which one was from Assyria, and felt they were under the influence of an ancient Hebrew family; but that at last he found in Egypt one superior to all, with whom he remained.' This was Panteus, whom he repeatedly mentions in his works, and who kept a school of Christian students at Alexandria, in which capacity Clemens succeeded him. St. Jerome says that Clemens was teacher of the catechumeni in that city. He was ordained presbyter of the church of Alexandria, where he appears to have remained the rest of his life. His death is believed to have happened about a.d. 220. Among the disciples were Origen, and Alexander, afterwards bishop of Jerusalem. He left many works, in which he has mixed with the precepts of the Christian doctrine and morality. In this it was his object to inculcate much information concerning the civil learning, philosophy, and systems of the heathens. Of the earlier Christian writers, he is the most conversant with the science and learning, with the opinions and practices, of the various nations of that day; and it is highly interesting, as showing the state of society, both among the Heathen and Christian races of the Roman empire at that early time. They also contain much information on ancient history, chronology, and the various schools of philosophy; many extracts from ancient writers, whose works are lost; and also accounts of the early heresies and schisms which divided the primitive Christian church. The works of Clemens which have come down to us are:—1. 'Exhortation to the Greeks,' 1 book. 2. 'Elements of Grammar,' 8 books. 3. 'Elements of the Philosophy of Sciences,' 8 books. 4. 'Stomateis,' 8 books.
or patch-work; 'opus vario contentious,' from the multifarious kind of information, religious and profane, anecdoti-al, historical, and didactic, put together without much regard to order or plan. Clemens says that he adopted this want of arrangement 'to veil the doctrines of Christianity under the vesture of the pagan learning,' in order to screen them from the eyes of the curious and the uninitiated, that those only who are intelligent, and will give themselves the trouble of studying, may understand the meaning. Probably also he found this style of writing has been long the vogue with the sects of heretics, and was the best adapted to collect, to arrange, and to diffuse information, and best suited to his old age, in which he apparently wrote it. In the first book he descants upon the utility of philosophy, and concludes by asserting, by the help of chronology and quotations, that the philosophy contained in his own writings was the antithesis of the heathenism of the antient, and that other nations had borrowed much from it. In the second he treats of faith, sin and repentance; he asserts the free will of man, condemns licentiousness, commands lawful marriage with one wife and one alone. In the third he continues the preceding subject, condemns the incontinence of the Nicolaites, Valentinians, and other early heretics, and defends marriage against the Marcionites. He says the apostles Peter and Philip were married and had children. This second book is, absolutely condemning them. He speaks also with great praise of virginity, when preserved for the love of God and according to his ordinances. In the fourth book he treats of Christian perfection and martyrdom, of the holiness, and of the elevation of the soul for the love of God and of Christ. Perfection he places in the precept of loving God and our fellow-creatures. In the fifth he shows that the method of speaking by figures and symbols is very ancient, both among the Hebrews and the Greeks. He says that the Grecians, having borrowed most of the truths they have written from those whom they called barbarians, and especially from the Jews. This book is full of quotations from ancient poets and other writers. In the sixth and seventh books he refutes the Gnostics, and shows that the Gnosticism, which with him is synonymous with that of a perfect Christian. It is a complete model of moral conduct. He combats the reproach of the Greeks about the divisions and schisms existing among them. He says that his aim was, in any community; that they were foretold by Christ; that they had existed among the heathens and the Jews; that the way to ascertain the truth is to consult the Scriptures, and the whole Scriptures, and not merely some parts of them, and to follow the tradition of the church, that there is only one universal church, older than all heresies, that it began under Tiberius, and was promulgated all over the world under Nero, while the other heresies date only from the reign of Hadrian. He then refers to several events in history, and to the books, and to the prophecies to begin the next by a new subject. The eighth book, as we have it in our editions, differs altogether from the rest, being a treatise on logic. Phoebus, in his Bibliotheca, says, that in some edition of the ninth book of this treatise consisted of the treatise 'Can a rich man be saved?' which however is generally placed as a distinct work, after the eight books of the Stromata. This treatise has also been published separately, with a copious and learned commentary by a professor of Utrecht. Clementia Alexandra liber: Quis dives salutem consecu? us? positus, perpetuo Commentario illustratus a C. Seegerio, 1816. Among the works of Clements which are lost was the 'Hypotyposis,' or Commentarius, of the first part of the Stromata. A part of this work is quoted by Photius, who quotes several passages, and severely condemns it as heretical. (Photius among the Testimonia, at the beginning of Clement's works, Potter's edition.) This seems rather strange, as the whole works of Clement have been esteemed perfectly orthodox, and greatly commended by Eusebius, Jerome, and other antient fathers, with the exception perhaps of one or two obscure passages concerning the nature of Christ and original sin. The errors here accused are supposed to be pointed out for some manner by the supposition that it was an earlier work of Clements, written before he was properly instructed in the Christian doctrines, and while he was still much imbued with his old philosophical views and the whole current of a Christian philosopher and moralist, than a professor of dogmatical theology. Some believe that the Excerpta ex Scriptis Theodoti et Doctrina que Orientalis vocatur, which appear at the end of Clement's works, as well as some other fragments, are extracts from his 'Hypotyposis.' He also wrote several treatises, 'De Paschis,' 'De Jejunio,' 'De Obtructatione,' &c., which are lost. Clement's works were published, with a Latin translation. By J. Potter, 6 vols., folio, Oxford, 1712; and also at Würzburg, 3 vols., 8vo., 1780. Clement I., or Clemens Romanus, succeeded Anacletus as bishop of Rome in the latter part of the first century of our era. The chronology of the early bishops of Rome is one of the most material points of Catholic history. The first see is the earliest authorities, Irenæus, bishop of Lyons, who lived in the latter part of the second century, says, that 'when the blessed apostles, Peter and Paul, had founded and established the church of the Romans in Rome, the first bishop of the bishopric in it to Linus. To him succeeded Ana- cletus, after whom, in the third place after the Apostles, Clement obtained that bishopric, who had seen the blessed Apostles and conversed with them; who had the preaching of the Apostles still sound in his ears, and their traditions before his eyes. Nor he alone, for there were still many alive who had been taught by the Apostles. In the time therefore of this Clement, when there was no small discussion among the brethren at Corinth, the church at Rome sent a most excellent letter to the Corinthians, persuading them to peace among themselves, &c. This is the epistle which is ascribed to Clement Romans, by Clemens Alexandrinus, Origen, Eusebius, Jerome, and other antient fathers. It is generally believed to have been written by Clement, as the name of the church of Rome to that of Corinth, and which was often read in the time of Eusebius in the churches, after the gospels, on account of the excellent precepts which it contains. Eusebius (Ec. Hist. Ev. 3. 1, 10) says: 'Clement is the ancestor, or Anacletus, or Anacletus, in the twelfth year of Domitian (a.d. 92), and that he died in the third year of Trajan (a.d. 100), having been bishop nine years. After mentioning his epistle to the Corinthians, Eusebius says that another epistle was also ascribed to him by some as the first, which was generally received as genuine; and that there had been published not long since other large and prolix works in his name, containing dialogues of Peter and Apollos, of which the authority of the antients had not been able to prove. Eusebius wrote at the beginning of the fourth century; and Jerome, who lived half a century later, repeats and confirms the remark of Eusebius. The first epistle of Clement, which was written in the name of the church at Rome to that of Corinth, 'Dei Ecclesia qua Reipublica Ecclesiae Dei quae Corinthi peregrinatur,' and was occasioned by a schism which had broken out at Corinth among the Chris- tians, is full of sound and charitable advice. It consists of fifty-nine chapters, and is one of the best of the memorials of the primitive church. The second epistle, supposed also to be Clement's, is only a fragment, containing likewise moral and religious advice; but it breaks off abruptly in the middle of the twelfth chapter, and is evidence of the corruption of the ancient manuscripts. It is supposed to be a fragment of some other work, but whether by Clement or by some subsequent writer is uncertain. Both epistles were found at the end of the New Testament in a MS brought from Rome to that of Januus: 'Sancti Clementi Romanorum ad Corinthios Epistola dum expressa ed in fide Sec. Cod. Alexandrinum, Oxford, 1633; and again by H. Wotton, Cambridge, 1716. Baratar and others argue from some passages that Clement was before the destruction of Jerusalem by the Romans, about a.d. 67 or 68, and probably before he became bishop of Rome, though some chronologists place his pontificate about that date; but the authority of Ire- næus, Eusebius, and other old fathers is other on such matters. A long account of Clement's life, labours, and martyrdom, has been made out by Gregory of Tours, Nicephorus, and others, entitled 'Acta S. Clementis,' and adopted by Baronius. A more complete collection is contained in the Catholic. It is not quite certain that Clement suffered martyrdom. He is said by some to have been exiled from Rome, and to have died in the Chersonesus Taurica; but this is also contrary to the evidence of others, and appears to have been with the Emperor. (Nath. Cardinal, Credulitas, 1. 5.) The Gospel History, vol. i. part ii. ch. 2.) Clement was succeeded in the see of Rome by Evaristus. Several other works have been attributed to Clement, which are evidently apocryphal, such as eight books of Institutions or Constitutiones, &c. (Tillmont, No. 434. [THE PENNY CYCLOPEDIA.] VOL. VII.-2 K
the jubilee to be held at Rome every fifty years. He died in 1352, and was succeeded by Clement VI.

Clement VII, Giulio de' Medici, the natural son of Giuliano de' Medici, and nephew to Lorenzo the Magnificent, was made cardinal by his cousin, Leo X, and was afterwards promoted, in 1523, to the papal chair, then vacant by the death of Adrian VI. He was full of dissipation and calamities to Italy. He first allied himself with Francis I against Charles V, in order to prevent the latter possessing himself of all Italy, but he only hastened the progress of the imperial arms, and fortified his own ruin. He was finally put to death by the army of Charles, and his body, as his last wish, was buried in the Castle Sant' Angelo. He afterwards made peace with the emperor, and united with him to destroy the independence of Florence, his native country. Clement's quarrel with Adrian VI, by which an attempt was made to confound the bull of divorce between the king and Catharine of Aragon, led to the schism between Henry and Rome. He died in 1534 after a long illness, leaving behind him a character stained by avarice, harshness, and deception; he had lost most of the failings, but none of the splendid or amiable qualities, of his cousin, Leo X. He was succeeded by Paul III.

There was also an antipope in the fourteenth century, who was elected by a party among the cardinals in opposition to Clement VI, and assumed the name of Clement VII. The schism lasted many years, and was continued by the respective successors of Urban and of Clement till the Council of Constance decided the question. The Roman calendar acknowledges Urban VI and Clement VII, and places Clement among the antipopes.

[URBAN VI. and BENEDITC ANTIPUS.

Clement VIII, Ippolito Aldobrandini, succeeded Innocent IX, in 1592. He was a man of learning, of considerable political sagacity. He succeeded in the negotiations with Henry IV. of France, by which that prince made public profession of Catholicism, and was acknowledged by his subjects. Clement annexed, by force, the duchy of Ferrara to the papal state after the death of Duke Alfonso, disregarding the claims of the Duke's cousin, Cesare d'Este, who was obliged to yield, and retire to Modena. Clement died in February, 1605, and was succeeded by Leo XI. He published a new edition of the Vulgate, differing in some particulars from that published under Sixtus V, in 1590. He also issued many bulls, the most remarkable of which are the 28th. defining the lawful and unlawful rites and usages of the Greek church, and the 87th, concerning the practice of confession and absolution in writing.

Clement IX, Giulio Rospigliosi, of a noble family of Pistoia, succeeded Alexander VII, in June, 1667. He showed a wise conciliatory spirit, flushed for awhile the court of France, and attempted the reconciliation of France and [ARNAUDI], and settled the long-pending dispute between the see of Rome and the king of Portugal, on the right of nomination to the vacant bishoprics, by confirming the prelates appointed by King Pedro II. He took a warm interest in the interests of the pope, and presented assistance of men and money to the Venetians for the defence of Dalmatia and of Cauda. The news of the loss of that island, which was finally conquered by the Turks in 1669, is said to have caused the death of Clement, which occurred in December of that year. He was much regretted by his subjects as well as by foreign princes. He established Rome, and was magnificent in his expenditure. His nephew was made a Roman prince, and married the heiress of the king of Savoy, daughter of Pallavicini, of Genoa. Clement IX was succeeded by Clement X, Emilii Altiari, who was 80 years of age at the time of his election, in 1670. He intrusted the affairs of the administration chiefly to Cardinal Palma, a distasteful, relative, whom he adopted in lieu of the family name of Altiari, as he had no nearer relations living. He died in 1676, and was succeeded by Innocent XI.

Clement XI, Gian Francesco Albani, succeeded Innocent XI in November, 1700. He was then fifty-one years of age, and had been made a cardinal by Alexander VIII, and had a merited reputation for learning and general information. He was one of the men of letters who first introduced the modern system of prints, and gave new life to the town and county of Avignon, which was sovereign of Provence. Clement fixed
dignity. The war of the Spanish succession was then just breaking out, and Clement in vain exerted all his powers of persuasion with the courts of France and of Austria to prevent the impending calamity. Louis XIV. having placed his grandson Philip on the throne of Spain, de- manding the return of Joseph I., whose troops had been driven from Naples and Sicily, the Emperor, by the leagues of Naples and Sicily, whilst the emperor claimed it like- wise as his right. Clement delayed giving his decision, and the intrigues of the agents of the two rival powers disturbed the peace of his own capital. In 1707 the Austrians, under Marquis anghelu, where he was coldly received by the Emperor, who was determined to be prepossessed against him by the Jesuits, and the legate was soon dismissed from the celestial empire.

Clement took a warm interest in the expedition of the Pretender, son of James II., in 1715, and furnished him with the means for it. He also opposed the war of France against England, by furnishing the prelates of this country with a large sum, declaring it a contribution upon the clergy of all Italy to defray the expense of the war, and he prevailed on the Emperor, Charles VI., to join Venice against the Porte. This led to the war between France and Turkey, which Clement considered a prelude to a war between England and Catholicism, by means of the Stuarts.

Clement was more profitably employed in frustrating the schemes of the Turks, who, having invaded the island of Corfu in 1716, were threatening Italy with an invasion. The pope sent a nuncio to join the Venetians, and the nuncio considered it a contribution upon the clergy of all Italy to defray the expense of the war, and he prevailed on the Emperor, Charles VI., to join Venice against the Porte. This led to the war between France and Turkey, which Clement considered a prelude to a war between England and Catholicism, by means of the Stuarts.

The Turks were also obliged to raise the siege of Corfu. After the fall of the intriguing Alberoni, in 1719, Clement succeeded in settling his disputes with Philip V. of Spain, and, in 1721, he was invited to Madrid. Europe was now at peace, and Clement enjoyed a short period of rest, after a long series of agitations, until March, 1721, when he died, after a pontificate of more than twenty years. In his private character he was amiable and generous, and his morals were irreproachable. He was very moderate in providing for his nephews, who owed their elevation more to his successors than to himself. He embellished Rome, and established the Calcografia Camerale, which has since given to the world many splendid engravings; he encouraged the art of mosaic, and he introduced at Rome the manufactory of tapestry, on the model of the Gobelins. He added to the Vatican library, and to the museum which is annexed to it. He was a patron of the arts, and gave the architect of Sweden, to raise her to a monument in St. Peter's. He patronised men of letters and of science, was the friend of Guidi, Mommsen, Sergardi, Marsigli, Martelli, Zappi, and the learned Biondini. A fine edition of his decretals, bulla, and constitutions was published in 1721, and in 1742, by Annibale Alberni, after his death, 'Bullarium Clementis XI.', one vol. fol. He wrote also several Latin homilies, which he recited on solemn festivals, and which were translated into Italian by Crescimbeni.

CLEM. XII. Lorenzo Corsini, of Florence, successed Benedict, in July, 1730. He was then seventy-nine years of age, and infirm. He resumed the old contest with the empire about the revision of the churches of Parma and Piacenza, and did not better than his predecessor. He endeavoured, and also in vain, to mediate in the war between the republic of Genoa and the Corsicans. He succeed better in restoring, in 1740, the little republic of San Marino to its liberties, which had been encroached upon by Cardinal Alberoni. He died soon after, in 1740, and was succeeded by Benedict XIV.

CLEM. XIII., Carlo Rezzonico, a native of Venice, succeeded Benedict XIV. in July, 1738. He was more discreet and private than his predecessor, and his political abilities or knowledge of the world. His pontificate was a continual, but on his part ineffectual, struggle to uphold the ecclesiastical immunities and the old prerogatives of the see of Rome against the determination of the other courts to make progress in the understanding of the world. He strove hard to support the Jesuits, who had become obnoxious to various courts, and who were suddenly suppressed in Portugal, Spain, France, and Naples. In their
distress, most of the expelled fathers sought an asylum in the Papal States, and found in Clement a generous protector. All the remonstrances and threats of France and Spain availed nothing to induce him to withhold his support, which was considered as the firmest support of the Roman see. The king of France seized upon Avignon, and the king of Naples, upon Benevento; still the pope held firm till his death. The Venetian senate, by a series of decrees passed in September, ordered that the ecclesiastical discipline in their own dominions, subjected the clergy to the payment of tithes, suppressed some convents, placed the rest under restrictions with regard to their property and the number of their members. Clement's only care was to retrieve the mass for four voices when in his thirteenth year. About that time his talents attracted the notice of Mr. Peter Beckford, an English gentleman, then travelling in Italy, who undertook the future education of the young archbishop. He taught him the society of a literary and accomplished family inspired him with that taste for the belles-lettres which encouraged him to pursue a course of study that had been well commenced under the eyes of his members. Clement's education, enlightened by extensive knowledge of the learned and living languages, as well as of various branches of science. But he did not neglect the art which he had chosen as his profession, for before he had completed his eighteenth year he composed a number of ecclesiastical pieces, which he afterwards sold for some good musicans, is the basis on which the whole fabric of modern piano-forte sonatas has been founded. At the time agreed on by his father, Clementi quitted Mr. Beckford. He shortly after was engaged to preside at the harpsichord at the King's Theatre, and soon was actively and lucratively employed as a master of the first rank. In 1750 he made a tour on the continent, whither his fame had long preceded him, and enjoyed every hospitality. In Vienna he made the acquaintance of Haydn, Mozart, &c., and played alternately with the latter before the Emperor Joseph II. and other royal personages. While in Paris he wrote his 'Toccata Etrusca,' and his 'Sonatas, Op. 7, 8, 9, and 10 were composed. On his return to England he published his Op. 11, and Toccatas, as well as his Op. 12. In 1783, J. B. Cramer, who had previously studied under Abel and Schroeter, became his pupil, and adorned him almost daily.

About the year 1800, having suffered considerably by the failure of the house of Longman and Broderip, he was, by the advice of some eminent mercantile friends, induced to take possession of the premises of those partners, to be speedily and slavishly ratifying business, and become the head of a new firm, from which time he declined all pupils, and devoted himself wholly to his new, important, and successful occupation. But the peace of 1802 tempted him abroad again, and, accompanied by his pupil, Field, whom he proceeded from city to city till he reached St. Petersburg, where he made some stay. In Berlin he married, and with his bride proceeded to Rome and Naples. He shortly after lost his wife, in childbirth of a son, who, grwo in fear of his father's great and active life, but unhappily lost his life by the accidental discharge of his own pistol. In 1810 Mr. Clementi, after encountering many difficulties in his attempts to reach England during the latter period of the rumour war, arrived in London, and shortly after entered again into the married state. During his last visit to the continent he published his Op. 41, and collected materials for many other works, which subsequently appeared, among which his Practical Harmony in four volumes, and his Gradus ad Parnassum, in three, must not be left unnoticed.

In 1813 Mr. Clementi assisted in founding the Philharmonic Society, of which he frequently consented to act as a director, and presented to it two symphonies, which were more than once performed by that admirable band, and received with every mark of respect. They both abound in agreeable melody, and are most skilfully written; but the real vigour of the composer's genius is exhibited in his piano-forte works, which will be revised or laid aside as a true taste shall happen to be in the ascendant or on the decline.

After an illness of no long duration, Mr. Clementi died on the 10th of March, 1832, at his house in Sloane-street, opposite to the cloisters of Westminster Abbey, and attended to the grave by the choir of that church, of the King's chapel, and of St. Paul's, together with numerous friends. In the Harmonicon for April, 1832, is a just eulogy of this very celebrated musician, by a brother of the Philharmonic Society, who thus speaks of him:—He was honourable in his intercourse with the world, affectionate and attentive to his family, constant in his friendships, and delightful in his feelings towards the whole human race.

Clementines is the name given to a collection of
He expelled the Peisistratids from Athens (Herod. v. 63, 64), 510 B.C., and espoused the cause of Isagoras in opposition to Cleisthenes [Cleisthenes], who, however, with the seven hundred families that had been banished, after wards returned and forced him to leave the city. Dema- ratus, the colonel of the Argives, accompanied Cleomenes across the Medes, while on an expedition against the Aegyptians, and obliged him to return home. By the aid of Leotychi- des, a private enemy of Demaratus, and by bribery of the Delphic oracle, Cleomenes succeeded in effecting the abduction of Demaratus, who was killed in battle near Argos (Herod. vi. 62, 63). The people of Argos (about 491 B.C., Clinton, Fast. H. p. 425, note x), Cleomenes was completely victorious, and burnt a great number of the fugitives in a sacred grove where they fled for shelter. In the next year, on the 27th of March, he had contrived to get rid of Demaratus afterwards be- coming known, he was banished into Thessaly and subse- quently to Arcadia, where he endeavoured to stir up the people against the Lacedaemonians. (Herod. vi. 74.) He was ordered to return, and on his arrival in Sparta he con- firmed the belief of his madness by mortally wounding him- self (Herod. vii. 75), 492 B.C.


Cleomenes III. succeeded his father Leonidas on the throne of Sparta B.C. 236. Immediately on his acces- sion he set himself to oppose Aratus and the Achaean league, to which he was all the more desirous of subjecting their league. [Ach. ii.] The Ephori were averse to the war, and Cleomenes saw no way to attain his ends but by abolishing their power. Accordingly he put four of them to death, and at once transferred their power to another, showing the necessity of restoring the ancient institutions of Lycurgo, which could not be effected by any other means. He renewed the old Spartan system of education, and himself observed great simplicity in his mode of life. The name of Procles (πρόκλες), or Proclus or Pointous, and his entire silence about Polomy. See however the arguments of Letronne, Journal des Sceurs, 1821, p. 713.

We mean by Cleomenes the one of that name who wrote the work Τος Ἐκείνης Στίγμα περίγραφε, in two books. On the Circular Theory of the Heavenly Bodies. It is professedly in several parts taken from a writing, or from the public lectures, of Posidonius, who was certainly the contemporary of Cassius. It is a probable conjecture that Cleomenes was a pupil of Posidonius. The work in question has contained discussions of the earth by Posidonius and Eratosthenes, establishes the antiquity of the opinion that the rotation of the moon is equal to her synodical revolution round the earth;—had it been thought in ancient times that the moon rotated on its axis. Various arguments in proof of the rotundity of the earth, in opposition to the supposition of flat and cubical forms, &c., and from this source the early English writers drew much of what they said on the same subject. It mentions eclipses as having happened without having been predicted in the 'canons'; a proof that something answering to an almanac was in common use. It decidedly suggests the possibility of rays of light being bent by the air. Delambre has made it a plan to revive the ancient theory of the shape of the earth by the writings of Hipparchus, though he frequently cites opinions and methods which he attributes to him.

The earlier editions of Cleomenes are, 1. The Latin ver- sion of George Valla, Venice, 1497 or 1498. 2. In Latin, with Aristotle and Philo, Basle, 1523. 3. The first Greek ed- ition, by Conrad Neubarius, Paris, 1539. 4. In Greek and Latin with Aratus, Proclus, and Dionysius, Basle, 1547; again in 1561; again in 1585. 5. In Greek and Latin, with a Commentary, by P. and J. J. de la Veillerie, and J. de la Bruyn. This edition was re-published with additional notes, by Janus Bake, Leipzig, 1820; this also was re-published, with additional notes, by C. C. Theophr. Schmidt, Leipzig, 1831. The most esteemed manuscript is that in the public library at Pisa, the most complete copy of Cleomenes (ed. de la Veillerie, Delambre, Hist. Astr. Anc. i. 218.)

Cleomenes, the name of several kings of Sparta. Cleomenes I., son of Anaxandrides (Herod. v. 39), although not perfectly sane, succeeded his father. (Herod. v. 42.)
Cleone, a daughter of Protesilaus, was the wife of a Myrmidon and a targeter. The remains of the Athenian army returned home.

If Cleon possessed any qualifications at all as a statesman, they consisted not in superiority of talent or in political knowledge (for he had little of either), but in a singular facility of speaking and a great command of words, which, combined with low manners, unsparing abuse of those who were better than himself, and a coarse vehement style, made him ever popular. What influence he gained with the more considerate citizens seems to have arisen from the reputation which he gained for blunt honesty in the declaration of his sentiments, and a general prudence in his actions, which in the end contrived to get so favorably approved as to have been impudence and rashness. The indignation of the comic poet Aristophanes was at last roused to endeavour to suppress what seemed to defy all reason or propriety. Cleon was the hero of his satire, and held him up to public ridicule in the most ridiculous colours. On one occasion (in the Acharnes), alluding to the demagogue's former occupation, he threatens to 'cut him into shoe-leather,' and the comedy of the 'Knights' (τριβος) was composed with the express object of destroying his authority, which had been raised to so extraordinary a pitch by his success in the affair of Pylos.

Cleon was a great and rapid consumer of wine. [Brasidas: Aristophanes] (Thucyd. iii. 36; iv. 21-40; &c.; v. 210; Aristoph. Equites; Thirlwall's Greece. vol. iii. pp. 185-192, 244-251, 300-304.)

Cleoneus, a genus of Coleopterous insects, is the section of the genus Cleonius. (Euphor. Ex- 1.)

His pride in the selection of his colleague cannot be questioned. The reputation which he gained for energy and promptitude in this affair, added to his inordinate vanity, completely turned his head, and it would seem by what followed as if many of his countrymen were so far deceived by this lucky business of Pylos as to think that Cleon actually had the talents that he pretended to. Accordingly, in 422 B.C. this incapable babler was fixed upon as the person to take the command, the able Strategus general Brasidas in Macedonia and Thrace, and he received the undivided command of 1200 heavy-armed men and 300 horse, with still larger forces of Imbrians and Lemnians, and a fleet of 60 galleys. He did not march direct to Ajax's Down, which was the principal object of the expedition, but stopped in his way to recover Trone. Brasidas, who had left the town, had stationed there a garrison which was inadequate for its defence, and accordingly Cleon was successful in his attack on the place. He sold all the women and children as slaves, and sent more than 700 men as prisoners to Athens. Proceeding with increased confidence in his own military powers, he stationed himself at Leuk on the Bay of Euboea, and delayed the attack on Amphipolis till he had reconnoitred. During the interval he made a fruitless attempt on Stagirus, but succeeded in his attack on Galepsus. The murmurs of his soldiers, who from the first had not been pleased with Cleon being appointed to the command, soon induced him to move towards Amphipolis with a view of reconnoitring, but not of fighting. Brasidas, however, who was in Amphipolis, did not choose to let him off so easily: he made a sudden sally out of the place, while Cleon, who was quite unprepared for an attack, and who had entirely abandoned the intention of making a retreat. In the battle that ensued both the Lacedaemonian and the Athenian generals fell B.C. 422. Cleon says Thurydides (with a half malicious codswallop), who had never had any idea of keeping his ground from the first, was the principal cause of the loss of Amphipolis.
Auletes, king of Egypt, was born about B.C. 69. His father, who died B.C. 51, left two sons called Ptolemy, besides Cleopatra and her sister Arsinoe. By her father's will Cleopatra and her elder brother were to be joint sovereigns, but he died designs, and Cleopatra was obliged to take refuge in Syria. In 40 B.C. she visited Egypt in pursuit of Pompey, who had fled from the battle of Pharsalia, determined to carry the will of Ptolemy into effect, and to settle the dispute between Cleopatra and her brother. The end of the following year, being the reign of the Dictator, contrived to get herself privately conveyed into his presence, and by her fascinating manners completely gained his favour. Though not remarkable for beauty, according to the testimony of ancient writers, with her charms for general attractiveness, which were the natural abilities, which had been carefully cultivated. She is said to have spoken with facility several languages, besides her native Greek; a circumstance in itself well calculated to gain an artful woman a great ascendancy over all with whom she came in contact. Caesar decided that Cleopatra should be restored to her equal share of power. This decision giving dissatisfaction to the young prince and his advisers, led to an attack upon Caesar's quarters under Achillas, the conspirators failed. Caesar, on the side of some months Caesar received reinforcements, and completely defeated the party of the king, who was drowned in the Nile. The sovereign power was now given by Caesar, in conformity with the meaning of Ptolemy's will, to Cleopatra and her brother. The variation in her doom, her return to Rome, Cleopatra shortly after followed him, and remained there till his assassination (B.C. 44), when she hastily quitted the city and returned to Egypt. (Cic. Ep. ad Att. ii. 14.)

In the fourth year of their joint reign Cleopatra murdered her brother Ptolemy. Her connexion with Marc Antony commenced after the battle of Philippi, about B.C. 40, with the interview at Tarsus in Cilicia, of which Plutarch (Anton. 25—27) and Josephus (Ant. 13. 5) have given an account, and which Shakespeare, in his play of 'Antony and Cleopatra,' has turned into a glowing picture. Antony had no doubt seen Cleopatra during her residence at Rome; but, according to Appian, he was first struck with her charms in Egypt (B.C. 44). He was afterwards accompanied by Gehinnus, who was commissioned to restore Cleopatra Aulete to her throne. Cleopatra at this their first interview was only in her fifteenth year. From the time of the meeting at Tarsus the destinies of Antony and Cleopatra were united. The voluptuous queen, whose love of pleasure was the king's, became in a great measure her companion to her taste; and she spared no pains to attract him by all the allurements that her inventive talents could devise. Her influence over him seems to have continued undiminished till the end of his career. If we may believe the extant authorities, Antony was even prevailed upon by Cleopatra to order her sister Arsinoe to be put to death, who had taken sanctuary in the temple of Dion of Ephesus. This occurred in Asia, and Antony's marriage with Octavia, the half-sister of Octavianus, for a time separated him from the queen of Egypt; but they met again in Syria (B.C. 36) to the unsuccessful Parthian expedition of that year, after which Antony denounced his wife for the removal of Octavianus. Cleopatra was present at the decisive battle of Actium, and set the example of flight, which was followed by Antony. On the death of Antony Cleopatra committed suicide in order to avoid the humiliation which she foresaw was in store for her. Most probably she took poison. According to the story in Plutarch, she was closely watched by the orders of Octaviansus, who suspected her designs, but she procured a poisonous serpent to be introduced in a basket of figs. This she gave to the bath, and partaking of a sumptuous repast, applied the deadly serpent to her arm. Two of her female attendants died with her. The emissaries of Augustus, who had received a letter from Cleopatra declaring her intention, came in search of her. They found her body lying on a golden couch in her royal robes, with one of her attendants dead by her side, and the other with just strength enough remaining to fix the diadem on the head of her mistress. Cleopatra at this time was pregnant, and her child was born alive, but was buried by order of Octavianus with royal honours in the same tomb with Antony. With Cleopatra ended (B.C. 30) the dynasty of the Greek kings of Egypt, which commenced with Ptolemy, the son of Lagus, B.C. 323.

She had by Julius Caesar a son, Caeronius, who was put to death by Octavianus. By Antony she had three children, Alexander, Ptolemy, and Cleopatra, all of whom she divorced. When the truce to the Romans expired, Octavianus took the kingdom of Egypt, and afterwards married Juba, king of Mauritania. [Antony, Augustus, Caesar.] (Plutarch's Life of Antony; Appian; Dion Cassius.)

The invention of pendulum clocks, it was not unusual in astronomical observations to measure time by the flowing of water, upon a principle which, in its most simple application, resembled that of the hour-glass, but which was varied by various contrivances for measuring longer periods. The instrument was used, up to the time of Galileo, by Tycho Brahe for instance, but as he does not describe it among his instruments, we suppose he hardly considered it as among the purely aids of an observer.

The Chaldeans, it is said, divided the zodiac into twelve equal parts, as they supposed, by allowing water to run out of a small orifice during the whole revolution of a star, and dividing the fluid into twelve equal parts, the time answering to each part being taken for that of the passage of a sign over the horizon. The authority for this story is Sextus Empiricus (Adv. Math. cap. 21), who adds, that they regularly used the instrument in finding their astrological data, and remarks that the unequal flowing of the water, and the variations of the heretofore described, would affect the accuracy of their results. Prinny mentions Scipio Nasica as the first who introduced clepsydras into Rome.

We might perhaps object to Sextus Empiricus as an authority on Chaldean usages, but a good presumption of the early use of clepsydras in India is afforded by the arithmetical treatise of Bhasara, written in the twelfth century. The prediction at the birth of his daughter, Liliwati, was that she should die unmarried. The father, accordingly, procured a bridegroom and an astrological determination of a lucky hour. The girl remained in her ornaments near the clepsydra, which stood perhaps one hour when she and her parent might set fate at defiance. But at length it was ascertained that the hour was past; and on examining the clock, which should have prevented such a catastrophe, it was found that a pearl had escaped from the daughter's dress and closed the orifice through which the water would have flowed. The father, thus disappointed, said to his unfortunate daughter, 'I will write a book of your name, which shall remain to the latest times.' The Liliwati accordingly remains, and bids fair to realize the prediction. (Taylor's Liliwati, 1816.)

In the account given by Vitruvius (De Architectura, lib. ix.), he attributes the invention to Ctesibius; but the instrument described is so complicated that we by no means see how he intended that this was the application of the principle even at Alexandria. Some moderns, measuring time by the efflux of water, however rude it might be, was used at Athens before the time of Ctesibius, as we see by various passages in Demosthenes. The instrument described by Vitruvius is an elaborate contrivance, which shows the hour, day, month, and sign of the sun. The astronomical clepsydra was rejected by Ptolemy on account of its imperfections, and it is not necessary to follow the moderns through the various modifications under which they have attempted to represent the use of such instruments continued to be common, as toys at least, till the middle of the last century.

If we suppose a clepsydra made of a glass cylinder, with a very small orifice at the bottom, and the apparatus to be filled with water, and the orifice then to be opened, the upper surface of the fluid will not descend equally in equal times, according to the notion which Sextus Empiricus attributes to the Chaldean. If the water be perfectly pure, and the orifice not clogged, the following will be the law of descent. Ascertain first the whole time of emptying the cylinder: then in the fraction of the whole time, the fraction of the fluid will have discharged itself, or that same fraction of the whole. The time of emptying the cylinder: then in the fraction of the whole fluid will have been discharged, while in of the whole fluid will have been discharged, while in of the whole.
CLEPTICUS, a genus of fishes, of the section Acanthropogrygi and family Labridae.

But one species of this genus is known (Clepticus genzuro), and this is from the Antilles.

The species here are—body pale; mouth protractile; teeth minute, barely perceptible to the touch; body elongate, lateral line uninterrupted; dorsal and anal fins covered with scales nearly to their outer margins.

CLERET. JEAN LE, born at Geneva in 1567, was the son of Etienne le Clerc, and nephew to David le Clerc, a clergyman and professor of Hebrew at Geneva, both known for several theological works. Jean le Clerc early manifested great capabilities for learning joined to an extraordinary memory. He traveled in France and England, and at last settled at Amsterdam, where he became professor of philosophy and belles lettres and of the ancient languages. He wrote a vast number of books, of very unequal merit, on all sorts of subjects. Those which most made noise at the time concerned superstitious and theological heresy, and were Latin commentaries on various books of the Bible, 5 vols. fol., Amsterdam, 1710-31; ‘Harmonia Evangelica,’ in Greek and Latin, fol., 1700; ‘Traduction du Nouveau Testament,’ 4to, 1700. His works were neither Catholic nor Protestant divine, from their having a tendency to Socinianism—a tendency made still more manifest by another work generally attributed to him, entitled ‘Sentiments de quelques Théologiens de Hollande touchant l’histoire critique du Vieux Testament,’ followed by a ‘Défense’ of the same work, 2 vols. fol., 1683. In these the author openly attacks the inspiration of the Scriptures and the very foundation of Revelation. As a critic, Le Clerc published ‘des Critiques,’ 3 vols. fol., 1712-30, a work which is much esteemed; and he also edited the ‘Bibliothèque Historique et Universelle,’ a periodical begun in 1687 and closed in 1693, making 26 vols. 12mo.; the ‘Bibliothèque Choixee,’ 1712-1718, 28 vols. 12mo.; and the ‘Bibliothèque Ancienne et Moderne,’ 1726-30, 29 vols. 12mo.

These literary journals enjoyed a good reputation in their day. He also wrote—1. ‘Parrhasiana, ou Pensées diverses sur des matières de Critique, d’Histoire, de Morale, et de Politique,’ 2 vols. 12mo., 1761, a compilation to which he has added some hints of his, and many favourable comments upon his own works. 2. ‘Histoire des Provinces Unies des Pays-Bas,’ from 1650 to 1729, 2 vols. fol., Amsterdam, 1738. 3. ‘Histoire du Cardinal de Richelieu,’ 2 vols. 12mo., 1714; 4. ‘Histoire de la Curé d’Arlieux,’ 4 vols. 12mo. He collected biographies and discusses the various motives and reasons which occasion many to reject Christianity: this work is written with considerable talent and judgment. He also wrote a number of polemical works and pamphlets, most of which were tinged with bitterness and dogmatism. Le Clerc was one of the first critics of his age, but it was an age in which the critical art had not attained a high degree of excellence. He was learned, had quickness and penetration, and a great facility of composition; but he grounded his works upon too many and various subjects, having at times five or six works in hand at once. He published also a supplement to Moreau’s Dictionary, and several editions of ancient classical authors, among others, Livy, Ausonius, Subiectus Severus, &c. This edition of Menander and Philemon’s fragments was severely criticized by Dr. Bentley. In 1728, when he was giving his lectures, Le Clerc suddenly lost the use of his speech through a paralytic stroke. His memory also failed. He lingered some years in a state bordering upon idiocy. He died at Amsterdam, on the 8th of January, 1736.

CLERGI, a collective term, under which that portion of the population of a country is comprehended who are in holy orders, and under which the term clergy comprehends all other persons. Like most ecclesiastical terms, it is of Greek origin, the word κληρικος (clericus) having been used in the sense of ‘appointing to spiritual persons’ by the Greek ecclesiastical writers. From clericus comes the word clerk, which is still a law-term used to designate clergymen, but which appears antiently not to have been confined to persons actually in holy orders, but to have been applied to persons possessed of a certain amount of learning, who were not the descendants of the clergy.

The distinction of clergy and laity in the Christian church may be considered as coeval with the existence of the church itself: for in the apostolic period there were officers in the church specially appointed to discharge the duties of pastors or deacons, and even, as many suppose, bishops or overseers, who had the superintendence of various inferior officers. These persons, though they might not perhaps be entirely relieved from the ordinary duties of life so that they might have leisure for the duties of the spiritual office, were necessarily been nearly so, and it is certain that they were nominated to their offices by some peculiar forms. Very early however the distinction became complete. The bishops, priests, and deacons of the Christian church, each ordained to the office in a manner which it was believed the founders of Christianity appointed, and each supposed to have received a peculiar spiritual grace by devolution from the apostles and from the sacred founder of Christianity himself, soon formed a distinct body of men demanding to be distinguished by some particular appellation.

In all Christian nations the distinction has been recognized by the political authorities, who have allowed certain social privileges or exemptions to the clergy. No monarch, during the middle ages, piously regulated his laws so as to protect from taxes the members of their own body, but over the laity, has in most states been, conceded to them. In the great German confederation the sovereign power in some of the states was vested in the hands of the clergy. In England, there has been for many ages an elective monarchy of clerics, in whom all temporal as well as spiritual authority has been vested.

It is easy to account for the ascendency of the clergy in the middle ages, and for the acquisition by the see of the many valuable exemptions, and so much actual power. They were the best instructed part of the population. The learning of the age was almost exclusively theirs; and knowledge, if it is not itself power, is at least a means of obtaining it. Besides this they had a most powerful instrument with which to work upon the rude minds of the laity, in the power vested in them of alone administering the sacraments of the church, and of regulating alone under what circumstances those sacraments should be administered. This enabled them to win acquiescence in any favourite design, sometimes by gentleness and sometimes by terror.

The history of almost every country of modern Europe abounds with instances of struggles between the laity and clergy for power or privilege. Our limits will not permit us to enter on these, not even on the struggles of this kind in our own country, where they were as determined, and sometimes carried to an extreme, as in any country of Christendom. All power in the clergy of England then became but a fragment of a once great and well disciplined body, dispersed through the whole of Christendom, which, when acting with common effort, and putting forth all its strength, it had been difficult for any single temporal power to resist. It was weak in hope of success.

We shall take from Blackstone a short statement of the privileges which the law of England allows to the clergy. They are but a faint shadow of the privileges which the clergy enjoyed before the Reformation. A clergyman cannot be compelled to serve on a jury, or to appear at a court leet or view of frankpledge. He is not at liberty to serve the office of bailiff, reeve, constable, or the like. He is privileged from arrest in civil suits while engaged in divine service. He could claim benefit of clergy more than any other class. (See 4 Cl. 2, p. 228.) Such, therefore, are the exemptions. On the other hand, the clergy cannot now sit in the House of Commons, nor can they engage in any kind of trade, though sometimes clergymen have been brought to an imputation of the latter by the law as it stood previously to the 57 Geo. III. c. 99, they were not allowed to take lands to farm, but by that act (s. 2) they are permitted (with the consent of the bishop of the diocese) to
the lay impropriators, who are, in fact, the rectors of the parish, the performance of the spiritual duties devolving on the vicar. Curates who are not merely assistants to a general incumbent in the parish, in which no vicarage was ever ordained, or incumbents of chapels of foundation later than the area of the foundation of parishes, and endowed by the special bounty of particular persons, etc. are called curates. This causes testamentary or matrimonial, and where the church's censures are directed against particular classes of offenders. To them also belongs the whole ecclesiastical revenue, with divers fees or customary payments, and to them also the whole regulation of the terms of admission to their order.

The three great classes of the English clergy are the bishops, priests, and deacons. To be admitted into each of these denominations an ordination is of an entirely different character from that which arises out of office or appointment. Of this kind of distinction there is in the English clergy the archbishop, the bishop, the dean and canons of a conventual or collegiate church (some of the canons being in many instances invested with particular characters, as preceptors, successors, and the like), the archdeacon, the rural dean, the dean of some church whose constitution is peculiar, the rector, the vicar, the curate in some chapel called parochial, the minister of dissenters forming a small church, or what is called a proprietary chapel, assistant ministers to aid the vicar or the rector in some churches of antient foundation, and, finally, a body of persons called curates, who are of rare occurrence except in the hands of the church and in them the performance of their duties, but who are not dismissable at the caprice of the incumbent, nor left by law without a claim upon a certain portion of the profits of the benefice.

There are the various offices in which the clergy of the church of England are distributed. As the subject is of importance, and seems to be but imperfectly understood, we shall here briefly notice wherein lies the distinction of rector, vicar, and canon, or those one which belongs nearly every individual of the English clergy.

For this purpose, England must be regarded as divided into something more than 10,000 small districts, varying in extent, called parishes. Each of these parishes must be regarded as having its church, and one person (or in some instances more than one), who ministers divine ordinances in that church. This person, whose proper designation is *persona ecclesia*, enjoys of common right the tithe of the parish, and has usually a house and glebe belonging to his benefice. If, in a system of naval tactics. In 1770 he communicated to some friends his notions concerning what is technically called 'breaking the line.' In 1780 he communicated his plan to Mr. Richard Atkinson, the particular friend of Sir George Mowbray, and that gentleman, in consequence, a few years before leaving London, said he would strictly adhere to it in fighting the enemy. On the 12th of April, 1782, when the experiment was tried for the first time, it led to Rodney's decisive victory over the French, under De Grasse, in the West Indies. From that time the principle has been adopted by all British admirals; and during the last war, when Howe, Nelson, and others, executed the manoeuvre in perfection, it was universally attended with success. (See An Essay on Naval Tactics, systematical and historical, with explanatory plates, in 4 parts, by John Clerk, Esq., of Eldin, Fellow of the Society of Scottish Antiquaries, etc.; also an excellent article in the *Edinburgh Review*, vol. vi., p. 361.) A few copies of the first part of this valuable Essay were distributed among friends in the beginning of 1780. This part was reprinted and published in 1790, and the second, third, and fourth parts were added in 1797. Mr. Clerk was no sailor, and had never even made a single sea-journey.

Such is the account given by Mr. Clerk's relatives and friends, but it has been indignantly contradicted in various publications by General Sir Howard Douglas. In a circumstantial narrative of Admiral Rodney's battle, he proves that the passage of the British through the channel and thereby cutting off the rear ships, arose from the chance position of the two fleets, and was one of those happy and unprepared decisions of the moment which always characterize a great and successful commander. In addition to a confirmation of dates, he also shows that Mr. Clerk's ingenuous essay could not have been communicated to Lord
Of the public buildings the cathedral is the principal: it is on the central point of the city; and though it has never been completely finished, it is regarded as one of the finest monuments of Gothic architecture in France. It is built on the site of the old Flamboyant Cathedral, which was entirely destroyed in the revolution; from the summit of the remaining one a beautiful view is obtained of extending over 15 miles S. by E. Paris, in a direct line, or 232 miles by the road through Nevers and Moulins: in 45° 46' N. lat., and 3° 5' E. long.

It is unknown whether this town existed when Julius Caesar invaded Gaul: it was certainly not the Gergovia, in attacking which he experienced his most considerable check. Strabo mentions it under the name of Nemessos (Nemossas), and calls it the metropolis of the Arvernii, from whom Auvergne is named. Ptolemy calls it Apovneviceas. In the Theodosian table the name is found in a contracted form, Aug. Nemeto. At a subsequent period it assumed the name of the tribe to which it belonged; and it appears under the names of Nemessa, Nemorisia, and Marcellinus and Sidonius Apollinaris, in the 'Notitia Imperii' and the 'Notitia Provinciarum Galliae.' In the middle ages, the castle by which the town was defended, was named Clerus Mont; and this name, which at first was restricted to the castle, was afterwards extended to the whole town.

In a council at Clermont, held A.D. 1095, the first crusade was resolved on. Pope Urban II. presided. The transactions of this council were numerous and important. In the middle ages, and up to the period of the French revolution, Clermont ranked as the capital of Auvergne. The bishops originated in the third century, and the bishopricranked next among the suffragans of the archbishop of Bourges; and until the creation of the bishopric of St. Flour in 1317 was the only bishop in Auvergne. The diocese at present comprehends the department of Puy de Dôme, which had in 1832 a population of 253,196.

This town is delightfully situated in a part of the rich plain of the Limagne, in a nook nearly embosomed in the hills which rise round the base of the Puy de Dôme, and which surround the town on every side except the E. and N.E.: it is close to a small mountain-torrent which flows into the Allier, from which river Clermont is distant about six or seven miles. In approaching the town from Paris, the traveller passes through the little town of Montferrand, called the three cities, or 4000 inhabitants, situated in a plain, little eminence, and having very steep streets. It was one of the strongest places in Auvergne; but its walls have been demolished and the ditches filled up. This place has been, since 1571, regarded only as a suburb of Clermont. It has some cavalry barracks, the diocesan seminary for the priesthood, and a church remarkable for its large nave unsupported by pillars. Here also is held a large cattle-market. From Montferrand to Clermont is a noble road or avenue, two miles long, perfectly straight, and bordered with willow and walnut-trees. Clermont itself, built on an eminence, forms, when viewed at a little distance, a noble termination to this avenue, and inspires the traveller with a notion of its erect and dignified interior of the town. This place is not kept up. It is not well laid out; the streets are narrow, and the houses, though not ill built, yet present, from the dark colour of the lava, which is the chief building material, a sombre appearance; several are however white-washed. The town is filthy; or, perhaps, better, the town of Clermont is separated from the faubourgs, which (exclusive of Montferrand) comprehend half its extent and a third of its population, by a line of boulevards, which are for the most part parceled out with trees and flowers. The place de la Ratonneau is remarkable for a handsome fountain in form of an obelisk, dedicated by the townsmen to the memory of General Daucy, who was born in the neighbourhood: this place, and those of Poterne and of L'Espagne, are so agreeable prospects. The north entrance of Clermont is adorned with a Gothic fountain, richly sculptured, which was erected in the cathedral close.

Among the eminent natives of Clermont, Pascal, the author of the 'Lettres Provinciales,' holds the first place. Clermont is distinguished by some remarkable mineral springs; that of Jauldes, near the place Jauldes, is intermitent; it is called the Flowers. The place of water that gushes out with a violent ebulition, which also lasts some minutes; it then returns to its previous equable flow, and then alternates. The fountain of St. Alyre, which derives its name from the same, is a holy well; St. Alyre, in the Faubourg St. Alyre, is still more remarkable. It falls from a streamlet which, running through some kitchen gardens,
deposits as it runs a calcareous sediment, and gradually raises its bed until it attains the level of its source, when the waters, unless a new channel be found for them, overflow on all sides. These deposits harden as they are formed, and the proprietors of the country are obliged, from time to time, to alter the course of the stream and to break up the incrustations to prevent the land being covered by them. In one instance where they allowed the incrustation to become too great, a permanent stream was formed by the formation of a natural dyke or wall 250 or 260 feet long, which preserves nearly the same level, while the ground on which it stands has a gradual slope, so that it appears at one end to rise out of the ground, while at the other it has a height of nearly 24 feet. At its extremity this dyke has formed a natural bridge over a brook which crosses its direction, and into which the streamlet flowed. The raising of the bed of the streamlet led to the formation of a small cascade, which increased in height as the bed rose higher and higher, and threw its waters farther into the current of the brook; this current prevented the extension of the dyke at the bottom, but the continued deposits at the top caused it to impend more and more over the stream, and to throw out its waters farther until they fell on the opposite bank, and there forming new concretions, completed the arch. This bridge is somewhat broken. The owners of the gardens turn the streamlet to a profitable account by placing, where the waters have a fall, various objects, as fruits, flowers, birds, and fowls, on which they let the water run, which are speedily covered with a hard calcareous crust.

The plateau of Gergovia, some five or six miles to the south-east of the town, is said by Vayse de Villiers to have only been traversed by government carriages. Caesar had to raise the siege in his campaign against Vercingetorix (Comment. de Bell. Gal., lib. viii.); but D'Anville seems to incline to a contrary opinion. The arrondissement of Clermont contained, in 1832, a population of 17,166. (Mafte Bruz, Vayse de Villiers; Balbi, Kapilly; Puchet, Diction. de Géographie Commerçantes; Tour en France by J. C. Carey.)

CLERMONT DE LÔDÈVE, a town in France, in the department of Hérault, in the province of Languedoc, on the river Lergue, which flows into the Herault. It is 367 miles S. by E. from Paris in a straight line, in 43° 38' N. lat. and 3° 26' E. long.

Clermont-de-Lodève is situated on the slope of a hill, in a territory fertile in grain and fruit, and supplying abundant pasturage: there is an ancient castle. The population, in 1832, amounted to 5905 for the town, or 6199 for the whole commune. The inhabitants are engaged in the manufacture of woven cloth, for the navy, and for the export trade. Tea was introduced in 1787 and for home consumption, bandkerchiefs, worsted and cotton stockings, verdigris, cream of tartar, vitriol, cotton yarn, and leather. In these articles, as well as in the agricultural produce of the country, which is received from the country, the considerable trade is carried on. Clermont furnishes wool for the manufactures of Carcassonne, Lodève, Aubenas, Bedarieux, &c. There are several considerable markets in the vicinity.

CLERMONT-OISE. [Oise, Department of.]

CLEVES (Kleva, German), the most north-western district of the kingdom of Prussia, and part of the old duchies of Cleves and Gueldereiland, is at present one of the three districts which compose the prov. of Elsaessia, in the province of Rhine, and contains 36,295 acres of land, 5,369 acres of meadow or pasture, 3,268 acres of forest, 34,300 acres of waters, 3,268 acres of meadows or pastures. The soil is a loamy soil, and the crops are: wheat, barley, oats, rye, rye, oats, rye, rye, and gos. 7060. The produce is chiefly wheat, rye, barley, oats, buckwheat, peas and beans, potatoes, cloverseed, butter, and cheese, of which Cleves is divided into eleven parishes. The town, besides the capital, the town of St. Omeren-
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(Ulianus, De Bonis Liberrorum) who died intestate and left no heir (finae heres). Patron and client were not permitted to sue at law, or give evidence against one another.

Originally patrini only could be patrons; but when, in the later times of the republic, the distinction between the two classes had become obsolete; all the honours of the state, clients also were attached to them.

The termis patronus and libertus, or even patronus and clients, as used in the later years of the republic, and under the empire, cannot be considered as expressing the same relation as the terms patronus and clients in the early ages of Rome, though this latter relation was probably derived from the earlier one. When a foreigner who came to reside at Rome, became a Roman, which, if the universal, he did more no more than what every foreigner who settled in a strange country often finds in his interest to do. The existing relationship at Rome between patron and client facilitated the formation of similar relations between foreigners and Roman citizens; the foreigner thus obtained a protector and perhaps a friend, and the Roman increased his influence by becoming the patron of men of letters and of genius. (See Cicero pro Archia, c. 3, and De Oratore, iii. 39, on 'Jus Applications.' See also Niebuhr, vol. I, p. 316. &c., and the references in the notes.)

As a Roman client was defended in law-suits by his patron, the words of both parties were used in modern times for a party represented by a hired counselor or dicitor.

CLIFTON. [Brastol.]

CLIMATE is a word which has been transplanted from the Greek into every modern European language. The Greek word klima, which originally signified a compartiment or part of the celestial sphere, carries with it in exposition a certain relation towards the seasons of the year, and was afterwards used as a technical term in astronomy and geography to indicate generally the climate of a place or country. It is defined in an equal one, and is the part of the celestial sphere to which the sun, as the star which is at the center of the universe, is nearest. The plural of this word, klimata (climate), however, was used in a somewhat different sense, and answered, in some degree, to our parallels of latitude. The Greeks supposed that the sphere of the globe divided into thirty-six circles, or zones, parallel to the equator, and surrounding the whole sphere. They then endeavored to ascertain through what stars the parallel circles formed the boundary-lines of such a zone were to be drawn, and what stars fell within the zone. The same division they afterwards applied to the terrestrial globe, ascertaining first the places through which the boundary-lines of the zones ran, and then determining at what distance from them the intermediate places were situated. These zones were called climata, or climates, and were used by them as we now use the degrees of latitude.

These climates of the Greek geographers however did not coincide with the modern divisions of latitude. The principle of the division into zones was the length of the longest days; and a difference of half an hour generally determined the breadth of one of these climates. For instance, the boundary-line of the northern climate would run through the places in which the longest day had thirteen hours, and the other through those in which it was thirteen hours and a half. This was sufficient for their purposes in those parts of the globe where there was only a small number of places the positions of which had been determined. But it was not sufficient for those parts where the number of places determined was greater, as in Greece and the adjacent countries. Here they gave a less width to the climate, allowing an hour for the difference between the boundary-lines of a climate. For instance, the southern boundary-line of such a zone would run through the places whose longest day was fourteen hours, and the northern through those in which it was fourteen hours and a quarter.

The modern term of climate, therefore, has rendered this division of the globe useless, and we have substituted for it the notation by degrees of latitude. The Greeks, of course, made use of these climata as we do the degrees of latitude, and the word climate indicates in a general way the comparative temperature which a country enjoys by reason of its smaller or greater distance from the equator. Modern nations have adopted the term climate, but with a somewhat different application. Climate, with us, not only implies the greater or less degree of that heat which a country is subject to, but also the quantity of moisture in its atmosphere; and, in general, all the phenomena which affect vegetation, and render a country a fit abode for men and animals.

Heat and moisture, properly speaking, constitute climate. The other phenomena, such as winds, electricity, &c., are concomitants of climate, and must be considered as modishers of climate, according to the view which we take of the subject.

We may observe, that those places where a high temperature is accompanied by a fair quantity of moisture, are the most fertile, and display the most luxuriant vegetation, provided the surface is not formed of naked rocks; but even the solid rocks will in time yield to the combined influence of heat and moisture, and be clothed with rich and varied vegetation, even at a globe or sphere shows that the sun at the end of the first month after the equinox has already advanced 12° of latitude towards the tropic; but in the second month it traverses between 20° and 23° of latitude, the equator being 20° or 23° from the equinox. There remain therefore only 34° to be traversed in the third month. The sun recedes from the tropic in the same way. It passes the first month through 34°; the second through 6°; and the third through 9°. Thus, if the sun passes through two months and one half, it is 16° distant from the equator; and the solar rays must fall on it during two whole months, either perpendicularly, or in a direction still less removed from the perpendicular than in the former case. On the other hand, when the sun passes the equator, two places on the earth are the same distance from the equator as the other; but six days are yearly 34° of latitude distant from one another; and a place situated exactly under the equator has only during six days the sun as near its zenith as the above-mentioned places near the tropics have it during two whole months. The earth is therefore possessed of a new heat; and the summer heat of the latter period must be much greater than that of places near the equator. This degree of temperature must be increased by the greater length of the longest days, which vary from 12 hours to 12½ hours; but at the equator they are always of the length of 12 hours.

This reasoning is not contradicted by experience. The countries in which the greatest degree of heat is experienced are the countries on the banks of the Nile, on the banks of the Caspian Sea, and in the northern part of India. The antipodes were not unacquainted with the fact; and one of their most ingenious inquirers, Posidonius, was so struck by the peculiarities of the climates near the tropic, that, for the purposes of his geographical geography, he wished to consider them as forming a particular zone, different both from the equatorial zone and from the temperate zone, and separating these two in the form of a narrow belt. He observes that these countries are characterized by the aridity and sterility of their soil, and that no rain falls there, while the regions nearer the equator, having abundance of rain and moisture, are exceedingly fertile. (Strabo, ii. 4.)

It remains now to consider whether the mean temperature of places near the tropic is greater or less than that of places near the equator. During nearly eight months of the year the solar rays fall on the equator less obliquely than on the places near the tropic, and it is not yet determined by exact observations how the greater degree of heat which these countries are subject to during that period is sufficient to compensate the much greater degree of heat during the remainder of the year near the tropics. Very few meteorological observations have yet been published; and of these few we know not how they were made, and how they were affected by local circumstances. There is however a well-established fact which cannot be disputed, that in summer the mean temperature near the equator is higher than near the tropics; for this is the line of perpetual snow, which in the Bolivian
Andes is found to be at least 1000 feet higher than in the Andes near the equator, a fact well known in countries lying in different degrees of latitude, the most intense degree of heat which is experienced in all countries between the equator and 60° of latitude is nearly equal. The thermometer rises almost everywhere in St. Petersburg above 90°; and it is observed that even on the coast of Guinea, and on the banks of the Senegal, it rarely exceeds 95°. There are certainly instances in which it has attained a much higher degree. Dr. Couler observed it at 140° on the banks of the Rio Colorado (52° 30' N. lat.); but such exceptions must be ascribed to local circumstances, especially to the reflection of the solar rays from an arid and sandy surface.

The general rule derived from geographical position, as to the distribution of heat over the surface of the earth, is subject to many exceptions, arising from local circumstances. But none of these local circumstances probably affect it so much as the elevation of the surface. It is a well-known fact, that near the tropics and the equator there are mountains which, owing to their great elevation, are covered with snow all the year round. The heat experienced in a given place not only depends on the greater or lesser height of the temperature; but in N. lat. also on the greater or less column of the atmosphere. The column of air is greatest on the surface of the sea and in such countries as are nearly on a level with it. The higher we rise above this level the more the air is rarefied, and the degree of heat due to the solar rays decreases. Thus we at last arrive at an elevation where the heat, even under the equator, is insufficient to melt the snow. As the density of the air and the intensity of the heat continually decrease as we rise higher, some attempts have been made to determine the law of the decreasing temperature than the snow-line under the equator. As the Bolivian and Peruvian Andes, on which these observations were made, exactly resemble those of Ecuador in their local circumstances, it may perhaps be a reasonable conjecture that the mean temperature in summer near the tropics is greater than under the equator; which is by no means improbable from other considerations, as we have shown above.

The snow-line would then be represented, not by a curve of continuous curvature, but by one of this form.

These observations on the elevation of the snow-line above the level of the sea, are however only applicable to mountains which rise with a steep ascent, and are not contiguos to table-lands. High table-lands have a higher temperature than isolated mountains of the same height. Humboldt observed that the elevated plains on which the towns of Bogota, Popayan, Quito, and Mexico are built, have a much warmer climate than they would have if elevation above the sea were the only element that determined the temperature when the latitude is given. In comparing the mean temperature of these plains with the adjacent coast, he found that the thermometer, instead of descending one degree for every 343 feet, had only sunk so much for every 400 feet of perpendicular elevation. He thinks that this difference is due to the supposition that the temperature of the atmosphere, under these circumstances, is considerably raised by the reflection of the solar rays on a plain of considerable extent. This supposition is confirmed by the circumstance of the different heights at which the snow-line occurs on the southeastern and northern declivities of the Himalaya mountains. On the southern declivity of that range, which rises rapidly from the low plains of the Ganges, Mr. Webb found the snow-line at an elevation of about 13,000 feet, corresponding

Alexandar von Humboldt, who has made a great number of observations on the steep declivities of the Andes near the equator, came to the conclusion that the thermometer of Fahrenheit descends one degree when we rise 343 feet above the level of the sea, and one degree for every 343 feet more. Thus the thermometer may be used to determine in a rough way the heights of mountains or of elevated plains. The calculations of Humboldt however are only founded on observations made in the intertropical countries, and it is supposed that the same law will not be applicable in all its extent to places situated without the tropics.

As already observed, at a certain height above the surface of the sea, the heat caused by the solar rays is too feeble to melt the snow and ice: this limit has been called the snow-line, or line of perpetual snow, or line of perpetual congelation. This snow-line does not occur in all places at the same elevation, but is dependent on the mean temperature in summer, and consequently on the latitude of a place. In warm countries it is consequently found at a much higher elevation than in cold countries. It has been ascertained by numerous observations, that in the Andes of South America, near the equator, the summit of a mountain rising to less than 15,000 feet does not attain the snow-line, or line of perpetual snow. The Sierra de Maguá, (52° 30' N. lat.) is, according to Captain King, about 3500 or 4000 feet above the sea. At about 30° N. lat. the snow-line is considered to commence at the surface of the earth. Numerous observations made on the mountains of Europe, combined with those made by Humboldt in South America, suggested the idea that the snow-line forms a regular curve (north and south) on the surface of the earth in the following way:
tive hygrometrical states of the atmosphere; on which however the necessary observations are wanting, especially for Mount Cancaus.

By these considerations it is evident that the temperature of a country, so far as it depends on latitude and on the elevation of its surface above the level of the sea, may be determined with a certain degree of exactness, or at least within certain limits. But temperature is still affected by several influences and phenomena, whose influence cannot be subjected to calculation, and consequently cannot be brought under positive rules; at least not in the present state of our knowledge. Such circumstances and phenomena are of the state of the overhanging winds, the quantity of moisture, the electrical state of the atmosphere, and the physical character of the adjacent countries and seas.

With regard to the soil, it is a well-known fact that the temperature of countries whose surface is covered with sand is higher than that of those in which it consists of clay or other compact soils. It is likewise observed, that where the soil has been to a great extent cleared and brought into cultivation, the air is much drier and warmer in summer than in those tracts which for want of cultivation remain covered with swamps and marshy grounds. This, according to Darby, is the case in the cultivated parts of the United States, in which he asserts, contrary to the vulgar notoriety, that drier and warmer air has caused the summer temperature to be raised, and that of winter diminished. The latter circumstance would seem a natural consequence of clearing the surface and exposing it during the winter to the full influence of the north and east winds. In fact, as the country becomes more open, the range of the thermometer increases. As far as we know, no attempts have been made to ascertain to what amount such differences in the soil affect the temperature of a country, though our knowledge seems to be quite sufficient to assign the reasons for the existence of such a difference.

The effect of the wind and the temperature of a place is still more obvious. It is a common observation that the summer thermometer is more or less raised or depressed by every change of the wind. But there is a great difference in this respect between the lower and higher latitudes. In the former a change of wind rarely raises or depresses the thermometer more than a few degrees, while in the higher latitudes it frequently happens that in a few hours a change of ten or twelve degrees, and even more, takes place. Captain Scoresby mentions an instance of this near the polar ice. On a sudden veering of the wind to the north, the thermometer fell, in sixteen hours, 34°, from + 32° to −2°. But changes as great as this, so far as such changes are measured merely by number of degrees, occur in the United States of North America, at some distance from the Atlantic. Again, even in the higher latitudes, the change of the wind has a greater effect on the temperature on high table-lands than on low plains. Mr. Dunn states that on the table-land of Guatemala it sometimes, though very rarely, happens, that during the period of the northern winds a cold current produces a difference of 20 degrees in a few hours. A similar phenomenon has never been observed on the low coasts between the tropics.

It is a very common observation, that both cold and heat are more intense when the sky is clear than when it is overcast with clouds. Hence it may be inferred that countries whose atmosphere is more loaded with clouds and vapours than that of others in the same parallel, must have warmer winters and cooler summers. This is a very common observation all over the world, and from it arises the difference of climate in maritime and continental countries. It is even observed in countries which are at no great distance from each other; such as England and Holland. In England the mean temperature of the summer and winter is said not to differ more than 22° of Fahrenheit, while on the opposite shores of Holland it amounts to 27°, the winters there being a little colder and the summers somewhat warmer. On this account, we must observe that even supposing the mean temperature of a large tract of country to be ascertained, which, as is well known, never has been done, there is no very great propriety in comparing the mean temperatures of a country of the form and position of England with one of the form and position of America. If two points under the same latitude, and both near the sea, were taken on the opposite coasts of England and Hol-

land, the difference, whatever it might be, would obviously be owing to the difference in the tracts of country contiguous to the respective places, to the winds, and to the hygrometrical state of the atmosphere. The conclusion could be drawn, all these conditions should be known. There appears no doubt however that the difference in the mean temperature of the two seasons increases as we pass from the Equator farther east in the continent of America, and it is equally certain that it depends mainly on the hygrometrical state of the atmosphere, which again in a great degree depends on the winds.

Since the time of Franklin, the attention of observers has been directed to the fact that the temperature of one country has so much on that of contiguous countries. In calm weather that effect is probably so small as not to be perceptible. But whenever a wind is stirring, it brings the colder or warmer air from one country and thus lowers or raises the temperature of that country to which it blows. This effect is very perceptible on the eastern shores of England, with respect to the easterly winds. In the latter part of the spring or early in summer, these winds, before they reach England, pass over the still chilled and damp surface of the great plain of Northern Germany, and bring the almost unheated vegetation of our eastern counties. On the contrary, in autumn the same winds pass over a sandy soil, which during the summer has been rubbed by the sun, and the air brought over by them is warm enough to raise the thermometer several degrees. A still more remarkable instance is mentioned by Poepig, in his Travels through Chile, that when the cold air from the north and south, called there los Puelches, when they blow in spring (September) are so cold that they depress the thermometer in a short time 15 or 18 degrees; but towards the end of the summer (February) they raise it nearly as much. He attributes naturally enough the first effect to the change of the Andes being covered with deep snow during the spring, and the second to the high temperature to which the air upon the sandy plains of the Pampas of Buenos Ayres is heated during the summer.

Considering the great effect which the temperature of countries contiguous to one another exercises on their respective climates, we may presume that a similar effect is produced by seas similarly situated. This has been long ago shown by the observations made on the regular changes of the land and sea breezes in warm countries, and by the explanation of this phenomenon, which is obvious and simple. But it has only been recently ascertained that the proportion between the temperature of the sea-water and the atmosphere above it is not everywhere the same, but that in some parts the sea-water is warmer than others under the same latitude. Now the temperature of the water must in some degree affect the temperature of air brought into contact with the air of the land by the winds, must produce a change in its temperature. This consideration may sufficiently explain why the countries round the Mediterranean enjoy a much milder climate than all others placed under the same parallel. It is now ascertained that the temperature of the water of the Mediterranean Sea is from 4° to 5° higher than that of the Atlantic in the same parallel. This may perhaps lead us to the explanation of the greatest anomaly of climate which exists on the globe—we allude to the great difference of temperature existing between the western countries of Europe and all the other countries of the globe lying in the same parallel.

Those eastern and western countries, which differ in temperature between western Europe and the eastern coasts of North America were natives of western Europe, and of course they considered the climate of their own countries as constituting the rule, and that of North America as the exception. They attempted to explain this phenomenon by reference to some peculiarities which characterize North America as a continent, such as the increase of its breadth towards the poles, the stretching out of it towards the north, its large rivers and lakes, etc. But when the temperatures of Asia and the eastern countries of Europe was ascertained by observation, it appeared that their temperature differed as much, and in many places still more, from that of the western countries in Europe, than that of England and Holland. It is probable that a large part of America may therefore be considered as the rule, and that of Europe the exception. Still the question remains,
to what peculiar circumstance it is owing that the temperature of Western Europe differs from that of America and the countries lying farther east in the same latitude by so far as 3° or 4°.

We venture to offer an opinion that the Gulf Stream is the most active, if not the only, cause in producing this difference. This remarkable current stretches across the Atlantic between Cape Hatteras, in North America (35° N. lat.), and the Azores, forming nearly in the middle of the North Atlantic. It has a very marked effect on the climate of Europe, according to the calculations of Major Rennell, is not inferior to the Mediterranean in extent. The temperature of its water is from 3° to 10° higher than that of the surrounding ocean, and this temperature is likewise several degrees higher than it is farther to the east and south, but less so when compared with those portions of the Atlantic which lie farther to the east and north-east.

We think that this last difference is due to the strong gales which are almost continually experienced in navigating the Gulf Stream, but more especially on its borders; they blow most frequently from the south-west and west. Winds blowing from these quarters are by far the most prevalent in the Northern Atlantic, and it is observed that even on the coast of Western Europe they still preserve the character impressed upon them by the gales of the Gulf Stream. They do not blow equably like the other winds, but in abrupt gusts, with short intervals of calm. These winds are probably blown along the Gulf Stream over the whole of the coasts of Western Europe from Cape Finisterre as far as North Cape; they even penetrate through the wide gate between the Harz mountains and the Baltic, and their action on this body of water and their effects extend to the very plains of Russia, where they are met by the prevailing north-eastern winds and stopped. All the countries within the range of these winds enjoy a much more favourable climate than those to which they do not extend.

It may here be objected, that as the Gulf Stream approaches much nearer the coast of North America than that of Europe, and as the temperature of its water is also higher on the latter side of the Atlantic, it should rather apply to the New than to the Old Continent. But, in the first place, the gulf stream along the coast of America is of comparatively inconsiderable width, being opposite Charleston only from 60 to 63 miles across; and, secondly, its waters in their whole course along that coast lose very little of their temperature. At Cape Hatteras, after a course of 900 miles, the stream has only lost 3° Fahr. of warmth. From this point it turns to the east, and the southern border of the Gulf Stream should rather apply to the New than to the Old Continent. But, in the first place, the gulf stream along the coast of America is of comparatively inconsiderable width, being opposite Charleston only from 60 to 63 miles across; and, secondly, its waters in their whole course along that coast lose very little of their temperature. At Cape Hatteras, after a course of 900 miles, the stream has only lost 3° Fahr. of warmth. From this point it turns to the east, and the southern border of the Gulf Stream should rather apply to the New than to the Old Continent.

Yet even opposite the great bank of Newfoundland, after a course of 1300 miles through 15° of latitude, its waters have lost only 5° Fahr. of warmth, and the temperature in this part is from 8° to 10° above that of the adjacent seas. This, then, is the latitude in which we find the gulf stream turns, and about the middle of the Atlantic. Now, when we consider that on the eastern coasts of North America likewise the western and south-western winds prevail, it follows that by far the greatest portion of the warm air derived from the evaporation of the Gulf Stream must come to those countries which lie to the leeward of these winds. The parts of North America, however, to the east of the Appalachian range, seem also to feel in some degree the heated air of the Gulf Stream, and over the deluge of the Indian. Here it appears to be that which, according to the calculations from which it appears that south of 45° the mean temperature of South America is from 12° to 18° lower than that of those parts which lie in the same latitude of South America. But Captain Wewdel found very little ice in 74° 15' S. lat.; and our whalers always find it in great masses within the same distance from the North Pole. Eben Horsberg advance as far as 49° 45' N. lat. whilst in the southern hemisphere Captain Weddel says that there is no fear of falling in with ice north of 55° 26'. Many persons suppose that the peculiar form of South America, which narrows towards the south, and stretches out in the form of an acute angle, may be sufficient to explain this phenomenon; though we admit that this diminution of the surface of the land may have some effect, it is not, we believe, the only or the principal one, and, in our opinion, is not by any means sufficient to account for so great a difference in temperature.

There are other circumstances, besides those enumerated, which affect the climate of Europe, but their influence is confined to small tracts. Thus the temperature of some places is considerably raised or lowered from being situated on the southern or northern declivity of a high range, or in a narrow valley, or from being entirely or in a great part surrounded by water. The atmosphere being everywhere continuous, it has some influence on the temperature of contiguous places. But as the influence of such circumstances is local, it may be sufficient here to indicate it.

The circumstances which tend to increase or to depress the general temperature of a country being so numerous, and their effect (in producing which several of them often co-operate) being in some instances very great, it often happens that the actual temperature of a country differs considerably from that which might be inferred from the latitude in which it lies. To show therefore what countries, situated under different parallels, have an equal or nearly equal temperature, the isothermal lines, or lines of equal temperature, have been drawn to enable us to compare them.

The second chief constituent of climate, the moisture of the air, appears under the form of rain, vapour, fog, and dew. The laws according to which moisture is distributed over the earth are very complex, and the globe are nearly unknown, few attempts having been made to ascertain the exception of the rain, which is of a more distinct nature than the others phenomena. We shall limit our observations to rain.

There are extensive tracts of this globe on which a drop of rain is never known to fall, or only at intervals of many years, and then only in small quantities. These countries are always found near the tropics, sometimes extending over a large portion of the earth's surface. We are often only on the side towards the poles, which circumstance is not ascribed to peculiar localities. These countries may be said to run like two belts round the globe, dividing the countries on each side of the equatorial line from the temperate zones, as Posidonius very correctly stated. It is only where mountain-ranges exist, that these belts of rainless regions are interrupted. Beginning with the Old Continent, we find in Africa the Sahara or Great Desert, on the latter part of the east coast of India, the coast of the South China, and on the north between about 22° and 30°. Proceeding farther east, the southern rains cease in the country on the banks of the Nile between 18° and 19°, and the northern between 27° and 29°. Passing the Gulf of Guinea, there is a region of desert or low country, destitute of rains; but we do not yet know how far to the south or north the rainless region extends. The high table-land which backs this coast on the east is said to have annually some rain, but we have no account of this region on which we can rely; it may be that it owes this advantage to local peculiarities, especially to its elevation. Further east the rainless region extends through Meckran, a province of Beloochistan, the desert of that part of the Indian. Here it appears not to comprehend more than 4° of latitude. From this point it turns to the north-east and extends to 30° N. lat., comprehending the Indian desert to the very base of the Himalaya mountains. Behind this region is the table-land of Tibet, which also has no rain. But at the eastern extremity of the Old Continent, in China, there is no rainless region, which may perhaps be owing to the circumstance that all the parts of China between 22° and 30° N. lat. are traversed by the high mountainous range of the Nan-lung and Yooling, and consist of a continual succession of ridges and valleys.

The countries of the Old Continent contiguous to the Mediterranean are not so dry as those on the north, and the countries of the North Africa, on the shores of the Atlantic, which extends to the north of the Garcepe, or Orange River (between 24° and 28° S. lat.), is said to be a sandy desert, with little or no rain. Towards the Indian Ocean, Africa is traversed by several mountainous ranges, and is consequently subject to a warmer and moister climate. Australia also appears to be subject to the same disadvantage. The long droughts, sometimes
continuing several years together, which occur in our col-
lony, in New South Wales, indicate that a great portion of
Australia must be reckoned among the countries which are
entirely or nearly destitute of rain.
In America the rainless region near the tropics is less
distinctly marked, probably on account of geographical
considerations, in consequence of the tropics, and other
local peculiarities; yet such a region exists in both hemi-
pheres.
In the northern it seems to occupy the coast of the
Gulf of Mexico, between 24° and 26°, and to extend westward
across the arid districts of Lower California, thence through
Chihuahua, till it reaches the northern portion of the
Sierra Madre Mountains, whose northern extremity it sur-
ronds. It then stretches along both banks of the Rio
Gila down to the Pacific, where, however, it does not termi-
nate, as the peninsula of California has no rain north of
23°. The countries of South America, near the tropic of
Capricorn, rise suddenly from the Atlantic Ocean to a
considerable height, and take the form of high table-land,
traversed by mountain ridges. These parts of countries are
not without rain: but nearly midway between both oceans
the country sinks considerably lower, and the Grand Charo
or Great Desert occurs, in which rain seems to be very rare.

This extensive plain is divided from the Atlantic by a
mountainous country, and from the Pacific by the high
range of the Andes. In both these mountainous regions
rains are frequent; but on the coast of the Pacific, though
it presents a very uneven surface, not a drop of rain is
generally observed between 23° and 27° S. lat. This barren
tract consists of the Chinese department of Copacab and
the Bolivian province of Atacama.

These two belts of rainless regions, which on the land are
formed by very different circumstances, have a more distinct character on the ocean. Rain seldom falls
within the range of the trade winds, except on their
very borders, both towards the region of the calms and
towards that of the variable winds.

The two belts formed by the rainless regions are
situated those countries which are subject to the equa-
torial rains. The ocean also has these rains in a small
degree in those parts which constitute the region of
currents, where the phenomena of the sphere sub-
stantially one another with great regularity. The sun rises in
a cloudless sky: towards noon some faint clouds appear
clouds the horizon, which rapidly increase in extent and density,
and are soon followed by thunder and violent gusts of wind,
accompanied by heavy rains of short duration: towards
evening the clouds disappear, and the sun sets in a
serene sky of a deep blue hue. It does not appear that
this state of the weather is at all affected by the seasons.

Those parts of both continent and ocean which lie
within these regions, have the greatest quantity of
rain, and this occurs at certain periods of the
year, whereas these rains are called periodical rains. The
season of the rains depends on the position of the sun.
It begins in the daytime within the sun’s sphere of
influence, and continues for some time after it has passed it;
the rainy season varies with the difference of latitude.

Though the observations which are requisite to determine
this point are far from being sufficiently numerous, it would
appear that those countries which are near the equator are
never for many days altogether without rain, and that there
is no rainy season which occurs when the sun passes over
the tropic, is only distinguished from the other parts of the
year by a greater amount of rain than is usual in the migrant
countries. In the countries more than 5° of lat. distant
from the equator, the dry and wet seasons are distinctly
marked. The rains begin either immediately or not many
days after the sun in its progress towards such a place has
passed the equator. They are heaviest when the sun
approaches the tropic of the place, after which they con-
continue with less abundance for an equal or even longer time.
In general the rains are more abundant in the first than in the
second half of the season.

The rains between 2° and 10° of lat. have com-
monly two rainy and two dry seasons. The greater rainy
season occurs when the sun in its progress to the nearest
tropic passes over the tropic, and lasts from three to four
months. The less rainy season occurs when the sun on its
return to the nearest tropic approaches the parallel of
the place. The rains then last only from six weeks to two
months, and are much less abundant and continual. Countri-
es more than 10° or 12° from the equator have only in the
first begins when the sun
approaches the nearest tropic, and ends some time after, when,
in its course from the tropic, it has passed the parallel of the
place. It lasts from four to six months. Such is the course of the rainy and dry seasons in these
countries, when their regularity is not disturbed by local circum-
stances, which sometimes influence the duration and extent of
them. There is a remarkable deviation from this order observed in
India, where the period of the rainy and dry season is not regu-
larized by the position of the sun, but by the change of the
monsoons.

The periodical rains differ from the variable rains, which
occur in the countries that lie without the tropics, not only
in the greater regularity of the time at which they fall, but
also in their abundance. The quantity of water which
accompanied the variable rains is often greater than
that which falls in these latitudes in three or four hours.

There is however an erroneous opinion prevalent respecting these rains: it is generally supposed that they
continue for many days without interruption, but this is not
the case: a day in which the rains fall without interrup-
tion from morning to evening is of much rarer occurrence
between the tropics than with us; the sun usually rises in
a cloudless sky: two hours before noon the clouds begin to
appear, and at noon the rain begins. They then fre-
quently pour down in torrents for four or five hours; but
towards sunset they cease, the clouds suddenly disappear,
and not a drop descends during the whole night. As the
abundant rains, especially when the rainy season sets in,
early in the morning, are accompanied by violent gusts of wind,
and heavy showers of rain, the atmosphere of such stra
tracts is continually loaded with vapours and exhala-
tions during that period, which render the stars invisible at
night, and are doubtless the prin-
cipal cause of the internal circum-
stances of those countries.

The parts which lie between the rainless regions and the
pole are subject to the variable rains. There is not
a single day in the year in which it has not rained, or may
not rain, and the rains are perhaps as common in the night
as in the day; there are certainly different differences
in the quantity and in the time of the rains in these countries:
but this difference can only be ascertained by comparing long sets
of exact observations; and such exact observations are still
wanting in many parts of Europe.
Comparing these observations, one would suppose the
countries south of 45° N. lat., with few exceptions, have
also a kind of rainy and dry season, the former occurring
in autumn and winter, and the latter in spring and sum-
mer. In summer frequently two or three months pass
without a single drop of rain falling. In the countries
north of 45° such a difference is not observed: there
the greatest quantity of rain seems to fall in the summer,
except in parts of India, where the rains are the driest part of
the year. The quantity of rain however occasionally
advances from the shores of the Atlantic to the inland parts
of the European continent. The rains become again more
abundant when we reach the plains of Eastern Europe,
the plains of Roumania and the Caspian Sea. These are
due to the circumstance, that here the winds proceeding from
the Gulf Stream meet those which blow from the Ural
Mountains and the great sandy deserts. These rules,
derived from observations made in Europe, will probably
not hold good for other parts of the globe, because the
temperature of Europe forms, as we have observed, a
great anomaly. Accordingly we find that the few meta-

erological observations which have been made in the United
States are far from confirming these rules.

In estimating the climate of any given country, there are
other phenomena which require notice; but their effect on
climate has not been ascertained with any great precision,
and it is difficult to think that they can be very great,
though electrical phenomena are thought by some to have
considerable influence. They certainly change the condi-
tion of the atmosphere for a short time, which is most
obvious in those violent thunder-storms within the tropics
known as typhoons.

CLIMAX. (clima', a step or ladder) commonly called
a figure of rhetoric, but properly only an artifice of style; for
a figure or trope is a use of words in some other than their
natural or literal sense. In accordance with the primary
meaning of the Greek word, a climax corresponds to a mode
of expression by which the writer mounts, as it were, from
one clause to another, as if he were climbing a series of
steps. In other words, each clause expresses a higher
degree of truth or importance than the one before. The
three words which Suetonius records to have been

on occasion of one of his victories by Julius Caesar—'Veni, vidi, vici,' form a climax. The following sentence ad-
dresses the officers in the same spirit of extravagant praise:
"nihil mirabile, nihil cogitas, quod ego non audiam, non videam, planeque sentiam' (You do nothing, you attempt nothing, you conceive nothing, which I do not hear, which I do not see, nay, which I do not even feel). A gradual progress from the opening idea (Veni, vidi, vici) to the conclusion, is an admirable example of making impressions deeper and deeper; such disposition of members in a period, is termed a climax. In another pas-
sage he makes an attempt to explain the effect asserted to be thus produced. If a number of objects of the same kind are presented in a row (chap. iii.), 'they are so dis-
posed that it is impossible to be ranged along a straight line, the most agreeable order to the eye is that of an increasing series; in surveying a number of such objects, beginning at the least, and pro-
ceeding to greater and greater, the mind swims gradually with the successive objects, and in its progress has a very sensibl

Europe. His productions consist of his speeches made on various occasions in the performance of his official duties; papers read before literary and benevolent societies; corre-
spondence concerning the canal; judicial opinions, and variou

rors, and several similar institutions in

a genus of fishes of the section Acanthat-
termi and family Gobiidæ. It forms one of the sub-

ranged into two families; the first, Thecosomatidae, being pro-

ers, of the true Blennies, these fishes have small spiny appendages over the eyes. [BLENNIES.]

CLIO (Zoology), CLIO TRIBE, CLINOIDÆ, a family of naked marine mollusks, placed by Cuvier as the first of his class Pteropoda. Lamarck also arranges them under the Pteropoda, which he makes an order, but gives them a situation immediately after the Hyalides. De Blainville unites the Pteropoda and Gasteropoda of Cuvier in one class Paraphospho, under which the Pteropoda form a division of about one hundred species, ranged into two families; the first, Thecosomatidae, being pro-

vided with a shell, and the second, Gymnosomatidae, com-

prising those Pteropods which have none. Rang follows this last arrangement, and retains the genera Pter-

of De Blainville, and the second family of the class Pteropoda.

The following is De Blainville's definition of his Gymno-

somatidae:—Body of an elongated form, subconical, completely naked; two bundles of tentacular suckers at the mouth; no tooth in the upper lip; a small lingual plate bristled with spines.

Rang thus defines the family:—Animal with the head

distinct; no articulate lobes, but one or more fleshy ap-
pendages in place of it; a muscular envelope or mantle.

Genera, Clio. (Cliones, Pall.)

De Blainville, who says that he characterized the genus from his own observations, gives the following definition:—Body free, naked, more or less elongated, a little de-

pressed, attenuated abax (aminzi en arriere), without any other fins than the lateral appendages. Head very distinct, provided with a long retractile tentacula, divided into two groups of three each, and capable of being entirely concealed in a species of prepuce bearing a small tentacu-

lum on its external side. Mouth entirely terminal and parietal. Eyes sessile. Three membranous appendages to the ventral and genital sides of the fins. Vent and organs of generation situated in a tube on the right side. Cuvier, who paid some attention to the Clio, thus defines the genus in the last edition of the 'Regne Animal':—'The Clio has an oblong membranous mantle, without a mantle, the head formed of two rounded lobes, whence spring small tentacula. They have two small fleshy lips and a tongue (languette) at the front of the mouth, and the fins are pro-

vided with a vascular stalk, which is called a branchiæ. The branchiæ and generative orifice are under the right gill. Some say that they have eyes. The mass of the viscera does not nearly fill the external envelope. The stomach is large, the intestine short, and the liver volu-

minous.

The principal discrepancies in the above definitions are the following:—1st. As to the mantle. De Blainville does not notice it; Rang expressly mentions a membranous and

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CLINTON, DE WITT, has a claim to biographical no-

clature chiefly as the persevering promoter of the project for

the formation of the great canal from lake Erie to the At-

antic. He was born in 1769, at Little Britain, in the state of

New York. His mother was one of the distin-

guished Dutch family of De Witt; and his father, who was of

conspicuous eminence, according to the best authorities, was

major-general in the army of the United States during the revo-

lutionary war. De Witt received his education at Coloni-

a, New York; and was admitted to the bar. In 1797 he was

elected, by the democratic party, to the state legislature of New York; having previously been of- 

ficiated for several years as secretary to his uncle George

Clinton, as well as to the regents of the university, and board of 

of New York. In 1801 he was elected a member of the United States Congress. He was

was then filled the office of mayor of New York until 1815, 

when his retirement was occasioned by the violence of po-

litical parties. During the period between 1817 and 1826, 

he was several times elected governor of the state of New 

York, and of the demonstrative party. He was a member of 

most of the literary and scientific societies of 

the United States, and of several similar institutions in 

the European vicinity.
very contractile one; and Cuvier directly denis its presence. There is not much real contradiction on this point. It may not be strictly correct to call the contractile sac which envelopes the Clio a mantle, any more than it would be to give that name to the testis which is the investing integument of the Ascididea; but all marine authors must take it for granted that the external parts of Clio are surrounded and protected by a highly contractile integumentary envelope.

2nd. As to the organs of respiration. These appear to have entirely escaped the observation of De Blainville. He speaks of a number of branching and radiating tubes, and describes their structure. 3rd. As to the eyes. De Blainville expressly describes these organs and their position. Rang says eyes sessile; with a query, and Cuvier merely observes that some attribute to them. That the eyes are sessile is the least we can say of anything like a well developed eye properly so called is not very apparent, in Clio Borealis at least.

a. Species whose tentacles are well known. Of these, Clio Borealis and Clio Australis will serve as examples. The former, which appears to be the same with Clio limacina of Phipps, Clio reussi of Fabricius, and Clione papilionacea of Pallas, is well known to the whale-fishers and others under the name of 'whole-food.' The species occurs in the northern seas, and indeed so plentiful are they that they form a principal part of the food of the whale-bone whales. Captain (now Sir W. E.) Parry found it in great abundance in all parts of Baffin's Bay and Davis's Strait, in the neighbourhood of ice. (Supplement to Captain Parry's first Voyage.) Captain James Ross observes that it is very numerous in most parts of the Arctic Ocean, but less abundant in Regent's Inlet and the Gulf of Boothia. When the weather is calm, they come in myriads to the surface for the purpose of respiration; but scarcely have they reached it, when they again precipitate themselves towards the bottom. Cuvier, who gives this account of their habits, adds, that the sea is so glutted with them in certain seasons, that the whales, so to speak, cannot open their mouths without ingulphing thousands of these small mollusks.

Integument, a delicate, demi-transparent, soft skin which covers a second tunic. This last is thicker, and presents longitudinal and very sensible muscular fibres, which come from two principal bundles attached to the sides of the neck. The effect of these fibres must be to shorten the envelope of the body, and to approximate its form to a spherical shape. Cuvier, who gives the above description, adds, that he knows not with what the interval between this fleshy tunica and the mass of the visceræ is filled in the living state; but observes that it is certain that these do not form the area maggiore, or tunica incidenstis, as the ancient authors of zoology have conjectured; and conjectures that there may be a liquid diffused there, or perhaps only a quantity of air which the animal can compress at pleasure when it would sink in the water, and dilate when it would rise.

Digestive Organ. The mouth is between the bases of the two tuberces of the head. Below it are two triangular tentacula, which form, as it were, two small wings between the two large ones. The opening of the mouth is triangular; and within are seen some longitudinal wrinkles, which Pallas and Fabricius appear to have taken for teeth, but which have no hardness, and are entirely fleshy. The visceræ are connected by vessels and celluloidis which unite them in a small packet situated near the neck. The heart is most of them, with the exception of an angle which is occupied by the testicle and ovary. The oosphagus, of a fair length, descends from the mouth through the neck, and is dilated into a stomach towards the beginning of the intestinal canal. After having made a fold, proceeds directly to the vent, situated under the gill of the left side. The lirra is composed of many lobes and lobules, and envelopes the stomach and a great part of the intestinal canal. Two long and straight palps extend to the sides of the oosphagus; their excreatory ducts are inserted in the mouth. (Cuvier.)

Brain, Nervous System, and Senses. The brain consists of two lobes placed at the origin of the oosphagus. From each of these spring a small filament, which swells into a large ganglion that unite itself to its correspondent under the oosphagus. These two ganglia give out each their filaments to the neighbouring parts. Two of these filaments, one on each side, swell again into ganglions, which, uniting together by a new filament that traverses upon the

capillaries, form there a second collar joined to the first beneath: they give out a filament, which is twice swollen or knotted, and it is from these small knots of medullary matter that the different nerves arise. No eye could be perceived, nor any particular organ of the external senses, except the common and general organ of touch. (Cuvier.)

Respiratory and Circulating System. Each gill gives off a vein, which, uniting to its correspondent in the shape of a Y, forms the trunk which reaches the heart. This last, situated in its pericardium on the left side of the mass of visceræ, gives out, double, arteries for the whole body, but they could not be followed out. (Cuvier.)

Organs of Reproduction.—Very much resembling the Gastropods, and uniting, like them, to the two sexes. The ovary gives off a delicate and short oviduct, which reaches the testis, and at the point at which its origin resembles a coccus, lessens by degrees into a deferent canal, and terminates at a small round pursæ, which fills the left tuberæ of the head, and has its exit near the neck. It is understood whether the straight and firm part which terminates the deferent canal is the penis, or whether that organ is hidden in the small pursæ above noticed. At the side of this pursæ is another oblong one, analogous to that which is termed the bladder (la vessie) in the ordinary gastropods. (Cuvier.)

![Clio Borealis](https://via.placeholder.com/150)

**Fig. 1. Clio Borealis, view of the back: a, the body; b, the visceræ, s through the common integuments; c, the tuberæ of the head, and the horns wherein the three tentacula on each side are withdrawn; d, d, gills and f, f the internal tunica or fleshly process. A A, the principal bundles of its flers; t, the mass of oosphagus; m, the principal vein of the gills.**

The finest specimen of Clio Borealis we ever saw is in the Museum of the Royal College of Surgeons (Gallery Nat. Hist., 161 A.), presented by Captain (now Sir John) Ross.

The figures and description above given (Cuvier's) are taken from an individual which had its oosphagus, &c., withdrawn.

β. Species without tentacula, and whose cephale expanse is entirely without tentacula is one of a sort of narrow and very distinct thorax. (Genus Chilodites of Quoy and Gaimard.)

**Example. Clio (Chilodites) Caducus.** De Blainville observes that this species is too incompletely known to allow of a satisfactory conclusion as to what it is; and he even thinks that it may be identical with the Clio Australis of Bruguières.

**Pneumoderm.on.**

Animal oblong, subelliptical, divided into two very distinct parts, the anterior conical, the posterior oval. The fins placed near the separation of these two parts, and presenting between them, and on the ventral side, a small membranous appendage. **Mouth** at the extremity of a sort of rind or peristome is borne, at its base, two tubes of tentacula, each terminated by a small disc or sucker. **Gills** situated at the posterior part of the body, and disposed somewhat in the form of two C's placed back to back, &c., separated by a small pursæ. **Fin** on the right, and a little anterior to the gills. Outline of the oosphagus in a common tuberæ, situated at the root of the fin of the right side. **Example. Pneumoderm.on Perrimi.** This is about an inch in length, and was discovered in the Atlantic ocean by Pernon. The genus was established by
Cuvier. De Blainville founded his character upon many well-preserved individuals brought home by MM. Quoy and Gaimard from the expedition under Captain Freycinet, and the present Asias as the locality of the species.

CLIO. [MURS.]

CLITELLIO. [LUMBIRICUS.]

CLITHEROE, a market town, a parliamentary borough, and a parochial chappel in that part of the parish of Whalley, in the hundred of Blackburn, and in the northern division of the county palatine of Lancaster, 216 miles N.N.W. of London, and 26 S.E. of Lancaster. Its population in 1831 was 5213, two-thirds of whom are employed in trade, and the rest in agriculture, where several who constitute the county, the earliest known charter is dated in the time of Henry de Lacy, who died in 1147; but it did not send members to parliament before the first year of Elizabeth. The late Boundary Act extended the parliamentary borough to the neighbouring chappel of Downham, and the four townships of Whalley, Wisyllaw, Pendleton cum Henshaw, and Little Mitton cum Colcoute, and reduced the two members to one. The town is governed by two bailiffs, chosen annually by the burgesses and freemen. Three courts are held here, viz., the court-baron, the court-leet, and a court of inquiry, at which the bailiffs preside. They are held in the New Moot-hall, a modern building of the Gothic order, with a neat porch.

The name of this town, or, as it was antiently spelt, Ciderlaw, is descriptive of its situation, a hill by the waters. The family of De Lacy, who came over with the Conqueror, built the castle, consisting merely of a keep, with a tower and a remnant of a town, and remained in possession of Farnley until 1649. It was also used for the purpose of receiving tribute from the feudatories within that manorial district, still called the Honor of Clitheroe. Within the walls by which the castle was encompassed, where a handsome house now stands for the bailiff, was a chapel dedicated to St. Michael, which disappeared when the fortress was dismantled in 1649. Prior to this, the Honor of Clitheroe had vested in the crown, and Henry VI, after he was deposed, concealed himself there. In the year 1461 he was admitted into the mansion by the Talbots of Bashall and Colebry, who carried him to London with his legs bound to the stirrups of his horse. The Honor of Clitheroe was, for nearly three centuries, a part of the possessions of the duchy of Lancaster, till Charles II. granted it to General Monk, Duke of Albermarle, from whom it descended to the present proprietor, the Duke of Buccleuch.

The church of Clitheroe is an ancient structure, with a fine spire, and many ancient monuments. It is dedicated to St. Michael, the patron of the castle church. The living is a perpetual curacy under Whalley, of which Earl Howe is patron. Among the monuments of this church is a brass plate to the memory of Dr. John Webster, the astronomer, who was buried in it, and engaged in the practice of witchcraft in the seventeenth century. One of the incumbents was the Rev. James King, whose son circumnavigated the globe with Captain Cook. The Roman Catholics, the independent dissenters, and the methodists, have places of worship, with Sunday-schools attached, in which nearly 700 children are instructed. Contiguous to the churchyard is a grammar-school, founded and endowed by Philip and Mary in 1544, at the recommendation of Bishop Bridgman, who was the great victory of the French, and six governors, who appoint the master and usher, subject to the approval of the Bishop of Chester. The income is 45l. 8s. 6d., arising from the rectorial tithes of the parish of Almondbury, and lands and messuages in Yorkshire. In the year 1791 there are twenty scholars, who are educated in the classics, and writing and arithmetic, by whom an annual remuneration is made to the masters, under the name of a cockpenny; besides which fees, the salary of the head master is 30l. and up the statute remains.

Greaves' Grammar-school has been used since 1816 as a church Sunday-school, in which 350 children are instructed in the Madras system.

Clitheroe was until recently a place of little trade; but extensive woollen and cotton manufactories have been established, which, along with the lime-kills, find ample employment for the increasing population. The neighbourhood abounds with limestone, for which there is a great demand, as it can now be conveyed by water to any part of the kingdom. The houses of Clitheroe are built of stone, the streets are well paved, and the town is well supplied with water from springs. There has been a weekly market from the time of the Conquest. It is now held on Tuesday, though Saturday was the day for the chartered market. Every alternate week there is a cattle market on the 24th March and 21st July, for horned cattle and woolen cloth; and the fourth Saturday after Michaelmas-day for cattle, horses and woolen. (Communication from Lancaster.)

CLITHON, which is a Latin name.

CLITUS, or CLEITUS. [ALEXANDER III.]

CLIVE, ROBERT, LORD, was born on the 29th of September, 1725, at Styche, near Market Drayton, Shropshire. His family was respectable, but poor. He was sent to Dr. Drowne's school in several places, and distinguished himself rather by a love of mischief and a fearless disposition than by any aptitude or love for learning. He was sent to India, and arrived at Madras, in the civil service, as a writer, in 1744. Three years after he entered the service of the East India Company for the military, which suited him much better. In 1748 he distinguished himself at the siege of Pondicherry, and shortly after at the taking of Devi-Cotta, in Tanjore, on which occasion his superior officer recommended him to the notice of the Company and British government. Coming into contact with the French (with whom, and not with the natives of India, the main struggle lay) he beat them under their veteran commanders. The taking of Arcot in 1750, and his retirement into the British lines, were chiefly owing to this young officer and comparatively inexperienced officer. On his return to England in 1753 for the recovery of his health, he was highly complimented by the Directory of the East India Company. In 1755 he went to France, and obtained the rank of lieutenant-colonel in the king's service. Soon after his arrival, in conjunction with the naval commanders, Watson and Pocock, he reduced the dangerous pirate Angria, taking Ghorishia his capital, and all his treasures.

In 1756 the Nabob, Sujaugh-ul-Mahomed, had himself been, but the British, destroyed their factories, and barbarously threw part of their prisoners into the memorable 'Black Hole' of Calcutta. Colonel Clive was then, according to the usual practice of the time, gazetted as a captain of the British in India. He sailed at once with Admiral Watson to Calcutta, took Fort St. William, in January, 1757, and following up his advantages, thoroughly defeated and disorganized the Sujaugh's army. Clive's victories led to a peace highly advantageous to the British power in India, which before this event was dwindling to nothing. A series of intrigues and recriminations followed: Clive accused Dowiah of being wholly devoted to the French interests—his own, as it were—on his return to England; and, as the charge was without honour, in whom there could be no faith or confidence. On the other side it was urged that Clive, instable of power, influence, and wealth, had from the beginning determined to dethrone that Nabob—that with this view he joined with Meer Jaffer and his brother officers, and with Omichund, a Gentoo merchant, whom, it was said, he afterwards defrauded. In all these transactions the observation of the rigid rule of right is not to be expected on either side. Clive's business was to advance the British power in India, and the Nabob happened to be at once an impediment in his way, and a cruel tyrant, after the fashion of that country. The war that ensued was short and brilliant, for, with a handful of men, Clive gained the great victory of Plassey, and, on the next day, entering Murshabad in triumph, installed Meer Jaffer, who took the style of Jaffer-Ali-Cawm, in the crown of Sujaugh-ul-Dowlah. The deposed Nabob was soon taken, and privately put to death by his father's son. The new Nabob gave Clive a jaghire, or grant of land, which was said to produce 27,000l. per annum. Clive being made governor of Calcutta, held the chief command there, and throughout the rest of British Bengal, for about two years.

In 1758 he became a member of the Dutch armament sent against Bengal. In 1760 he returned to England, where he received the unanimous thanks of the Company, and was created by government an Irish Peer, under the title of Lord Clive, Baron of Plassey. He was returned to parliament for Shropshire, and became a member of Commons till his death. In politics he was rather liberal, being what was then called 'a moderate Whig,'—but he exercised prodigious influence on parliamentary elections. Speaking in the House of Lords, he said in a letter to his friend Major Carnac, 'If health had not deserted me 2 M 2
on my arrival in England, in all probability I should have been an English Peer instead of an Irish one, with the promise of a red ribbon. I know I could have bought the title (which is usual), but the I was above, and the honours I have obtained are voluntary.

After Clive's departure, the affairs of India fell into an apparently hopeless state of confusion, and he was once more sent out (in 1764) as the only man at all likely to reform the state of things. At last, however, he received the order of the Bath, and was promoted to the rank of major-general. In spite of dissensions and intrigues, and an almost general opposition on the part of the employees of the Company, both civil and military, he secured them in order, and did not allow the best interests of the British power to be raised in India. He, however, made many enemies, whose influence he felt a few years later.

He returned from India on the 14th of July, 1767, with a constitution thoroughly shattered. He was received with the greatest distinction. Five years later (in 1772) his proceedings in India were made the subject of severe animadversion in parliament, and out of doors; and in 1773 a select committee of the House of Commons was appointed to examine into them. The charges presented to the House were most serious, even including a charge of forgery; but on the great debate, on the 22nd of May, the motion was narrowed into a motion made by Colonel Burgoyne, and seconded by Mr. Hills; the main question being the conduct of his lordship during the period of his service in India. In the course of the debate, Mr. Burke, in his admirable eulogy of the wealth and power of his lordship, had abused the powers with which he was intrusted.

This motion was rejected, and, at five o'clock in the morning, a resolution was raised—"Resolved, that Lord Clive had rendered himself a service-worthy service to his country."

He was thus acquitted, but the course of the trial was a process of torture to his proud spirit, nor was the form of the acquittal altogether satisfactory. He never held up his head again, and towards the end of the following year he committed suicide. Soon after his first arrival in India, in consequence of a painful disorder, he accustom himself to take opium, the pernicious doses of which he gradually increased. After the last arrival in England, he suffered from a complication of disorders, and, to alleviate the anguish of the galls-stones, he swallowed opium in greater quantities than ever. His death took place on the 22nd of November, 1774, at his house in Berkeley Square, shortly after completing his forty-ninth year. (Life of Robert Lord Clive, collected from the Family Papers, &c.; by Major-General Sir John Malcolm, 3 vols. Svo. 1836.)

**CLIVINA**, a genus of coleopterous insects of the family Scauridiam, and section Geochepha. The technical characters are:—body elongate, somewhat cylindrical; antenon moniliform, the basal joints rather long (the first longest), the remaining joints short and rounded; palpi with the terminal joint long and pointed; mentum trilobate; the legs are broad and flattened, with two notches externally, leaving three long, pointed, tooth-like processes; the intermediate pair of legs with one of these external processes on the tibia.

We have nothing to do with this genus of Dyschirus, but we think without sufficient reason.

These insects are of small size, and live under stones in damp situations, particularly on the margins of rivers, lakes, &c.; their dentated and inferior tibia enable them to burrow like the Lamelliscocha beetles.

Of the genus Clivina but few species are known. In England there are two; the more common is Clivina fusca (or C. arenaria of some authors). This species is rather more slender than the others, and may be distinguished by the width of an inch, and the black or brown colour; the legs, antennae, and palpi, are reddish. Clivina collaria, the other British species, is rather less than the one just described. It is black, and has chestnut-red elytra, sometimes with a black dash on the suture.

The species of the genus Dyschirus is distinguished from those of Clivina principally by having the thorax globular, the terminal joint of the palpi thicker in proportion, and somewhat ovoid. They are also more slender in proportion, and more convex, or less cylindrical; they are almost always of a brassy metallic colour, whereas the species of Clivina are black or brown, and without any metallic lustre.

Of the genus Dyschirus between twenty and thirty species are known. Their habits are much like those of the genus Clivina, but they are less frequently found under stones, and often make cylindrical burrows in the ground in banks at the margin of rivers or other pieces of water. Upwards of twelve species inhabit this country, the largest of which is ascertained to have been one-eighth of an inch long. The species first described by Livi (Ivy, i. 38). According to Livi (v. 55) the chief subterranean passages originally followed the lines of the streets and public places, but in the hurry of rebuilding the city after the wild violence, the old lines of streets were neglected, and the houses were often built across the drains.

The cloaca of Rome consisted of several branches, which ran in the low parts between the hills; these branches fell into one large arched drain, constructed of solid blocks of stone, called the Cloaca Maxima, said to have been built by Tarquinius Superbus (Livy, i. 56), and repaired, in latter times, by Catu the censor and his colleague in office. A portion of this cloaca is visible near the Arch of Janus. It was formerly continued towards the Tiber, passing by the Corinthian peripheral temple, called the Temple of Vesta, close to which it terminated in the Tiber, at a point believed to be the Fulcherium Littus, so called from the sides of the river where the floating logs of wood were drained. The drain of the Cloaca Maxima is fifteen feet wide, and thirty high (these dimensions include the masonry); with three arches in contact one within another: in some parts there are seven; under the Robur; and at the mouth of the drain the stones are stone brackets to support the great water pipes of the fountains. Niebuhr says that the innermost vault forms a semicircle 18 palms in width, and of the same height. This vault is inclosed within a second, and this again within a third. The stone employed, called Roman peperino, is a greenish stone with black specks. The blocks are 74 palms long and 41 high. The same writer is of opinion that the Cloaca Maxima was only constructed to drain the Tiber, for which a fortification, called the Circus Maximus, (Hlst of Rome.) In the year 1742 part of the Cloaca Maxima was discovered in the forum, at the depth of thirty feet from the surface, constructed in a similar manner to the part which is seen near the temple of Janus. (Nardini, p. 219, lib. vi., cap. viii., regio viii.) Niebuhr, on the authority of Ficaroni, says it was constructed of travertine stone, and he thinks it of greater antiquity than the peperino construction. The only cloaca or drains for a city which can be compared with the cloaca of Rome, are the sewers of London; and no city in the world is better provided with this valuable and healthy convenience.

The maintenance of the Roman cloaca was originally the business of the censors, but afterwards belonged to the curators: for the drains of each city have a separate and distinct name. A very large cloaca, of which Pliny (xxvi. 15) has spoken in terms of unbounded admiration. The emperors created officers called curatores cloacarum. The city of Pompeii had cloacas in the style of other cities.

Festus derives it from the verb collabo, ' to wash together,' or ' bring together by washing.' (Encyclopedia Methodique, ' Architecture: Plan of Rome, by the Society for the Diffusion of Useful Knowledge; Nardini's Rome.)

**CLOCK.** (Horology.)

**CLODIUS PUBLIUS**, a Roman patrician, the son of Appius, first became notorious by introducing himself, in the disguise of a common Roman, into Caesar's house during the celebration of the sacred rites of the Feast of the Days. For this offence he was tried, but, by the help of his hirelings and dependents, and by bribing the judges, he was acquitted. (Cicero, Ep. ad Att., i., 12. 16.) Cicero, who was called to give evidence on this trial, made an opportunity respecting his character, for which Clodius never forgave him. It was chiefly in order to revenge himself on so formidable an enemy, that Clodius took measures to qualify himself for a future and ample tribune of the people: with this view he got himself adopted into the Populares, with considerable difficulty, and not without the help of Caesar and Pompey. No sooner was he elected tribune than he applied all his energies to effect the ruin of Cicero. (Cicero, De Off.)

In B. C. 57, when Lentulus had brought before the
Selene, in this case, is cited as an example of the power and influence of women in ancient Rome. Her story serves as a reminder of the challenges faced by women seeking recognition and respect in a society governed by men. The story of Selene also highlights the role of the Senate in shaping the course of events, as it is they who ultimately decide the fate of Selene and her family.

The subsequent events in Selene's story are significant for understanding the attitudes and values of ancient Roman society. The prominence given to Selene's beauty and virtue, as well as her ability to navigate complex political landscapes, serves as a testament to the ideals that were held in high regard during this period.

The story of Selene also serves as a cautionary tale, reminding us of the potential consequences of betraying the trust placed in one by those of higher rank. It underscores the importance of maintaining loyalty and integrity in all aspects of life, particularly in positions of power and influence.

Overall, the story of Selene is a rich and complex narrative that offers insights into the social, political, and cultural dynamics of ancient Rome. It is a story that continues to resonate with contemporary audiences, as it speaks to universal themes of love, power, and the pursuit of justice.
other places of Protestant and dissenting worship. 5. In the latter year, the gross population of this diocese was 123,848, of whom there were 4,761 members of the Established Church; 119,082 Roman Catholics; 2 Presbyterian, and 6 other churches. In the proportion of one Protestant of whatever denomination, to 22 Roman Catholics nearly. There were at the same time in the diocese 111 schools, educating 8,656 young persons, being in the proportion of 65, or very nearly 7 per cent of the whole population, under daily instruction, in which respect Clonfert stands twenty-second among the thirty-two dioceses of Ireland, and is on a par with the diocese of Ross. Of these schools, 7 are in connection with the Board of National Education, being in the proportion of one to sixteen.

Clonfert, from which the diocese takes its name, is a vicarage in the barony of Longford, and county of Galway. The name of the place signifies a wonderful den, or place of continual noise. He was at first, not disdained by the bishop for his piety, and in 1161 his remains were here deposited in a separate shrine. Roland Lynch, who succeeded to this see in 1602, was also bishop of Kilmacduagh, a neighboring diocese, which has ever since been held in connection with Clonfert. By the 16th chap. of 117th of Will. IV, cap. 37, § 121, the united bishoprics of Clonfert and Kilmacduagh, as soon as vacant, is to merge into the joint see of Killboda and Kilfenora.

(Ware's Bishop; Beaufort's Memoir of a Map of Ireland; Reports of Commissioners.)

CLOMENL, the a-size town of the county of Tipperary, in Ireland; situated chiefly on the north side of the river Suir, in the barony of Ibea and Offa East, in the county of Tipperary, on Monroe Island, in the same river, in the barony of Upperthorp and county of Waterford; 168 miles from Dublin; 52° 19' N. lat., and 7° 43 W. long. The limits fixed by the Boundary Act include only 361 statute acres, comprising the town on the north side of the river with the islands. A population of about 1000 is excluded by the new boundary line, which cuts off many mean cabins in the suburbs.

Clonmel is a place of considerable antiquity. It is said to be founded by the Danes of Grangmore, who had a grant of Tipperary, and a considerable portion of Cork, was the first English possession. He founded a Franciscan Friary here, a d. 1269.

Clonmel, from its situation on the frontiers of the pale, was a favorite station for assembling on any emergency. The town appears to have continued faithful to the crown until the rebellion in favour of Simnel and Warbeck. A disposition to revolt was also manifested by the inhabitants on the death of Queen Elizabeth. On the breaking out of the war in 1641, Clonmel declared for the Roman Catholic cause.

Clonmel continued a strong hold of the ultra Roman Catholic interest until the end of the war, and made a good defense against Cromwell, who besieged, and finally took the town, when the council was not included, but to the council adhered to the losing party until after the conclusion of the wars of the revolution by the treaty of Limerick. Few antiquities remain: a gate-house at one end of the main street is the only part of the old works standing.

The town is governed under charter of the 5th July, 6th James I. The corporation consists of the mayor, five burgesses, and commonalty; and is one of those subject to the regulation of the new rules of the 5th Charles II. The council consists of the mayor, and of ten councillors, who for four years are elected by ballot. Prior to the passing of the Reform Act, the same family had also the return of the member for the borough. The assizes for the county of Tipperary are held here twice a year; petty sessions, quarterly, which do not share the cognizance of any matters arising in the town or liberties, are held every third Saturday. The mayor's weekly court has jurisdiction to the amount of 100 Irish. The court, in which the mayor also presides, has unlimited jurisdiction in civil, but none in criminal matters. Taxed as the heavy stamp duty on the admission of attorneys to practise in it. There is no corporation gaol, but a county gaol, house of correction, and marshall. The corporation has no criminal jurisdiction. The property of the corporation has been mismanaged. Their estate, of 3,300 acres, 120 houses, 12,114d. per annum. Many of the leases under which it is at present held have been executed lately, some of them to the patron at an under value. There are twelve monthly fairs, ten of them the exclusive property of the patron; and markets twice a week.

(Order of Commissioners on Municipal Corporations in Ireland.)

The present condition and appearance of the town are highly respectable. Southward from the main street, which runs parallel with the river Suir, running up the bridge of two of which are carried over the islands in the Suir. Adjacent to the lowest bridge are the works which supply the town with water; a house of instruction stands near the upper. There are barracks for a regiment of foot and two troops of horse, a fever hospital, a parish church built in the form of a cross, a Roman Catholic chapel, and a large cotton manufactury. The market-house is strong and well built. The lunatic asylum for the county of Tipperary, opened here in 1835, cost 16,507L. 19s. 3d., and is calculated for sixty patients. The cost is to be defrayed by fourteen annual instalments by the county. Commissioners, appointed 25th Sept., 1828, under 5 Geo. IV, c. 82, regulate the lighting and watching of the town: for the last seven years the finest streets are those under the lights, and lighting tax, levied annually, is 7552L 14s. 6d. The streets are paved and cleansed by the corporation. The expense of paving and cleansing for 1833 amounted to 417L 4s. 0d. For the last fifteen or sixteen years Clonmel has been subject to great agitations for some time, but the present state of the town, says Mr. Ingles, 'the great point of export for Tipperary, which is one great granary, as well as for parts of other counties, for it is the first point at which water-carriage commences.' The exports are chiefly wool from the first article to two from three thousand thousand barrels of wheat are annually brought into the town. The flour mills are very numerous and extensive. The family of Grubb, and other members of the Society of Friends, have been chief proprietors of the islands.

The borough, as laid down in the Boundary Report for 1831-2, contains 1532 houses; of which 419 are thatched, and 1113 are slated, and 771 have seven windows and upwards, with a population of 12,246, and a probable constituency of 652. The population of the whole town, in 1821 was 1590, consisting of 7727 males and 838 females: in 1831 the numbers were respectively 6654 and 8480. In 1821 the number of inhabited houses was 2035, and of inhabited houses and land in 1831 the numbers were respectively 1793 and 2754.

The population of the whole parish of St. Mary, in which Clonmel is situated, was, in 1834, according to the first report of the commissioners of public instruction, 17,655; of whom there were 1737 members of the Established Church, 13,938 Roman Catholics, 44 Presbyterianists, and 206 other Protestant Dissenters. According to the second report of the same commissioners there were in the same year 12,000 inhabitants, 12,786 males and 12,786 females; total, 1172. Of these schools there were then endowed. One is a boarding and day school. The endowment, amounting to 400L, Irish annually, is handled by the families of Mountcassell and Ormond: the other is a parish school, conducted by a schoolmaster with a small endowment of 100L annual. There does not appear to be any free school, except one for ten females, nor are any of the above in connection with the Board of National Education.

(Goo's History of Ireland; Carkelhane's Memoirs; Ingles's Ireland in 1834; Post Chaise Companion; Pub...
CLOTHEIL: and was killed at the siege of Orléans. During his absence Clotilde is said to have composed and addressed to him her first epistle, which is one of the most beautiful pieces of lyric poetry that has come down to us. Ovid's compositions of the same name. She afterwards, during her long widowhood, is said to have composed the other poems which bear her name. They consist chiefly of odes, rondeaux, chansons, epistles, with fragments of an epic poem. The date of a collection of the epigrams of the battle of Bornovino gained by Charles VIII. But the authenticity of these compositions is very much doubted. It rests merely on the reported assertion of Joseph Etienne de Sacy, that Clotilde, as an officer in the royal army, who emigrated at the time of the French revolution, but who having re-entered France in 1796 was tried and executed. He is said to have discovered Clotilde's autograph MSS. among the family papers, which however was destroyed at the time when the peasantry went about burning the mansions of the nobility. He entrusted some friends with a copy of the poems, which were first published by Vaudemont in 1603, with a biography of Clotilde. For the controversy about their authenticity, see Biographie Universelle, art. 'Survile ('Clothilde), and the authorities referred to; among others, Raynouard's article in the Journal des Savants, July, 1824.

The poems are not without merit; and if not written by the lady, they are evidently written by a person of the same style of the fifteenth century, although some of the images and expressions appear to betray a later origin. Clotilde is said to have died at a very advanced age. (Biography, preceding article.)

CLOUD, a mass of vapour or other substance not a necessary constituent of the atmosphere, elevated to a considerable height in it. When very near the surface of the earth, it takes the name of mist; or rather, perhaps, we should say, it is a product of the earth. Following the example of his father, he divided the monarchy of the Franks. Caribert was made king of Paris, Gontran king of Orleans and Burgundy, Siegbert king of Metz or Austrasia, and Childebert king of Soissons. CLOTAIRE II. was son of Childebert, king of Soissons, or of Neustria, and of his wife Fredegunda. His father died, and left him an infant, under the regency of his mother. After many civil wars, occasioned by the rivalries between Fredegunda and Brunehaut, the wife of Siegbert, king of Austrasia, Clovis united in his person the whole empire of the Franks, as his grandfather Clovis I. had done before him, A.D. 613. Having taken Brunehaut prisoner, he put her to a cruel death. Clovis, in order to conciliate his new subjects the kingdoms of Burgundy and Austrasia, appointed a Maire du Palais, Major Domo Regni, to each, for life. The office previously seems to have been held, as well as in Neustria, during pleasure only. The Maire being a kind of squire, was not the same as the French parlement, as the parlement of Paris. CLOTAIRE issued general ordinances, which were called ' Capitulums.' He also convoked at times a kind of not a parliament (so called from the word parli, or parler, to speak), which was an assembly of the chief officers of the Franks. The bishops had not admission into these assemblies till the time of Pepin, the father of Charlemagne. (Histoire du Parlement de Paris.) The principles of government were also called ' Placita,' from which term are derived the words plaida and plastir, to plead. Clovis had to sustain a war in his German dominions beyond the Rhine against the Saxons, whom he defeated with the loss of their king, A.D. 626. In 630, 641, and 653, he often visited the church of St. Germain des Pres. His son Dagobert, who succeeded him, gave to his brother Caribert part of Aquitania with Toulouse for his residence. Clovis I. was a man of abilities and of considerable parts. He was learned and popular, but ambitious, unprincipled, and cruel, like most of the Merovingian kings. (Velly, Histoire de France sous la Premiere Dynastie.)

CLOTH, a genus of fossil bivalve shells, established by Solen, is abundant in the sands and in the shells of Cypraeacea. Shell oval, subrugated, striated longitudinally, equinvalve, subequivalvular. Hinge formed by a bifold tooth, curved into a look, a little larger in one valve than in the other. CLOTHILDE, MARGURIITE ELEONORE, born at Vallon Chalis, in the Vivarais, on the banks of the Ardeche, about 1465, married Bremeng de Survile, who soon joined the army of the dauphin, afterwards Charles VII.
studied in this way, we could perhaps have written more definitely upon it) is given by Mr. Dalton in the first edition of his Meteorological Essays (1793), the observer being Mr. Grissell of Keswick. By accurate measurement of Skiddaw, and fixing marks on the side of the mountain, which is 1050 yards high, he was able to ascertain by inspection the height of any cloud, when it did not exceed the height of the mountain.

This he did three times each day, morning, noon, and evening, for five years, missing only as many observations as amounted to omitting less than a week per year. The result is as follows, the number of times in which either the clouds were above the mountain, or there were no clouds at all, the last circumstance occurring about once out of thirty times.

<table>
<thead>
<tr>
<th>Month</th>
<th>More than 300 feet</th>
<th>More than 200 feet</th>
<th>More than 100 feet</th>
<th>More than 50 feet</th>
<th>More than 25 feet</th>
<th>More than 10 feet</th>
<th>Overhead</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan.</td>
<td>9</td>
<td>12</td>
<td>28</td>
<td>53</td>
<td>29</td>
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<td>32</td>
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<td>Feb.</td>
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<td>Mar.</td>
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<td>Apr.</td>
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<td>May</td>
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<td>June</td>
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<td>July</td>
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<td>Aug.</td>
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<tr>
<td>Sep.</td>
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<td>Oct.</td>
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<td>Nov.</td>
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<tr>
<td>Dec.</td>
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<td>24</td>
</tr>
<tr>
<td>Total</td>
<td>484</td>
<td>282</td>
<td>407</td>
<td>505</td>
<td>513</td>
<td>485</td>
<td>416</td>
</tr>
</tbody>
</table>

Thus, it appears, that in the month of September, for instance, for seven times that the clouds were between 200 and 300 yards high, there were 38 times in which they were between 200 and 600 yards high, &c. The supposition of the height of the clouds depending on the barometer, was in no instance countenanced by these observations, and though in heavy and continued rains the clouds were mostly below the summit, yet it frequently rained when they were above it.

The most complete classification of clouds, and sketch of their usual forms and arrangements, is to be found in a paper by Mr. Luke Howard, first published in Tillotson’s Magazine, then in Rees’s Cyclopedia, afterwards in Nicholson’s ‘Journal of Natural Philosophy,’ &c., vol. xxx. p. 35. In this paper Mr. Howard first proposed the nomenclature which is now so frequently used, and of which we give the heads in his own words.

1. Cirrus. A cloud resembling a lock of hair, or a feather. Parallel, feathery, or diverging fibres, unlimited in their length, are their characters.

2. Cumulus. A cloud which increases from above in dense, convex, or conical heaps.

3. Stratus. An extended continuous level sheet of cloud, increasing from the ground.

4. Cirro-stratus. A connected system of small roundish clouds, placed in close order or contact.

5. Cirro-stratus. A horizontal or slightly inclined sheet, attended at its circumference, concave downward, or undulated. Groups or patches having these characters.

6. Cumulo-stratus. A cloud in which the structure of the cumulus is mixed with that of the cirro-stratus, or cirro-cumulus. The cumulus flattened at too, and over, hanging its bases.

7. Stratus. A dense cloud spreading out into a crown of cirrus, and passing beneath into a shower.

CLOUD, ST., a small town in the immediate neighbourhood west of Paris. It lies on the left bank of the Seine, not far from Sèvres; the road to it is a branch from the great road by Sèvres to Versailles. It is in the department of Seine et Oise.

This place is said to have been known, in the earlier ages of the French monarchy, by the name of Nogent. Chisleul, one of the three sons of Childebert, king of Orleans, retired hither in the sixth century, having embraced a monastic life to avoid the fury of his uncles Childebert and Clothochar or Cloudere, who had (A.D. 533) murdered his two brothers in order to seize their inheritance. This prince was canonized, and his name, corrupted into St. Cloud, has been given to the town where he passed his life and where he was buried.

The claims of this place to notice are founded upon its park and palace, the favourite residence of Napoleon, and now the usual summer residence of the king of the French. The greater part of this park was formerly a chateau belonged to a Florentine, Jerome de Gondi, in which Henry III. of France took up his quarters during the siege of Paris by his own forces and those of Henry IV., the king of Navarre, in the year 1594, when he was killed by the plotting of Jacques or James Clément. The heart of the unfortunate prince was deposited in the parish church of St. Cloud, with this inscription, 'Passenger, pity the lot of knaves.' The church, which had long been in a decayed condition, was restored by the revolution by the queen Marie Antoinette, who commenced the erection of a new one at her own cost, but the breaking out of the revolution put a stop to it. The domain with an adjacent one was purchased by the prince de Condé, and in 1663 it passed into the possession of the duke of Orleans. The present palace, built by the duke, has engaged the talents of several architects, among whom is Mansard. It was purchased a little before the revolution by Marie Antoinette, who much enlarged it, and restored it more magnificently. Bonaparte, on his return from Egypt (A.D. 1799), assembled the Council of the Five Hundred in the palace of St. Cloud, and dissolved them by force.

The park of St. Cloud extends from Sèvres to the town of St. Cloud, on a hill which rises above the bank of Seine. The lower part of the park, along the bank of the river (from which it is separated by a road and towing path), is occupied by a magnificent plantation of elms and by green lawns: it is the part most frequented by those on horseback. The section, as it is called, is the nearest to Paris and is the most fit for serious residence, for walking. The upper part of the park, and the wooded slope of the hill on which it lies, excel the lower part in picturesque beauty. The slope, skillfully planted, is adorned by masses of foliage, by frequent steep descents, by the masties, and by its various trees. Down the slope falls the cascade of St. Cloud, the water tumbling from one basin to another in the form of shells, and adorned with grotesque statues of marble and figures cast in lead; at the bottom of the cascade, the "giant’s step," a spacious terrace, with the height of more than a hundred feet. The upper part of the park has spacious lawns and allies of trees stretching beyond the reach of the eye, but the turf is not so fresh nor are the trees so vigorous as in the lower part. At the edge of the slope, a platform called "La Balustrade" commands an extensive view, including the long meanderings of the Seine, the whole extent of the capital, and a considerable part of the surrounding country. From this platform rests a lofty square tower, from the top of which many interesting points are visible. This tower was built by Bonaparte A.D. 1801, and on the top of it is a copy of the lantern of Demosthenes.

The chateau of St. Cloud is equally admired for the beauty of its situation and the elegance of its architecture. It was built by Mansard in the first years of Louis XIV., and is as beautiful with less pretension. It consists of a principal front and two wings at right angles, enclosing three sides of a square, the fourth side of which is formed by a terrace and a cascade, from which there is a view of the park and of the castle of St. Cloud, on which the present chateau stands. There are three porticos of the Corinthian order, one in the centre of the principal front, and one at the extremity of each wing; the intervals are adorned with statues and reliefs. The most remarkable part of the interior are the gallery painted by Mignard, and the room called the "Salle du Mars," the ceiling of which was painted by the same artist; but the chief ornament of it is four superb marble columns, the pictures are not numerous, but they are well chosen. The chateau was much improved and splendidly furnished by Napoleon.

The town of St. Cloud abounds with houses of public entertainment, tea gardens, cafés, &c. The population in 1832 was 1535. There is an annual fair in the month of September, which lasts three weeks, and attracts a number of persons from Paris on the Sundays which fall during its continuance. (Vasse de Villiers.)

CLOUDBERRY, a dwarf kind of bramble, with beery fruit, yellowish-red, firm, sour and juicy, found in turf and in the woods of Sweden, and in the mountains of Norway. It is very well flavoured when newly gathered.

CLOVE PINK, a species of Dianthus, so called from its connection in odour between its flowers and the cloves of the shops.

CLOVER, a name given to different species of Trifolium. Dutch clover is T. repens; purple clover is T. pratense; orchis, or perennial clover is T. medium.
Clover was introduced into the agriculture of Great Britain about the sixteenth century, from the Low Countries, where it had been long cultivated as green food for cattle in situations where natural pastures were scarce. It was the first step towards the improvement of the old triennial system. Its abundant increase, in consequence of annual weeds, which smother it by its broad foliage, and especially the beauty of the wheat sown after it, soon recommended it as an indispensable part of an improved rotation of crops. It is not too much to say, that the progress of the cultivator may be measured by the annual increase of the quantity of clover which is produced upon it on an average of years. There are various kinds of clover, which all go under the botanical name of trifolium, from the three leaves which now it for hay and for green manure. One of these clovers has three heart-shaped parts. They are annual, biennial, or perennial plants. The annual clovers, with the exception of the trifolium incarnatum ("Trifolium incarnatum" or "faroche"), introduced from the south of France, are not so generally cultivated as the biennial, which produces white clover and is one of the first to be sown along with the spring corn comes up the first year under its shade, and gives a full crop in the second. In good land it will sometimes stand another year, but it falls off in quantity; and unless other artificial grasses or perennial clovers have been sown amongst it, to fill up the places where the biennial clover has failed, it is seldom profitable to allow it to remain on the ground more than one year after that in which it is sown.

The sowing of clover is a matter of considerable importance. The clover is the common red or broad clover ("Trifolium pratense"), which is usually sown with barley or oats, or sometimes among wheat or rye in spring. When these are drained and hoed then the clover sown in the meanwhile for food can be taken out. The crop which is already advanced in growth, because it is kept under, and there is no danger of its injuring the chief crop by its too great luxuriance. There is however some risk of the clover not coming up so well, if the wheat or rye is very close on the ground. Another clover is known as "cow clover," and is sown amongst wheat, in Norfolk invariably with barley, and in Belgium among rye. This depends on the various rotations adopted in different countries. The first crop is generally wheat and made into hay; the second year clover is taken not to break off the tender leaves of the plant in drying; the swarth is not taken off as is done with meadow grass, but merely turned over, and if the clover can be dried and put in a stack without any shaking, it is so much the more valuable. When clover is soaked with rain, no hope of an improvement in the stack must induce the farmer to carry it together, so long as the least moisture remains. If it is allowed to stay in the field till it is perfectly dry, even when it has been heated and made into hay, it is then trod hard in a rick with a sprinkling of salt over each layer, it will be readily eaten by cattle in winter, and be far more nutritious than that which, having been stacked in a moist state, will infallibly come out musty. A very good rule is, that when the weather is fair the weather cannot be reckoned upon—particularly when the second crop is cut in September—is to take advantage of two or three dry days to cut the clover, and turn it as soon as the dew is thoroughly dried off the upper surface; the next day, do the same, and in the evening carry the green dry clover and lay it in alternate layers with sweet straw, so as to form a moderately sized stack. A fermentation will soon arise, but the dry straw will prevent all danger from too much heat; during the first day it will be eaten with avidity by the cattle. To those who make clover-hay for the use of their own stock in winter, we recommend this as preferable to the common method, even when the weather is less dangerous. But where the temperature it in September would probably save the crop two years out of three.

It is usual to sow rye-grass ("Lolium perenne") in a small proportion with clover seed, especially where clover, having been often repeated on the same land, is apt to fail. In Great Britain in the west of London the unmixed clover obtains a better price, there is no reason why it should be preferred, unless the rye-grass has been allowed to stand too long and has grown hard. Young rye-grass is a good, and its abundant the heating qualities of clover-hay. A very extensive use of clover-hay in London is to cut it into chaff, and to mix this with oats and beans for dry horses, which have little or no hay given them in any other way; but the most profitable use of clover is to cut it green for horses and cattle. With a little manage-
should be mown early, or fed off by sheep in May. The first crop is seldom free from various seeds of other plants which enter and grow by force of wind, or by the action of birds, these are destroyed, and the clover, which grows more rapidly than most other plants, rises again without any mixture of weeds. When the blossoms are thoroughly withered, and the seeds are ripe, the flowers are dried on the ground without much shaking. In very dry weather it may be hou-ed or stacked in a week; but the process is much retarded by showers and want of sunshine. It is therefore only in the drier parts of the island that clover is to be seen and is at all cultivated, and even so usually is only to be seen and is at all cultivated, and even so usually is only cultivated to a great extent, could not be supplied without a considerable importation from abroad; and this has caused an outcry against the duty of 20s. per cwt. on foreign seed, as a tax on agriculture. Notwithstanding this high duty, the importation of clover-seed from Belgium and Holland is very considerable, as it is more advantageous to purchase foreign seed than to raise it; except in the case of the trifolium incarnatum, which produces early, and is abundant seed. Foreign clover-seed should be well examined when it is purchased, as it frequently contains the seeds of docks and other noxious weeds. The usual mode of doing this is very simple. The thumb is moistened and passed over some of the seeds, and if it is turned up the quality is distinctly seen by the colour and plumpness of the seeds. If any seeds of weeds are in it, they must be detected after a few insertions of the thumb, as the finest of the flowers are easily clovered by the few seeds closely, it is difficult to separate them. In Holland they have various machines for this purpose, one of which consists of two fine-rolled hurdles made to rub each other whilst the heads pass between them. In England it is generally threshed on the floor. But if the heads, after being separated from the haulm, are put together in a heap and pressed, a slight fermentation takes place, and this makes the calyx brittle, so that it breaks into dust, and the seed comes off readily; it is then easily clovered by the few.

When the seed is not intended for the market, the trouble of clearing it of the husk may be saved, especially in the trifolium incarnatum. It will grow as well when sown with the husk as when cleaned; and it is easy to find the proportion required to be sown in that state by allowing for the weight of the husk.

CLOYES, the dried flower buds of Caryophyllus aromaticus.

CLOVIS, CLODOVUS, and CHLODWIG in old German, from whence Ludwig, the Latinized form Ludovicus, and Louis are derived, was born a.d. 467. He was the son of Childeric, and grandson of Merovius, who gave his name to the Merovingian dynasty. At the battle of Tournaï, he took the capital of the Franks, who had occupied the north-east part of Gaul, and extended their incursions as far as Paris. After the death of Childeric, a.d. 481, Clovis attacked Sigarius, the Roman commander, defeated him near Soissons, took him prisoner, and beheaded him. Having conquered the whole country south and west, as far as the Seine, he fixed his residence at Soissons. He afterwards got rid of force or treachery, of some of the other Frankish kings, his own relatives, who held various parts of Gaul: Siegling of Cologne, Carac, king of the Morini, Rancearius, king of Chassul, and others, all perished by his hand.

In 493 Clovis married Clotilda, the daughter of Chilperic, king of the Burgundians, who was a Christian. Clovis and his queen had some children; but in 496 he fought a great battle at Tolbiac, near Cologne, against the Alemanni, who had advanced to the Rhine and threatened Gaul. In the most critical moment of the fight, it is said that the noise of the action attracted all of Clovis, and he remained conqueror. The Alemanni were completely defeated, and Clovis and most of his soldiers were christened in Christmas day of the same year, by Remi, archbishop of Rheims. The Gauls and Romans of the western provinces, who were in the Louvre, submitted voluntarily to Clovis.

He next turned his arms against Alaric II., king of the Visigoths, in the south-west part of Gaul, whom he defeated in the battle of Vouillé, near Poitiers, a.d. 507; Alaric fell, and Clovis took possession of the whole country as far as the Pyrenees. Theodoric, king of the Goths in Italy, failed in his attempt to recover the throne of his country or the purple, a.d. 510. Clovis now fixed his residence at Paris. In 511, at the Council of Orleans, the rights called Regalia were acknowledged by the bishops as vested in the kings of the Franks. By these rights, on every vacancy of a see, the previous occupier had the right of precedence, and election. Clovis caused the laws and customs of the Salian Franks to be compiled and arranged to serve as a code for his Frankish subjects. His Gaulish and Roman subjects were equal in his memory; by King Clovis, in the year 508, after a reign of 30 years, and was buried in the Church of St. Peter and Paul, afterwards called Sainte Geneviève. When the old church of Sainte Geneviève was pulled down on May 10, 1867, the sarcophagi of stone were found with the remains of Clovis and his wife Clotilda, as well as an epitaph upon the former, written long after his death. They are preserved in the 'Musée des Monuments Français,' as well as a statue of Clovis, erected to his memory, by King Charles the 10th, in the year 1845, of the 11th century. Clovis left four sons, among whom he divided his monarchy. [CLOTAIR I.] Clovis first reduced the Franks to the condition of a united and partly civilized nation. His conversion to Christianity constituted the glory as well as the renown of the Gaulish subjects, most of whom had embraced that faith.

CLOYNE, a Bishop's see, in the archiepiscopacy of Cashel, in Ireland. The chapter consists of a dean, chanter, chancellor, a deacon, and a subdeacon. The see was established in a.d. 576. The Diocese occupies the greater part of the county of Cork, from the river Lee northward, and lies wholly within this county, with the exception of a part of one parish, which is in the county of Waterford. It extends from e. to W. 30 miles, and from n. to S. 29 miles; the number of town parishes is 137, and of benefices 69, with 51 churches of the Establishment. It now contains 122 parishes, consisting of 64 benefices. In 1634 the places of worship were—churches of the Establishment, 64; Roman Catholic, 69; other places of Protestant and Dissenting worship, 30. In the same year the gross population of this diocese was 342,477; of whom there were 13,866 members of the Established Church; 326,402 Roman Catholics; 14 Presbyterians; and 192 other Protestant Dissenters; being in the proportion of one Protestant of whatever denomination to 234 Roman Catholics nearly. There were at the same time in this diocese 379 daily schools, educating 11,043 children; being in the gross, 80 per cent. of the entire population under daily instruction, which respect Cloyne is on a par with Kilkenny, and stands 25th among the 32 dioceses of Ireland. Of these schools, 19 were in connection with the Board of National Education, being in the proportion of 1 in 10 to 30

Cloyne, from which the bishopric takes its name, is a vicarage and small town in the barony of Imokilly, and county of Cork. The name may signify a place of retiremet; by some it is derived from clausus, a cave, from the number of caves with which the limestone strata of Imokilly abound. The chief object of interest here is a round tower, 92 feet in height, surmounted by a modern battlement, the original conical roof having been destroyed by lightning. The tower is about 50 feet from the site of the street, stands the cathedral, a small heavy building, supposed to have been raised about the end of the thirteenth century. The episcopal palace adjoins the town; and of the cathedral the last part of the last century by Bishop Crowe, and stands in a handsome garden. The town itself is an inconsiderable place, consisting of one principal street of mean houses. It was estimated in 1851 to contain 306 houses, and rather more than 1600 inhabitants. In 1853 the number of inhabitants was 652. Being the only market-town in a considerable extent of country, its fairs are usually well attended. In 1834 there were in Cloyne 8 schools, educating 556 young persons; of these schools was one endowed by a free-school.

The founder of the bishopric was Colman, a native of Lening, the chief bard of Aedh, king of Munster. He died a.d. 804. There are few records of the see prior to the arrival of the English, about which time one Matthew was
bishop; he is supposed to have been the same with the
then legate of Ireland. About the year 1327 this see had
been given by the Cornish see to the Bishop of Cork by
Pope John XXII. for the purpose of uniting it with the
diocese of Cork, and at that time much reduced: but the
contemplated union did not take place till more than a
century after, when, both sees happening to be vacant, they
were united, as is known, by Martin V. in the person of
Bishop Jordan, about a. d. 1430.

About the time of the Reformation, this see, in common
with almost every other diocese in Ireland, had suffered
severely in its temporalities, part being forcibly seized on
by lawless neighbours, who had feignedly made away
with lay prebends and dishonest bishops, insomuch that,
says Harris, there was not one bishopric in the
province of Cashel that had not the print of the sacrilegious
palm considered with a green light. As did his next suc-
cessor, Bishop Edward Synge, since whose death in 1678
these sees have been in separate hands. Bishop Crewe,
one of his successors, in 1702 recovered to the see upwards
of 8000 Irish acres of land, which had been fraudulently
sold to a certain Johnson, Bozeman, and the Reverend
Beattie, a munificent benefactor to the town, in which he founded
a free-school, at present enjoying 190l. 8s. per annum, and
dedicating 35 boys by his bequest.

Among the distinguished Prelates of the see are the
names of Berkeley, and the late Bishop Brinkley.

By the 3rd and 4th Wm. IV., c. 37, sec. 121, Cloney is to
be reunited to Cork and Ross as soon as these latter sees
become void.

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CLU

Bishops; Beaumont's Memoir of a Map of Ire-
land; Reports of Commissioners; Croker's Sketches in
the South of Ireland.)

CLUB is defined by Johnson to be an assembly of
good fellows, meeting under certain conditions; but by
Todd, an association of persons subjected to particular rules.

It is plain that the latter definition is at least not that of
a club as distinguished from any other kind of association,
although it may not be more comprehensive than is ne-
cessary to take in all the associations that in modern times
have assumed the name of clubs. Johnson's however is the
more exact account of the true old English club.

It might not be quite safe to make a positive assertion as
to the antitye of either of the name or the thing in
England. But while the term has not had a place in
popular literature date about the end of the sixteenth or
the beginning of the seventeenth century. It was then that
there was established the famous club at the Mermaid Tavern
in Fleet Street, known as the Government Club, and
Fletcher, Raleigh, Selden, Donne, &c., were members.

Ben Jonson had another club, of which he appears to
have been the founder, that met at another well-known
tavern, called the Devil Tavern. It stood between the
Temple Gates and Temple Bar. It was for this club that
Jonson wrote the Loges Convivales, which are printed
among his works.

It seems to have been not till a considerable time after
that any political club first came into existence.

In the Spectator, No. 78, Addison makes mention of
the club, or rather the confederacy, of the Kings. ' This
grand alliance,' he observes, ' was formed a little after the
return of King Charles II., and admitted into it men of all
qualities and professions, provided they agreed in this sub-
name of King, which, as they imagined, sufficiently de-
clared the owners of it to be altogether untainted with
republican and anti-monarchical principles.' A famous
political club founded at that period was the King's Club,
which is alluded to in Tate's continuation of Dryden's
Absalom and Ahithophel.' It was a whig club; and the
badge of its members was a green riband, in opposition to
the Tories, who wore a scarlet riband in their hats. (See Dryden's Works, by some, vol. vii., p. 154, and vol. ix.,
p. 380.)

The great age of clubs, political, literary, and of every
other description, was the early part of the last century.

Then flourished, among many others, the Brothers' Club,
which were established at Derry, Hollygrove, Swift, and
the other most distinguished literary and political clubs
of the day: the famous Scriblerus Club, of which Pope,
Swift, and Arbuthnot were the leading members:
the October Club, of the original institution and subsequent
history of which may be found in Swift's ' Four
Last Years of the Reign of Queen Anne,' and also in
a satirical pamphlet entitled ' The Secret History of the
October Club, from its original to this time, by a Member,'
2v. London, 1711: the Hanoverian Club: the first
Beef-Steak Club, where William Wollaston, the actor,
was president, being the only female member, and
Richard Estcourt, the comedian, provisor, wearing in that
character a small gridiron of gold, hung round his neck
as a badge: above all, the celebrated Kit-Cat Club, which is said indeed to have been instituted at the time of the trial of the seven bishops, in the reign
of James II., but was in its greatest glory in that of Queen
Anne.

In 1735 the second Beef-Steak Club, being that which
still exists, and which has embraced among its members
the most eminent public characters that have appeared
since its institution, originated with Rich, the pamphlistocrat,
and the Earl of Chesterfield. For an account of the cir-
cumstances, see an entertaining work entitled The Clubs of

Of clubs of more recent institution, the most famous is
the Literary Club, established in the year 1764, of which
Mr. Johnson, Boswell, Reynolds, Beattie, and other well-
known names, formed the list of members. Along
with this may be mentioned the Essex Head Club, also
founded a few years after by Johnson. It took its name
from the tavern at which it met, in Essex Street. One of
the most successful literary clubs of modern times was that
called the King of Clubs, which began about the year
1807, and used to meet at the Crown and Anchor, in the
Sta. id. An account of it is given in the second volume
of the Clubs of London.

The modern subscription houses which go by the name
of clubs, such as the Athenaeum, the University, the Senior
and Junior United Services, and others of the same de-
scription, are in no other respect clubs, according to the
antient English understanding of the term, except that
every member must be balloted for, or admitted by the
consent of the rest. And little more of the true character
of a club belongs to those numerous political associations
known as the Whig Club of Brook's, the club at White's,
the Carlton Club, &c. Political associations, in imitation of
those existing in England, were formed at Paris in the
earliest stage of the French revolution, and assumed the
English name of Club. The Brown Club, the Jacobin Club,
the Club des Feuillants clubs respectively, in one of the
important parts in the various scenes of that extraordinary
drama.

CLUB-MOSS, or SNAKE-MOSS, is a prostrate moss-
like plant, with small scallop imbricate leaves, frequent
in alpine or damp situations in most parts of the world.
Its fructification consists of little two-valved cases, containing
powdery matter. All the species belong to the genus
Lycopus; that to which the name is most commonly
applied is L. clavatum.

CLUNY, a town in France, in the department of Saône et
Loire; it is on the little river Grône, in a by-road, 200 miles
in a direct line S.S.E. of Paris, in 46° 26' N. lat. and 4° 39' E.
long.

Until the early part of the tenth century, Cluny was a
mere village in the Mâconnais. In 910 Guillaume (William)
I., duke of Aquitaine and count of Auvergne, who had
purchased the village, founded an abbey of the Benedic-
tine order. About twenty years afterwards St. Odon, second
abbot of Cluny, introduced a reform into the Benedictine
order, which reformed spread very widely; and in course of
time two thousand religious houses adopted the discipline
of Cluny, which alone, in the next century, in which it
continued to exist, retained the rank of an abbey; the others
were all simple priories, the abbots laying aside their title and
rank. The Cluniac monks were divided into reformed and
non-reformed, and the abbots of Cluny was the recognised supe-
rative of the whole. The number of the religious in the middle
ages very large. The increase of the establishment may be judged by the

2 N 2
The houses of Cluny abroad had pensions from the houses of their order in England, called Appurposes, which were granted to Cluniac house in England. In his "Abridgement," p. 51, says, the abbots of Cluny had a pension from England of 2000l. per annum; and according to Rymer, old edit., vol. iii. p. 1099, and Pryne's "Records," vol. iii. pp. 366, 368, the foreigners sometimes demanded pensions here; and even ran into debt, as stated by Pryne, vol. iii. p. 720.

The prior of Lewes, in Sussex, was accounted high chamberlain to the abbots of Cluny, and was often his vicegerent in England, Ireland, and Scotland. (See Rymer, old edit., vol. xi. p. 464.)

The greater part of the houses of the Cluniac order were founded prior to the reign of King Henry II. Sleveshom, in Norfolk, was the last founded, about A.D. 1222. Four houses were among those which Cardinal Welsey dissolved in 1532.

In D'Achery's "Spectulum," fol. par. 1723, tom. i. p. 641, are the "Anuntuores Consuetudinum Cluniacensium Monas teri," collectores S. Udalrico Monosi Benehodici. A de taiiled history of the origin and progress of this order abroad will be found in the "Histoire des Ordres Monastiques," tom. v. p. 184, which is translated in Stevenson's Continuation of Dugdale's Monasticon. (Tanner, Notit. Monast. at Cleeve, gig. 15.)

CLUPEIDÆ, a family of fishes of the section Abdominales. The Clupeidae are placed by Cuvier between the Salmonidæ and the Gadidae: in fact they form the fifth and last order of the class of Fishes, or of his system of other fisha minima." The fishes of this division may be distinguished by their wanting the adipose fins, by having the upper jaw composed of the intermaxillary bones in the middle, and the maxillaries at the sides, and by the body being always covered with scales. Some of the species ascend rivers.

The genus Clupea, as now restricted by Cuvier, may be thus characterized:--maxillaries arched in front; opening of the mouth moderate; upper jaw entire; body compressed and covered with large scales; teeth wanting. To this genus belong the Herring, Sprat, White-bait, Pilkhead, &c.

Clupea harengus, Linn., the Herring (French, Le hareng commun) is a fish well known; its characters however will be useful to distinguish it from some allied species; they are as follows:--

Small teeth in both jaws; subperculum rounded; veins on the infra-orbital and gill-cover; dorsal fin behind the centre of gravity; this with commences about half way between the point of the upper jaw and the end of the fin; the ventrals placed beneath the middle of the dorsal fin; tail forked; length of the head one fifth of that of the body; the greatest depth of the body one fifth of the length; the body covered with scales; back blue or green, according to the light; the sides, belly, and gill-covers are silvery white; ordinary length, nine to twelve inches.

The term Herring is the same as the German Hering, which, according to some, is derived from Heer, an army, and is applied to these fishes from their visiting the coasts in such immense numbers. The Herring inhabits the deep waters all round the British coasts, and approaches the shore in the months of August and September for the purpose of depositing its spawn, which takes place in October, or the beginning of November. It is during these months that the great fishing is pursued. Dugdale, for all his Monasticon Anglicum, last edit. vol. v. p. 3.)

The term "drift-net" is very similar to those employed for taking mackerel and pilchard, with a slight difference in the size of the mesh. The nets are extended by its upper edge from the drift-boat by various shorter and smaller runs, called buoys; and considerable practical skill is required in the arrangement of the nets. These may hang with the meshes square, smooth and even, in the water, and at the proper depth; or they may be arranged in a zigzag situation of the same, and other causes, the herrings swim at various distances below the surface. The size of the boat used depends on the distance from shore at which the fishery is carried on, but whether in deep or in shallow water, the net is run during the night. It is found that the fish strike the nets in much greater numbers when it is dark than when it is light: the darkest nights therefore, and those in which the
surface of the water is ruffled by a breeze, are considered the most favourable. It is supposed that neta stretched in the daytime alarm the fish, and cause them to quit the places where that practice is followed; it is therefore strictly forbidden.

The young are found on our coast during the summer months in great abundance, and are often taken in small-meshed nets used for catching other fishes.

The food of the herring consists principally of small crustaceans, but these have been known to devour the fry of herrings, and when in great abundance are caught on this coast for use in fish sauce.

**Clupea Leachii (Leach's Herring).** This second species of herring was discovered by Mr. Yarrell, and described in the proceedings of the Zoological Society for 1831, p. 34. A mirror of this kind was given by Yarrell to the Zoological Journal, vol. v, p. 278, where a figure of the species of herring will be found. We will therefore give the distinguishing characters in Mr. Yarrell's own words.

The length of the head compared to that of the body alone, without the head or caudal rays, is as one to three; the depth of the body greater than the length of the head, and compared to the length of the head and body together, is as one to three and a half; it is therefore much deeper in proportion to its length than our common herring, and has both the dorsal and caudal lines much more convex: the under jaw longer than the upper, and provided with three or four prominent teeth just within the angle of the mouth. The snout is longer, the uppermost line of the mouth is rounder, and the maxillary bone longer and broader than in the herring. The height of the body is one and one-half, breadth full one-fourth of the length of the whole head; irides pale yellow; the dorsal fin is placed behind the centre of the body, but not so much so as in the common herring; the sides are smaller; the sides without any distinct lateral line; the edge of the keel of the flippers, but not serrated; the fins small. The fin-rays in number are—dorsal, eighteen; pectoral, seventeen; ventral, nine; anal, sixteen; and caudal, twenty. Vertebrea, fifty-four.

The back and upper parts of the body are deep blue, with green reflections, passing into silvery white beneath. The flesh of this species differs from that of the common herring in fl unhealthy and in much more mild.

Mr. Yarrell first discovered this species when examining the various fishes collected by the fishmen whilst engaged in taking sprats.

**Clupea Sprattus, the Sprat, called in France Le Melet, Eperol, or Harengue.** This fish has been known to many authors been confounded with the young of the herring; it is however distinct, and its characters were first pointed out byPennant; we are as follows:—proportions nearly the same as those of the herring, but the depth of the body is greater in proportion than in the young of that species; the gills are more numerous; the mouth is much smaller; the teeth of the jaws are more slender; the scales are smaller; and the sides without a distinct lateral line, the edge of the keel of the flippers, but not serrated.

The fin-rays in number are—dorsal, eighteen; pectoral, seventeen; ventral, nine; anal, sixteen; and caudal, twenty. Vertebrae, fifty-four.

The back and upper parts of the body are deep blue, with green reflections, passing into silvery white beneath. The flesh of this species differs from that of the common herring in flavour, and is much more mild.

Mr. Yarrell first discovered this species when examining the various fishes collected by the fishmen whilst engaged in taking sprats.

**Clupea albo (Yarrell), the White-Bait; French, Blanchette; German, Breitling.** This fish has been supposed to be the young of the shad: Mr. Yarrell, however, upon a careful dissection of it, has considered it to be a distinct species: its distinguishing characters are—length of the head compared to that of the body, and not including the tail, as two to five; depth, as compared to the whole length of the fish, as one to five; keel of the abdomen distinctly serrated, but not so sharp as in the shad. The dorsal fin commences half way between the tip of the muzzles and the end of the tail: the upper jaw is slightly crenated, the lower jaw is the same or somewhat larger, the body is covered with a blackish greenish on the back; the body is more compressed than in the herring, and the keel to the abdomen is more sharply serrated than in either that fish or the sprat.

The White-bait is caught in great abundance in the Thames as high up as Woolwich and Blackwall: the fish

*From Yarrell's 'History of British Fishes,' to which we refer our readers for a more detailed and interesting account of this and the other species here noticed.

**Clupea pilchardus, the Pilchard; Le Osten, in France.** This is a local fish, but its size this fish resembles the herring; it is also nearly of the same form, but rather thicker, and of greater proportionate depth; the scales are larger, the head is shorter, the suboperculum is square, and the dorsal fin is more for in the adult. The young are eaten when the first ebb-tide; and various attempts to preserve them in well-boats in pure fresh water have uniformly failed. The food of the white-bait consists of small crustaceans.

**Clupea shad, the Shad.** This fish is caught off the coast of Cornwall in great abundance, and the fishing commences in July.* The food of the shad consists of small shrimps, and other crustaceans.

The Shad is a fish belonging to this group; it is however placed in a sub-genus called by Clupea Allosa.

Mr. Yarrell separated this, together with several other species, from the true Clupea, from the circumstance of their having the upper jaw deeply notched in the middle.

Two species of shad are found off the British coast; the first (the Tectaica, Shad, Yarrell) known generally by the name of Shad (Allosa finta), is about fourteen inches in length; its colour is brownish-green on the back, or in other words; its scale is much longer, the tail is more rounded, the body is silvery; five or six dusky spots are observed on each side, and are disposed longitudinally, the first close to the head, and the others at short intervals; the length of the head as compared with the body is as one to five; the body of the shad exceeds in measurement in depth; the jaws are furnished with distinct teeth, and the tail is deeply forked.

This fish is found in the Severn and Thames in tolerable abundance. The principal fishing season for the shad is in the month of July; they begin to ascend the river about May for the purpose of depositing their spawn, and this being done they return to the sea about the end of July.

In former times the shad was caught as high up the Thames as Putney; it now rarely passes London Bridge, and is caught in the greatest abundance a little below Greenich. Its flesh is dry, and therefore not much esteemed for the table.

The second species of shad, the Allicone, or Allicone Shad of Mr. Yarrell (Allosa commutata), is considerably larger than the one just described, being from two to three feet in length: it may moreover be distinguished by its having only one spot on the side of the body, near the head, and the scales are much smaller; the keel of the abdomen is less distinct, and the scales of the body are rather smaller in proportion, though they are large in both species.

The Allicone Shad is plentiful in the Severn, but of rather rare occurrence in other estuaries.

**Cluverius (Cluver), Philip.** Born at Danzig, in 1580. His father intending him for the profession of the law, sent him to study at Leyden: but Cluverius showed more disposition for the study of geography and antiquities, and was encouraged in his bias by his acquaintance with Joseph Scaliger. In a journey which he made to Louvain and Antwerp, for the purpose of meeting Justus Lipsius, he fell in with some narrating fresh events, who suggested to him the idea of going to Holland, finding that his father, being dissatisfied with his conduct, had stopped all remittances for his support; he joined the troops of the emperor, and served for two years in Hungary and Bohemia. In the latter country he made the acquaintance of a Baron Polum, who being arrested by order of the emperor, had written a pamphlet in his defence, which Cluverius undertook to translate into Latin, and published it on his return to Holland. The pamphlet being considered offensive to the court, the emperor ordered the whole of the papers belonging to the pamphlet to be burned, and the printing presses to be destroyed in the sight of the rebel troops. The author, however, was not arrested, but continued to publish the pamphlet under another title. He was subsequently recalled to the court, and was appointed one of the diplomatic committee of the States General. He was soon after released, and his mother having sent him some supply of money, he set out on his travels to England, where he wrote 'De Tribus regionum Alia,' an essay on the history of the countries through France and Germany, and published his 'Ger...
mania Antiqua,' fol., Leyden, 1616. It is a work of considerable research, intermixed with much conjecture. Having made a journey into Italy, he was well received there, especially at Rome and Bologna, where his familiar acquaintance with most of the European languages excited great admiration. His next work, 'Siciliana Antiqua Libri Duo,' to which he added a short description of Sardinia and Corsica, fol., 1619, has been considered by many as his best work. On his return to Holland from Italy, he suffered severely from melancholy, and his health rapidly declined. It was under these circumstances that he wrote his 'Italia Antiqua,' which was published after his death. It is a work of great research, and is still one of the best on the geography of ancient times. It occasionally requires corrections from the more exact observations or discoveries of later geographers and antiquarians. Clavertius's friend and fellow traveller, Lucas Holstenius, added to it his own observations. Clavertius wrote also 'An Introduction to Universal Geography,' which has been repeatedly published. He died at Leyden in 1623, forty-three years of age.

Daniels Heinai Oratio in obitum P. Cluverii, at the end of the 'Introduction to Geography,' Leyden, 1624, gives an account of the principal incidents of Clavertius's life.

CLYWD, a river in North Wales, in the counties of Flint and Denbigh. It rises on the eastern declivity of the Bronnagob hills, a ridge belonging to the Hiraethog hills, and its upper course for a few miles is to the S. It then turns E.N.E. and continues nearly eight miles in that direction. About three miles above Ruthin it declines to the N., and preserves this course to its mouth. The upper third of its course is through a navigable valley almost devoid of trees. Below Ruthin it enters the fertile vale of Clywd, which extends upwards of fifteen miles in length, and is a pretty level tract from five to seven miles wide. Being studded with towns, villages, and seats, covered with verdant meadows and luxuriant fields, and enclosed on every side by brown and barren hills, this vale offers by the contrast a very pleasant view. A little below St. Asaph, the Clywd is joined by the Elwy, which traversing a hilly tract brings to it a large mass of water, and the river below this town increases considerably in breadth. It soon afterwards enters the fertile and extensive marsh of Rhuddlan, called Morva Rhuddlan; three miles below the town of Rhuddlan it enters the sea through a small estuary opening northward, and forming a port for small coasting vessels. The whole course of the river may be about thirty miles; it is navigable for flat-bottomed boats of about seventy tons up to Rhuddlan quay.

CLYDE, a river in Scotland, the third in magnitude, but the most important for its navigation. Its sources lie between 55° 10' and 55° 29' N. lat., where the highest summits of the mountain-range traversing South Scotland, the Cheviots (3150 feet), the Lead Hills, Quensberry Hill (2259 feet), and the range connecting the latter with Hart Fell (2790 feet), form nearly a semicircle. The rivulets which descend from this range unite in one stream about 55° 27', and thus the Clyde is formed. The southern and largest of these streams is the Dea; but another smaller stream is called Clyde, before the union. After the junction of these streams, the Clyde continues in the direction of the Dea northwards to Robertson, twelve miles lower down; in the whole of this part of its course the current is very rapid, and preserves the waters of a mountain-stream. North of Robertson, the Tinto Hills (2310 feet high) direct its course north-east; at Biggar its course is changed to the north-west and north, but below Biggar up to the south-west of Douglas Water, and accordingly it makes a large bend round the Tinto Hills. Its course in this distance is little short of twenty miles, though Robertson and the mouth of the Douglas Water are only six or seven miles distant in a straight line. The vale through which it flows is wide, and the current is so gentle that in some places it is hardly perceptible. After the junction with the Douglas Water the rapidity of the stream increases, and the falls commence. It continues on, the Bonnich and Bonnatt Linn thirty feet high, which is followed by the Corra Linn, where three waterfalls occur near one another, each apparently as high as Bonnatt Linn. The rocks on both sides mark the bed of the river so much, that the waters in several places rush down in cataracts more than four feet wide. Corra Linn is two miles above the town of Lanark.

Two miles lower down is Stonebyres' Fall, which also consists of three distinct falls, all together measuring about seventy feet in height. The scenery near the falls has considerable beauty. It is probable that the river in a space of about six miles descends more than 230 feet, and the valley of the river above the falls may be about 400 feet above the sea. Below the falls, the river, continuing its north-west course, runs in a fine valley to Blantyre and Bothwell, rising in a gentle ascent on both sides. Farther down its banks are broken by bold and richly wooded: sometimes they extend in level plains. At Glasgow the Clyde has a considerable width, and vessels ascend to the Lower Bridge of Glasgow. From Glasgow to the vicinity of Dumbarton it runs through a very level country. At no great distance from the castle of Dumbarton the Kilpatrick Hills rise on the north, and the Renfrew Hills on the south. Between these ranges the Clyde forms a wide estuary, which at Dumbarton is about a mile across, and widens in its progress to the west, being at Greenock more than two miles in breadth. To the west of the latter place at Cloch Point it turns abruptly to the south, and reaches the sea by the two straits which lie between the island of Bute, the Cambray islands, and the coast of Ayrshire. The river south of Cloch Point is called the Firth of Clyde, a term which is frequently extended to that part of the sea which lies between the island of Arran and the coast of Ayrshire. The whole course of the Clyde, from the source of the Duer to the most extremity of the island of Bute, may be about 100 miles.

CLYMERNE. (Zoology.) [NAID.

CLYPEAS. (Zoology.) [ECHIN.

CLYPEASTILIS. (Zoology.)

CLYPEUS SOBIEKSI (the shield of Sobiescki), a constellation formed by Hevelius out of some small stars below Aquila, and passing the meridian about an hour before a Aquila. The name was given in honour of John Sobieski III. king of Poland.

CLYSTERS (the Greek χλυστηρ), lavacmas, or enema, terms bestowed upon medicinal agents introduced into the rectum, or lower bowel, with the intention of expelling its contents, or producing other local effects, but also occasionally to influence the system generally. The intestinal canal, from its commencement at the mouth to its termination in the rectum, is endowed with peculiar sensibilities; and though each of the constituent parts has some special office, yet the whole responds to certain stimulants, whatever part they may be applied to. Thus purgative medicines may be introduced into it either by the mouth or by the rectum, and to a certain extent their action is the same, i.e. will excite an expulsion of the contents, and produce other effects also. But the secondary influence on the system will be different, inasmuch as when the purgative is given by the bowels; but the secondary influence on the system will be different, inasmuch as when the purgative is given by the bowels, and to a certain extent their action is the same, i.e. will excite an expulsion of the contents, and produce other effects also.
aid in retaining the contents of some of the neighbouring organs, such as of the uterus, in cases where abortion is threatened; and are also employed to allay pain and irritation in the bladder, kidneys, &c. Further, when the mouth or upper part of the throat is closed, as in spasmodic diseases, the Clotia are paralysed, they are frequently made the vehicle for introducing either food or medicine into the system. The only other point requiring notice here is the fact that as the stomach is a shorter and much less, the terminal joint thick than the others, is situated at a shorter and much less, being nearly equal than that of the stomach, the doses of most articles given as clysters must be greater than when administered by the mouth.

Clysters are rarely, except in two instances, taken or administered without the order or superintendence of a competent physician; the basal joint is short, and the posterior pair are often considerably longer than the two posterior pairs. The peliminate joint of the tarsi is bilobed.

The larvae of these insects (at least those that are known) are present only when they are feeding on them.  

The Clifthra reside on trees and shrubs, and those found in this country appear in the beginning of the summer. The species Cytora, which is a very numerous, physical insect, is a perfect black, and the metallic colours. In England we have five species, the most common of which is Cytthra quadrupunctata: this is not quite half an inch in length, and black; the clytra ochre-coloured, with four black spots, two near the base, and two near the middle. The next species which is uncommonly met with is Cytthra tridentata. This beetle is rather less than the last, and of a blue-green colour, thinly and finely punctured above; the elytra are pale-yellow and imma cubate; the anterior pair of legs in the male are elongated.

Clythta, a genus of Coleopterous insects of the section Longicornes, and family Cerambichidae.

The species of the genus Clytus (a genus established by Fabricius) form a well-marked group among the Cerambichidae, and are chiefly distinguished by their having the elytra shorter and nearly equal, the terminal joint thicker than the others, and situated at a shorter and much less, being nearly equal than that of the stomach, the doses of most articles given as clysters must be greater than when administered by the mouth.

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The larvae of these insects (at least those that are known) are present only when they are feeding on them.  

The Clifthra reside on trees and shrubs, and those found in this country appear in the beginning of the summer. The species Cytora, which is a very numerous, physical insect, is a perfect black, and the metallic colours. In England we have five species, the most common of which is Cytthra quadrupunctata: this is not quite half an inch in length, and black; the clytra ochre-coloured, with four black spots, two near the base, and two near the middle. The next species which is uncommonly met with is Cytthra tridentata. This beetle is rather less than the last, and of a blue-green colour, thinly and finely punctured above; the elytra are pale-yellow and imma cubate; the anterior pair of legs in the male are elongated.

Clythta, a genus of Coleopterous insects of the section Longicornes, and family Cerambichidae.

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COA

seized by Verres, a marble Venus from Cnidus. (In Verres, iv. 60.)

COACH. It is stated by Slow, that in 1564, Boonen, a Dutchman, became the queen's coachman, and was the first in England to use coaches as a means of travel.

H. (Hist. of Com.), on the other hand, says that "about 1580 the use of coaches was introduced by the earl of Arundel." Before that time (Hume, Hist. of Eng.) the queen (Elizabeth) used horses and stages, but she had one horse of her own. A long time elapsed before this luxury was attained by more than a few very rich and distinguished individuals, and a very much longer time before coaches became general.

Carriages for hire were first established (Anderson) in Edinburgh in 1624. They did not exist in the streets of London, but at the principal inns. In 1637 there were, in London and Westminster, 50 hackney coaches. Stage coaches were first used in England soon after the introduction of hired carriages. In Scotland, in 1678 (Shelton, Statute of Glouces), Provost Campbell established a coach to run from Glasgow to Edinburgh, "drawn by sax able horses, to leave Edinburgh' ilk Monday morning, and return again (God willing) ilk Saturday night." The first mail coach travelled from London to Edinburgh about 1785, and to Glasgow in 1788. The Scotch custom of the male passengers treating the female to breakfast and dinner on the road continued till these coaches were established.

Some stages were familiarized with the use of stage coaches that they are apt to forget that their origin is recent. At the present time there is scarcely any small town through which which stage-coach does not pass, and no considerable road which is not travelled by many. Until the invention of the road, the art of endurance was the test of a gentleman. The journey: it was impossible to travel fast, on account of the weight of the carriage; it was equally impossible to travel far, since no one could bear the direct and unmutilated jar. Springs were the first means towards better travelling; since their invention, the increased speed and better appointment of English stage-coaches have been caused by the improvement of roads in conjunction with the great demand for rapid travelling. In this country the best stages are those by which perfect numbers of persons and animals that are engaged come to be considered, are extremely complete. The attendant expenses are very large, but they are defrayed wholly by private speculators, excepting in the case of mail coaches, which convey the letters, the contractors for which, in consideration of certain services, receive an allowance from the state. The stage-coaches themselves usually belong to a coachmaker, who contracts with the speculator who 'work them for the supply of new carriages at certain intervals, and is liable to the expense of all repairs: for this he receives 2/6d. or 3/6d. for every mile they travel. There is a duty per mile according to the number of passengers to be carried, from 1d. a mile for 4 persons, to 4d. a mile for 21. For each coachman a duty of 11. 5s. is annually paid, and for each guard, excepting those of mails. The expense of horses of a coach running at the speed of twenty miles a day, nine to ten miles an hour, may be stated at 31. a double mile for 28 days (a lunar month); so that a person horsing ten miles of a coach passing backwards and forwards each day, should earn or receive by way of remuneration 13 times 20l. or 30l. a year for his work. This may be considered a high rather than a low estimate, unless in a district where wages and rent of stables are high, and hay and corn dear. In a cheap neighbourhood, or where a large number of horses are kept, the expenditure will not be so great. Nevertheless a great many articles are to be provided: harness, which for four horses costs from 15l. to 20l.: horses, of which, for ten miles of ground, at least eight in summer and nine in winter will be required; their price will be from 31. to 20l. the use for the year. Some improvements, of which each horse will eat little less than two bushels a week, together with hay and straw cut into chaff. Straw, shoeing, physic, and farriery, must also be reckoned, as well as stables and stables, and houses, for which each man is from twelve to fifteen shillings a week. The firm must also defray the wages of coachmen, who receive about ten shillings a week, unless they drive backwards and forwards, and take fees from two sets of passengers each day, when they get no wages. The charge for washing the coaches must also be reckoned. To this long list must be added the expense of coaches, which are also to be paid for toll-sacks, but a tax is paid for them to the government, and mileage to the contractor for the use of the coach. The Post-office allows them, according to their speed and the country they travel through, to be paid for in 2s. 4d. a mile for carrying the letters; in consideration of this, it claims a right to limit their number of passengers, and regulate their speed and time of starting: the guard is the servant of the Post-office. Booking-offices and bookkeepers and agents are also to be paid for, as well as way-bills. One of these, on which the name and destination of each passenger and the direction of each parcel is inserted, is carried by the coachman, and delivered as soon as the coach stops to each post-house; the book-keeper, that he may examine its correctness and make any requisite entries. In the country nothing is paid to the booking-offices, but in London this is not the case: from 3l. to 4l. a (lunar) month is charged when the office is a mere shop for the purpose of booking, and do not belong to any coachmaster: if it is the property of a coachmaster, he takes 1l. for booking out of the fare of each passenger booked at his offices.

Some stages are familiarized with the expenses of booking may be made from the above statement. The returns will not so easily be calculated. They consist of the fares, which are usually, for the outside passengers, at the rate of 2d. to 3d. a mile; for the inside somewhat less than twice this. Some of the coaches are now paid for their journeys at a certain sum of money. Very necessary charges are made for parcels according to their size and weight. These however are not all the profits arising from stage-coaches: the custom which they bring to towns must be reckoned a large item, when the proprietor is the owner or renter of an inn; and especially when the coach 'ends' at his house; and thus, though a coach may itself be worked at a loss, all things considered, to some of its proprietors at least it may be a remunerating speculation.

The following are the prices of mail coaches, and the chance of profit; for nearly every passenger must spend something, however small, at their inn. They have likewise a greater advantage in portage, and often get a profit from advertising, printing way-bills, and washing coaches, all of which are managed by them: they also get interest for the money that is earned by the coach, which remains in their hands until the monthly division among the proprietor.

The fastest coaches now travelling are between London and Shrewsbury, 120 miles, in one day.

" Exeter . . . . . . . . . . . 171 "
" Manchester . . . . . 187 "
" London and Manchester (mail) 187 " 19th. 0m.
" Herts of passengers 200 "
" Liverpool (mail) 203 " 20 50

The Edinburgh, the Loeda, and the Devonport mails are also very rapid.

Some stage coaches, plying in the neighbourhood of towns, have been nearly superseded by omnibuses. By an Act passed in 1833, coaches and omnibuses are allowed to ply for hire in the streets of London. The coaches which form the trains upon rail-roads are of very different construction from those upon the common roads: they are stronger, larger, heavier, and longer; the wheels being of smaller diameter: they are fastened together with links of chain, and there is attached to the front and back of each a 'fender,' acting on a spiral spring, by which a collision is prevented when the train is stopped. Some carriages adopted on the Greenhill Railway seem to be of an improved construction: they are lower than those hitherto used; and as long as they remain upon the road they have a great advantage over other carriages, even though the axles were to break, or the wheels come off.

Upon the continent, travelling in public carriages is not so rapid or so commodious as in England. The state of the road is in general such as to preclude any considerable speed, and they are the worse for any great stretch of water.

In France the diligences are conducted by private speculators, who are obliged to use the horses of the Poste Royale. They are clumsy carriages, generally consisting of three bodies, the middle body being usually carried on two wheels, driven by one postilion from his saddle. The first body, called the chaisse, formed like a chariot, contains three people; the second,
Coagulation occurs in various ways in different fluids. Thus when albumen, or the white of eggs, is heated, it is rendered solid or it coagulates; but when a solution of gelatin cools, it undergoes a similar change. The cause of the spontaneous coagulation of the blood, by which it is rendered solid of itself, and coagulum has not been explained, and we are equally in the dark as to the immediate cause of the coagulation of cheese by the action of rennet; the separation of butter is attended with heat, and the immediate cause is mechanical action.

There are some cases of a purely chemical action which resemble coagulation in appearance; when, for example, solutions of sulphate of soda and nitrate of lime are mixed, a sudden solidification takes place: but this is probably a case of confused crystallization, and not, strictly speaking, of coagulation.

Coagula. [Atelius, Species 1, v. ii. p. 547.]

COAL COMPOSITION OF. From the very different qualities of the several varieties of coal, it might naturally be expected that they would vary in composition, and this is actually found to be the case. They generally agree however in containing a much larger proportion of carbon than of the other elements, which are chiefly oxygen and hydrogen, and frequently a small portion of azote.

The composition of coal may be regarded under three different points of view: first, as to the quantities of combustible matter and earthy impurity; secondly, as to the mode in which the pure constituents of the coals are combined; and thirdly, as to its ultimate analysis.

With respect to the first of these three points of view, we shall state a few of the results obtained by Mr. Muschet.

<table>
<thead>
<tr>
<th>Volatile Matter</th>
<th>Charcoal</th>
<th>Ashes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Derbyshire cannel coal</td>
<td>47·00</td>
<td>48·36</td>
</tr>
<tr>
<td>Scotch ditto</td>
<td>56·57</td>
<td>39·43</td>
</tr>
<tr>
<td>Welsh furnace ditto</td>
<td>8·50</td>
<td>88·06</td>
</tr>
<tr>
<td>Yorkshire stone ditto</td>
<td>8·90</td>
<td>88·93</td>
</tr>
<tr>
<td>Kilkenyon coal</td>
<td>4·25</td>
<td>92·87</td>
</tr>
</tbody>
</table>

Masquer observed that nitre does not detonate with oil or inflammable matter till it is reduced to coal, and then only in proportion to the carbonaceous matter which it contains. Following this opinion, Kirwan imagined that he might be able to distinguish the quantity of bitumen and maltha from that of mere carbon which the coal contained by deposition from nitre. The method is not sustained by the clearest precision, but the following results are worth recording:

<table>
<thead>
<tr>
<th>Charcoal</th>
<th>Petrolea.</th>
<th>Earth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kilkenny coal</td>
<td>97·3</td>
<td>0</td>
</tr>
<tr>
<td>Compact cannel</td>
<td>75·2</td>
<td>21·68</td>
</tr>
<tr>
<td>Mahonesa</td>
<td>92·53</td>
<td>3·23</td>
</tr>
<tr>
<td>Wigan</td>
<td>61·73</td>
<td>36·7</td>
</tr>
<tr>
<td>Newcastle</td>
<td>58·00</td>
<td>40·0</td>
</tr>
<tr>
<td>Whitehaven</td>
<td>57·00</td>
<td>41·3</td>
</tr>
</tbody>
</table>

The following are the results of the analyses of some varieties of coal:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Karsten.</td>
<td>Newcastle coal</td>
<td>84·99</td>
<td>11·78</td>
<td>3·23</td>
</tr>
<tr>
<td>Ditto.</td>
<td>Cannel coal</td>
<td>74·83</td>
<td>19·72</td>
<td>5·45</td>
</tr>
<tr>
<td>Crum.</td>
<td>ditto ditto</td>
<td>70·9</td>
<td>24·80</td>
<td>4·30</td>
</tr>
<tr>
<td>Ure</td>
<td>ditto ditto</td>
<td>72·22</td>
<td>21·05</td>
<td>3·93</td>
</tr>
</tbody>
</table>

As during the preparing of carburetted hydrogen gas from the decomposition of coal, a quantity of ammonia is generally, if not always, produced, it must in these cases contain ammonia, as shown in Dr. Ur's analysis. According to Dr. Thomson, indeed, with the great pressure, caking or bituminous coal gives nearly 11 per cent. azote, and carbon coal above 13 per cent. of the same element; whereas Karsten and Crum find none, and Dr. Ure only 3 per cent. It is therefore probable that different kinds of coals may be named under the same name; and the subject requires further investigation.

Coal-Fields, a term used to express those extensive carbonaceous deposits which are found in various parts of the world, but which especially in our own island. The following article is limited to a description of the various coal-fields of the United Kingdom, together with a short notice of the locality of coal-fields in other parts of the world.

The following general arrangement of the coal-fields of England and Wales, which is offered by Messrs. Conybeare and Phillips, seems to be as good and natural a classification.
tion as can be adopted. 1. The great northern district, including all the coal-fields north of the Trent. 2. The central district, including Leicester, Warwick, Stafford, and Shropshire. 3. The western district, which may be subdivided into north-western, including North Wales, and south-western, including South Wales Gloucester, and Somersetshire.

Coal is found in these fields in strata of various thickness, alternating with slate-clay and sandstone; the alternations being frequently and indefinitely repeated. The coal-fields of various districts are principally distinguished by the proportion of bitumen in the coal. Three species are enumerated, in each of which the quantity of bitumen has been ascertained. 1. The coking coal, like that of many other provinces, yields about forty per cent. of bitumen: this is the prevailing kind in the Northumberland and Durham mines. 2. The cannel coal, called parrot coal in Scotland, contains about twenty per cent. of bitumen: this coal occurs in Lancashire also. 3. The stone coal, likewise known under many other names, contains little or no bitumen: this is the ordinary coal of the Staffordshire and Scotch collieries.

The coal seams, together with their alternating strata, called the coal-measures, usually lie on beds of millstone grit and shale. The coal itself is a mixture of sandstone and slate-clay. It sometimes exceed 120 fathoms in thickness. Under this series is the mountain or carboniferous limestone, an assemblage of calcareous strata, of variable thickness, sometimes extending for miles. This limestone is frequently characterized by caverns and fissures. The carboniferous limestone rests on a bed of old red sandstone, varying in thickness from 2000 to 2000 feet. These four different series of strata are usually comprehended under the term coal formation. The general line of contact between these three beds is nowhere parallel. The thickness of the three beds just enumerated, these beds do not form an essential part of the coal formation; for sometimes the coal-measures occur without these intermediate series, and reappear immediately on the transition rock: such is the case in the coal-fields of Coalbrook Dale and of Dudley.

A general resemblance in structure appears in all the English coal-fields, but still with considerable local varieties. The phenomena by which dykes or faults are produced have been already explained in the section on the sides of the dyke many fathoms above those on the other side, and occasioned irregularities extremely perplexing to the miner. These dykes are fissures which traverse the strata, often extending several miles, and penetrating generally to an unknown depth. These fissures are usually filled with clay, with the debris of the dislocated strata, or sometimes by basaltic rocks.

COAL-DISTRICT NORTH OF THE TRENT.—This great coal formation extends over the whole Pennine range, in the eastern and western; north; not however in one uninterrupted line, but in a series of detached coal-fields. 1. The coal-field of Northumberland and Durham. 2. Some small detached coal-fields in the North of Yorkshire. 3. The coal-field of South Yorkshire, and Derbyshire. 4. The coal-field of North Stafford. 5. The South Lancashire coal-field. 6. The North Lancashire coal-field. 7. The Whitehaven coal-field.

The coal-field of Northumberland and Durham commences near the mouth of the river Coquet on the north, and extends nearly to the Tees on the south. As far as Shields the sea is its boundary on the east; from that point it leaves a margin of a few miles between it and the sea, but not more than ten miles to the south of Newcastle. Its greatest length is fifty-eight miles, and its greatest breadth about twenty-four. The coal-measures of this field rest on the series of strata of the millstone grit and shale, and are in part under the magnesian limestone, the northermost point of which is near the mouth of the Tyne. The beds of which this coal formation is composed dip towards the east and crop out towards the west; so that a section of them gives the idea of a form of a host. In consequence, the beds of coal in some places appear at the surface, while in other places in the middle of the basin they are at great depths. At Yarrow, about five miles from the mouth of the Tyne, one of the thickest beds of coal, called the Main Hill, is 960 feet deep, and rises on all sides; the dip is nearly one in forty, but this is not uniform throughout; and therefore that bed does not rise to the surface at equal distances around Yarrow. The beds of the coal-measures are eighty-two in number, and consist of alternate beds of coal, sandstone, and shale; making an aggregate thickness of 1620 feet, which varies however in different parts. The irregularities of the surface do not affect the dip or inclination of the strata; so that with a valley intersected by a coal-seam in the sides of the opposite hills at the same levels as if the respective strata had once been continuous. It is difficult to determine the exact number of beds of coal, in consequence of the different depths at which the seams occur: the number is nearly the same as the thickness of the coal. The seams of the coal and other strata. These strata occasionally enlarge, and occur in places, so that it is only by exhaustive observation that in the number of beds. The seams of the coal have been seen; a considerable number however of these are very thin. The two most important beds are those distinguished by the names of High Main and Low Main. The thickest number of six feet, and of the second six feet six inches. The Low Main is about sixty fathoms below the High Main. Eight other beds of coal occur between these: one called Bensham is four feet thick, and another called Coal Yard is three feet. These three beds are thicker than the Lower Main, which is in the Low Main, some of which are of considerable thickness, but of an inferior quality. The aggregate thickness of the whole number of seams is about forty-four feet; but there are a few of much less thickness, being only a few inches. Five others amount together to only six feet. Making proper deductions for these, it may be considered that the available beds amount to thirty feet in thickness. The different strata which occur in the coal-measures of the Trent, as described in the Official Report on Accidents in Mines, 1835. The space which it would occupy prevents our inserting this tabular view of the strata.

The whole surface of the coal-field is calculated by Dr. Turner at 180 square miles, on the assumption that its length is twenty-three miles, and mean breadth eight. But according to the latest geological maps, these dimensions appear very far below the actual length and breadth, and it is evident that the area at double that number of square miles. The greatest number of mines are on both sides of the Tyne, and not far from its banks. There are several in the northern part of the field, and many about five miles south of the Tyne, about midway between Newcastle and Durham.

The number of dykes or faults which traverse this field is very considerable. They appear to run in all directions. The most remarkable, called the Great Dyke, or 90-fathom dyke, has received the latter name because the beds on the south are 90 fathoms below the line of the dyke. The direction is N.N.E. and S.S.W. It enters the sea a little to the south of Hartley, or about three miles north of Shields, and running westward crosses the Tyne at Leighton, about four miles west of Newcastle bridge. In some places it is only a few inches wide, but in Middleport colliery it is 22 yards wide, and is filled with hard and soft sandstone. From the southern side of this dyke two others branch off, one to the S.E. and the other to the S.W. The latter, called from its breadth the 70-yard dyke, is also filled with hard and soft sandstone. This dyke intercepts the upper or Beamont seam of coal, but does not alter the level on either side. The thickness of the seam however decreases, beginning at the distance of 13 or 18 yards from the dyke. The 10-yard coal first becomes the coal shows a thickness of indurated clay is interposed between the sides of the fissure and the basalt. The upper seam of coal is here about 35 feet from the surface, and where it is in contact with the sandstone below it is only 20 feet thick. The Upper dyke, which crosses the Tyne at Walker, and traverses the Walker colliery, does not alter the level of the strata, but on each side of it the coal is converted into coke, which on one side in some places was found to be 18 feet thick, and on the opposite side about 9 feet thick (447). At W albottle Dean, 54 miles west of Newcastle, a double vein of basalt crosses the ravine in a diagonal direc-
tion, passing nearly due east and west; it underlies at an angle of 78 degrees, and cuts the coal strata without altering their dip, but the seam of coal is charred. A dyke, cutting the coal at the east of the Cheviots, is described by Dr. Thomson in the 'Annals of Philosophy,' November, 1814, under the name of the Independent Coal Formation. This tract terminates westward at Cross Fell, in Cumberland, is supposed to occupy the whole of Durham, and consists of the part of Northumberland east of the Cheviots, exclusive of the coal-field already described. The different strata of this coal formation amount to about 147. The coal-measures here differ from those we have just noticed, in having limestone as well as sandstone and slate-clay alternating with the beds of coal; the coal worked in this formation is slate-coal, and is considered inferior in quality to the Newcastle coal. There are several collieries, but the coal is only employed for housing and linings. The greatest bed of these measures crops out near Cross Fell. The coal of which it is composed, provincially called crow-coal, falls into powder when exposed to the air, and cannot be burnt by itself. The poorer class makes it up into balls with clay, and use it for fuel. An attempt has been made to stop the road beyond this locality of the Newcastle beds. (Ann. of Phil., vol. iv.) There are numerous lead mines in this tract.

2. Detached Coal-fields in the North of Yorkshire.—These are very limited in extent, being small insular coal basins, lying in the valley of the Wear. They occur near Middleton, Leyburne, Thorpefell, near Burnside, and as far west as Kettlewell. The seam is seldom more than twenty inches thick. At Thedswell Moor the lowest seam is one foot thick, but the seams above it vanish at the edges of the Meses. Conybeare and Phillips doubt whether these beds should not be referred to the thin coal seams subordinate to the millstone grit series rather than to the principal coal-measures.

Coal is wrought in some parts of the great carboniferous chain extending from Penigent to Kirkby Stephen. Here the great 'Craven fault' occurs, described by Professor Sedgwick. 'On the Carboniferous Chain from Penigent to Kirkby Stephen' (Proc. Roy. Soc. of Nat. Antiquity of Durham, 1814). It runs along the line of junction of the central chain with the skirts of the Cumbrian system, passing along the south flank of Casterton Low Fell, up Barbondale, thence across the valley of Dent through the upper part of the valley of Wharfe, and along the flanks of Bown Fell, and down to the ridge which flanks Ravenstone Dale. Throughout the whole of this line there are enormous and most complex dislocations, which affect the strata of the coal formation and produce other phenomena. The coal strata in the lowest part of the coal-measures is sufficiently valuable to be worked; it varies from eighteen inches to nearly four feet in thickness. At Turna Fell, near Hawes, in Yorkshire, and at Tan Hill, near the summit of the pass, the coal bed is the highest part of the coal-field under Broughton and the Coln. It was only a few inches in thickness, but said to be of so good a quality as to be in great request. About 70 or 80 years ago it was sent on pack-horses from this place to Carlisle. A few years ago Kendal was the largest user of this coal. Kendal has long been supplied with fuel from the Lan cashire coal-fields; but this fact, of comparatively so recent a date, strongly illustrates the astonishing progress we have made in our modes of internal communication.

At the Barbon coal-pit in Westmoreland, a coal-bed of this series is likewise wrought; the lower part of it is however so impure as to be unfit for ordinary purposes, and is chiefly consumed in lime-works. The following is a section of the strata as occurring in the Barbon colliery:

<table>
<thead>
<tr>
<th></th>
<th>feet</th>
<th>in</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Alluvial soil</td>
<td>53</td>
<td>6</td>
</tr>
<tr>
<td>2. Plate (calcareous shale)</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>3. Limestone, the 4th or Mosdale Moor (lime)</td>
<td>27</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>stone of the great section</td>
<td>27</td>
</tr>
<tr>
<td>4. Gritstone</td>
<td>27</td>
<td>0</td>
</tr>
<tr>
<td>5. Alternations of shale and gritstone</td>
<td>27</td>
<td>0</td>
</tr>
<tr>
<td>6. Shale</td>
<td>30</td>
<td>0</td>
</tr>
<tr>
<td>7. Crow limestone</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>8. Plate with a 3-inch crow-coal</td>
<td>27</td>
<td>0</td>
</tr>
<tr>
<td>9. Gritstone</td>
<td>27</td>
<td>0</td>
</tr>
<tr>
<td>10. Coal</td>
<td>2</td>
<td>0</td>
</tr>
</tbody>
</table>

The strata of the coal are in general much less regularly continuous than the strata of limestone. This however is not always the case. Some of the thin bands of coal here appear to continue with astonishing regularity. The following example is quoted from Professor Sedgwick, in the valley of Dent, the coal seam under the 12-fathom limestone is divided, by a band of clay half an inch
thick, into two parts, with distinct mineral characters; and the same coal seam, with exactly the same subdivisions, has been traced across the flat terrace on the slopes of the valley at the distance of three or four miles measured in a straight line. This seems to prove that a bed not more than a fraction of an inch thick was originally continuous throughout an area probably several miles in diameter.

3. Coal-field of South Yorkshire, Nottingham, and Derbyshire.—This extensive field, which in character is closely allied to that of Newcastle, is considered by some geologists as a single formation, but the same stratigraphical order as the covering of magnesian limestone under which it is concealed through the intervening space. This coal-field occupies an area extending north and south from a little to the N.E. of Leeds nearly to Derby, a distance of more than two hundred miles, and east and west of the Pennine chain. The strata of this coal formation are very numerous. There are many beds of gritstone at the least, some of great thickness. Most of these beds consist of sands of semi-transparent silex united by an argillaceous cement; the lower are frequently termed “black” or “narrow millstone grit,” below which no workable coal is found. Besides these gritstone beds there are many strata of shale (slate-clay), bire (indurated loam), and chalcedony (indurated clay), alternating with several beds of coal of different thickness and quality. A hard argillaceous rock called crown-stone fortin some places the roof of the coal beds, and is supposed to be a variety of the chalcedony still more highly indurated. These beds range up and down the strata and extend over the whole breadth of the coal-field. Mr. Bakewell (p. 384) states their number at thirty, varying from six inches to eleven feet, and the total thickness of coal at twenty-six yards. This however he considers as only an approximation. Three varieties of coal occur in these measures: hard, or stone, which burns to a white ash; soft, or bright, which burns to a white ash; caking, or crozling, which usually burns to a red ash. The first is esteemed the best, and is in much greater demand than the others. The thickest bed is worked near Barnsley, near the Middlewood property of the Reverend Ralph Henry Bramling, three seams are being worked; one at the depth of about forty to seventy yards from the surface, another thirty-eight yards lower, and the deepest of all is about one hundred and seventy yards deep, making the whole depth from one hundred and ten to one hundred and forty yards. The upper seam is about two feet eight inches thick, the middle seam from two feet ten inches to three feet four inches, and the lower one from four feet six inches to five feet.

The strata of this field, according to Mr. Farey, are traversed by an immense fault commencing from Allostock, in the south, and running in a zigzag direction through the south and east part of the field; the rise of the strata is said to be much more rapid on the western than the eastern side of the fault. Besides this great fault there are many others which traverse the field in various directions, and create an inextricable confusion by the rise and fall of the different strata, making it almost impossible to mark distinctly the continuation of each bed. This coal-field supplies the coal for the important manufactures which surround it, and also, by means of inland navigation, the midland counties south and east of Derbyshire.

4. Coal-fields of North Stafford.—There are two detached coal fields in this county, one on the N.E. of Newcastle-under-Lyme, distinguished as the Potteries coal-field; the other at Cheddle, to the east of the first. The form of the Pottery coal-field is triangular. Its vertex is near Congleton, from which points the sides diverge to the S.S.E. and S.W., running in each direction about ten miles; the base is estimated at about seven miles: Newcastle is nearly in the centre of the base. The strata dip from the two sides to the centre of the area. On the eastern side the strata are inclined at one point, on the other side it is still more rapid. Between Burslem and its eastern limit, nearly in the centre of the coal-field, it has been ascertained that there are thirty-two beds of coal of various thickness, generally from about three inches to four hundred yards. Some seams only twenty inches thick have occasionally been worked, but they are seldom worked under three or four feet thickness.

The Cheddle coal-field is an insular basin surrounded by and separated from the millstone grit; it is about five miles long and three miles broad, and of little importance.

5. The Manchester or South-Lancashire Coal-field is separated from that of South Yorkshire and Derbyshire by the range of lofty hills extending from near Colne to Blackstone Edge, and thence to Ax Edge in the county of Derbyshire. It commences near the western side of this range in the north-west of Derbyshire, and continues thence to the south-western part of Lancashire, forming an area somewhat in the shape of a crescent, with its convexity towards the Lancashire coal-field, the chord or span between the opposite horns is about forty miles. It runs nearly due north from Macclesfield to a few miles beyond Rochdale, a distance of thirty miles; the part between Macclesfield and Manchester is however not nearly so productive. From Macclesfield it extends to Cheshire, south-west to Leigh and Prescot, north-west to Preston, and north to Colne. Viewing it as a whole, the strata rise towards the exterior edge of this crescent-shaped field, along with the strata of millstone grit, on which they repose, crop out from beneath them, and dip towards its inner edge, where they are covered by the superior strata of the newer sandstone formation, which contain oolitic beds of carbonate-magnesian conglomerate. Great disturbances have arisen from the irregularity of this arrangement, and caused divisions of the coal-measures which render it difficult to trace out the exact positions of the field. At Disley, in Cheshire, it bifurcates into two branches, having an intermediate ridge or saddle of millstone grit, the eastern branch forming a trough, of which the strata crop out on both sides against the millstone grit.” This part of the field is a long narrow strip joined to the main field at Disley, and extending south-east to near the coast to the west of Staffordshire. The strata of the western branch of this bifurcation, extending from Disley to Macclesfield, dip again to the west, but not so at great an angle as they rise, on the east side of the intermediate ridge. In other parts of the coal-field the great faults occur, which have been sufficiently investigated by the geologist for them to be distinctly traced. Mr. Bakewell has investigated a small portion, which he distinguishes as the coal-field of Bradford. The result of his observations is found in the second volume of the Geological Transactions. This tract is rather more than two miles long, and little more than one mile and a half wide. It is situated on the river Medlock, a short distance E.S.E. of Manchester. It is surrounded on every side, except the east, by the red sandstone which prevails in the environs of Manchester. Beds of limestone pass under this, and overlay the coal-measures, in which there are several beds of coal rising to the north, under an angle of 45 degrees.

One of these, near the centre of the field, is four feet in thickness, and extends from the north to the south; it is a considerable disturbance, and the direction of the beds becomes suddenly vertical. One of the vertical beds, together with its accompanying strata, bears so close a resemblance to the folds of the coal above mentioned, that there is no doubt of their identity, and the same events, before the dislocation which severed them took place, a continuation of the first. With these vertical beds the coal-measures terminate: on the north an interval of the red sandstone is visible, and the coal beds again appear, rising as before towards the north. All this indicates considerable faults and subsections, which however cannot be accurately traced at present. The coal from the Lancashire field supplies Manchester, Liverpool, and the surrounding district.
6. The North Lancashire Coal-field is one of little importance.
It lies midway between Lancaster and Ingleton; it is about eight miles long and six miles wide, but it has never been thoroughly examined, and its strata cannot be distinctly stated.

7. The Whitehaven Coal-field is situated on the west coast of Cumberland, and extends from near Egremont, south of Whitehaven, to Allonby on the north.

There is of much more importance, as it extends from the House of Commons, states that the thickest seam in this coal-field is nine feet; and in speaking of the Whitehaven colliery the WISENED man, both in point of thickness of the seams of coal, and in its depth, is very deep: there are several 100 fathoms and upwards. The Workington mines, in which the same seam is worked as in those of Whitehaven, go to a considerable extent under the sea, but not so far as the Whitehaven. The Coal-field of Ashby-de-la-Zouch, of Warwickshire, and South Staffordshire.

The Coal-field of Ashby-de-la-Zouch is of a very irregular figure, and so much dislocated, that it rather forms two small basins than one continuous whole. The greatest length from north-west to south-east is about ten miles, the greatest breadth about eight miles. The eastern part is included in the transition district of Charnwood Forest. This coal-field is described by Mr. Farey as one of the highly curious out perhaps not uncommon occurrences, in the red marl deposits; a tract entirely surrounded by a fault, or a series of faults, which seems to have been raised up through the red marl strata, and denuded, the coal strata having rapid dips in various directions, while the surrounding strata of red marl are horizontal, or as nearly so as may be. Of the two portions of the field, one ranges by Ashby Wood, about three miles on the west of Ashby; the other by Cole Orton, about the same distance on the east.

The Ashby Wood portion ranges from Sweepston, four miles south of Ashby, to Breoby in Derbyshire; the inclining or protracting edge of the basin is bounded by the out-crop of the beds and that town another crop has been traced near Brothorpe, dipping in a contrary direction. More than twenty coal-works have been opened on this line. The lowest shaft sunk is to the depth of 246 yards. Of the seams is from 17 to 21 feet thick. This great thickness is caused, it is supposed, by the running together of two or more seams—a circumstance which is known to occur in the coal-fields of South Staffordshire. The eastern portion is beyond Warwick, in the northern part of Warwickshire, and extends about six miles in length, running parallel to the larger portion. The strata dip to E.N.E. In the pits belonging to Sir George Beaumont, two coal-beds, each a yard and a half thick, are worked. Of the coal we are assured, that the lower one, improved to lie above these, have been worked at the depth of 116 feet.

2. The Warwickshire Coal-field commences at Wycen and Sow, two villages about three miles east of Coventry, and continues in a north-west direction to Poleworth and Warestone, about five miles east of Tamworth, a distance of sixteen miles: its average breadth is about three miles. All the strata rise to the E.N.E., the inclination becoming greater towards the eastern part of the field, where in many parts it makes an angle of more than 45° with the horizon: towards the west it decreases to about one foot in three, and lastly in five. The principal collieries are near the south of the field, at Griff and Belworth. The depth of the 117 inch, the seam three yards thick. The same seams are worked in the Bedworth mines, but there the first and second coal-seams of Griff run together and form a five-yard seam. The intermediate strata of shale which separate them are found in the collieries to be thirty-three, and in the western twenty-five yards thick; but they gradually decrease as they proceed westwards, till at length they entirely vanish.

3. South Staffordshire or Dudley Coal-field, the principal in the district, extends from Beverton, near Badgely, on the N.E., to near Stourbridge on the S.W. The greatest length is about twenty miles, and its greatest breadth, from Walsall to Wolverhampton, is about seven miles, but it is very irregular towards the south, being almost divided into two parts. The area from actual survey has been found to be about sixty square miles. The southern portion, extending from Stourbridge to Bilston, about seven or eight miles in length and four in breadth, has been minute examined. Mr. Farey, and described by him in Shaw's 'History of Staffordshire,' says, that the collieries of the northern portions of this field has hitherto been published; many coal seams, of eight, six, and four feet in thickness, are worked in it. The southern portion is of much more importance, as it contains seams from 30 to 45 feet in thickness. This enormous thickness is however not one continuous seam, but a number of seams, divided by layers of what the miners call band, which are found in beds of clay slate. The working of these thick seams is not so profitable as might be supposed. The colliery left standing in order to support the high roof are estimated at about one-third of the whole coal in the bed, and the small coal left in the mine is about equal to another third, so to one-third of the whole coal is taken out of the mine.

In the coal-measures of this district there is an absence of the millstone grit, carboniferous limestone, and old red sandstone, which usually lie under the coal-measures. The coal-measures rest, in the Dudley Coal-field, on the transition rock at once, without any intermediate strata: this singularity is likewise observed in the Coalbrook Dale coal formation.

The coal district in South Staffordshire is traversed from Lichfield to Stourbridge by a line of about 20 miles, not absolutely continuous, though they have a uniform general direction. On examination, the hills on the north and those on the south of Dudley are found to differ entirely in their character. The northern chain consists of only inclined strata of limestone, and sandstone, in which all the coal-measures crop out at a considerable angle, but come near a horizontal position as they recede from these hills. The other chain hills, on the S. of Dudley, are entirely composed of one mass of basalt and amygdaloid, and the coal-measures preserve their usual level in approaching the hills, not cropping out as they do upon the limestone chain. Two opinions are entertained with regard to these basalt elevations: they may be either simply a vast basaltic tuff, or a detached portion of the coal-field, or an overlying mass: the latter is considered the more probable. The coal-measures on the south, near Stourbridge, appear to dip beneath the beds of the newer red sandstone formation: the beds of this part of the Warwickshire coal-field dipping in opposite directions under the super-strata give reason for supposing that they may extend continuously below this through the intervening space. The eastern side of the field, which extends a considerable distance bordered by the red marl, is less asso- ciated with that of Dudley, and the coal-measures are observed again to crop out against it, thus lying in a basin between these two towns. That the coal-beds rise towards the north, and the coal-measures crop out against the surface, is very satisfactorily shown by the comparison of the strata in different collieries. At Tividale the main coal is sixty and a half fathoms below the surface; at Bradley it is only twenty and a third; and the greater number of beds which cover the main coal at the former place have entirely disappeared before the main seam reaches Bradley; and farther to the north the main seam also crops out and disappears altogether. A very curious phenomenon takes place at Bloomsfield Colliery, to the S.

The two upper beds of the main coal, called the roof, floor, and top slipper, separate from the rest, and are distinguished by the name of the flying reed. This separation occurs at Dudley Colliery, and amounts to twelve feet, four beds of shale (state-clay), and ironstone, being interposed. These two upper beds crop out, while the rest of the main coal goes on to Bilston, and is only eight yards thick.

This district supplies coal to the numerous iron-works in the immediate neighbourhood, and the manufactories of Birmingham and its vicinity; besides which, all the neighbouring counties, as far south as Reading and Gloucester, are supplied by the inland navigation. The clay ironstone occurs in various beds, but is only wrought in two: one of these is the bed under the main coal, and is wrought for iron ore.

Many faults or dykes occur in this field; they are usually fissures in the beds filled up with clay, and very frequently the levels of the different strata vary in consequence.
There is a great fault near Bilston, which causes the dip of the strata to be reversed, the beds on the south side dipping south, and on the north side dipping north; this is a lower and unusual circumstance.

Dr. Buckland has observed indications of coal near the Lickey Hills, a few miles south of this coal-field.

**Western Coal Districts.** — The coal-fields of this division are found in the counties of North and South Wales. The north-western district includes the coal-fields of Anglesey and Flintshire, the western those of Shropshire, the south-western those of South Wales, of South Gloucester and Somerset, and the Forest of Dean.

1. **Llanelwy and the Clwydian Range.** — At the distance of about six miles from the Menai Straits, and running nearly parallel to them, a remarkable valley stretches across the whole island. This valley opens on the north into Red Wharf Bay, and on the south into the bay of Llandudno. The valley is marked by several small ridges by parallel sides of carboniferous limestone, in the depression between which coal has been found, and it is thought probable that the coal-measures may extend through the whole line. Coal has been worked near the Maltraphen estuary; and a few years since shafts were sunk in the neighbourhood of Trefdraeth. Successful trials have likewise been made at Pentreberen, about five miles north-east of the former pits: the beds are said to be of a tolerable thickness, and of a good quality.

2. **Flintshire.** — The coal-field of this county extends north and south from Llanasa, near the western cape of the estuary of the Dee, to near Oswestry, in Shropshire, forming an extensive belt co-extensive with the range of the mountains. The western part of the Clwydian Range, north of the Clwydian Range, is entirely covered by the carboniferous limestone is partially interrupted by the mountain of Salteyn the coal strata rest immediately on the transition slate, of which that mountain is composed. (Conyers and Phillips, p. 419.) The greatest length of the district in which the coal-measures are found is about thirty miles, but it must by no means be understood that coal is worked throughout. At Oswestry there is a very small detached piece, not more than three miles long and half a mile broad; there is then an interval of some miles. Near Chirk another coal tract commences, and runs north for about five miles; then another interval occurs; and a little to the north of Wrexham the principal portion begins, and thence extends to the coast and forms a narrow belt along it to the termination at the west cape of the Dee. The beds dip from one yard in four to two in three, sink beneath the estuary of the Dee, re-appear on its opposite side, and finally sink beneath the strata of the newer red sandstone. This position of the coal-measures has lessened the conjecture that they are connected with the beds of the Lancashire coal-field. The coal formation here commences with the same strata as those of Derbyshire. The beds of coal vary in thickness from three quarters of a yard to five yards. In the near the north of the Clwydian Range, the beds of coal, varying from three feet and a half to seven feet. Common, cannel, and peacock coal are found.

3. **The Coalbrook Dale Coal-field rests on transition rock:** it extends from Wombridge, in the parallel of Wellington, to Coal Port, on the Severn, a length of about six miles; its greatest breadth is about two miles. The coal-measures are composed of the usual alternating strata, which occur without much regularity, except that each bed of coal is always immediately covered by indurated or slaty clay, and not by sandstone. The strata are eighty-six in number. In Madeley colliery a shaft is sunk 729 feet through all the beds. The first coal seam, which occurs at the depth of 102 feet, is 20 inches, and other beds of coal occur, one ten inches and the other three feet thick, before the bed of big flint sandstone, which is found at the depth of 576 feet; nine beds of coal occur, of the aggregate thickness of 16 feet, between the great flint and the little flint below, being 20 inches thick (10 feet). Beneath the little flint and the lowest bed of the whole formation, there is a sulphureous eight-inch coal. This account of the strata refers more particularly to the Madeley colliery. A bed of coal of this field is usually a mixture of peacock coal and pitch-coal.

**Rest of the Coalbrook Dale Field:** there are a few detached, narrow, and broken coal-fields in the plain of Shrewsbury, at the other side of the Wrekin. Several small coal-fields are in the Brown Clee Hill and the Titterstone Clee Hill, which rise a few miles south of the Coalbrook Dale-field; the latter hill is about four miles south of the former. The coal in the Brown Clee Hill only lies in thin strata, while the principal strata in the Titterstone Clee Hill is six feet thick. The coal-fields on the Titterstone Clee Hill are represented as six detached portions, or separate basins, cut asunder and rendered irregular by a vast basaltive dyke, more than 100 yards wide, which devours the strata into fragments. These fragments are more interesting to the geologist than the miner.

On the east of these hills, and between them and the Severn, a coal-field extends from Denbigh and Bilingsten on the north, to the borders of Shropshire and Worcestershire on the south, a length of about 20 miles, in which several small coal-fields are worked in several points along this line. Coal is also worked near Over Arley, on the Severn, adjoining the Shropshire border. Only a few miles from the Bilingsten coal-field at Pensex, near the foot of the Abberley Hills, is a "small patch (rather than field) of coal-measures," and another similar piece about three miles to the west.

**The South-Western Coal District** comprises the several small coal-fields near the estuary of the Severn and the Forest of Dean, including parishes of Gloucester, Somerset, Monmouth, and Glamorgan. The various coal-fields distributed over this district are apparently insulated, yet they have several points of connection. They all rest on one common base of old red sandstone; they all contain a limestone stratum, and are contemporaneous, being of the same era, to have been subject at a later period to the same revolutions, and lastly to have been covered partially by similar overlying deposits. (Ged. Trans., vol. 1, and 2nd. Res.) Messrs. Buckland and Conyers have found that the several basins in the coal formation are divided by lines (which they term "anticlinal") formed by the saddles of the strata or meetings at the surface of their vertical angles on each side of which the strata dip in opposite directions.

The coal-measures are thus surrounded by external bands of mountain limestone and old red sandstone, in the order of the outcrop of the subjacent beds. This district includes three principal coal basins, together with some smaller ones, adjacent to and closely connected with the same.

First, the South Welsh coal basin; second, that of South Gloucester and Somerset; third, that of the Forest of Dean.

1. The coal-field of South Wales is upland, of 100 miles in length, and the average breadth in the counties of Monmouth, Glamorgan, Caermarthen, and part of Brecon, is from eighteen to twenty miles; it becomes much narrower in Pembrokeshire, being there only from three to five miles. This area extends from Pontypool on the east to St. Bride's Bay on the west, and forms a vast basin of limestone, in which all the strata of coal and ironstone are deposited. The deepest part of the basin is between Neath and Llanelli; from a line running nearly east and west through Neath, all the strata rise on the south towards the southern end of the basin, and on the north towards the north, cropping out at the edges. The limestone crops out at the surface all around the coal, except where its continuity is interrupted by Swansea and Caermarthen Bays. The depths from the surface to the top of the coal are measured up by actual observations. The upper coal seam does not extend a mile either north or south beyond Neath, and not many miles in an east or west direction, and its utmost depth is not above fifty or sixty fathoms; the next stratum of coal and those below dip more steeply towards the north at a distance from the centre, and so of the rest in proportion to their depth. The lowest bed is 700 fathoms deep at the

* Sometimes these lines follow the crests of the chains of hills (p. 41); sometimes they are to be traced along the course of valleys (p. 48); the hills in the latter case are frequently not by the saddles of the strata, but by the cor

**co**
church shafts are sunk to the coal through both the latter formations.

The central tract, which begins on the south of Dundry Hill, is divided into two parts by a narrow valley; the northern part is the more extensive, and is divided in length into three miles to the north of the south-east of this central coal-tract the coal-measures are entirely concealed by superjacent deposits through a distance of six miles. Throughout this space however many shafts are sunk, some through the red marl of the valleys, and some through the limes. The crest of this tract is at an elevation of about 100 feet. There are several of the latter description in the parishes of Timmsbury and Poulton; but the deepest is on Clun Down near Radstock, which is sunk 200 fathoms before its horizontal adits are driven. Another shaft, beginning in the collie, is sunk on the edge of the same Down near Poulton, but it is not so deep as the former, since here there is a rise in the strata, and the coal seams are in consequence much nearer the surface. On the ascent of the hill above Chiscompton the coal-measures are again exposed to the extent of about an acre.

The southern coal-tract commences near the point where the road between Bath and Shepton Mallet crosses the valley of the Avon; between its greatest length is six miles, and greatest breadth two and a half miles. The coal-measures of the eastern coal-tract are laid open in the vale of the Boyd at Wick and Upton, both in Gloucestershire; they are likewise exposed on the left bank of the Avon at Newton St. Loe, near Bath, and above, on the right bank of the Avon, at Bath, dipping towards the interior of the basin. Several seams are worked at Upton and Newton. The western coal-tract lies at the south-east of Leigh Down, near Bristol. Beds of well marked form the upper strata in all the coal-pits of this tract between Long Ashton and Bedminster. The coal-field of Nailsea, lying more to the west, is a continuation of this tract.

A great undulation in the strata of the coal-measures of Somersetshire and the south of Gloucestershire alters the apparent position of the seams in such a way that it is very difficult to ascertain the identity of each throughout the various colliers. The local names of the several seams also tend to confuse the geologist.

The chain of hills which forms the western boundary of this coal district presents remarkable anomalies between Clevedon and Portbury, along its northern escarpment. A great fault ranging along the edge effects a very considerable subsidence. In consequence, the coals, depressed to the level of the old red sandstone, appear to occupy its place, and seem to dip beneath the mountain limestone, on which, in fact, they repose. (Gest. Trans. vol. iv., 2nd series.)

The following is a subdivision of the coal-measures in this basin, beginning with the highest. The upper coal shale; the Pennant grit (sandstone); the lower coal shale; and the millstone grit. We refer the reader to the Memoir already quoted for a minute description of the various sections of this coal basin.

In the Bedminster colliery on the S.W. of Bristol, there are three seams of good bituminous coal: the deepest and uppermost are wrought; the former is four to five inches thick, the latter two feet two and a half to three feet thick; the middle seam is only one foot. The interval between the two principal seams is Twenty-three fathoms; the lowest shaft sunk is 127 fathoms deep. These beds are obviously referable to the upper coal shale. Works were established at Cromhall, a few miles north of Acton, about forty-five years ago, but were soon abandoned, in consequence, it is supposed, of the numerous derangements of the strata. They were again resumed, but not very profitably. The coal lay in thicknesses in different places varying from thirty to six inches; while in some parts no coal at all was to be seen. It never retained a regular thickness for many yards together, and in some places it diminished gradually in the line of the dip until it disappeared altogether.

The following is a 'section' of the Cromhall colliery, as given in Mr. Weaver’s ‘Geological Observations on parts of Gloucestershire and Somersetshire,’ Gest. Trans. vol. i. series 2 —
working. In the parish of Ormiston, in the west of the same county, coal is found in abundance; there are three workable seams of coal, varying from twenty-eight to forty-three inches in thickness, and the coal is rich in fibre.

Coal occurs in Fife, on the north side of the Forth, but it is not at present much worked. There are mines in the parish of Dysart, where coals were first raised in Scotland more than 350 years ago. There are fourteen collieries in the county, of which five are of the most important, are the respective thicknesses of five, eight, and five feet. The pits are about sixty or seventy fathoms in depth.

Coal is wrought in several places in Mid Lothian.

In Lanark the coal-fields are numerous and extensive. The Wilsontown coal-basin and the Climpie basin both occur in the parish of Carnwath; the latter is on the west side of the first, the crop of the one nearly approaching the other. There are several seams of coal in these basins. The main coal, or lowest, is called the four-foot coal; another seam is about two feet in thickness. The accompanying strata are sandstone, varying in composition and hardness; bituminous shale, slate, and clay, and thin beds of ironstone alternate with the coal. Several small faults, or hitches, as they are here called, traverse the field. On the S.W. part of the field, the main coal is generally fourteen feet below the crown coal, which is the next superior bed; on the N.E. the space between the same beds is about two feet. These basins form part of the great coal-basin of the Clyde, which extends on both sides of that river, and the centre of which is near Dalziel. On the same side of the river, in the parish of Monkland, there are many collieries which work the thickest bed of coal, and it is of good quality. On the left bank of the river coal is wrought in several places. Five mines are worked in the parish of Rutherglen, and others in the adjoining parish of Cambuslang. There are several collieries also in Hamilton, Stonehouse, and Douglas. Throughout this district seven seams of coal are generally found within 415 feet of the surface; five of these seams are of sufficient thickness and good quality to be wrought. The following tables show the number, thickness, and quality of the seams of coal in the pits in the parish of Cambuslang:

<table>
<thead>
<tr>
<th>Stratum</th>
<th>Description</th>
<th>Thickness (ft.)</th>
<th>Quality</th>
</tr>
</thead>
</table>
| Upper soil (earth and clay) | from 20 to 30 | | Absolute white freestone
| Shale, with vegetable impressions, from 30 ft. | to 40 ft. | | 35 ft. | 30 ft. |
| 1st seam, soft coal | | 4 | | | 25 ft. |
| 2nd seam, soft coal | | 5 | | | 25 ft. |
| Interval (shale) | | 63 ft. | | | 50 ft. |
| 3rd seam, shaft coal | | 5 | | | 50 ft. |
| Shale, 20 feet | | 65 ft. | 18 inch. | | 50 ft. |
| Interval (ironstone, from 6 to 18 in.) | | 60 ft. | | | 50 ft. |
| Interval (shale) | | 80 ft. | | | 50 ft. |
| 5th seam, soft coal | | 3 | | | 50 ft. |
| Interval (ironstone) | | 10 ft. | | | 50 ft. |
| 6th seam, hard coal, good for iron-works, forge. | | 3 | | | 50 ft. |
| Interval (shale) | | 6 ft. | | | 50 ft. |
| 7th seam, soft coal | | 6 ft. | | | 50 ft. |
| Till, &c., with thin seams of coal | | 84 ft. | | | 50 ft. |

The thickness of the coal and of the freestone varies considerably in different parts, and the numbers here given must be taken only as an approximation. The strata are frequently deranged by faults, several of which run from east to west. In their general arrangement these generally run nearly parallel to each other, although they have always a considerable angle of elevation, and uniformly dip towards the Clyde. A great fault occurs between Hamilton and Quarter, and none of the principal seams are wrought for some miles of this part of the coal-beds being sunk nearly 100 fathoms lower than those of the fault. The main seam worked at Quarter is five feet six inches thick, and consists of four distinct varieties of coal.

This coal-basin of the Clyde extends into Renfrewshire.
there are many collieries. Coal is wrought in the parish of Eastwood, in that county, in several seams of various thickness; but none exceed two feet six inches. The whole are of good quality. Five of them are wrought in pits varying in depth from twenty to forty fathoms. The coal measures here consist of the usual strata of the British coal, dipping generally to the S.W. This coal formation partly surrounds the loch of Castle Semple, and continues without interruption into Ayshire, around Kilmuirne Loch, and on to Ardrossan. Coal occurs in different places in Dumbarton, where, among other parishes, it is wrought in Easter Kilpatrick. It is also found abundantly in Stirlingshire, along the southern base of the Lennox hills. Coal lies there through the whole of Linlithgow, and is worked extensively in that county. Coal is also found in Clackmannan, and in the south of the counties of Perth and Kinross.

**Irish Coal-Fields.**—Mr. Griffiths, in his Report on the Leinster Coal District, gives an excellent summary of the Irish coal-fields, from which what follows is taken. *If we except the Leinster district, my knowledge of the coal-fields of Ireland is as yet very limited: and though each in its turn will form the subject of a separate report, I think it right to draw attention to them in this place, by giving such general information as I possess respecting their situation and circumstances.*

Coal has been discovered in more or less quantity in seventeen counties* of Ireland; but I believe that the chief deposits are in the counties of Wexford and Waterford, in counties Limerick and Tipperary, viz., the Leinster, the Munster, the Connaught, and the Ulster. The two former contain carbonaceous or stone-coal, and the latter bituminous or blazing coal.

The Leinster coal-district is situated in the counties of Kilkenny, Queen's County, and Carlow. It also extends a short distance into the county of Tipperary, as far as Killenaule. This is the principal carbonaceous coal-district. It is divided into three detached parts, separated from each other by a secondary limestone country, which not only envelops, but in continuation passes under the whole of the coal-district; a fact which was indisputably, though accidentally, proved by the Grand Canal Company, who struck a pit through eighteen yards of black slate-clay and limestone, near the town of Kilkenny.

It is probable that the Leinster coal-district is therefore of subsequent formation to the limestone.

The Munster coal-district occupies a considerable portion of the counties of Cork and Kerry, and a large part of the county of Tipperary. It is by much the most extensive in Ireland; but as yet there is not sufficient information respecting the number, extent, or thickness of the beds of coal that may exist.

Coal-cuts have been raised for near a century in the neighbourhood of Kanturk, in the county of Cork. At Dromagh colliery, I understand, the work has been carried on to a very considerable extent, and its annual supplies of coal are large. The coal occurs in the cutting for a considerable time, but four principal coal-districts here, where all the beds which have been discovered have been successively and in general successively worked, four beds incline on each other, and at no greater distance than 200 yards from the first, and are very thick, and is the leading bed. All faults, checks, and diaclases, similar to those which are discoverable in this bed, are in general to be encountered in the other three. The names of the four beds are, the coal-bed—this lies farthest to the north; the rock-coal, so called from its being comparatively of harder quality than the other beds; the bulk-bed, so called from its contents being found in large masses or bulks; and Bath's bed, so called from the name of a gentleman who, very early in the present century, discovered and worked. The coal-bed consists of three-feet solid coal, and is not sulphureous; the rock-coal is nearly of the same thickness with the leading bed, but is generally harder than the other. The bulk-bed is the most easily wrought. The other beds are of the culm species, but of peculiar strength. **The bulk-bed forms immense bulks and masses of culm, in which the miners have frequently been unable to retain the ordinary directions of roof and seat.**

No work has been undertaken in the Munster coal-district to a greater depth than 80 yards. The present work at the Dromagh colliery is at that depth; it is heavily watered, and consequently expensively wrought. The quality of the coal and culm improves as the work descends.

**The Connaught coal-district stands next in order of value and importance to the Leinster and Munster, and possibly may be found to deserve the first place when its subterranean treasures shall be explored. At present nothing is known, except that the outer edges of several beds of coal have been observed, but they have not been traced for any distance. The extent and thickness cannot be ascertained. The coal is of the bituminous species. This coal is particularly adapted to the purposes of iron-works, foundries, &c. &c.**

The Ulster coal-district is of trifling importance, when compared with the foregoing. It commences near Dunagown, in the county of Tyrone, and extends in a northern direction to Coal Island, and in continuation to the neighbourhood of Cookstown. No beds of coal worth working have yet been discovered between Coal Island and Cookstown, but certainly the coal strata extend there. The principal collieries are at Coal Island and at Drumglen. The coal of this district is bituminous. I understand that indications of coal have been observed at Drumglen, in the county of Tyrone, and at Lough Erne, in the county of Fermanagh, on the upper or left bank of the river Lough, about one mile north of Lough Erne. Possibly the coal-formations may extend from the neighbourhood of Cookstown westward to the north of Lough Erne.

Besides the foregoing principal coal-districts, there are others of less consequence. Bituminous coal has been found in the neighbourhood of Belturbet, in the county of Cavan, and at the collieries of Ballinamore, in the county of Sligo; but the Anthracite coal-district is not very extensive. These coal-districts are mentioned here only for the sake of completeness. The coals are of a slaty nature, and greatly resemble both the coal and the accompanying rocks which occur in Ayrshire, and probably belong to the same formation.
and the Riesengebirge, on the north, and the great district of primitive slate which occupies the larger part of Bohemia south of the Beraun and Upper Elbe. More than forty beds of coal are supposed to be worked in this district.

Coal is found in Russia, near Toula, lat. 54°, long. 37°, where it is worked; but the quantity is so small, and the difficulty of working it beneath a loose and half-liquid bed of quicksand is so great, that it seems unlikely to be of much utility. Coal has also been worked near Alexandropol, lat. 45°, long. 35°, in the government of Katerinolaf. (Mr. Strangways on the Geology of Russia. Geol. Trans., vol. i., 2nd series, p. 32.) In Sweden coal occurs to the south of the primitive tract, near Helsi- sborg, at the entrance to the Baltic. Coal is also worked in the island of Bornholm. [BORNHOLM.]

Lobarde mentions coal as occurring in Spain; in eight places in Catalonia, in three in Aragon, and one in New Castle. Coal, it is conjectured, will be found in several parts of continental Greece. On the north of Constantin- nople coal is said to be found.

Asia.—In Asia coal has long been worked in China, but what has hitherto been obtained is said to be very slaty. Coal is likewise found in the countries immediately around the Persian Gulf, but of a very indifferent description. In most parts of Cutch, coal occurs in abundance, and of good quality; it ignites quickly, and burns to a white ash. Coals are also found in Bundelcund. There are large mines in a district of 10,130 miles, worked to the extent of 14,000 or 15,000 tons annually. They are situated on the banks of a river connected with the Hooghly, and were first worked about eighteen years ago, but they have not been in extensive operation more than five years; the principal seam is about 30 feet thick, and is about 90 feet from the surface. Coal has likewise been got from a mine opened near Bhogulpoor, on the Ganges, about 300 miles from Burdwan. Another coal- field has been discovered on the banks of the Hooghly, at a place called Merzapore, about 40 miles from Calcutta; the coal is close to the surface, and the thickness of the principal seam is said to be two feet. Coal of good quality likewise occurs in the Birmian empire.

Coal mines of North America. The coal-field of the Appalachian range, in the eastern part of the United States, is probably the most extensive in the world. It stretches from Virginia, twelve miles west of Richmond, to Nova Scotia, and is divided into several sub-divisions, each of which is worked on a large scale. The principal seams of coal are said to extend from the Ohio to the Tombigbee in Alabama. The coal commences at Cumberland, in the state of Maryland, between the Alleghany and Tuscumara ranges; and west of this town it occurs generally in beds varying from six to ten feet in thickness, and is generally free from impurities. On the banks of the Wheeling, on the Ohio, a great quantity of coal is used for manufacturing purposes. The sandstone in this part is considered as the lowest member of the formation. The consumption at Pittsburgh is also considerable. West of the Mississippi the argillaceous sandstone is associated with beds of coal and ironstone. The Ozarks contain beds of coal.

In the southern provinces of Chile there is an extensive coal-field, that is partially worked.

North America has a great quantity of coal. The great coal-field of Picou has been traced from Cariboo Harbour to Merigisheim, comprising an area of more than 100 square miles. The seams of coal range from three to eight miles in length, and from one to four feet in thickness. One bed is described by a practical miner, who works in Nova Scotia to superintend the opening of the mines, as 40 feet in thickness; it is not however equally good throughout, and it was thought advisable to work only 10 feet of the upper layer. According to Bouchette the thickness of the principal seam varies from 1 foot to 50 feet. The coal is highly bituminous and burns well. There is another coal-field, also of considerable extent, in the north-west part of the British Columbia, between the river Macan and the shores of the Chignecto Channel. In this district there are eight strata of coal, varying from one to four feet in thickness. This coal is not considered so good as that of Picou. There are also indications of coal in the townships of Londonderry and at Onslow; on the north shore of the Mina's basin; at the head of Pomket Harbour, in the upper district of the county of Sydney; and on the south shore of Wallace Harbour, in the county of Cumberland. [Bouchette.]

Coal of excellent quality are got in Cape Breton. The coal-mines have been traced in the western part of the island, on Inhabitants River, at Port Hood, and at Mabou. On the east the Sydney coal-field is of great extent; it commences at Miray Bay and runs along the coast to the mouth of the river New Yarmouth, a distance of 40 miles, averaging 5 miles in breadth. From a minute calculation, after deducting harbours, bays, and all other inter- positions, it appears that there are 120 square miles of land, containing a large number of veins of coal. These veins extend through the island and, according to government measures in this district contain fourteen beds of coal, varying from 3 to 11 feet in thickness. The coal is wrought at Sydney Harbour and at Lingan.

Coal is found very abundantly in Australia and is worked extensively in the Newcastle district, on the Hunter's River. A coal formation likewise occurs in Van Diemen's Land.

COAL PLANTS. That coal is the result of the mineralization of vegetable remains is abundantly proved, both by the numerous impressions of plants found in connection with it, and by the traces of organization which are still discoverable in it. Mr. Hutton has shown that it is possible to prepare the different varieties of bituminous coal in such a way as to render slices of them partially transparent, when examined under a microscope, and by this means discover many of the minute plants which have produced them. Cannel coal, he says, seems to retain traces of its structure through its whole mass, while it exists in fine coal in small patches only, which appear as if mechanically entangled. (Rasin Flora, ii., 25.)

In general, the coal-bed is about the same height in the shale of the coal-mines, that is, in the mud which sepa- rates the seams of coal, or in the sandstone or ironstone associated with the coal formation; and such impressions are as much more clear and perfect than those which occur in the coal itself, is chiefly from them that we find the ideas of the mode of formation from which coal has been produced have been derived. They are often present in inconceivable beauty and abundance, as may be imagined from Professor Buckland's graphically descriptive remarks on the coal-formation of the coal-mines of Bohemia just mentioned. The most elaborate imitations of living foliage upon the painted ceilings of Italian palaces bear no comparison with the beautiful perforation of extinct vegetable forms with which the galleries of these instructive coal-mines are overhung. The roof is covered as with a canopied of gorgeous tapestry, enriched with festoons of most beautiful foliage, which is sometimes referred to ten thousand species of plants. On every portion of the surface the effect is heightened by the contrast of the coal-black colour of these vegetables with the light ground-work of the rock to which they are attached. The spectator feels himself transported, as if by enchantment, into the deep forest, and sees before him the complex forms and characters now unknown upon the surface of the earth, presented to his senses almost in the beauty and vigour of their primeval life; their sealy stems and bending branches, with their delicate apparatus of foliage, are all spread out before him, little impaired by the lapse of countless ages, and bearing faithful records of extinct sys- tems of vegetation, which began and terminated in times of which these relics are the infallible historians.

Such engravings consist chiefly of leaves separated from their branches, and of casts of trunks more or less in a broken state; and with them occur now and then pieces of wood or remains of trees, in which the vegetable texture is to some extent preserved. Of the leaves the greater part is more or less mutilated; those of ferns, which are extremely numerous, have lost their fructification in the majority of instances; and it frequently happens that the leaves of compound plants have been disarticulated either wholly or in part. The casts of trunks or trunks are in all cases in a state which must be supposed to be originally viously to their conversion into coal; destitute of bark, or with the principal part of that envelope gone, and often pressed quite flat, so that all trace of their original com- plexity has been effaced. These impressions are not in clusters as they probably were when alive, but separated into single individuals. Of flowers there is no trace that can be satisfactorily identified; for Antholites Pitcairnie, the most perfect that has yet been discovered, is
altogether of a doubtful nature. The authors of the 'Fossil Flora' represent it as having been so much decayed at the time it was imbedded in the shale that all its parts are blended together, and no longer distinguishable as separate organs.

If remains such as these, although of recent plants, were submitted to the same treatment, he would find it impossible to form any other than a general idea of their nature, and he would be unable to speak with any confidence as to the precise plants which produced them. Such being the case with recent fragments, where cause, texture, and manner of growth, and, in many other particulars, of which a skillful botanist would avail himself, independently of the more important points of structure of which systematic writers principally make use, it is obvious that the different remains of the fossil remains of plants must be far greater; for with them the evidence upon which an opinion is to be formed is of the most circumscribed and sometimes doubtful nature; so great indeed is the difficulty, that a French botanist of no mean reputation is known to have declared that all speculations upon the nature of antient vegetation ought to be referred to the romance of natural history, and have no concern with science. There is little doubt now that some of the theories to which the study of the vegetable remains of the coal-measures has given rise are romantic enough; but on the other hand it is equally certain that they furnish some most important and precise evidence as to the nature of the vegetation with which our planet was clothed in the earliest ages of the exist. When they branched they were often observed to do so in a forked or dichotomous manner. Sometimes they are minute, and no larger than existing Lycopoda; but they are occasionally found of considerable size, some having been seen which, although mere fragments, were between forty and fifty feet long, and more than four feet in diameter. An idea of their appearance will be gained from the accompanying figure of Lepidodendron Sternbergii.

Lycopodaceous plants, or what are considered analogous to them, form a very large proportion of the vegetable remains of the north of England coal-field. They are represented by impressions closely covered either with lozenge-shaped spaces disposed in a spiral manner, or by small scale-like leaves, which are supposed to have produced those impressions by falling inwards, and from which it has often been observed to do so in a forked or dichotomously manner. Sometimes they are minute, and no larger than existing Lycopoda, but they are occasionally found of considerable size, some having been seen which, although mere fragments, were between forty and fifty feet long, and more than four feet in diameter. An idea of their appearance will be gained from the accompanying figure of Lepidodendron Sternbergii.

Coniferous wood is known among other things by the presence of small disks upon the sides of its woody tubes; differences in the arrangement of these disks have given rise to the formation of the genera *Pace* and *Piniæs*, to one or other of which all the coniferous coal-wood seems referrible. Mr. Nicol believes that it may all be referred to either the existing genera *Pinus* or *Araucaria*. Specimens of this kind of wood occur sometimes of considerable size. A trunk of *Piniæs Brandiæng* has been found 72 feet long, and another of *Piniæs Withermii* 36 feet long.

The wood, to which Mr. Witham's genus *Aroabatha* apparently belongs, is known by its longitudinal section representing tubes marked by parallel transverse lines resembling the steps of a ladder. This is very uncommon, and is stated by Messrs. Lindley and Hutton to belong to the genus *Stigmaria*, which will be mention hereafter.

One specimen in iron-stone also has occurred of the wood of the genus Lepidodendron; it consists principally of long cellular tissue, having near the centre a zone of spiral vessels, connected with the bases of the leaves by arcs of spiral vessels, and having rudiments of wood on the outside of the zone. (Fossil Flora, 2, 98 and 99.)

**2. Coal plants which have an obvious analogy with recent plants.**

Coniferous plants have left few remains, except wood, by which they can be recognised. A cone of *Pinenes anthracina* has been met with, and there is reason to believe that certain stems called *Bollaniæ* have numerous minute dots upon their surface, and deep circular oblique concavities, four or five inches across, at intervals of ten or eleven inches, are also remains of trees of this description. It is
are always more like mosses than trees), having arrived at gigantic dimensions in the remote ages when coal was deposited. But it is highly probable that this notion is altogether unfounded; for, in the first place, there is no certainty whatever that the most gigantic Lepidodendra were not fir-trees, analogous to Araucaria; a conjecture which is rendered the more probable by Mr. Nicol's discovery that some of the specimens of fossil coniferous wood are nearly identical with the wood of that genus. Now the Norfolk Island pine, which is a species of Araucaria, is one of the largest of known trees. In the second place, it has been proved that Lepidodendron Harcourtii at least is not a Lycopodiaceous plant at all, but an extinct genus, intermediate in organization between Coniferæ and Lycopodiaceæ, connecting Gymnosperms and Acrogens more directly and satisfactorily than any known plant. It is impossible to say how many other species of Lepidodendron may not agree with L. Harcourtii, and it must be obvious that, being an extinct form, we have no more reason to be surprised at its being larger than the genus Lycopodium now is, than we should have at finding a tree fern, like Alasophila brunoniana, whose stem is between forty and fifty feet high, in the same natural order with the common Polypodium of our hedges. With regard to the small species of Lepidodendron, it is more probable that they belonged to the genus Lycopodium; but there is nothing remarkable in their stature.

Ferns are the most abundant of all plants in the shale of the coal, almost every yard of it being more or less marked by their impressions, and very often containing them in great multitudes. It has been estimated that of the vegetable remains belonging to the Coal Flora, one-half at least of the species are ferns. They are in most cases destitute of fructification, so that they cannot be arranged according to the system in use for recent species; and consequently M. Adolphe Brongniart, the great writer upon these subjects, has divided them into genera characterized chiefly by the way in which the veins are disposed. The number of ferns renders it convenient that some such classification should be formed, and M. Brongniart's plan has been adopted by all other writers. It is no part of our object to go into such details in this place, but it will be useful to many of our readers to know what the differences are between some of the most common of these fossil genera.

Such are the following:—

Pecopteris consists of species whose leaves are once, twice, or thrice pinnated, with the leaflets either adhering by the whole breadth of their base, or by the centre only. The midrib runs quite through to the point, and the veins are planted upon it somewhat perpendicularly.

[Odonopteris giganica.]

Odonopteris has leaves like the last, but its leaflets adhere to the stalk by their whole base; there is no midrib; and the veins spring side by side at once from the base of the leaflet, passing onwards towards the point.

[Odonopteris Brezili.]

Sphenopteris has twice or thrice pinnatifid leaves; the leaflets are narrowest at the base, and the veins generally

[Odonopteris longifolia, a little magnified.]

Neuropteris has leaves divided like those of Pecopteris, but the midrib does not reach the apex of the leaflets; on the contrary, it divides off right and left into veins, and gradually disappears.
arranged as if they radiated from the base; the leaflets are more frequently wedge-shaped than any other figure.

**Lochocystites** has the leaves several times pinnatifid, and the leaflets more or less united to one another at the base; there is a distinct midrib, and the veins are reticulated.

**Cyclopteris** has the leaves simple, and either altogether undivided, or only lobed at the margin; they are more or less orbicular, and are filled with veins radiating from the base; there is no midrib. Specimens of this genus are common in ironstone nodules.

**Schizocystites** is like the last, except that the leaf is deeply divided into numerous unequal segments, which are usually lobed and taper-pointed.

Under the name of **Cyclopteris** are comprehended all the kinds of stems of tree ferns. They are found in the form of short, round, or compressed truncheons, marked externally by oblong scars of considerable size, much wider than the spaces that separate them, and having their surface irregularly interrupted by projecting points. Such appearances are owing to the manner in which the woody parts of the leaf when fresh were connected with the stem. The fragments to which this name is given do not belong to leaves bearing other names; but as the stems and leaves are never found united, it is impossible to identify them. Remains of tree-fern stems are of such rare occurrence, that up to the present time not more than two or three specimens have been found in the rich coal-fields of Great Britain.

3. **Coal plants with which no existing analogy has been satisfactorily traced.**

**Calamites** are fossils found in short, jointed, cylindrical, or compressed fragments, with channels furrowed in their sides, and sometimes partially surrounded by a bituminous coating, the remains of a cortical integument. They were originally hollow, but the cavity is usually filled up with the substance into which they themselves are converted. They were separable at their articulations, and, when broken across at that part, show a number of striæ originating in the furrows of the sides, and turning inwards towards the centre of the stem, which however they do not reach. It is not known whether this structure was connected with an imperfect diaphragm stretched across the hollow of the stem at each joint, or whether it merely represents the ends of woody plates of which the solid part of the stem was composed. Their extremities have been discovered either to taper gradually to a point, or to end abruptly, the intervals becoming shorter and smaller. The latter are believed to have been the root end of these plants, the others the extremity of their branches. Various speculations upon the nature of these plants are to be found in M. Adolph Brengniart's works, and in the 'Fossil Flora.' The former botanist concludes that they were plants allied to Equisetum, only of a more gigantic stature. (Equiseta are slender, weak-stemmed, erect plants, not more than two or three feet high; while Calamites have been found with a diameter of fourteen inches.) Later botanists, on the contrary, adduce what they consider ample evidence to show the supposition that Calamites were analogous to Equiseta to be unfounded; and that they more probably were a race of plants which have now become extinct. It is particularly urged that the presence of bark in Calamites, the existence of which M. Adolph Brengniart admits, is quite conclusive that those plants did not even belong to the same natural class. **Stigmopteris** is one of the most common of all plants in the coal formation; not a mine is opened, nor a heap of shale thrown out, but there occur fragments of an irregularly compressed roundish form, apparently portions of a stem, marked externally with small cavities in the centre of slight tubercles
arranged irregularly, but somewhat in a quincunxial manner. The axis of these fragments is often hollow, or different in texture from the surrounding part. From the tubercles arise long ribbon-shaped bodies, said to have been traced to the length of 20 feet. For a long time no more was known of these plants. A few years ago Mr. Hutton discovered that such fragments as we have just described are portions of the extremity of the arms of a huge dome-shaped body which divides into twelve limbs, each of which spreads horizontally from the edge of the dome, usually dividing into two arms. From more recent observations it has been ascertained that the arms of this plant consisted of a mass of cellular substance, having in its centre a hollow cylinder composed exclusively of spiral or scalariform vessels, and destitute of medullary processes. It is useless to enumerate the conjectures which have been formed concerning the real nature of this strange production; all that can safely be asserted about it is, that it was unquestionably a vegetable, for even that might have been doubted in the absence of some of the evidence that now exists. We are very much of opinion that it will eventually be ascertained to be something altogether different from any plant with which it has been yet contrasted: see observations further on.

Siggillaria comprehends all those columnar gigantic stems which occur commonly in the sandstone of the coal in an erect or nearly erect position, but which are prostrate and crushed flat in the coal-shale, and which are marked by flutings with a single row of small scars between them. In diameter they vary from 6 to 36 inches, and they must have sometimes been full 40 or 50 feet high.

__Siggillaria columnaris__

It is believed, from the very compressed state of many specimens, that these plants must have been of a soft nature, and, from the general absence of scars of large size, that they must have been very little branched. The presence of a distinct bark proves them to have been Exogens or Xylophytes. They have been supposed to be from ferns, but that is highly improbable; again, they have been conjectured to be analogous to the torch-thistles (Caeti) of the Tropics, which is far more probable. But in fact no evidence exists upon which a precise opinion can be formed. Is it quite impossible that Siggillarias and Sigmuarias are both the same thing, the former being the stem, the latter the roots? Compare with each other tab. 54, the base of fig. 1 and fig. 2, with tab. 31, fig. 2, of the 'Fossil Flora.' _Asterophyllum_ are very common plants, with pinnate, whorled leaves, which vary in figure and in size, but which, together with the slenderness of the stem to which they belong, give the plants much the appearance of the modern genus Galium. _Sphenoophyllum_, with many of the characters of the last genus, has broad wedge-shaped leaves, the veins of which are forked. That circumstance has led to the notion that it was related to ferns, especially to the genus Marsilea.

_Sphenoophyllum Schloëtianum_ [ _Asterophyllum folium_.]

Such are the more common of the plants whose remains are traced in the coal-measures. One of the first things which strikes us in casting the eye on the list is the little variety of form apparent in the old Flora. Instead of the infinite diversity of plants which are contained in a modern forest, nothing here presents itself except fir trees, ferns, a very few palms, and a small number of species whose nature is unknown. Not a trace is found of grasses, or the numerous herbs and shrubs that are now met with in all regions clothed with vegetation; and of the vast class of Exogens not one authentic instance occurs. Ferns, too, would seem to have constituted in themselves one-half of the entire Flora, and yet it is only in a few rare cases that they have been met with in a state of fructification. These circumstances have led to the hasty inference that in the beginning nature was in reality but little diversified; that a few forms of organization of the lower kind only were all that clothed the face of the earth; and that it was only in after ages that Nature assumed her many-coloured ever-varying robe. And yet it has been at the same time admitted that in those early days vegetation was more luxuriant and vigorous than at the present hour. It is not a little singular that the true explanation of this circumstance should not have been hit upon without any direct experiment having been instituted for the purpose of demonstrating how it is really to be explained; for considering that all geologists are of accord in the opinion that the plants which formed coal were for a period of some duration floating in water, a partial destruction of them might easily have been supposed to be the result. Professor Lindley has recently proved that plants are capable of enduring suspension in water in very different degrees, some resisting a long suspension almost without change, others rapidly decomposing and disappearing. One hundred and seventy-seven plants were thrown into a vessel containing fresh water; among them were species belonging to the natural orders of which the Flora of the coal-measures consists, and also to the common orders, which, from their general dispersion over the globe at the present day, it might have been expected should be found there. In two years one hundred and twenty-one species had entirely disappeared; and of the fifty-six which still remained, the most perfect specimens were those of coniferous plants, palms, lycopodiaceae, and the like; thus showing in the clearest manner that the meagre character of the Coal Flora may be owing to the different capabilities of different plants of resisting destruction in water. The same experiment accounts for the want of fructification in fossil ferns; for it showed that one of the consequences of long immersion in water is a destruction of the fructification of those plants.

A much more important fact is the presence of certain tropical forms of vegetation, such as palms and tree-ferns, in the coal; and the quasi-tropical character of other species, as Aracuaria-like Conifera. This is the more startling when connected with another fact, that the coal-measures of Newfoundland and even of Melville Island, in 75° N. lat. From this it has been inferred that the northern parts of the world enjoyed in remote ages a climate where frost and snow, and the inclement seasons of Arctic regions, were unknown; that they were at least as hot as equinoctial countries now are; and that the inhospitable hyperborean plains of Melville Island at one time displayed the noble scene of a luxuriant and stately vegetation. Palms, it has
been said, were there, and they are the especial and princely denizens of the tropics; tree-ferns occur, and they now only exist in the primeval forests of the torrid zone, having become gradually impaired by the influence of the more equable atmosphere, and living, like vegetable eremites, without even a parasite to fix itself upon their trunks and keep them company. Sigillarias, Sigilmarias, and even Calamites, have been enlisted in the cause of this theory, notwithstanding Sigillumaria and Sigilmaria have a trunk, but not a root. And in confirmation of all this, the preponderance of ferns is ascribed to as having its parallel no where except in the hottest and dampest islands of Polynesia.
The advocates of these theories have not however been permitted to hold their ground in peace. It has been asserted that the presence of these tropical forms of vegetation in northern latitudes is no proof of what the climate in which they were deposited formerly was, because they may have been transported here from more southern latitudes. The perfect state of many of the remains offers however great difficulties in the way of this supposition; for although they are very much broken, yet the angles of most fossil plants are by no means water worn, and in Sigillarias, &c., are as sharp as they ever were. Nor is the state of those tropical stems and fruits, which in modern times reach the coasts of Ireland and Norway, at all like that of the buried plants of the coal-measures.

And further it is submitted a high temperature in northern regions in former days is suggested by considering the duration of the days. Without a diurnal change of light and darkness plants cannot exist: absence of light blanches them, by the accumulation of undeveloped starch, and makes them either perish, or die by a slow and deform them, by the incessant decomposition, of their carbonic acid. Now, however this may be reconciled with a country like England, in which the winter days are of moderate length, it is less reconcilable with the northern parts of North America, and not at all with Melville Island, in which there are 94 days when the sun is never above the horizon, and 104 days that he never sets; and it will hardly satisfy the objection to call in the aid of long-continued sun in order to remove the disadvantages of a short day, which, so far as we know, will stimulate the digestive functions of plants. To admit therefore the presence of a tropical vegetation in former days in Melville Island, or Baffin's Bay, seems to carry with it the necessity also of admitting that a change has occurred in the position of the earth's axis of rotation—an assumption for which we have no evidence at all.

These points were adverted to in a lecture given by Professor Forrester of the London University, on the 16th March, 1835, and at the same time some views of his own were sketched out, with which we conclude the present article.

He, in the first place, adopted entirely the opinion that the plants of the English coal-measures had not been deposited under such a high temperature as that which they required, but that they were only the most within a few hundred miles of the places where they are now deposited, and probably in their very vicinity. But from this statement was excepted the coal of Melville Island; for he asserted, that although the vegetable impressions in the English coal-measures were by no means water worn, yet those in the British Museum from Melville Island were so rubbed and damaged, that they might have travelled from the very equator before they were deposited. The plants of the most in places where they are now growing, in the possibility of plants growing without light under a supposed high temperature, and to a considerable size, because it cannot be denied that an English winter at the present day has an influence very unlike that of a southern climate, and that vegetable; and the same is true of Newfoundland, and those parts of the United States of America in which the coal plants are most unequivocally of the same nature as those of Newcastel.
The great point for consideration was the evidence which, it is asserted, the coal-measure plants afford of the climate of Great Britain, and the north of Europe generally, having formerly been tropical. This opinion has been founded upon the work of Quinquis, whose rather too extensive examination: the one, the excessive development of certain forms of vegetation; another, the presence of the remains of palms and tree-ferns, which are usually considered incapable of existing unless in a tropical atmosphere; the third, the sigillariae of Mass, which have been considered to have passed to the north of Europe, have been asserted to be enormous forms of natural orders, now known only in a comparatively pigmy state. Sigillarias have been called huge tree-ferns, Sigilmarias and Lepidodendra the gigantic Lycopolis, and Calamites have been considered as the hyperborean equivalents of the more developed ultra-tropical form of Equisetum. But these assertions are of the most gratuitous kind, and are incapable of being maintained upon admissible botanical reasoning. The same, however Sigillarias and Sigilmarias have a trunk, but not a root; and Lepidodendron has been demonstrated to have been a genus intermediate between Lycopolis and fir-trees. It is almost certain that all these remains are in reality the progeny of living analogies; and therefore as we do not know what they were, we have no means of judging what kind of climate they required. Supposing that some of the Lepidodendron may have been derived from Sigilmarias, it is highly probable, yet that fact does not afford any proof of a tropical climate; for Araucaria Dombeyi now inhabits the cold mountains of Southern Chile, and is at this day unjuiced in the severest of our English winters; while Cunninghamia sinensis, and species of Calitria or Dacrydium, with which other remains of Lepidodendron may be compared, although not European, are by no means of tropical habits, but are found on the mountains of New Zealand, where it is only a short step from the equator to temperate climate. Moreover Salisabaria adiantifolia, which would certainly be considered a tropical form of Coniferae, if found in an extinct state only, is one of the hardiest of trees, and a native of the rigorous climate of England. Further it must be observed, that Sigillarias and Sigilmarias could be found to have been succulent plants, allied to Cactaceae or Ephrioglossaceae, as some think, still no real evidence of their having required a tropical climate for their development would be afforded by them, because there is nothing in the mere organization of succulent plants which unfitts them for cold climates. A capability of enduring cold is something immaterial and independent of organization, about which nothing can be said, which has been drawn a priori, under the term of which, so far as we know, will stimulate the digestive functions of plants. To admit therefore the presence of a tropical vegetation in former days in Melville Island, or Baffin's Bay, seems to carry with it the necessity also of admitting that a change has occurred in the position of the earth's axis of rotation—an assumption for which we have no evidence at all.

Nor are those derived from the presence of palms and tree-ferns of much greater force. For, in the first place, it is to be remembered that such remains are exceedingly rare, much more common have been dashed about a good deal before they were deposited; and thirdly, that such plants are among those which are capable of resisting the action of water for a considerable period. Independently however of these considerations, there are other reasons why certain palms or tree-ferns are exclusively tropical: it is true that at the present day the principal part of such species do inhabit the tropics, but there is a sufficient number of exceptions to justify the opinion that others may have existed of still more hardy habits. To say nothing of the date-palm itself, which is cultivated in Sicily, and even at Bordighiera, in Liguria; or of the palmetto (Chamaerops humilis), found as far north as Nice; or of the New Zealand Arecas, which is found in the south seas; or the palm of Ceylon, so called, the snow for several days; or of the doubtful Palma magellanica, which Humboldt states certain Spanish voyagers to have seen in 53° S. lat.—there is the gigantic wax-palm of the Andes (Euphorboxylon), which may resist the most severe cold, is inexpressably inexpressible for any other palm. It is chiefly, says Bonpland, among the snow-clad summits of Tolima, San Juan, and Quindiu, that this palm occurs. "The elevation above the sea of this species presents a very striking phenomenon with the natural phenomena of the country. The savages do not know it, because it is very rare except in this law of nature. It is hardly seen in the plains; it first begins to appear at an elevation of 5000 feet, which is about that of the Puy de Dôme, or the Passage of Mont Cenis. It therefore appears to shun the excessive heats of low elevated localities and to be limited to the summits of the Cordilleras. We observed it plentifully at the height of
5700 feet, which is 6000 feet higher than species of palms are usually met with, and not more than 2400 feet from the region where the soil is occasionally covered with snow."

As for tree ferns, we have them in New Zealand, and especially on the south side of Van Diemen's Land, where the mean temperature probably does not exceed 54° Fahrenheit. So that, all things considered, it is by no means surprising to find palm trees and other plants as good evidence of a tropical climate, or indeed of a climate materially unlike that which we now experience.

The only remaining argument to be considered is that derived from the preponderance of ferns in the Coal Flora. It is said by Adolphe Brongniart, that as it is only in damp tropical regions that we now find ferns equal in the number of their species to all the species of other plants, and as this same proportion is found in the Coal Flora, that therefore the climate under which the Coal Flora was produced must have been damp and tropical. But as, by the experiment already mentioned, it was shown that when a given number of plants of entirely different habits are plunged into the same vessel of water, by far the greater part is decomposed before ferns begin to be affected, it is obvious that no estimate of what the proportion of ferns to other plants really was can now be formed; and consequently this argument also fails to the ground.

We must, however, consider it apparent that geologists have been too hasty in coming to the conclusion that the north of Europe was formerly tropical; and that if the facts we actually possess are soberly examined, they do not amount to more than this:

1. That coal is vegetable origin.
2. That at the period of its deposit, the earth was covered with a rich vegetation, of which only a small portion has been preserved, and that of this portion all the species and several of the races are totally unknown at the present day.
3. That the climate may possibly have been something milder than it now is, but that there is no evidence in the vegetable kingdom to show that it was materially different from the present day.

It may possibly have been expected that in the course of these remarks we should have touched upon the modern theory that species have been gradually becoming more and more completely organized from the earliest period of the creation to the present day; that the simplest forms were those which first appeared; that they were succeeded by others of a more complicated structure, and that it is only in these later days that the most perfectly constructed species have appeared. Upon this subject we have only to remark, that so far as the vegetable kingdom is concerned, the theory is not supported by a shade of evidence; and we therefore do not think it necessary to give it further notice.

COAL TRADE. The quantity of coal shipped coastwise from Great Britain to other parts of Great Britain and to Ireland amounted, in the year 1835, to 6,117,993 tons; and the quantity exported to the British colonies and to foreign countries, in the same year, was 736,550 tons, to make up a total of 6,854,543 tons of coal sea-borne from the maritime districts. The market of London alone required a supply of 2,298,811 tons, for the conveyance of which 7938 ships (which make repeated voyages) were employed. The great towns of Lancashire, of the three Ridings of Yorkshire, of Nottinghamshire, Derbyshire, Leicestershire, Warwickshire, and Staffordshire, are supplied by canals or by land-carriage from collieries in the respective counties here enumerated. In 1816 a committee of owners of Northumberland and Durham was commissioned to inquire as to the quantity of coal sent by inland navigation and by land-carriage to different parts of the kingdom. The result of their inquiries was that 10,908,046 tons were annually sent. There can be no doubt that if this estimate were correct at the time, the quantity must have been greatly increased during the last twenty years. In estimating the annual consumption of the country, it is also necessary to take into account the quantities used upon the spot, which arise from the collieries situated in the district. The town of Sheffield alone requires for manufacturing and domestic purposes more than half a million of tons annually drawn from collieries on the spot; and it has been estimated that the iron-works of Great Britain, manufactures, which are distributed in the north, require every year, for smelting the ore and converting the raw material into bars, plates, &c., more than five millions of tons. The total consumption of coals within the United Kingdom has been variously stated at from fifteen to thirty millions of tons per annum; recent parliamentary investigations have concluded that the estimate is not much, if at all, exaggerated. Mr. Taylor, whose experience in the various branches of mining operations is equal to that of any person living, has given the following estimate, which agrees substantially with estimates formed by Mr. Stevenson, &c. From the inquiries to the inquiries to which reference has just been made:—

<table>
<thead>
<tr>
<th>Description</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total coal</td>
<td>15,580,000</td>
</tr>
</tbody>
</table>
In 1831 these duties were modified to 3s. 4d. per ton upon large, and 2s. 2d. per ton upon small coal; and in 1833 they were repealed, with the exception of an ad valorem duty of 14s. per cent. The revenue derived from them for many years raised from all coal carried coastwise by sea from one part of the kingdom to another. When first imposed, in the reign of William III., this tax was 5s. per chaldron, but was raised during the war of the French revolution to 9s. per chaldron; but this increase was not continued after 1814; it was then reduced to 6s., and in 1831 was wholly repealed. Although the government has remedied the evil so far as the public revenue is concerned, the consumer is still burdened in some places with local or municipal duties, &c. Thus in the port of London, which is the chief emporium of the commerce in coal, the Acts 10 Geo. IV., c. 136, and 11 Geo. IV., c. 64, levy eight pence per ton for providing for the payment of the interest and ultimate liquidation of monies borrowed for making the approaches to the docks, a tax which is not in use since 1824; it was levied under the Act 47 Geo. III. for establishing a market for the sale of coal, and under the Act 1 and 2 William IV., c. 76, four pence per ton for metage by prescription and charters, making together 1s. 1d. per ton upon all coal brought coastwise to the port of London. By letters patent granted by Charles II., the duke of Richmond was entitled to receive 1s. per chaldron, Newcastle measure, on all coal shipped in the river Tyne to be consumed in England; and on the approach to the Tyne, to receive 7½d. per chaldron, on coal that had been 21,000l. a year. On the 19th of August, 1799, the Treasury agreed with the duke for the purchase of this duty by an annuity of 19,000l., which sum was charged upon the consolidated fund, to be paid quarterly. The sum of 7½d. per chaldron as an equivalent of the several parts for the purchase of a perpetual annuity of 19,000l., instead of those Exchequer payments was 490,8332. 11s. 6d.; but the bargain has proved by no means an improvident one on the part of the public, the sums received by the Custum House, as the representatives of the duke of Richmond, from August, 1799, up to March, 1831, when all coasting duties ceased, having exceeded the payments made from the Exchequer by 313,000l. The total revenue derived from the coasting duties on coal in 1830, the year preceding its repeal, was 1,021,862l. 3d.

The quantity and declared value of coals, culm, and cinders exported from the United Kingdom to British colonies and foreign countries, in each year from 1827 to 1835, have been as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Value</th>
<th>Total Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1827</td>
<td>368,675</td>
<td>135,567</td>
</tr>
<tr>
<td>1828</td>
<td>375,086</td>
<td>143,943</td>
</tr>
<tr>
<td>1829</td>
<td>371,271</td>
<td>147,309</td>
</tr>
<tr>
<td>1830</td>
<td>354,819</td>
<td>191,485</td>
</tr>
<tr>
<td>1831</td>
<td>316,041</td>
<td>196,814</td>
</tr>
</tbody>
</table>

The British colonies and foreign countries to which shipments were made in 1835, together with the quantity and value sent to each, were as follows:

<table>
<thead>
<tr>
<th>Country</th>
<th>Value</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Russia</td>
<td>481</td>
<td>98</td>
</tr>
<tr>
<td>Norway</td>
<td>5,505</td>
<td>1,297</td>
</tr>
<tr>
<td>Sweden</td>
<td>16,755</td>
<td>3,741</td>
</tr>
<tr>
<td>France</td>
<td>38,159</td>
<td>8,608</td>
</tr>
<tr>
<td>Prussia</td>
<td>46,755</td>
<td>9,556</td>
</tr>
<tr>
<td>Germany</td>
<td>99,255</td>
<td>18,177</td>
</tr>
<tr>
<td>Holland</td>
<td>115,188</td>
<td>25,035</td>
</tr>
<tr>
<td>Belgium</td>
<td>104,139</td>
<td>22,601</td>
</tr>
<tr>
<td>Portugal</td>
<td>20,095</td>
<td>4,545</td>
</tr>
<tr>
<td>Brazil</td>
<td>9,211</td>
<td>2,000</td>
</tr>
<tr>
<td>South America</td>
<td>29,379</td>
<td>6,345</td>
</tr>
<tr>
<td>Mexico</td>
<td>6,089</td>
<td>2,301</td>
</tr>
<tr>
<td>Peru</td>
<td>6,910</td>
<td>2,389</td>
</tr>
<tr>
<td>Chili</td>
<td>2,016</td>
<td>1,009</td>
</tr>
<tr>
<td>Perú</td>
<td>3,686</td>
<td>1,770</td>
</tr>
<tr>
<td>Guayana and Guiana</td>
<td>2,707</td>
<td>1,429</td>
</tr>
<tr>
<td>W. Coast of Africa</td>
<td>36</td>
<td>90</td>
</tr>
<tr>
<td>New Zealand</td>
<td>6,943</td>
<td>2,393</td>
</tr>
<tr>
<td>Acapulco</td>
<td>1,182</td>
<td>500</td>
</tr>
</tbody>
</table>

The owners of the greater part of the collieries in the counties of Durham and Northumberland have entered into a mutual agreement under the denomination of 'The Limitation of the Tax on Coal,' which has continued in operation with some intermissions from the year 1771 to the present time. The object of this compact is to apportion among the different collieries the quantity to be raised and sold, according to the quality of the coal and the per ton of raising it, and with reference also to the probable demands of the different markets in the kingdom. The nature of the regulation was explained by Mr. Brandling to a committee of the House of Commons, in 1830, in the following terms:—

When it is understood by the coal-owners that all the parties interested in the coal trade are willing to enter into an arrangement of this nature, a representative is named for each of the collieries; these representatives meet together, and from amongst them a chairman is chosen, who is empowered to send in a statement of the different sorts of coal they raise, and the powers of the colliery, that is, the quantity that each particular colliery could raise at full work; and upon these statements the chairman is requested to fix the relative proportions as to quantity between all the collieries, which proportions are observed, whatever quantity the markets may demand. The committee then meet once a month, and according to the probable demand of the ensuing month they issue so much per 1000 to each colliery; that is, if they give me an imaginary basis of 30,000, and my neighbour 20,000, according to the quality of our coals and our power of raising them in the monthly statement, the 100,000l. they can raise during the month, and my neighbour 2000; but in fixing the relative quantities, if we take 500,000 chaldrons as the probable demand of the different markets for the year, if the markets should require more, an increased quantity would be given; but if the market quantity to meet the demand, were it double the original quantity assumed.'

The single circumstance upon which the committee forms its estimate of the quantity to be sent by any coal-owners to the different customers is the London market. If this has been greater during the previous month than the price fixed by the coal-owners, as already explained, added to the freight and other charges of conveyance to London, permission is given to raise a larger quantity of coal, as the excess would be sold below a remunerative one, thus calculated, then the supply is limited till the requisite price is reached. In the agreement entered into among the owners of collieries, it is stipulated that when there is no demand for the coal, or to effect 2s. per chaldron, the same quantity, as the actual quantity sold, has been usual for each of the parties to deposit in the hands of the chairman of the committee a promissory note for a considerable amount, proportioned to the quantity allotted as the annual yield of the particular colliery, that is, to aid them in furnishing the capital for the purchase of any farthing that may be required; but during the last two years this part of the plan has not been insisted on.

This combination on the part of the coal-owners is defended on the plea that if through the free competition of the collieries a glut should be created in the market, so that any great reduction in the price should be occasioned, many of the collieries must soon cease to be worked; the effect of which would be, that those collieries which could sell their coal at a higher price, as to indemnify themselves for the loss they may have sustained, by which means the consumer might be permanently injured. In support of this position, it is urged that in those years when the trade was free, the prices were so much dependent to such a degree as to involve the coal-owners in great losses, which must have ruined the weak parties, and have led to the results just described, had not the whole body felt it much for their advantage again to have recourse to the regulation of the price, in order to prevent abuse. The regulation made by the committee for the year 1828 fixed the prices too high, the consequence of which was an immediate influx of coals from Scotland, Wales, and Yorkshire, into London; so that when the engagement entered into with the coal-owners expired, the price was not raised.
have prevented the competition, which, having been once created, still exists, and has been constantly increasing. The extensive trade, the glowing hopes, which are attached to this industry, of creating a market, must in time altogether break up the monopoly which the coal-owners of Durham and Northumberland are attempting to perpetuate. The manner and degree in which this monopoly is being carried on is so scandalous and unmanly that the coal-owners themselves of its continuance, may be understood from the evidence of Mr. Wood, the managing partner in an extensive industry, that he always consents to sell the coal of Durham and Northumberland much below the price of coal from other counties. The managers of collieries sell as much of the coal as possible at the mouth of the pit, but the demand being necessarily limited to the wants of the surrounding district, a great proportion is wholly unsaleable, and is actually thrown on fire to clear the ground. This loss would of course be saved if the trade were made permanently free. The waste by screening is said to be always from one-fourth to one-third of the total quantity raised, and was greater even than this proportion before the debate in 1832, when the sale of coal was by measure was abolished in and about London. Coals that are shipped to other parts, or exported to foreign countries, are less screened than those sent to London, and are consequently sold at 4s. to 6s. per chaldron cheaper.

The number of collieries on the Tyne, in June, 1836, was 47; on the Wear, 17; and on the Tees, 16.

The basis of the regulation for the vend, as settled in the preceding April, was that on the Tyne 959,500 Newcastle chald., or 2,542,675 on the Wear 564,000, or 1,494,600 on the Tees 176,000, or 466,400. The coals sent from the Tees are all carried down from the collieries to the mouth of the shipment by boat, and are conveyed by the London Railway. When this work was first projected, the coal-owners of Newcastle and the Wear petitioned against it on the ground that it would exonerate the owners of the coals. That it was to pass from this portion of the expense of transport to the ship, and to their opponents at that time was fruitless; but, acting upon the same principle, a meeting of the coal-owners of the Tyne, Wear, and Tees, was held at Newcastle in April, 1836, at which it was determined to oppose the progress of the Durham and South Durham Railway bills, and a subscription was entered into to defray the expense of such opposition. These bills were both thrown out by the House of Lords.

The following statement shows the price per ton of the best Newcastle and Sunderland coals at the place of shipment, and in London, in June and July of each year from 1813 to 1835:

<table>
<thead>
<tr>
<th>Year</th>
<th>Price at Newcastle</th>
<th>Price in London</th>
</tr>
</thead>
<tbody>
<tr>
<td>1813</td>
<td>15.6d.</td>
<td>16.4d.</td>
</tr>
<tr>
<td>1814</td>
<td>15.6d.</td>
<td>16.5d.</td>
</tr>
<tr>
<td>1815</td>
<td>15.6d.</td>
<td>16.4d.</td>
</tr>
<tr>
<td>1816</td>
<td>15.6d.</td>
<td>16.4d.</td>
</tr>
<tr>
<td>1817</td>
<td>15.6d.</td>
<td>16.4d.</td>
</tr>
<tr>
<td>1818</td>
<td>15.6d.</td>
<td>16.4d.</td>
</tr>
<tr>
<td>1819</td>
<td>15.6d.</td>
<td>16.4d.</td>
</tr>
<tr>
<td>1820</td>
<td>15.6d.</td>
<td>16.4d.</td>
</tr>
<tr>
<td>1821</td>
<td>15.6d.</td>
<td>16.4d.</td>
</tr>
<tr>
<td>1822</td>
<td>15.6d.</td>
<td>16.4d.</td>
</tr>
<tr>
<td>1823</td>
<td>15.6d.</td>
<td>16.4d.</td>
</tr>
</tbody>
</table>

The charges upon the transmission of a cargo of coal from Sunderland and upon the delivery in London, as well as the proportions in which the price paid by the dealer is divided between the coal-owner and the shipper, will be seen in the following account:

<table>
<thead>
<tr>
<th>Item</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Night office and entry</td>
<td>£12.0.0</td>
</tr>
<tr>
<td>City dues on 293 tons at 1s. 1d. per ton</td>
<td>16.10.0</td>
</tr>
<tr>
<td>Baggage charge</td>
<td>£12.0.0</td>
</tr>
<tr>
<td>Stage carriage to reach</td>
<td>£3.6.0</td>
</tr>
<tr>
<td>Del Crease commission, 10 per cent.</td>
<td>£1.10.0</td>
</tr>
<tr>
<td>Insurance</td>
<td>£1.0.0</td>
</tr>
<tr>
<td>Policy duty</td>
<td>16.0.0</td>
</tr>
<tr>
<td>Balance for freight on 293 tons</td>
<td>£21.15.11</td>
</tr>
</tbody>
</table>

Out of the freight, which in this case amounted to 7s. 11d. per ton, the ship-owner had to pay 9d. per ton delivery charges, and 1½d. per half metage.

The quantity of coals and the number of ships, including their repeated voyages, in which the same was brought into...
the port of London in each year from 1825 to 1835, were as follows:

<table>
<thead>
<tr>
<th>Years</th>
<th>Ships</th>
<th>Tons.</th>
<th>Years</th>
<th>Ships</th>
<th>Tons.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1825</td>
<td>1 444</td>
<td>5,580</td>
<td>1831</td>
<td>7,284</td>
<td>9,990</td>
</tr>
<tr>
<td>1826</td>
<td>2,704</td>
<td>19,000</td>
<td>1832</td>
<td>5,556</td>
<td>7,990</td>
</tr>
<tr>
<td>1827</td>
<td>4,156</td>
<td>25,984</td>
<td>1833</td>
<td>6,801</td>
<td>8,996</td>
</tr>
<tr>
<td>1828</td>
<td>5,500</td>
<td>26,000</td>
<td>1834</td>
<td>7,222</td>
<td>11,990</td>
</tr>
<tr>
<td>1829</td>
<td>6,300</td>
<td>27,500</td>
<td>1835</td>
<td>7,105</td>
<td>10,996</td>
</tr>
</tbody>
</table>

The ports from which the above shipments were made in 1835 were:

<table>
<thead>
<tr>
<th>Ships</th>
<th>Tons.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newcastle</td>
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<tr>
<td>Sunderland</td>
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<tr>
<td>Stockton</td>
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<td>Hull</td>
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<td>Scotland</td>
<td>349</td>
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<tr>
<td>Wales</td>
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<td>York</td>
<td>231</td>
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<tr>
<td>Sunderland</td>
<td>6</td>
</tr>
<tr>
<td>Calais</td>
<td>11</td>
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</tbody>
</table>

COALBROOK DALE. [Coal.]

COAST, GOLD, is a part of Upper Guinea, but its boundary is not exactly determined. Geographers state that Cape Three Points (2° 30' W. long.) constitutes its western boundary; but our navigators extend it farther west to the small river Assine (about 3° 30' long.), nearly 70 miles east of Cape Lihou. On the east, the eastern mouth of the river Gambia is considered as constituting its boundary towards Benin, though the eastern districts are often distinguished by the name of the Slave Coast. In the interior are the powerful kingdoms of the Ashantees and Dahomey, on which most of our colonies along the coast are dependent.

Nearly in the centre of the coast is the English fortress of Accra. The country west of it has an undulating surface, with a small proportion of level ground; the hills are covered with forests and timber of various growth. The coast, though rarely high, is rocky and bold. At Accra the low country begins, and extends without interruption to the eastern boundary and still farther. It is a fertile, open, and level plain, which contains extensive savannahs covered with high grass, and in some places it is thickly wooded with fine trees. The shores here are flat and sandy. There are no harbours along the whole line of the coast, not even for vessels of a moderate size; and as the surf is very violent, the trading vessels are obliged to anchor four or six miles from the beach. In many places landing can only be effected in calm weather; in others there are reefs, from 100 to 1000 yards from the shore, upon which the surf breaks its force, and consequently the inshore harbours offer facility for landing at all times. The principal European settlements are built near such places.

The whole of this coast being near 5° N. lat., is considered one of the hottest countries on the globe; yet, according to the observations made in the interior, the thermometer sometimes falls to 73° or 74°. Monrad also states, that on the coast it rarely attains 90°, though in the interior it reaches 94° or 95°, and in some ill-ventilated places even 100°. This comparatively low degree of heat is attributed to the circumstance that the sky is nearly always clouded. Adams says that the prevailing south-western and western winds load the atmosphere with moisture, so as to give it a hazyness, which diminishes the intensity of the sun's rays and renders them more supportable than in the West Indies, where the sun shines with a brilliancy seldom seen in this part of Africa. Monrad attributes the same hazyness during the eastern winds to a fine dust with which the air is filled. It is further observed, that the nights are commonly cloudless, except in the rainy season, and that the moon and the stars shine with unusual brightness in a clear blue sky.

During the Harmattan season, which begins about the middle of December and lasts until March, on which days the driest and coolest part of the year, the wind blows from north-east. This wind takes the skin off, yet Monrad thinks this more healthy than the other seasons. The great rainy season begins in March and continues to the beginning of June. During this period the rains occasionally continue so long and then so rapidly that the dry earth cannot absorb it quick enough, the whole country is covered with water. The rain however gradually diminishes; but during the whole season it is frequent and heavy. From June to the end of September is the warm season, which is the most unhealthy, especially the month of August, when the fogs are denser than at other times, and generate fevers. September however and October, which are the hottest months, are considered healthy. In October and November the showers of rain are frequent, and hence this part of the year is called the little rainy season. Except during the Harmattan season, the winds blow from the west in the middle of the day, from eleven to three o'clock, but in the evening from south-west, and in the morning from west-south-west.

The climate is in general unhealthy, especially to Europeans on their arrival. Every person is attacked by a fever, which is called the seasoning, and many die of it; but when Europeans have become acclimated, and adopt a regular manner of living, they can live here many years. Monrad however observes, that he never saw a European who had attained the age of fifty.

This coast was formerly much resorted to by European and American vessels for slaves. When we consider that during more than a century nearly 100,000 persons were annually removed from this country as slaves, we must admit that the interior of this portion of Africa is much more populous than is commonly supposed. Many of the slaves however were brought from distant parts of the interior. At present a few vessels fetch gold and ivory: they give in exchange fire-arms, iron and iron wire, tobacco, rum, and some other articles. Many of the numerous factories and forts which are ereceted on this coast for the protection of the slave-trade, have, since its abolition, been broken up and abandoned.

West of Cape Three Points the Dutch had three forts, and the English had one, Apollonia, which have all been abandoned, except that of Apollonia, which is the second best of the Dutch forts on this coast, and affords good landing. East of Cape Three Points is the English fort Dixtown, with a small cave under the guns of the fort, capable of sheltering a few small boats: it is the only place where the whole coast east of the forts can be reached by five Dutch forts, Bourtou, Tackoram, Sukondee, Chama, and Comenda, all of which are now abandoned, as well as the English fort at Comenda.

Further east is the Dutch fort of S. George della Mina, the oldest European establishment on the coast. It was erected in 1411, by the Portuguese, under the command of Don Diego d'Azanbua: the Dutch took it from the Portuguese in the beginning of the seventeenth century. It is the best fortified place on the coast, and is defended by the castle of S. Jago. The reefs along the coast form a harbour for small vessels, and the Dutch have built piers and wharfs for landing goods. The town is the only one on the coast between the Cape of Good Hope and the Cape Verdean Islands that has any one that is paved, but it is badly laid out, and the houses are all built close together. The population is about 8000.

A few miles farther east is the principal English fortress, Cape Coast Castle, which covers a considerable space, and contains comfortable apartments for the officers, an arsenal, and barracks for the privates. There are some spacious warehouses. It is built on a rock close to the sea. The town, which is behind the fortress, is considerable; but the houses are of mud, anduddled together.

East of Cape Coast Castle is the Dutch fortress of Mouree, which is now abandoned; and the next, which is the English fortress Annamabo, has a safe landing-place, and is surrounded by a town with 4000 inhabitants. The English forts are Annamabo and Warri, and also the Dutch fortress of Berkum. Near it is the English fortress of Accra, which is situated in a fine open plain several miles in length. The Dutch fortress of Crevecoeur, near it, is abandoned.

East of Accra, but at no great distance from it, is the Danish fortress of Christiansburg, and farther east Friedensburg, which also belongs to the Danes. The smaller Danish forts, as Prinzerstein, have been abandoned. At a considerable distance from the above forts, on both sides of these fortified settlements, the English fort of Wiyahul. In its neighbourhood the Portuguese had two small forresses, but we do not know if they are still retained by them. The possessions of the Europeans are entirely limited to the coast and the islands; the great part of the country lies far from the sea and is almost entirely inhabited by natives.
Palmos to the River Congo; Monrad’s Gemnihilde der Küste von Guinea.

COBALT. This metal is said to have been employed as early as 1540 for the purpose of giving a blue colour to glass. It was however first procured in a separate state by a Swedish chemist named Brandt, in 1733. Various processes have been recommended for obtaining this metal in a state of purity, which however is not a matter of importance for the various purposes to which it is applied. The following may perhaps answer the purpose as well as any on the small scale. Suppose the ore to contain cobalt, arsenic, copper, and nickel, dissolve it, after roasting to get rid of the greater part of the arsenic, in nitric acid; immerse a plate of iron, to precipitate the copper; then boil the solution with excess of soda, which will throw down the cobalt, nickel, and iron; dissolve this in nitric acid, and add the solution to excess of ammonia which will dissolve the oxides of nickel and cobalt; to the solution add potash, which will throw down the oxide of nickel, and after some days’ exposure to the air, or more quickly by heat, the cobalt will be precipitated nearly or quite pure in the state of oxide. By heating it very strongly mixed with black flux it will be reduced to the metallic state. The properties of cobalt are, that it is of a reddish-grey colour, and weak metallic lustre. The specific gravity is 7.834, according to Dr. Turner. It is not acted upon by exposure to air or water, but together they oxidize it. It fuses at a high temperature, probably rather below that of iron, and when cooling it crystallizes. It is stated that it obeys the magnet, but this is questionable.

Oxygen and Cobalt combine to form two distinctly-marked compounds; and a third, which, if not regarded as a compound of them, is a 4 oxide. The protoxide of cobalt may be obtained by calcining the metal at a high temperature in the air, or by dissolving it in nitric acid.

Protoxide of Cobalt is obtained by dissolving the metal in nitric acid, and decomposing the solution, or that of any other salt of the metal, by carbonate of potash; the carbonate precipitated, after due washing, to be dried, and then decomposed at a red heat without the access of air. This oxide is of a ash-grey colour; it is insoluble in water, but readily dissolved by acids, and by ammonia and its carbonate, forming with them a solution of a fine red colour. It is not soluble in the alkalies, potash or soda, or in their carbonates. When exposed to a red heat in the air, it gradually absorbs oxygen and becomes peroxide. It is the basis of all the salts of cobalt, and they usually have a red colour.

It is composed of

1 equivalent of cobalt 30
1 " oxygen 8

The equivalent of oxygen 38

When a solution of nitrate of cobalt is decomposed by potash, the hydrate is precipitated, which absorbs oxygen from the air, and becomes of a dirty green colour, and this is stated to be a hydrate of the 4 oxide.

Peroxide of Cobalt.—When a solution of chloride of cobalt is mixed with one of hypochlorite (or chlorite) of lime, a black precipitate is obtained, which consists of peroxide of cobalt combined with two equivalents of water; the water may be expelled at a heat of about 600°, but it is difficult to expel the whole of the water, without at the same time getting rid of some of the oxide. It does not combine with any acids; and when treated with hydrochloric acid, chloride of cobalt is formed, and chlorine gas evolved. This oxide is applied to no use, and consists of

2 equivalents of cobalt 60 or 1
3 " oxygen 24 14

equivalent as peroxide 84 as sesquioxide 42

Oxide of Cobalt is procured when carbonate of cobalt is gently heated in an open fire. It is of a dark brown colour. The same oxide is obtained by heating the peroxide to redness, by which such a portion of its oxygen is expelled as reduces it to a compound.

3 equivalents of cobalt 90
4 " oxygen 32

It suffers no change by continued heat, and is therefore the most stable oxide of cobalt.

Chlorine and Cobalt may be made to unite by direct action, but the best method of forming this salt is to dissolve the protoxide of the metal in hydrochloric acid, when water and the chloride are formed. By evaporation small pink-coloured crystals are obtained, which are a hydrate. By evaporation to dryness a white sealy chloride is obtained; it is volatile at a red heat; but when air is present, it is decomposed, chlorine is expelled, and peroxide formed.

The solution when concentrated is of a deep green colour, but by dilution with water it becomes of a pale pink; when a dilute red solution is heated so as to evaporate the water, a green chloride is left, which by exposure to the air attracts moisture and becomes again colourless. This has been called Héloët’s sympathetic ink.

Chloride of cobalt consists of

1 equivalent of cobalt 30
1 " chlorine 36

equivalent 66

The bromide, fluoride, and iodide of cobalt, are but little known, and are unimportant compounds.

Sulphur and Cobalt unite in three different proportions, forming the sulphuret, sesquisulphuret, and bisulphuret. The sulphuret may be obtained by heating a mixture of oxide of cobalt and sulphur: light is disengaged during their combination, and the sulphuret which is formed diminishes rapidly in volume, and has a metallic lustre. It may also be formed by passing a current of hydrochloric acid gas into a solution of a neutral salt of cobalt.

Sulphuret of cobalt is composed of

1 equivalent of cobalt 30
1 " sulphur 16

equivalent 46

Sesquisulphuret of Cobalt.—When sesquisulphide of cobalt is heated in hydrochloric acid gas, taking care not to carry the heat to redness, sesquisulphuret of cobalt of a deep grey colour is obtained. This compound also occurs in nature. It consists of

1 equivalent of cobalt 30
1 1/4 " sulphur 24

equivalent 54

Bisulphuret of Cobalt may be formed by heating the sesquisulphide with three times its weight of sulphur to about the temperature at which sulphur is volatilised. When hydrochloric acid is added to the residue, it decomposes any protosulphuret which may have been formed; by a solution of which any excess of sulphur may be dissolved, and pulverulent bisulphuret of cobalt of a black colour, but no metallic lustre, is left. Hydrochloric acid does not act upon it. It consists of

1 equivalent of cobalt 30
2 " sulphur 32

equivalent 62

Phosphuret of Cobalt is obtained by adding phosphorus to the ignited metal, or by heating a mixture of superphosphate of lime, oxide of cobalt, and charcoal. It is very fusible, brittle, of a bluish-white colour, and tarnishes on exposure to the air. Its exact composition has not been determined.

Selenium and Cobalt combine very readily with the production of heat; when the mass is heated to a redness, the excess of selenium is expelled, it liquefies, and yields a product of a metallic appearance, a grey colour, and laminated fracture.

Cobalt and the metals combine, or at least cobalt unites with several of them, but the resulting alloys are of no means important.

Arsenic and Cobalt combine with facility; and the compound occurs in some of the ores. The arsenuret of cobalt fuses at a high temperature into a white brittle mass. It occurs in nature.

Antimony and Cobalt form a brittle alloy. Tin and Cobalt yield a bluish-white alloy, which is somewhat ductile.
Lead and Cobalt unite with difficulty. The alloys in general possess the characters of the predominating metal; they are all but slightly malleable, and are harder than lead.

Mercury and Cobalt do not amalgamate.

Silver and Cobalt do not combine, and when they are melted together they separate on cooling. Still however the silver retains a little cobalt, which renders it brittle, and the cobalt a little silver, which gives it a lighter colour.

Gold and Cobalt may be combined in several proportions. Gold, with 1/4 of cobalt gives a dull, yellow alloy, which is not at all malleable, nor is it when it contains only 1/8, but when it amounts to only 1/16 the alloy may be forged.

Platinum and Cobalt form a fusible alloy.

Acids and Cobalt form various salts, of which the protocobaltates are the important compounds, we shall describe only a few of them.

Nitrates of Cobalt.—This salt is easily procured by dissolving either the metal or the protoxide in dilute nitric acid. The solution is of a red colour, and by evaporation yields crystals of a deep brownish-red colour, the form of which does not appear to have been ascertained. Their taste is bitter and acrid, and they render litmus paper; they are deliquescent, very soluble in water, and dissolves also in the alcoholic. When moderately heated, the crystals fuse, and part with their water of crystallization; after warming, when the heat is increased, they become blue; but the red colour returns on cooling; if still more strongly heated, the nitric acid is decomposed, and peroxide of cobalt remains. This salt is composed of:

1 equivalent of nitric acid = 54
1 " oxide of cobalt = 38
6 " water = 54

Equivalent = 146

Carbonate of Cobalt may be prepared by adding a solution of carbonate of potash to one of nitrate of cobalt, washing and drying the precipitate, which is the carbonate of cobalt. It is of a light pink colour, tasteless, unaltered by exposure to the air, but readily decomposed by acids. It consists of:

1 equivalent of carbonic acid = 22
1 " oxide of cobalt = 38
1 " water = 9

Equivalent = 69

A sesquicarbonate may probably be formed.

Sulphates of Cobalt, of which there appear to be three, viz: the neutral sulphate, bisulphate, and subsulphate. The neutral sulphate is obtained by adding excess of a solution of cobalt to dilute sulphuric acid; the solution is of a red colour, and by evaporation yields rhombic prismatic crystals of sulphate of cobalt, which are of a deep red colour. This salt has a sharp, bitterish, metallic taste; it is soluble in twenty-four parts of cold water, but insoluble in alcohol. When moderately heated, the crystals lose their water of crystallization, and become opaque without melting, and may be made red-hot without suffering decomposition. This salt is constituted of:

1 equivalent of sulphuric acid = 40
1 " oxide of cobalt = 38
6 " water = 54

Equivalent = 132

The Bisulphate of Cobalt is prepared by adding acid to the neutral sulphate; the crystals are red four-sided prisms, which effloresce when exposed to the air; they contain twice as much acid and half as much water as the sulphate.

Sub sulphate of Cobalt is formed when a quantity of soda or potash is added, and the sulphate insufficient to compose it. It is a flesh-red powder, insoluble in water; its exact composition does not appear to have been ascertained.

Phosphat of Cobalt is prepared by double decomposition. When phosphat of soda is added to sul phate of cobalt, a violet-coloured precipitate is formed, which becomes rose-coloured on drying in the air. It is insoluble in water, not decomposable by heat, but is so when charcoal is mixed with it. Its composition has not been accurately ascertained. It is used in making a pigment known by the name of Thener's or Cobalt Blue.

The distinguishing characters of the salts of cobalt are, their red or brownish-red colour; they are not decomposed by hydrosulphuric acid, but the hydrosulphites throw down black sulphuret of cobalt; the caustic alkalies give a blue or green precipitate, ferrocyanide of potassium a greyish-green, and the alkaline carbonates a bright red. Cobalt is not precipitated by zinc.

Cobalt is very extensively employed. Its oxide gives an intense and beautiful blue colour to glass, and hence is used in colouring both glass and porcelain. Blue glass reduced to a fine powder is called smalt or powder blue, and is used for relieving the yellow tint of writing-paper and linon. Phosphate of cobalt has been already mentioned as entering into the composition of a blue pigment.

Cobalt Ores. Cobalt is not found in the native state, and its ores, though not numerous, require a more minute examination than they have hitherto received. We shall notice those which are best known.

Bright White Cobalt or White Cobalt occurs crystalline and massive; the primary form is a cube, the planes of which are usually striated, colour silver-white; streak greyish-black; lustre metallic; hardness 5 1/2; yielding with difficulty to the knife, and not very fragile; specific gravity 6 3/4 to 6 5/6; fracture uneven; cleavage parallel to the faces of the cube; before the blowpipe on charcoal gives arsenical fumes; and tinges borax of deep blue. It is found in fine crystals at Tunaberg in Sweden, in Norway, Silesia, and Cornwall.

It is met with also amorphous, arborescent, botryoidal, and stalactite.

Analysis of the crystals from Tunaberg by

<table>
<thead>
<tr>
<th>Mineral</th>
<th>Klapez</th>
<th>Stromeyer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cobalt</td>
<td>44</td>
<td>36.7</td>
</tr>
<tr>
<td>Arsenic</td>
<td>55</td>
<td>49.0</td>
</tr>
<tr>
<td>Sulphur</td>
<td>60.5</td>
<td>5.6</td>
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</tbody>
</table>

Klapez = 99.5, Stromeyer = 97.8

Tin-White Cobalt or Hard White Cobalt occurs massive and crystalline, glasses transparent and amethyst; colour tin white, but sometimes externally tarnished, fracture fine-grained and uneven; lustre metallic; it yields with difficulty to the knife, and is hard and brittle; specific gravity variously stated, from 6.74 to 7.7; yields arsenical vapour when heated with the blowpipe, and tinges borax deep blue.

The massive is amorphous, arborescent, botryoidal, &c. The amorphous occurs in Cornwall, and the crystallized at Skutterud in Norway. Analysis of the crystals by Stromeyer:

<table>
<thead>
<tr>
<th>Mineral</th>
<th>Cobalt</th>
<th>Arsenic</th>
<th>Iron</th>
<th>Sulphur</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>33.10</td>
<td>43.46</td>
<td>3.23</td>
<td>29.00</td>
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</tbody>
</table>

Grey Cobalt occurs massive and crystallized; primary form a cube; colour greyish tin-white; streak greyish-black; lustre metallic; hardness 5; specific gravity 6.466; fracture uneven; cleavage indistinct.

The massive occurs amorphous and reticulated. It is found principally at Schneeberg in Saxony, and is used in the manufacture of smalt.

Earthly Cobalt occurs massive, amorphous, botryoidal, pulverulent, &c.; colour yellowish-brown and bluish-black; specific gravity 2.4; the fracture of the massive is earthy and dull, but polished by friction, and yields to the touch readily; when heated red; on charcoal gives an arsenical colour, and a deep blue colour with borax; it is found in Hesse, Saxony, Bohemia, and also in Cheshire and Cornwall.

Sulphuret of Cobalt occurs yellowish-white and steel-grey; streak grey; it is amorphous or botryoidal, and externally brilliant; fracture uneven. According to Hisinger it consists of:

<table>
<thead>
<tr>
<th>Mineral</th>
<th>Cobalt</th>
<th>Copper</th>
<th>Iron</th>
<th>Sulphur</th>
<th>Earthy matter</th>
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<tbody>
<tr>
<td></td>
<td>43.2</td>
<td>14.4</td>
<td>3.53</td>
<td>38.50</td>
<td>33</td>
</tr>
</tbody>
</table>

Arseniate of Cobalt—Cobalt Bloom—Red Cobalt—occurs fibrous, massive, and crystallized; primary form an ob-
Is a rhombic prism; colour various shades of red pass-
ing into crimson; sometimes greyish; translucent, trans-
parent; it is soft, light, and flexible; specific gravity
2·948; the massive variety amorphous, botryoidal: struc-
ture fibrous, radiating; below the blow-pipe emits arsenical
volatile gaseous products; its colouring point at wax black.
It occurs in Saxony, Bohemia, Scotland, and Cornwall, &c.
Analysis by Bucholz:—
Arsenic acid . . . . . 37·9
Oxide of cobalt . . . . . 39·2
Water . . . . . . . . . 32·9

Sulphate of Cobalt—Red Vitriol—is of a pale rose-red
colour, and occurs involving other minerals, in small masses
and in stalactites; the masses are generally transparent and
crystalline; it is soluble in water; translucent; lustre
vitreous, often dull externally: it occurs among the mining
hills near Hanau and in Salzburg.

COBB. (Gull)

COBBETT, WILLIAM, was the son of a farmer and
publican at Farnham, in Surrey, where he was born, it is
supposed, in 1762. He has himself related the incidents
of the first portion of his life in 'The Life and Adventures of
Peter Porcupine,' first published in 1796. This tract contains
a most interesting account of his self-education, carried on
under circumstances of difficulty, and with an ardour and
steadfastness of purpose that have never been surpassed.
He was trained to work and employ himself from an early
age, till the autumn of 1782, when, on a visit to his
neighbourhood of Portsmouth, he first beheld the sea,
and the next day made a unsuccessful attempt to get employ-
ment on board a merchant-ship, and was eventually ordered to
New Brunswick. For his excellent conduct he was made a corporal before the regiment left England, and, on its arrival in America he was raised at once, over the heads of thirty-sergeants, to the
rank of sergeant-major. In New Brunswick he made his
acquaintance with his future wife, then a girl of thirteen,
the daughter of a sergeant-major of artillery. His own
account of his courtship and marriage is, it may be fairly
said, one of the most beautiful moral pictures ever drawn.
Cobbett's regiment did not get back to England till the
end of the year 1791, when, at his earnest request, he
obtained the discharge with a testimonial from his com-
manding officer, declaring that he had served honestly
and faithfully for the space of eight years, and was
discharged 'in consideration of his good behaviour and the
services he had rendered the regiment.' He now en-
gaged in the manufacture of his constituents in which he
was actuated no intelligible explanation has ever been
given; we mean his bringing charges of peculation against four officers of his late regiment, and then, when a court-martial was appointed to try them, and
every arrangement connected with it were made in the manner
he himself required, declining to come forward to prosecute.
When, on the day of trial, to the surprise of all concerned,
he did not make his appearance, after forty-seven witnesses
had been heard and sworn against him, he was brought from Portsmouth to London, the court, in the notion that no incident might possibly have happened to him, adjourned to the third day
after, and in the mean time search was made for him in all
directions; he had crossed over to France. He re-
ained in that country for six months, and then sailed from Hâvre de Grace for New York, where he arrived in Oc-
tober, 1792. About two years after this date he made his
first appearance as a public writer, in an attack upon Dr.
Priestley, then arrived in the United States from
England, under the title of 'Observation on the Emi-
gration of a Martyr to the Cause of Liberty, by Peter Por-
cupine.' This pamphlet attracted much notice, and was
followed by a king's succession of others in the same violent
anti-democratic strain, and with the same denunciatory
signature. The whole were afterwards collected and reprinted in Eng-
land in 1801, in twelve volumes octavo. The outrageous
recklessness and personality of his invective, however, at
length exposed him to several prosecutions for libel, and
the meanness of which he was thus induced to
him, in June, 1800, to quit America for England. On ar
riving in London, he immediately set up a Tory paper, under the title of 'The Porcupine,' but it was discontinued
after an existence of only a few months. Upon this he
commenced his 'Weekly Register,' which rapidly attained
a large circulation, and which, without the failure of a single week from its first publication to its death, a period of above thirty-three years. In the course of
this time, however, it wholly changed its politics, having
become the most determined among the assis-
tants of the revolution and the remonstrant
by. The first indications of this change appeared in the course
of 1803; but it was not till some years later that the con-
ductor of the Register had completely reversed his original
position. In two verdicts and two convictions the principal
was accused against him for libel; in consequence of this, the
Earl of Hardwicke (for libels on the Earl of Hardwicke, then lord lieutenant
of Ireland, Lord Redesdale, lord chancellor of that country,
and other persons connected with the Irish government)
he was fined 500l., and by the second of which he was cast
in 1804.3 to serve for Mr. (now Lord) Plunket, then the
Irish solicitor-general. In 1810 he was again tried on an infor-
mation at the instance of the government for certain ob-
denies of the 'Register of the 10th July, 1809, on
the flogging of some local militiamen; it was a conviction, on which he was sentenced to pay a fine of
1000l. to the king and to be imprisoned for two years.
When he came out of prison, he set in motion a new engine
for the destruction of the administration, in the sense of
papers which he called his 'Two Tracts,' an imitation of
what is said at one time to have amounted to 100,000 copies.
In April, 1817, however, professedly to escape from
the operation of the Six Acts, but partly also, as it is believed, in consequence of certain
embarrassments, he again visited America. While there
he still continued the publication of his Register in London, the
manuscript being regularly transmitted across the
Atlantic. He returned to England in 1819, and soon after
commenced a daily paper, which was only in two months,
involving him in further losses. Other two actions for libel
immediately followed, in both of which he was cast; the
damages awarded in the first (brought by Mr. Cleary) being
only 40l., but in the second (brought by Mr. John Wright)
1000l. Amidst all these troubles, neither the regularity
nor the spirit of his literary labours ever relaxed. His
Register was only one of many productions which his un-
tiring and ever vigorous pen was constantly giving to the
world. In 1820 he made his first attempt to enter
parliament, by standing for the city of Coventry, to
which he was defeated. In 1828 he was again unsuccessful
in a similar attempt at Preston. In 1829 and 1830 he at-
tended the House of Commons, and was possessed of the
power by a number of political lectures and
speeches, which he delivered in several parts of
England and Scotland. In July, 1831, he was again tried on
a prosecution for libel, the charge being grounded on an
article which he had appeared in the Register, and which was
alleged to have been published with the intent of exciting
the agricultural labourers to acts of violence and to
destroy property. He defended himself on this occasion in a speech
of six hours; and, the jury not being able to agree in a
verdict, the trial ended in his discharge.

In 1832 Cobbett was returned to the first reformed par-
liament as one of the members for Oldham. In the course
of his parliamentary career he made several effective
speeches; but his success in this new field did not, on the whole, equal his expecta-
tions. And on more than one occasion he damaged himself by those strange
attacks and exaggerations, which here and there mark every portion of his history.
His death took place unexpectedly, and after a very short illness, on Thursday, the 15th of June, 1835.
A complete catalogue of his publications would occupy more space than we can afford. Among those
not already mentioned that have attracted most attention, are 'Year's Residence in America;' his 'Emigrant's
Guide;' and 'Cobbett's Man's Friend;' his 'Cottage Econ-
omy;' his 'Village Sermons;' his 'Natural History and the
Testant Reformation in England and Ireland;' his 'Ad-
vice to Young Men and Women;' his 'Grammar of the
English Language;' his 'English Grammar;' in a Series of
Letters to His Son; and 'Rural Rides;' reprinted from the
'Register.' He also translated from the French
Martens's 'Treatise on the Law of Nations;' and is under-
stood to have been the projector and original conductor of the "Parliamentary History," which, for some years, bore his name. On the subject of the intellectual character of this remarkable man, there is already a more general agreement of opinion than might have been expected, considering the varied views of France, the Moselle, and other portions of what he has written. His mind was one of extraordinary native vigour, but apparently not well fitted by original endowment any more than by acquirement for speculations of the highest kind. Cobbe's power lay in wielding more effective and persuasive weapons than they ever were wielded before, those weapons of controversy which tell upon what in the literal acceptance of the words may be called the common sense of mankind, that is, those feelings and capacities which nearly all men possess, and to those of a more acute and exquisite character which belong comparatively small number. To these higher feelings and powers he has nothing to say; and all things that they delight in are uniformly treated by him with a scorn, real or affected, more frank and reckless certainly in its expression than they have met with from any other great writer. He cares for nothing but what is cared for by the multitude, and by the multitude, too, only of his own day, and, it may be even said, of his own country. Shakspeare, that poet of England's Masques, who made Germany, are, one and all, either wholly indifferent to him, or the objects of his bitter contempt. But in his proper line he ismatchless. When he has a subject that suits his genius, he is among eleven such literary skilful as an accomplished writer, as with the perfect and inimitable natural art with which a dog picks a bone. There are many things that other men can do, which he cannot attempt; but this he can do as none but himself can or ever could.

COBBLE. [DIVER.] COB [Gobi.]

COBITIS, a genus of fishes belonging to the Abdominal Malacostracini and family Cypriniidae. This genus includes the largest species of the family, of which may be distinguished by their having the head small; mouth but slightly cleft, without teeth, and furnished with barbules on the upper lip; body elongated, covered with small scales, and invested with a mucous secretion; ventral fins situated far back, dorsal fin placed above them; gill openings small; branchiostegous rays three in number.

The loach, which is common in most of our running waters, will afford a good illustration of this genus. It is about six inches long; the skin, on which the colour, mottled with brown; its upper lip is furnished with six barbules, one of which springs from each corner of the mouth, and the others are situated on the fore part of the body.

Like fishes in general, the loach is without fishes feel the bottom of the water. The species above described spawn in March or early in April, and is very prolific.

The spined loach (Ositis torta, Linn.) is a far less common species than the above; its form is more compressed; the barbules are very short, and consequently less conspicuous: the principal character however consists in its having two spines, one before each eye. From this character and some other differences of minor importance, this fish, with several others having the same structure, have been separated from the true loaches, and now constitute the genus Botia of Mr. Gray.

The loaches are extremely restless during stormy weather, when they generally rise to the surface of the water, which frequently causes great loss.

COBLENZ, an administrative circle or division in the province of the Lower Rhine, belonging to Prussia. It is divided by the Rhine into two unequal parts, the larger portion being on the south bank. It lies between 50° and 51° 30' lat., and 6° 6' and 8° 3' E. long.; it is bounded on the east by the grand duchy of Hessé and the duchy of Nassau, and on the south by Rhenish Bavaria, Oldenburg, and Hesse Homburg. Its area is about 2300 square miles, of which about 567,000 acres are water. Its soil is good, and as it is two-thirds beech forest, and one-third pasture land; 17,000 vineyards, and 556,000 forests and woods. Coblenz contains 12 minor circles, 34 towns, 19 market-towns, 917 villages, and 463 hamlets. The population, including the military, was, in 1817, 395,200; in 1823, 436,826. The number of Roman Catholics, in 1823, was 268,322; of Protestants 126,682; and Jews 6724. The surface of the country is generally hilly. The left bank of the Rhine, which is the most fertile, is traversed by a portion of the Eifel forest. To the north the Rhine, its upper course is 1579 feet above the sea. The rivers of this circle are:—On the left bank of the Rhine the Moselle, the Nette, the Saar, the right, the Lahn, Sayn, and Wied. The breadth of the Rhine here is 1160 feet; between Coblenz and Neuweid 1230; and at Neuweid 1400. The average breadth of the Moselle, between Trarbach and Coblenz, is 593 feet. The river here is watered, and the corn fields and meadows. The stock of cattle in 1831 was 12,590 horses, 563,753 head, 145,077 sheep; 11,478 goats, and 49,630 swine. The chief manufactures are woollen yarn, leather, iron and iron ware, potashes, earthenware, tobacco, mill-stones, &c.

The circle consists of 12 minor circles:—

Coblenz, cap. Coblenz, 14,724; St. Goar—Boppard, 3700; Kreuznach—Kreuznach, 7900; Simmern—Simmern, 2700; Zell—Zell, 1890; Kochem—Kochem, 2350; Mayen—Mayen, 3920; Adenau—No town; Ahrweiler—Ahrweiler, 4360; Neuweid—Neuweid, 5350; Altenkirchen—No town; Wetzlar—Wetzlar, 4500.

The seat of the provincial administration is at Coblenz. The ecclesiastical affairs of the Protestant are distributed among eleven sacerdotal circuses, under the provincial consistory at Coblenz; the Roman Catholics, among eleven deaconries, under the bishop of Treves.

COBLENZ, the capital of the circle of the same name, and of the whole province of the Lower Rhine, lies in a beautiful situation on the confluence of the Moselle and Rhine, whence the city obtained its ancient name of Confluentes, Confuentia, or Confluentes. After the conquest of Gaul by Caesar, it came under the dominion of the Romans. It was, in 1356, united with the bishopric of Trier, and in 1552, it became a part of the Spanish dominions. After the division of the monarchy among the sons of Lewis, in 1643, Coblenz fell to the share of Lorrainia, and was included in Lorrainia, which province was alternately in the possession of the French and Germans till it was finally annexed to the Germanic empire by Henry I.

In 1818 the Emperor Henry II. gave this city, with its many privileges, to the archbishop of Treves; since which time it continued to be held by the archbishop, though no longer among its temporalities. It was the occasional residence of many of the German emperors, and it was here that Conrad of Hohenstaufen was elected emperor (1338). Edward I. of England, when he laid claim to the throne of France and sought the assistance of Germany, met the Emperor Louis with other princes and several archbishops.

Coblenz was antiently fortified with walls and ramparts, traces of which still exist, and this part retained, for many centuries after it had been considerably extended, the name of Old Town. Coblenz is very irregularly built, with narrow streets and old houses. In what is still denominated the "Old Court" stood the palace of the archbishop, which became subsequently the palace of the Frankish monarchs, the German emperors, and the Archbishops of Treves. The "Clement, or New Town, which is very handsome, was built by the last electoral prince, Clement Wenceslaus of Brunswick. Coblenz contains at present two Roman Catholic and two Protestant churches, and one synagogue: among the former the principal is the collegiate church of Saint Castor, built in 636, which was the place of meeting of the Council of 805, when three kings of the Franks met here. The collegiate church of St. Florian, said to have been founded by the Empress Helena, has been fitted up for Protestant worship. The antient residence of the electoral princes is now the palace of justice; its chapel is built in a style of noble simplicity and adapted to the uses of a chapel. The castle yard is planted with trees and decorated with a pyramid 60 feet in height: the castle in the New Town has, since the French revolution, been converted into an hospital and magazine, &c.

There are two bridges from the Old Town to the New, one of 480 yards, length of 14 arches, which was commenced in 1334 by Archbishop Baldwin; the other of wood, built in 1819 across the Rhine to the
valley of Ehrenbreitstein is 455 feet in length, and rests on 36 pionts. The old Jesuits' College, now the Gymnasium, has 300 scholars, besides 200 in the elementary school attached to it; it has a considerable revenue, and a fine library, formed out of the remains of the monastic libraries. There are various schools for children, a Catholic seminary for schoolmasters, a musical institution, house of industry, ladies' benevolent association, savings' bank, an orphan asylum, and various other charitable institutions. Besides its own library, there are many private collections of paintings, coins, and antiquities.

Coblentz is the head-quarters of the 8th corps of the army, the residence of the superior president (ober-president) of the province, and the seat of the provincial administration. It has a linen and a cotton manufactury and an extensive one of Japan wares; besides manufacturies of furniture, carriages, and other articles. There is scarcely any wholesale business carried on, and its trade is confined to exporting the productions of the neighbouring provinces, the importation of articles of home consumption, and the transport of goods along the Rhine and Moselle. Many of the inhabitants are engaged in the cultivation of the vine.

In connection with Ehrenbreitstein, Coblentz is strongly fortified, and an important military post. The population in 1817 was, including the military, 12,238; in 1822, 13,689; in 1825, 14,333; in 1828, 14,724 (of whom 13,888 were Catholics, 562, and 162, of which 154 were males), in 1835, exclusive of the military, 12,514. 50° 21' N. lat. and 7° 30' E. long.

COBRA CAPELLO. [ASP. VEPHERD.]

COBURG, the most southern of the independent principalities, is bounded on the northwest by Schwarzburg, Meiningen, Hildburghausen, and Bavaria; it lies between 50° 9' and 50° 24' N. lat., and 10° 30' and 11° 13' E. long., including the newly acquired territories of Königstein and Sonnenfeld; its area is about 900 square miles, about one-fourth more than the area of the Rhine, which is composed of the great valley of the Itz, which is bordered on the north by the Thuringian mountains, and is traversed by the rivers Itz, Rodach, Steinach, Naasbach, Liegau, and many others. Besides Coburg, the principality now comprehends the whole of the duchy of Gotha, and the principality of Lichtenberg, which lies on the left bank of the Rhine: the whole constitutes the duchy of Saxe-Coburg-Gotha. 'Coburg Proper' belonged formerly to the counts of Henneberg; it came by marriage to the house of Saxony, whence it passed into the Ernestine line, and in 1733 to the branch of Saxe-Altenburg. The principality of Lichtenberg was added to it in 1816, and the duchy of Gotha (with the eastern districts) in 1826, in consequence of that house having become extinct by the death of Duke Frederic IV.; when it was made over to the house of Saxe-Coburg-Altenburg, by virtue of a treaty, of the partition of the duchy of Saxony, in exchange for the duchy of Saxe-Altenburg and several other districts. Thus arose the present duchy of Saxe-Coburg-Gotha, containing altogether about 1000 square miles, as large as Dorsetshire, and 153,700 inhabitants, which shows an increase of upwards of 8000 since the year 1826, when their numbers were 145,932; it has eleven towns, ten market-towns, 253 villages and hamlets, and about 26,100 houses.

Coburg Proper contains 32,000 inhabitants; ana, including the lately acquired districts of Königstein and Sonnenfeld, 38,000, of whom the majority are Lutherans; the Catholics (about 11,000) enjoy the free exercise of their religion. By the constitution of the 5th of August, 1821, the right of citizenship is enjoyed by natives only, who are all equal in the eye of the law, without regard to their religious profession. The legislative body consists of a single chamber, composed of six deputies from the nobility, and eight from the magistracy, towns, and rural districts.

The climate is mild, especially in the valley of the Itz. The agricultural products are timber and fuel, grain, particularly peas, beans, hops, vegetables, &c. Iron, copper, cobalt, coal (but none of them in large quantities), lime, salt, marble, asphalt, pumice, sandstone, and earth, &c. are found there. The inhabitants are chiefly occupied in the manufacture of linen, woollens, and cotton, wooden toys, and the rearing of cattle. The principal articles of food are potatoes, fruit, and grain; besides butter, leather, wood, wool, linen, and other manufactured goods. The duke takes the fifth rank among the Saxon dukes, and with them has the twelfth place at the diet, and a separate voice at the Plenum, or in the full assemblies of the diet.

Besides Coburg, the principality contains Rodach, a town of the archbishopric of Bamberg, and Weikersheim, a town of the archbishopric of Mainz, church, 300 houses, and about 1430 inhabitants; Sonnenfeld, a market-town of about 600 inhabitants; Königstein, on a hill, and on the Naasbach, with a grammar-school, and about 750 inhabitants; and Neustadt, at the foot of Mount Coburg, with about 250 houses, having a tobacco-manufactory, hop-gardens, and some trade.

[SAXE-COBURG-GOTHA.]

COBURG, a bailiwick (Amt), in the principality of the same name, is situated on the Itz. It is surrounded by walls, and, with its long suburbs, is divided into nine quarters, having two market-places, 36 streets, 732 houses, and about 9060 inhabitants.

COBURG, the capital of the principality of the same name, is a picturesque valley on the right bank of the Itz, surrounded by walls, and, with its long suburbs, is divided into nine quarters, having two market-places, 36 streets, 732 houses, and about 9060 inhabitants. It is far from being a handsome town; the houses are small, the streets rough, and in many places overgrown with grass. The ducal palace of Ehrenburg (burg of honour), which is surrounded by walls, and, with its long suburbs, is divided into nine quarters, having two market-places, 36 streets, 732 houses, and about 9060 inhabitants. It is far from being a handsome town; the houses are small, the streets rough, and in many places overgrown with grass. The ducal palace of Ehrenburg (burg of honour), which is far from being a handsome town; the houses are small, the streets rough, and in many places overgrown with grass. The ducal palace of Ehrenburg (burg of honour), which is far from being a handsome town; the houses are small, the streets rough, and in many places overgrown with grass. The ducal palace of Ehrenburg (burg of honour), which is far from being a handsome town; the houses are small, the streets rough, and in many places overgrown with grass.
The effects of this drug are said to be of the most perennial nature, exceeding even opium in the destruction of mental and bodily powers. The coca leaf is chewed by the Peruvians, mixed with finely-powdered chalk, and brings on a state of apathy and indifference to all surrounding objects, the desire for which increases so much with indulgence in it, that a confirmed coca-chewer is said never to have been reclaimed. Poppig describes such a person in his usual graphic manner:—

"Useless for every active pursuit in life, and the slave of his passions, even more than the drunkard, he exposes himself to the greatest dangers for the sake of gratifying this propensity. As the stimulus of the coca is most fully developed when the body is exhausted with toil, or the mind with conversation, the poor victim then hastens to some retreat in a gloomy native wood, and, flinging himself under a tree, remains stretched out there, heedless of night or of storms, unprotected by covering or by fire, unconscious of the floods of rain and of the tremendous winds which sweep the forest; and after yielding himself, for two or three entire days, to the occupation of chewing coca, returns home to his abode, with tumbling limbs and a pallid countenance, the miserable spectacle of unnatural enjoyment. Whenever accidentally meets the enquirer under such circumstances, and by speaking interrupts the effect of this intoxication, is sure to draw upon himself the hatred of the half-maddened creature. The man who is once seized with the passion for this practice, if placed in circumstances which favour its indulgence, is a ruined being. Many instances are related to us in Peru, where young people of the best families, by occasional visitation of the forests, have begun using the coca for the sake of passing the time away, and, acquiring a relish for it, have, from that period, been lost to civilization; as if seized by some malevolent instinct, they refuse to return to their homes; and, resisting the entreaties of their friends, who occasionally discover the haunts of these unhappy fugitives, either retire to some more distant solitude, or take the first opportunity of escaping when they have been brought back to the towns."

The immediate addiction of the Peruvians to the use of this drug is such that their forests have long since ceased to be able to supply their wants, and the cultivation of the plant has been carried to a very great extent, not only under the Incas, but beneath the local government of the Spaniards, who seem to have been no more able to resist the temptation of a large revenue from the monopoly of this article than European nations from the consumption of ardent spirits. It is said that in the year 1583 the government of Potosí derived a sum of not less than 500,000 pesos duros from the consumption of 90 to 100,000 baskets of the leaf. The cultivation of coca is therefore an important feature in Peruvian husbandry, and, it is added, so lucrative a produce of the coca plant that those whose original cost and current expenses amounted to 2500 pesos duros during the first two or three months, will, at the end of ten months more, bring a clear income of 1700 pesos duros. Poppig states that coca has now become a sort of necessary evil; that thousands of persons would lose, were they deprived of the use of it, and that if its consumption were put a stop to; and that the value of it in Peru and Bolivia amounts to above 24 millions of pesos duros a year.

The exciting principle of the coca has not yet been inquired into. It is stated by Poppig to be of so very volatile a nature that leaves only 12 months old become perfectly inert and good for nothing. Large heaps of the freshly-dried leaves, particularly while the warm rays of the sun are upon them, diffuse a very atoxic smelling that of hay in which there is a quantity of metilol. The natives never permit strangers to sleep near them, as they would suffer violent head-aches in consequence. When kept in small portions, and after a few months, the coca loses its scent and becomes weak in proportion. The advice thinks that the grassy smell and fresh hue are as perceptible in the old state as when new, and this is to be expected with the Peruvian, who never uses it without the addition of but little. Without doubt, it excites the mouth of a stranger, the natives declare that coca has not its true taste, a flavour, by the bye, which can only be detected after a long use of it. It then tinges green the carefully-swallowed spittle, and yields an infusion of the same colour. Of the latter alone I made trial, and found that it had a flat grass-like taste, but I experienced the full power of its stimulating principles. When taken in the evening it was followed by great restlessness, loss of sleep, and generally a bad state of sensibility. While, from its exhibition in the morning, a similar effect, though to a slight degree, arose, accompanied with loss of appetite. The English physician, Dr. Archibald Smith, who has a sugar plantation near Huancou, once, having used coca, in a very acute condition, made a trial of the coca as a substitute for it, but experienced such distressing sensations of nervous excitement that he never ventured to use it again. The Peruvian increases its effects by large doses, over retirement, and the addition of other stimulants. The indigenous use of the coca speedily occasions bodily disease, and detriments to the moral powers; but still the custom may be persevered in for many years, especially if frequently intermitted, and a copa or sometimes even the use of fifty, with comparatively few complaints. But the oftener the orgies are celebrated, especially in a warm and moist climate, the nearer are their destructive effects made evident. For this reason the natives of the cold and dry districts of the Andes are more addicted than the inhabitants of the close forests, where, undoubtedly, other stimulants do but take its place. Weakness in the digestive organs, which, like most incurable complaints, increases continually in a greater or less degree, is not the unfeigned complaint, which is called opilación, may be trifling at the beginning, but soon attains an alarming height. Then come bilious obstructions, attended with all those painful symptoms which are so much aggravated by a tropical climate. Jaundice and derangement of the nervous system follow, along with pains in the head, and such a prostration of strength that the patient speedily loses all appetite; the hue of the whites assumes a leaden colour, and a total incapacity to sleep ensues, which aggravates the mental depression of the unhappy individual who, spite of all his ills, cannot relinquish the use of the herb to which he owes his sufferings, but craves brandy in addition. The appetite becomes quite irregular, sometimes altogether, and sometimes sometimes assuaged to quite a woful voracity, especially for animal food. Thus do years of misery drag on, succeeded at length by a painful death.' (Poppig, Reise in Chile, &c., vol. ii.; Hooker, Compen. to Bot. Mag. i. and ii.)

COCCHINAE. [Gossas.] COCCO-CULUS, a genus of Menispermaceae plants, consisting of elims, whose leaves are usually more or less undulated, and frequently green, brown or pale green, in loose panicles or racemes; in most cases they are dioecious, and are always very minute. The most recent character of the genus is given by Messrs. Wight and Arnott, from whom it appears that the essential distinctions are, six sepals in two whorls, a corolla of six
petals, three or six distinct stamens, terminal two-celled anthers opening vertically; three, six, or more ovariates; and one-celled one-seeded drupes. The species are usually powerful bitter fibrousgines. Cocculus craspus, a twining plant found in Sumatra and the Moluccas, with a tuberous or warty stem, is employed by the Malays for the cure of intermittent fevers. Owing to its intense bitterness and twining habit it was called Passifera by Rumford. Another plant, the Menispermum foetidum of Roxburgh, is in great repute among the Cingalese, who slice it, steep it in water, and swallow it along with the infusion as a stomachic.

Cocculus villousus, a plant common in the hedges of Bengal, with variable downy leaves and axillary solitary female flowers, succeeded by deep purple berries the size of peas, is a species of considerable importance to the Hindoos. The juice of its ripe berries makes a good durable bluish-purple ink, according to Boezburg, who adds some further particulars concerning its uses. A decoction of the fresh roots, with a few heads of long pepper, in goats' milk, is administered for rheumatic and old veneral pains; it is reckoned heating, laxative, and sudorific. The fresh leaves taste simply herbaceous; rubbed in water they thicken it into a green jelly, which is sweetened with sugar, and drank when fresh made to the quantity of half a pint twice a day, for the cure of heat of urine in gonorrhoea. It suffered to stand for a few minutes, the gelatinous or mucilaginous part separate, contract, and float in the water, leaving the water clear, like Madeira wine, and almost tasteless. Curry is made of the leaves, for people under a course of its roots, or jelly of the leaves.' The species most important to Europeans is that which produces the celebrated Calumbu root. Cocculus palmaus, from which a valuable bitter is procured. This plant is a native of Mozambique and Obio, abounding in the thick forests that cover the shores of those countries, and extending inland for fifteen or twenty miles. The Africans of those parts call it Kalumb. It has a large fleshy deep-yellow root, divided into many irregular forks or fangs, which are amputated by the collectors, cut into slices, strung on cords, and hung to dry in the shade. The stem is covered with a thick whitish-green glandular fur; the leaves are large, roundish, heart-shaped, and deeply divided into five to seven sharp-pointed lobes. The plant is now cultivated in the Isle of France.

The name given to this genus is that of a kind of seed imported from the East Indies under the name of Cocculus Indicus, possessing a powerful, bitter, poisonous principle, which, according to Goupius, exists principally in the kernel. It is found in the forests of Malabar, and when transplanted to the botanical garden, Calcutta, grew in a few years so as to extend over a large mango-tree, with a stout woody stem as thick as a man's wrist, covered with deep-creased, spongy, and dark brown bark. The leaves were very exactly composed, entire, obtusely emarginate, of a hard texture, shining on the upper surface, and from 4 to 12 inches long, by from 3 to 8 inches broad. This plant is the Menispermum coccus of Linnaeus, the Cocculus subtruncatus of Linnæus, and the Menispermum palmatum of Wight and Arnott, it does not properly belong to the latter genus, having the stamens combined into a central column and no corolla. They call it Anamirta cocculus. Cocculus Indicus bears the berries are the fruit of the Cocculus subrousus (Decand.), the Menispermum Cocculus (Linnaeus). 'The medical jurist,' says Dr. Christison, 'should make himself well acquainted with its external characters, because, besides being occasionally used in medicine, it is a familiar poison for destroying insects, and has also been extensively used by brewers as a substitute for hops—an adulteration which is prohibited in Britain by severe statutes.' This fruit is a bristly drupe, varying in size from that of a pea to that of a laurel (or bay) berry; subglobular, emarginate, dark-brown or purplish, smooth, or rough, with an external integument, or husk, is very brittle; within is the seed or kernel, lunulate, oily, with a nauseous and intensely bitter taste. The kernel contains about one part in the hundred of a poisonous principle, known as porotoxina, as some term it. Upon this principle its poisonous properties depend. It seems to act by exhausting the irritability of the heart, and if the dose be considerable, its fatal effects are very quickly displayed. What renders it a more formidable agent, is the circumstance of its leaving scarcely any trace of its presence on the coats of the stomach. Cocculus Indicus is never used internally in the practice of medicine, but an ointment formed of the powdered berries is very efficacious in the supplicative and evacuating treatment of pustules, such as Pustule capitis, and Syphus mentis. It specially alloys the erythematous state; but its employment requires great care. Creatoide will probably supersede it in such cases.

Calumba is the root of the Cocculus palmatus, a native of the forests on the east coast of Africa, where it is sent to Ceylon, and thence to Europe. It occurs in the form of transverse sections, the bark of which is thick and easily separable; the woody portion is spongy, of a yellowish or reddish color when old much perforated by worms. The colour is faintly aromatic, the taste bitter and slightly acrid. It contains much starch, a yellow astringent matter, a yellow bitter principle, traces of a volatile oil, woody fibre, salts (chiefly of lime and potasses), oxide of iron, and silic. The active principle is Calumbine, which may be obtained either by alcohol or ether. As Calumba contains nothing which can decompose the salts of iron, it may be given along with them. The powder is a good form; the infusion soon spoils, but is otherwise a very excellent form; a tincture or extract retains the virtues and keeps a long time.

Other roots are often fraudulently substituted for Calumba. Some of these are supplied by America, others by Africa. The American, which is the most common in England and the north of Europe, is the root of the Sura, or Surana, as it is called by the native of the marshes of Carolina. It may be distinguished from the true by its whiter colour, lighter texture, the presence of longitudinal pieces, and the taste being at first sweetish, and not nearly so bitter, as genuine Calumba. Chemical tests further assist in discriminating them: solution of proto- sulphate of or permanganate of iron, does not trouble the tincture of the real, while it gives the false a dark green colour: the tincture of the genuine, mixed with tinctures of salts of cuprous precipitatum, but the false none. The substance of the true is rendered blue by iodine, the false brown. It is used in doses the spurious causes vomiting, and the genuine alleviates the symptoms.

Slices of bryony root are often employed to adulterate Calumba root.

Calumba acts chiefly upon the mucous membrane of the stomach, and upon the secretion and quality of the bile. It is not however without power over the nervous system, as
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its efficacy in allaying the vomiting of pregnancy testifies. In diarrhoea, after proper evacuants, and in bilious vomiting, it is superior to all other medicines. The vomiting and nausea of the early months of pregnancy are much alleviated by it; while the want of appetite, accompanied with general debility, of which many cases are often removed by Calumba along with preparations of iron.

Dr. Percival states that infusion of Calumba will remove the disagreeable odour of putreting ox-gall.

CUCURBITA. (CUCURBITACEAE)

COCCUS CACCO. [CUCURBITACEAE]

COCYRUS. [CUCURBITACEAE]

COCCYRUS. [CUCURBITACEAE]

COCHABAMA. [BOLIVIA]

COCHIN-CHINA is in that part of Eastern Asia which comprises the countries of Annam, Tonkin, and Cochin-China, of which it forms the eastern portion. It extends from 8° 40' to about 23° N. lat., and from 102° to 109° E. long. Its length from north to south is about 950 miles, but it varies from 100 to 300 miles. Crawford assigns to it an area of only 88,000 square miles; but Berghaus makes its surface one third larger, or about 147,000 square miles. This country, therefore, is about 33,000 square miles more than the British islands.

Yunnan is a highland province bordering on the kingdom of Siam, or Shan, on the north-west, and on the north by Laotcho and on the north on the Chinese provinces of Yunnan, Quang-si, and Quang-tong (Canton). To the east of it extends the sea, called by the Chinese Nan-Hai, or the Southern Sea. Laotcho forms a boundary between the northern province of Cochin-China and the island of Hai-nan, called the Gulf of Tonkin. To the south of Cochin-China extends the southern part of the China Sea.

The character of the most northern part of the coast is not known; in our charts a great number of islands and cliffs are laid down. At 21° N. lat., or near the mouth of the river Song-ca, and farther to the south, the shores are low, partly sandy and swampy. Between 20° and 18° N. lat., opposite Cape James, a number of lagoons near the low shore, connected with one another, so as to form an inland navigation of great extent. These lagoons are not inserted in our maps. Near 17° N. lat., the shores begin to be high, forming capes several hundred feet in elevation, between which large bays run deep into the land. This is the general character of the coast between 17° N. lat. and Cape James (10° 11' N. lat.). This coast is lined with a great number of small rocky islands and cliffs, but it contains numerous safe and excellent harbours. The remainder of the coast from Cape James to the very boundary of Siam is low and mostly swampy, being formed by the alluvial deposits of the river Maekhan or Cambo.

Cape James, the southern extremity of an extensive mountain range, which as far as the parallel of Cape Padaran (11° 20' N. lat.) runs north-east, and then turns to the north, in which direction it continues to 14° N. lat., which it communicates from 15° 10' to 16° N. lat. Farther north the range is little known, and it is conjectured that it joins the high mountains in the Chinese province of Yunnan. This range occupies perhaps a hundred miles in width, and seems to consist of a number of parallel ridges. Its height, which is not ascertained, appears to be considerable. A road leads over it between the towns of Sai-gon and Phu-yen, which is described as very difficult and dangerous.

Several short offsets or promontories, from the coast extend the greatest part of the maritime districts between 10° 20' and 17° N. lat.; some of them are known to attain the height of 4000 feet above the sea. The most remarkable of these lateral ranges is that which forms the boundary between Cochin-China and Tonkin, in about 17° 30'. It contains a depression, forming a mountain pass, about six miles in width, which is shut in by a wall, traversed by an artificial road, which leads from Hwe to Cheko, and is so well made that it is said not to be inferior to the good roads of Europe. The length of this artificial road is estimated at 400 or 500 miles.

The boundary between Cochin-China and the Chinese province of Quang-si is partly formed by the river Nangan-kiang, and partly by a extensive range of mountains, which separates the Yulung, a mountain system of southern China. Over this range there is a pass, which constitutes the boundary line of both countries, and is also shut in by a wall, on each side of which a military post is maintained by each country.

The northern part of Cochin-China, which formerly constituted the separate kingdom of Ton-kin, comprehends an extensive plain, surrounded, except where it borders on the gulf of Tonkin (between 19° 20' and 21° N. lat.), by mountains, which rise in height above the sea. This plain appears to extend above 100 miles in length and width. Being very low, a great portion of it is annually inundated by the river Song-ca, which fertilizes the soil, so that two or three crops of rice are annually cut. It is by far the most fertile and populous part of the country. The valleys which run up far into the mountains are equally fertile: the greatest part of them may easily be irrigated, and the mountains themselves are rich in metals. The Song-ca, as it proceeds to Nang-coy, the southern bend of the river of Cochin-China in the mountain-region of Yunnan in China, in two branches: the Ho-ti-kiang and Li-sien-kiang, which run nearly parallel in a south-eastern direction, till they enter Cochin-China, where they unite, and take the name of Song-ca (Great River). Before this river enters the sea it divides into numerous branches, two of which are navigable. The northern arm, which formerly was visited by large European vessels, is said now to afford access only to vessels of 200 tons burthen.

The southern basin is navigable as far as the mouth of the river Song-ca, which enters the sea at 15° 30' and 15° N. lat., consists of an alternation of small plains and intervening mountain ridges. The plains often extend 5 or 6 miles in width, and terminate in the west with valleys. The range which descends from a great height, are in some places bare, and in others covered with forests. In many places cultivation extends to a considerable height on their sides. Most of the plains are irrigated and well cultivated. The rivers which traverse them have a short course, but supply abundance of water for irrigation, and most of them are navigable for some miles. In some places the plains are traversed by canals.

The country which extends from Cape Avarrella to the neighbourhood of James Town is considered as entirely covered with mountains. The rocky masses approach so close to the sea as to leave a level tract along the beach only in a few places. In its numerous indentations a few narrow strips of land, the rivers which traverse them, mostly inhabited by fishermen. But though this country (formerly called Champa) is unfit to maintain any great population along the coast, the interior is said to contain much cultivated ground, and to be pretty well peopled.

That portion of Cochin-China which lies to the west of the mountain-range constituted till lately the principal part of the independent kingdom of Cambo. [CAMBODIA.] The southern portion, which is imperfectly known, consists, except near the boundary with Siam, of an immense plain, which is supposed to be formed of the deposits of the great river by which it is traversed. The shores and the adjacent country, as far as the tide ascends, which renders the water of the river salt, are covered with trees and shrubbery. About the commencement of the Monsoon course to be cultivated, and is exceedingly fertile. In the interior a great number of fresh-water lakes and swamps are said to cover a considerable part of the plain.

Two large rivers traverse this plain. The Sai-gon or Saigon, which runs through its eastern portion, has been navigated by European vessels as far up as the town of Sai-gon, but farther northward its course is not known. Its course is said to be more than a thousand miles. Towards its mouth it sends off two or more branches; oneof these branches, or a branch of the Saigon, unite with the eastern arm of the great river of Cambo, or the Maekhan.

The great river of Cambo, called by the Burmans Maekhan, is probably that which in the Chinese province of Yunnan is called Lan-tham and runs through the large table-land of Eastern Asia, at no great distance from the upper course of the Yang-te-kiang. In the province of Yunnan this river is navigable: but where it descends from that table-land and leaves the territories of Cambo, it breaks through the ranges of mountains, which in its course, lying between high and steep mountains, is frequently interrupted by rocky ledges and cataracts. Where its valley begins to grow wider, it is said to send off a branch to the south, which joins the tune near Siam, between 18° and 19° N. lat. Its course farther south is unknown, but it is said to send off various lateral branches, which fertilize the country through which they flow, and...
then re-unite with the river. About 150 miles from its mouth is the ancient capital of Camboja, Pontaipret, to which European vessels ascended in the seventeenth century, but this navigation has been discontinued. Some distant bays and the river bend that links the west and south-west numerous arms, which enclose and traverse an extensive delta, that stretches out into the sea with an acute angle. Most of these arms are navigable for large river-boats during the rainy season; though they keep a continuous course through the whole year, a canal was made from it in 1820, which joins the principal river some miles south of Panompeng, the modern capital of Camboja. The three principal mouths of the Mekhuan lie on the eastern side of the delta, and are all navigable for vessels of considerable burthen up to the capital of the country.

The climate of the plain of Camboja resembles that of Bengal. The rainy seasons last from the end of May or the beginning of June to September of the same year, and the dry season prevails in that period; the north-east monsoon brings rain. The wet season sets in at the end of October, and continues until March. In the greatest summer-heat the thermometer may reach 105°, in the morning, but cold it never falls below 57°. In the countries on the shores of the Bay of Tonkin, the south-west monsoon brings the rain, and the wet season begins in May and terminates in August. The heat is occasionally very excessive, and the cold in December, January and February, varies with the weather, and is often rendered unpleasant by heavy fogs, as in Lower Bengal. Typhoons and hurricanes rage with the utmost fury in the Gulf of Tonkin and on the adjacent coasts; more southward, especially below 16° N. lat., they are rarely felt; and west of Cape James the sea and land are entirely exempt from them. They are commonly accompanied with heavy and incessant rains; and Crawfurd mentions that after a continued rain of forty-eight hours, the sea in the bay of Haiphong rose 12 feet with a stratum of mud, and the casks of the vessels were filled with water good enough for the cattle and poultry. All the country seems to have a very healthy climate, for Europeans as well as for natives.

The iron mines of Tonkin are about six days' journey from Cachan, and the gold and silver mines about twelve days' journey, both in a western direction. The annual produce of the silver mines of Tonkin is estimated at about 15,600 ounces; that of the gold mines is unknown. All these mines are worked by Chinese; the number of miners is stated to be between 20,000 and 30,000. Cochihn-China is said to have tin, which however is not worked.

Rice, which is the principal article of food, is very extensively grown on the plains of Siamen and Cambodia. Indian corn, earth nuts (Arachis hypogaea), and the Convolvulus batatas, are also cultivated. The sugar-cane is extensively cultivated on the coast, south of 16°; much sugar of an inferior quality is sent to China, and a small quantity to Malacca and Singapore. The true cinnamon (Laurus Cinnamorum) is probably indigenous; and though its bark is much thicker than that of Ceylon, it is preferred by the Chinese: from 250,000 lbs. to 300,000 lbs. are annually exported from Faifo.

Cotton is cultivated everywhere, and largely exported to China, where it fetches twenty per cent. more than that brought from Bengal. Silk is in Tonkin and Cochihn-China a general object of attention with the peasantry; that of Tonkin being of better quality, but still inferior to that of China. Tea of a coarse kind is grown in the neighbourhood of the capital Hué, and called Hué tea. It is largely used by the lower classes.

The French missionary, M. de la Bussière, states the population of Cochihn-China at twenty-two millions, of which he assigns eighteen millions to Tonkin. The French officers at the court of Hué differed considerably in their statement, estimating the population from fifteen to twenty millions, and another writer thinks all these numbers to be considerably exaggerated; and according to his calculation, Cochihn-China contains only 5,194,000 souls. But as all authorities agree in describing Tonkin as very fertile, and extremely well cultivated and peopled, the estimate of the French seems too low.

The natives call the eastern part of their country Anam, which seems to be derived from the Chinese name, which is Ngan-nan. They belong to the same race as the Chinese and Mongols. Their language is monosyllabic, and the dialect to Cochihn-China is in a great measure regulated by their accentuation. But the Anamese language is totally different from the Chinese language. The Chinese characters are only used in printing; for common purposes the people use the Anamese.

The inhabitants of Camboja, who call themselves Kam-mor, constitute a different nation; they extend on both sides of the river Maekhuan to 15° N. lat. They do not differ from the Anamese in their physical character, but, and the language is of a totally different character. Klaproth however thinks that it is only a dialect of the Anamese. In manners, laws, religion, and state of civilization, they bear a nearer resemblance to the Siamese than the Anamese.

On the mountain-range live two independent nations. The Loye or Loi extend from Cape James at least as far as 15° N. lat. They once belonged to the very coast, and occupied all Champa, but having been expelled from it, they retired into the mountain-fortresses. Their language differs essentially both from the Anamese and Camboja. To the north of 15° N. lat. the interior districts of the mountain-range are occupied by another independent nation, called Negritos. They live on the banks of the river between Laos and Cochihn-China, about 120 miles in length, and from 20 to 30 in breadth. They are said to be an uncivilized and inoffensive people. Very little is known of them.

The political division coincides nearly with the historical division of the country. Anam, or the eastern portion, is divided into two provinces—Tonkin the northern, and Cochihn-China the southern, and the boundary-line between them, at about 19° N. lat., is nearly the same line which separated the ancient kingdoms of Tonkin from Cochihn-China; only two small provinces have been detached from the former, and added to the latter. That portion of Camboja which has been united to Cochihn-China constitutes a provence of the same name.

1. Tonkin or Tongking comprehends the most northern portion of Anam, or the plain which extends on both sides of the river Song-ca, and is bounded by the mountain-range within all its limits. It is the most fertile and most populous portion of Cochihn-China, producing rice, cotton, and silk, in great abundance, and exporting extensively all these articles. Its mountains abound in gold, silver, and iron. The capital, Cachan or Cacho, called by the natives also Ban, is situated on the banks of the river Song-ca, about 80 or 90 miles from the sea. Its commerce in the products of the country is very considerable, especially with China. Haian is on the same river, about 16 miles lower down; the largest junks connect to this place.

2. Cochihn-China Proper comprehends the coast from about 19° N. lat. to the neighbourhood of Cape James. The name of Cochihn-China is not known to the natives, and was introduced by the Portuguese, who on their first arrival in the country found that it was called Koe-eon or Cochihn in order to distinguish it from Cochihn on the coast of Mala- bar, they added China, calling it as it were Cochihn of China. The native distinguish it by the name of Dong-truong or Dang-truong, that of the interior or central country is called Tonkin Dang-ngoi (the external country). The whole surface is covered with mountains, but towards the north the ridges are separated by wide valleys, sometimes extending to more than 20 miles. These valleys narrow towards the south grow narrower, till in the vicinity of Cape Patnan and south of it they become narrow glens. Its principal products are sugar, silk, cinnamon, cardamoms, pepper.

The harbours along this coast are numerous, and safe and extensive, but the country is a chain of islands, and the towns are called Hué, the metropolis of the whole country. The best and most frequented harbour is Touron or Han. To the south of it is the town of Fafoo, with about 500,000 inhabitants, mostly Chinese, who carry on an active trade with the coast towns of Qui-nhon, Phu-yen, and Nhatrang, not visited by Europeans. The most southern portion of Cochihn-China Proper once formed a separate country, under the name of Chinh-dong.

3. Camboja extends over nearly the whole of the ancient
kingdom of Camboga, only one province of it, Batabang, having been united with Siam. The Chinese name of this country is Kan-phu-chhe, from which Camboga is derived. As the climate renders it its people, it is a town formed by the alluvia of its large rivers, and very fertile and well cultivated. Its principal commercial productions are rice, areca-nuts, oil, spices, and timber. It has mines of iron. Sai-gun, on the river of the same name, may be considered as its principal port, but its location is overshadowed by that of Pontapret or Camboga, on the Mae Laung, a port of the capital, and a very considerable town when visited by the Dutch in the seventeenth century. Nothing is known of its commerce, but it is occasionally visited by Chinese traders, who go up the river a later period the capital, and is attended by the residence of the nominal king of Camboga; it is in a populous and well-cultivated country. Kang-kao is about two miles from the mouth of the Kang-kao river, which forms a shallow port; it has some commerce with Singapore and the countries inhabited by the Malays. The population is about 50,000.

The Chinese have made some progress in most of the arts of civilized life. Barrow says that they excel in ship architecture, and that their row-galleys for pleasure are remarkably fine vessels; and Crawford thinks that the lacker-ware made in Tonkin is preferable to that of Japan. They manufacture great quantities of coarse cotton and silk cloth, but both are inferior to those from the south of China. The Chinese cotton is very coarse, and those of the Chinese, and their vessels of cast-iron are also very good. As they are not acquainted with the art of making steel, their tools are not hard enough, and they prefer the copper tools imported by the Chinese. Fire-arms are extremely small and light from their latitude. Their earthenware is much inferior to that of the Chinese.

The great number of excellent harbours and valuable products would seem calculated to attract foreign vessels to this coast. But after the feeble attempts of some European nations to establish a permanent trade, it was frustrated by the long internal wars of the eighteenth century, the commerce of Cochin-China was limited to its intercourse with China. Since the establishment of Singapore, however, an improved intercourse between the two countries, especially by Chinese merchants, and this trade seems to be rapidly increasing. The commerce with China is chiefly limited to the harbours of Caiciao, Faifo, and Sai-gun, in Cochin-China, and to Canton, Amoy, Fu-chou-fu, and Ning-po, in China. In 1822 there were employed in this trade, according to Crawford, 116 junks, of about 20,000 tons. They export from Cochin-China rice, cotton, silk, eagle-wood, spices, and some other articles; they import tea, the finer kinds of tea, coffee, silk goods, china, and some other articles of less importance, silks and English broad-cloth. From Singapore are imported iron, fire-arms, opium, catechu, and terra japonica. Before 1822 this commerce employed a shipping of 4000 tons, mostly Chinese junks; but it is now carried on by the English in the most extensive manner.

A commercial intercourse is also maintained between Faifo and Sai-gun, and Bang-kok, the capital of Siam, which however is not considerable, as only 40 or 50 small junks are engaged in it. They bring to Bang-kok silk, worked and raw, matings for sail, &c., and take in return iron, tobacco, opium, and some European goods. (Crawford; Barrow; White.)

COCHINEAL is extremely rich in the finest red colouring matter, and has been long employed in scarf dying, and in the manufacture of carmine. (Carmine.)

Cochineal has been anguised by Pelletier and Caventou, and they find that it contains—

1. A colouring matter to which they have given the name of carmine, or carminum.

2. A peculiar animal matter.

3. Fatty matter, which is soluble in ether, and consisting of stearine, oleine, and an odorous acid.

4. Phosphate of lime and of potash, chloride of potassum, and carbonate of lime; and potash combined with an acid.

Carmine was obtained by Pelletier and Caventou by digesting cochineal in ether; treating the residue repeatedly with boiling alcohol, allowing it to cool; treating the deposit of the alcohol, and distill the alcohol with a volume equal to its own of pure sulphuric ether; a deposit of carminum is thus formed.

The properties of carminum are that it is solid, uncrystallizable, of a perfect red colour, fuses at 104°; very soluble in water, slightly soluble in pure alcohol, insoluble in sulphuric and in the volatile and fixed oils. Sulphuric acid, nitric and hydrochloric acids when concentrated, iodine and chlorine, destroy carminum; but when diluted, the acids render its colour brighter. Nitric acid, and also ammonia, dissolve it perfectly. Alkaline solutions added to a solution of carminum render it purple, but lime water precipitates it. If gelatinous alumina be added to a solution of carminum, these two substances combine, and the solution is decomposed. Thus obtained is a very fine red colour, but it may be rendered crimson by heating it in the liquor in which it is formed. The greater number of saline solutions poured into a solution of carminum render it crimson; sulphate of lime, protocloride of mercury, and subchloride of lead, precipitate it. When heated, carminum is decomposed, but unlike most animal matter, it yields no ammonia by decomposition.

The chief use of cochineal is the dyeing of scarlet; the fine colour which it yields is converted to this tint by means of chloride of tin, usually called muriate of tin, and by the dye, tin spirits.

The insect which constitutes cochineal feeds chiefly upon the Cactus cochenillifer and C. opuntia. The female insect only is collected. Several varieties are distinguished in commerce, and have different degrees of value attached to them. A number of the best are called Chinese, or vervain; others are called Indian, Syrian, or Mexican. When dried they resemble small grains, scarcely so large as a soybean, round, convex above, plane below, transversely furrowed, externally blackish-brown, but as if dusted with a white powder, light, fragile, the internal substance consisting of excreted secretions, on which that is excreted is adherent to powder, of a rich purple. Indoruous, but with a bitternectar acid taste. They impart to water or alcohol by digestion an intensely red colour. The colouring principle is termed carminum.

Adulterations are effected either by mixing old insects consisting of the mere skin, or grains artificially prepared, with the genuine.

Cochineal has hitherto been employed mostly as a coating material, either of tincture of cochineal, or carminum, the nature of which it is wished to disguise; but lately it has been stated to possess diuretic and antispasmodic powers, and to be useful in pertussis, or hooping cough. Its claim to this character requires yet to be established by further evidence. Some well-authenticated cases are recorded of the utility of a tincture of cochineal in doses of half a drachm or more twice a day in removing or mitigating tic-douloureux, or neuralgia faciei dolorousae.

M. E. (Cochineal) (Cochineal).—German, Koenchel's; Dutch, Concenthele; Italian, Cocchiglia; Spanish, Cochinilla; Grana; Portuguese, Cochinha; Russian, Kosmolez.) Previous to the revolt of the Spanish American provinces almost all the trade in cochineal was carried on by the Dutch, and through the East India Companies. From these countries, from 1822 to 1833, it has taken a more natural course, and the markets of consumption are supplied with cochineal either direct from the places of production, or from neighbouring stations, to which the article has found its way in the natural course of commerce. Representing a considerable value in a small bulk, cochineal is frequently sold, with great convenience to merchants, as a medium for making remittances, and hence the comparatively circulatory route by which the greater part of it reaches the places of ultimate consumption. The trade in this article carried on by this country in each year from 1827 to 1833 has been—

<table>
<thead>
<tr>
<th>Year</th>
<th>Imported</th>
<th>Re-Exported</th>
<th>Taken for Consumption</th>
</tr>
</thead>
<tbody>
<tr>
<td>1827</td>
<td>29,056</td>
<td>15,793</td>
<td>14,675</td>
</tr>
<tr>
<td>1828</td>
<td>228,032</td>
<td>158,109</td>
<td>147,819</td>
</tr>
<tr>
<td>1829</td>
<td>288,456</td>
<td>153,738</td>
<td>127,954</td>
</tr>
<tr>
<td>1830</td>
<td>316,369</td>
<td>106,039</td>
<td>182,517</td>
</tr>
<tr>
<td>1831</td>
<td>224,414</td>
<td>161,629</td>
<td>163,292</td>
</tr>
<tr>
<td>1832</td>
<td>388,478</td>
<td>138,270</td>
<td>166,900</td>
</tr>
<tr>
<td>1833</td>
<td>359,381</td>
<td>130,732</td>
<td>178,246</td>
</tr>
<tr>
<td>1834</td>
<td>410,387</td>
<td>255,490</td>
<td>139,860</td>
</tr>
<tr>
<td>1835</td>
<td>418,320</td>
<td>352,023</td>
<td>162,396</td>
</tr>
</tbody>
</table>

Of the quantity imported in 1835, two thirds or 278,993ibs. came by way of the British West India Colonies: 49,341ibs. by way of the United States of America; 721ibs. from va-
COC 310

Of basilisks, or cockatrice, there were said to be three, if not four kinds. One species burned up whatever they approached—a sort of breathing upases, they made a desert wherever they went, for every thing animal and vegetable came to decay under them, and made a kind of water. Some said Medusa’s heads, and their look, like Vathek’s eye, caused an instant horror, which was immediately followed by death; the touch of a third caused the flesh to fall from the bones of the wretched animal with which they came in contact; and the last made the egg of every kind of thing to be produced from the eggs of extremely old cocks (cem oles, mena), hatched under toads or serpents. There are authors who maintain that this parentage did not belong exclusively to one kind only, but that it was the origin of the whole in primæval times.

The Greek word basileuas is often translated in Latin by the word Regulus. When mention is made of these basileus, or cockatrice, in the Holy Scriptures, nothing appears to occur in the sacred volume beyond an expressive of a very poisonous and detestable serpent, intended, in the opinion of many commentators, to typify sin, misery, destruction, God’s judgments, and the principle of evil, or Anti-Christ. Thus, in Psalm xci. 13, it is written “super serpem et basiliscum ambivam, which in the old quarter Bible, ‘imprinted at London by Robert Barker, printer to the King’s most excellent Majesty, 1613,’ is translated, ‘Thou shalt walk upon the lion and asp,’ and in the modern edition, ‘Thou shalt bestride the lion and adder.’ In the ‘Booke of Common Prayer,’ by the same printer (Robert Barker), 1613, the passage stands ‘Thou shalt goe upon the lion and adder,’ and so in the more modern editions. Again, Proverbs xxviii. 32, speaking of the serpent, has the word basiliscus, basileas, or basilis, for the serpens venena diffundat, which in the old edition above alluded to is rendered ‘In the end thereof, it will bite like a serpent and hurt like a cockatrice, and, in the modern version, ‘At the last it biteth like a serpent, and deviously like an adder.’ So Isaiah xxiv. 19, ‘And serpents shall be in the vineyard, and adders webe: he that eateth of their eggs dieth, and that which is trod breaketh out into a serpent,’ which the commentator thus explains, ‘Whatsoever cometh from them is poison and destruction; and the venom, or habitation, of other insects, is not to be looked on as a thing of no consequence, for by the bite of the cockatrice shall be a fiery flying serpent;’ and Luke 3, speaking of the wicked, ‘Ova apsidis rumpent et tales aranxum tentum; qui conciderit de eis ejus moritur, et quod fructum erit, erumpet in Regulum;’ ‘In the old quarto, ‘They hatch cockatrice eggs, and adder weaves the spider’s web: he that eateth of their eggs dieth, and that which is trod breaketh out into a viper.’ Also Jeremiah viii. 17, ‘Ecco ego mitum vos serpentis Regulam, etc.,’ which, in the same old edition reads, ‘I will send serpents and cockatrice among you, which will not bee charmed: and they shall sting you, saith the Lord;’ which the commentator explains as follows: ‘God threatneth to send the Babylonians among them, who shall utterly destroy them in such sort as by no means they shall escape.’ The modern edition scarcely varies from the old quarto, except in the substitution of the word ‘bite’ for ‘sting.’

These basilisks were called kings of serpents, because all other dragons and snakes, behaving like good subjects, and wisely not wishing either to be burnt up, or struck dead, or to have their flesh fall from their bones, although they were in full feast upon the most delicious prey, were supposed, the moment the basilisk heard the distant sound of their king, to turn tail in a saure qui peut style, leaving the soil enjoyment of the banquet to the royal monster.

Of the ancient profane writers, Aristotle, as might be expected, says nothing about the wonders of the cockatrice, but Pliny, who distinctly loved the basilisk more than once: thus (Hist. Nat. book xii. c. 21, and book xxi. c. 4) he enters at length into its deadly attributes, and records the praises with which magicians celebrate it. It is considered an admirable antidote against sorcery (veniferis). Deceivers, Galen, Solinus, Aelian, and others, are eloquent upon

* Lady Anne, in answer to Richard’s observation on her eyes, says,—

‘Would they were basilisks to strike thee dead!’
basilisks, as are Avicenna, Grevinus, Scaliger, and many more.

Brown (Pseudodoxa) is of opinion that what "we vulgarly call cockatrice, and wherein (but under a different name) we intend a formal identity and adequate conception with the basilisk, is not the basilisk of the ancients, whereof such there are described with legs, wings, a serpentine and winding tail, and a crest or comb somewhat like a cock; but the basi-
lisk of elder times was a proper kind of serpent, not above three palms long, as some account; and different from other serpents by a blemishing, and some white marks or coronary spots upon the crown; as all authentic writers have delivered." The following is Pliny's description (Hist. Nat. viii. 21). After stating that the basilisk, like other serpents, was also white and red - "As the Cyreniaci province produces him of the greatness of not more than twelve fingers, and remarkable for a white spot, like a diadem, on his head. He drives away all ser-

Such a prodigy was not likely to be passed over in the legends of the saints. Accordingly we find that a good man (vir quidam justus) going to a fountain in the desert suddenly beheld a basilisk. He immediately raised his eyes to heaven, and with a pious appeal to the Deity, laid the monster dead at his feet. A somewhat similar miracle is related of the abbot St. John, who, by prayer, slew a basilisk that lay hid in the bottom of a deep well, and re-
duced the monks of a monastery built by him to the greatest distress for want of water. Leo IV, by a similar party, is said to have delivered Rome from a basilisk whose breath afflicted the inhabitants with a terrible pestilence in his pontificate. 

Jonsen enumerates the attributes of the basilisk in silence, till he comes to its alleged power of annihilating with the eye; when he sagely remarks, "Intuitu internere vix crediderim, quis enim primus vidisset?" 'I would scarcely believe that it kills with its look, for who first could have seen it?' The worthy physician was not aware that the eyes of the basilisk reflect the image of everything that is presented before them with a mirror which reflected back the deadly glare upon its author and, by a kind of poetical justice, slew the basilisk with its own weapon.

Our author, Mr. Browne, who treats most of the fables about the basilisk with contempt, is still unable to resist the story of its killing with the eye. We think we can trace a little of the sympathetic theory maintained by Sir Kenelm Digby and others, in the following passage: "According to the doctrine of the ancients, men still affirm that it killth at a distance, that it poisoneth by the eye, and by priority of vision. Now that deletious it may be at some distance, and destructive without corporal contraction, what uncertainty ever the influence of the eye in the relation. For if plagues or pestilential atoms have been conveyed in the air from different regions; if men at a distance have infected each other; if the shadows of some trees be noxious; if tor-

The reader will, we apprehend, by this time, have 'supped full' of absurdities, but still we can imagine his anxiety to know what a cockatrice was like. We therefore subjoin from Aldrovandus, in whose work he will find two others made out of scraps from one of which he seems to owe to Cardan, and the other to Grevinus. In both it will be seen that

[See the clipping for what seemed his head. The likeness of a king's crown had on.]

[Basiliscus in solitudine Africa vivens.]
There are two other works which bear the name of Cocke, and both published by the same John Hawkins. (1.) Decimal Arithmetic, accompanied by Artificial Arithmetick (logarithms) and Algebraical Arithmetick: London, 1684 and 1685. (2.) Cocke’s English Dictionary, the second edition of which is dated London, 1712.

Cocker had been dead some time, as appears by Hawkins’s preface to the Arithmetick, and since Kersey’s Algebra, on which Cocker’s is professedly founded, was published in 1673, it will appear only just possible that Cocker could have lived to write this work. Again, the Arithmetick was written by a person who understood Latin, as proved by seditious quotations from Oughtred and Gemma Frisius: the Decimal Arithmetick is entirely without quotations, though it contains extracts on which the addition of the logarithmic might be expected to quote. Lastly, to the preface of the Decimal Arithmetick is annexed a very clumsy attempt at a cipher, which seems utterly unmeaning, unless it be considered as wrapping up a confession of authorship. Deciphered, it is as follows:—Amico suo amantissimo Johannii Perkes, Phtochotrophii Fohlenisii in Comitate Wigmoriensi judicem agit. Sir, if you please to bestow some of your spare hours in perusing the following treatise, you will then be better able to judge how I have spent mine, and if my pains therein may be profitable to the publick I have my wish, but if not, it is not a good thing now indeed I do say so. Sir, I am your humble servant John Hawkins.

From all that precedes we are inclined to suspect that Hawkins, being in possession of Cocker’s papers, and finding the Arithmetick a successful work, published others of his own in Cocker’s name, perhaps with some assistance from the manuscripts of the latter.

Cockermouth, a parliamentary borough and market town in the west division of the county of Cumberland. The township is in the parish of Brigham, in the ward of Allerdale above Derwent. Before the alterations effected by the Reform Act, it was co-extensive with the borough; but the boundary is now extended. The extent of the township includes, besides the township of Cockermouth, those of Brigham, Bridgwater, Papreast, Eglesfield, and a portion of the township of Dovenby. The town is 25 miles S.W. from Carlisle, and 299 miles N.W. from London. Its name is derived from its position on the river Cockermouth, at the point of its confluence with the Derwent. The Older flows from Buttermere-water, and after passing through Crummock-water, divides the town of Cockermouth into two equal parts which communicate by a bridge. The Derwent, after it has received the Cockermouth, is also crossed by a handsome bridge, erected in 1822, at a cost of 3000L. The township occupies the site of the ancient barony of Allerdale. The ruins of the castle which formerly was the baronial seat of the lords of Allerdale, and now the seat of Egremont, stand on the brow of a bold eminence near the confluence of the rivers. It is supposed to have been erected shortly after the Conquest, though the Norman architecture of the remaining walls and the thickness, appears to be of the fourteenth century. The area enclosed by the outer walls consists of two courts. Beneath the gateway between them are two deep and vaulted dungeons capable of containing 100 prisoners; and under a building in the larger court is a spacious chamber with a vaulted roof supported in the centre by a single octagonal pillar. Lysons, in their Magna Britannia, give a detailed description and a drawing of this castle.

The town is described by Johnson, p. 44. See also the Beauties of England. It was occupied by the parliamentary army during the civil war in 1648, and sustained a month’s siege by the royalists. Since that time it has gradually been decaying, and is now habitable only in a small part. Among the antiquities which have been found, is a font of green-coloured stone, inscribed with Runic and Saxo characters. It is also worthy of remark that to the north of the town is a tumulus called Foot Hill, and to the west there a natural amphitheatre of which a Roman camp is pleasantly situated in an agricultural district, and belongs to Egremont. The town is a promenade in length on the banks of the Derwent, but the streets in some parts are narrow and confined. It is recorded that the plague in 1677 was fatal to nearly 200 of the inhabitants, and that the number of houses are considerably less. They are chiefly of stone, with roofs of slate, but only a few are of the better class. The town is well supplied with water, but the streets are deficient in lights and foot-pavements, and the general appearance of the place ex-
habits no disposition for improvement. The town-house, called Moot Hall, is the only building worthy of particular notice.

The population in 1831 was 4536, of whom 2111 were males, and 2425 females. There were then 128 families employed in agriculture, and 623 families employed in trade, manufacture, and manual labour. The population of the borough, enlarged as stated above, is 6922. Cotton, linen, and woollen fabrics are manufactured; also hats, hosiery, and paper with the tanning and dressing of leather.

The elective franchise was first granted to the borough in the reign of Edward I.; but it appears not to have been exercised until it was renewed under Charles II. It continues to send, as formerly, two representatives to parliament, and it is the place where the court of election is held for the western division of the county of Cumberland. The quarter sessions are alternately held here and at Carlisle. There is a free school which was founded in the time of Charles II., and over the school-house a parochial library consisting of 500 volumes. There is also a subscription library, a dispensary, a Sunday-school, and four friendly societies. The living is a chapey, in the diocese of Chester, and places of worship are established by several sects of dissenters. The Rev. John Fell, who wrote on the 'Demonica,' 'Rowley's Psalms,' &c., was a native of Cockermouth. On the first Monday in May, and on the 10th of October, there are fairs, chiefly for horned cattle and horses. (Boundary Report, part ii. p. 95; Lysons's Mag. Brit. : Population Report, 1831.)

COCKLE. [CONCHACKA.]

COCKNEY, a term of contempt for a Londoner, borrowed originally from the kitchen. A cook, in the base Latinity, was called coquinator and coquarnus, from either of which Cokney, as Chaucer uses it in the 'Reve's Tale,' might be derived.

And when this leap is told another day,
I shall be holden a daff or a cockney.

In some rhymes ascribed to Hugh Bigot, which Camden published in his 'Britannia.' London itself appears to be alluded to under the name of Cockney.

Were I in my castle of Braggly,
Upon the river Waverley.
I would so care for the king of Cockney.

The author, says Tyrwhitt, in calling London Cockney, might possibly allude to that imaginary country of idleness and luxury which was antiently known by the name of Cucurige, or Cocagne; a name which Hickes (Grom. Anglo-Sax., p. 231) has shown likewise to be derived from coquina. Boileau, in his 'Satires,' speaks as if the French metropolis had the same appellation bestowed upon it (Sot. vi.)

Paris est pour un riche un pats de Cocagne.

The name of the festival of La Cocagne at Naples, described by Keyser, vol. ii. p. 369, appears to have the same origin.

(Tyrwhitt's Notes on Chaucer, 4th edit. vol. ii. p. 437; Brand's Popular Antiquities, vol. i. p. 65; Nares's Glossary, in loco.)

COCKROACH. [BLATTESI.]

COCKSCOMB. [CELORIA.]

COCOA-NUT. [Cocos.]

COCOA-PLUM. [COCCOA] The fruit of Chrysobalanus Icaco.

COCOON. [PUPA.]

Cocos, a genus of palms thus defined by Von Martius. Both male and female flowers on the same spadix. Spathe ample; flowers sessile. Males: calyx three-leafed; corolla of three petals; stamens six; ovary three-celled; stigmata three, sessile; drupe fibrous; putamen with three pores at the base; albumen homogeneous. Female: putamen next one of the petals at the base; stamens either lofty or middle-sized, slender, ringed, or crowned by the bases of the petals, with a pale fibrous wood; leaves pinnate; the pinna lanceolate or linear; flowers pale yellow; drupes brown, green, or orange colour, rather smooth. The genus contains several species. The most interesting of which is the common cocoa-nut, Cocos nucifera.

This plant is found all over the tropical parts of the world, especially in the vicinity of the sea, growing within reach of salt water, and establishing itself upon reefs and sand-banks as soon as they emerge from the ocean. Its principal range is said by Mr. Marshall to be between the equator and the 23rd parallel of latitude, and in the equinocial zone to an altitude of about 2900 feet. Its great importance to man has caused it to be cultivated wherever the climate is favourable to its growth; and accordingly it is sometimes found occupying extensive tracts to the exclusion of all other trees: the whole Brazilian coast from the river San Francisco to the bar of Mamanguape, a distance of 280 miles, is, with few breaks, thus occupied; and it was estimated that in the year 1813 no fewer than 10,000,000 trees were growing on the south-west coast of Ceylon.

The cocoa-nut palm rises like a slender column to from 60 to 90 feet in height; its stem is of a soft fibrous nature, and is marked on the outside by rings produced by the fall of its leaves; two such leaves are said to drop off annually, and consequently the age of an individual is equal to half the number of the annual scars of its stem. About a dozen or fifteen leaves, each from 12 to 14 feet long, crown the summit of the stem; and as these are not inaptly compared to gigantic ostrich feathers, they give the plant the air of an enormous tuft of vegetable plumes. A reticulated
substance resembling coarse cloth envelops the base of each leaf-stalk, but falls off before the leaf is full grown. The flowers proceed from within a large pointed spathe, which always opens on the underside. In wet seasons the tree blossoms every five or six weeks, so that there are generally two crops in a year. The fruit ripens at the same time; there are commonly from five to fifteen nuts in a bunch; and in good soils a tree may produce from eight to twelve bunches, or from 80 to 100 nuts annually.

The fruits are round when young; but as they grow older, the outer husks are shed, and the cocoa-nut tree is applicable are innumerable. The roots are chewed in place of the araca-nut; gutters, drums, and the posts of huts are formed from the trunk; the young buds are a delicate vegetable; shade is furnished by the leaves which bear separation from the tree though large size and hard texture render them invaluable as thatch for cottages; they are moreover manufactured into baskets, buckets, lanterns, articles of head-dress, and even books, upon which writing is treated with an iron stylus. The copra yields potash in abundance; their fibrous forms oars; and brushes are formed by bruising the end of a leaf with a portion of the midrib adhering to it. From the juice of the stem, a kind of palm wine, and subsequently an acrid spirit, are prepared; the aromatic matter contained in the stem is a good substitute for sago; and a coarse dark-coloured sugar, called jagherry, is obtained from insapsating the sap. This jagherry, mixed with lime and pounded, forms a kind of flour which adheres the moisture, dures great solar heat, and will take a fine polish. The ripe fruit is a wholesome food, and the milk it contains a grateful cooling beverage; indeed these two constitute the principal sustenance of the poorer Indians in many countries. The bark is used in tanning, and the fibre is used for brushes, and to form a valuable elastic cordage, called cori; the fibrous matter is also employed to stuff mattresses.

The shell is manufactured into drinking-vessels and vessels of measure; and finally, the albumen or white solid matter contained within the shell, yields by pressure or decoction an excellent oil; the former is the method usually employed. This oil is not only employed for burning, but in the manufacture of torches, and in the composition of pharmaceutical preparations. It has a pleasant aroma; and medicinal resin of Shorea robusta it forms the substance used in India for paying the seams of boats and ships.

The name cocoa seems to be a contraction of the Portuguese macaco or macao, a monkey, and to have been given from the resemblance between the end of the shell, where the three black scars are, and the face of a monkey. These three scars indicate the places through which the three embryos of the fruit have been formed; frequently, the cavity reserved for the embryono, is obliterated, and but one of the three ovals is drawn out in the cocoa-nut. It is immediately below the soft scar that the embryo of the cocoa-nut is formed, and the use of the scar is to allow of a passage through the shell of the nut for the germinating embryo, which, without this wise contrivance, would be unable to pierce the hard case in which it is confined.

Cocoa-nuts are brought to Europe as wodges to set fast the casks and other round packages in the cargo of vessels; their freight therefore consists in these wodges.

CUCUMIGINGLIA, the name of a kind of plum (Prunus Cucumigum) found wild in Calabria, and having the reputation of being a powerful nephritic. It is described as bearing a globular or nearly round plum, but with short double peduncle, elliptical-obovate leaves, which are smooth, crenellated, and tapering to each end, the crenellating and the petioles covered with deciduous glands, and with a whitish-oblong fruit of a dull tawny yellow colour, with a slightly incurved point, and some appendages on the stem. It is abundant about Silé, and on the mountains which overlook Monteolone, Statt, Cotonero, and Mesoraca, on the sides exposed to the sea, as far as the height of about 3000 feet. Part of this species is in extensive use for the cure of the intermittent fevers of Calabria, both in private practice and in the military hospitals, where it is preferred to cinchona. The bark of the root is principally employed either in powder or extract; and its valuable qualities are not inferior to those of the true plum. It is attested by Savarese, Poirot, Torelli, etc., and is used by the physicians. The medicinal properties of the Coco-
sations and suggestions were likewise printed, and the whole was then laid before the section of the committee consisting of Boulay, Belier, Emmerich, Portails, Roederer, Rapp, Saint-Hilaire, de Montalembert, and Cambacérès, his colleague in the consularship, who took an active part in the debates. The various heads of the code were successively discussed, after which they were laid before the council of state. It was adopted on 18 December 1804, with considerable opposition. The code however passed at length both the tribunaute and the legislative body, and was promulgated in 1804 as the civil law of France, 'Code Civil des Français.' Under the Empire its name was changed to 'Code de la France,' and is in its current form is often designated, though it has now officially resumed its original title of Code Civil. This code affects to define the civil rights of Frenchmen, and their legal relations to each other; and it-arises out of the general government and distribution it resembles the Institutions of Justinian; like them, it has adopted the great distinction of laws concerning the person, and laws concerning property. It consists of three books, divided into titles or heads, each of which is subdivided into chapters and sections. Book I., in eleven heads, treats of persons; specifies their civil rights; regulates the means by which their rights are certified; provides the modes of registering births, marriages, and deaths; defines the conditions constituting the legal domicile of a person, and provides for the appointment of a legal representative in case of absence. It then treats of marriage as a civil contract, the form required, the obligations resulting from it, and lastly, of separation and divorce. The articles concerning divorce, which are contained in Book II. of the Code de Procédure Civile, have been repealed since the Restoration, and separation alone is now allowed. The code proceeds to treat of the relations of father and son, of legitimate and natural children, of adoption and guardianship, and of paternal power. Under this last head the French code, without adopting the rigid principle of the old Roman law in its full extent, gives to a father the right of imprisoning his son during his minority for a term not exceeding six months, by a personal process, after the declaration of a local court, who, after consulting with the king's attorney, may give the order of arrest without any other judicial forms being required. The remaining heads treat of minority and emancipation; majority, which is fixed, for both sexes, at 21 years complete; of interdiction, and the council of trustees appointed in certain cases to administer the property of a man who is incapable of doing it himself. Book III. treats of property and its various kinds and modifications. The 1st head draws the distinction between meubles and immeubles, or moveables and immovables, and subdivides them into three classes not exactly express, to an English lawyer, the distinction between meubles and immeubles. The 2nd defines the different rights of ownership. The 3rd treats of usufruct, uses, and dower, the council of trustees, precuratorium servorum of the Roman law, excluding all other personal servitudes which were abrogated at the revolution. Book III. treats of the various modes by which property is legally acquired, such as inheritance, donation inter vivos, and wills or testaments. A father can dispose of by testament of one-half of his property if he has but one legitimate child, of one-third only if he has two, and of one-fourth if he has three or more. The law then proceeds to treat of contracts or conventional obligations, specifying the modes of proving them by written documents, official or private, or by witness, or lastly by presumption. The 5th head treats of the marriage contract, and the respective rights of husband and wife according to the various situations in which they may be placed, and the separation of property, or by dowry. Next come the heads of sales, exchanges, leases, partnerships, loans, deposits, and sequestration. The 12th head concerns the contracts called aléatoires, which depend in a great measure upon chance, such as those of chance, annuities, &c. The law treats next of power of attorney of bail and security, and of amicable compromise. The 18th head concerns privileged creditors and mortgages. This subject is very elaborately treated, and has been much extended as a very important subject, since in this country there is a very strong tendency to grant mortgages in order to secure the property which it gives to property by means of the public offices for registering mortgages, of which there is one in every district. The registration of mortgages has been adopted in most of the Italian states, and other countries besides France. In France, however, it is the law that there is no obligation to register every sale or transfer of property, nor the servitudes affecting property and because the French code admits of sales by private contract, and of mortgages in favour of minors or wives, without the intervention of the state. The French code is considered superior, because it enforces the registration of every transmission of property, and of every burthen or servitude, on the book of census, or cadastre, for Paris, 'Traitement des Hypothèques,' 1824: Introduction.) The nineteenth head of the French code is concerned with the civil code treats of expropriation or seizing, or selling off by execution; and the twentieth, or last, of prescription.

Much has been written on the merits and defects of this celebrated code, and lawyers as well as judges are now at liberty to read the reports of the discussions in the council of state by the most distinguished jurists of France. (Locq, Esprit du Code Napoléon tiré de la Discussion, vols. 5, 6, 1805; Maleville, Annales raisonnées de la Discussion du Code Civil au Consulat, in which the debates of the council of state are reported.) In all other cases, several distinguished German jurists have pointed out its imperfections. (Savigny, On the Apitude of our Age for Legislation, translated from the German by a barrister of Lincoln's Inn; Rihberg, über den Code Napoleon, Hanover, 1814; Thibaut, Schmidt, &c.) With regard to the part which Bonaparte took in its discussion, not of course as a professional man, but as a quick-sighted observer and critic, a lively account is given in Thibaudeau's Mémoires sur le Consulat, in which the debates of the council of state are reported. The Code de Procédure Civile.—The Code Civil having determined what was law, it remained to prescribe the forms of civil process and the practice and rules of the courts. The Code de Procédure Civile, published in 1806, is divided into three books. The first part treats of the various courts: 1st. Of the judges of the first instance and their jurisdiction. There are about 2840 of these magistrates in France, who decide petty cases not exceeding 300 francs, and also act as conciliators between parties at first instance, who are not allowed to plead before a court without having first appeared before the juge de paix. 2nd. Of the process before the tribunaux de première instance, which try civil cases without jury. There is one of these courts in each arrondissement, consisting of a president, four councilors, and four attorneys. The Courroies of, of which there are 27 established in the larger towns, each having several departments under its jurisdiction: these courts try cases by jury. 4th. Of various modes of judgment. 5th. Of the execution of judgments. The second part treats of the various processes for the recovery of property, separation between husband and wife, interdiction and cession of property by an insolvent debtor. Foreigners are excluded from the benefit of the cessatio bonorum. The code then passes to the subject of inheritance, the affixing of seals, taking incontestable, and other acts which are bound to the act of registration. The Code de Procédure was in great measure founded on the ordinance of 1667 of Louis XIV., with considerable ameliorations. It was framed by a commission appointed in 1800, and discussed in the council of state in 1803. It was approved by the legislative body. It was put in force in January, 1807. An aror of the government, using the licence of flattery, said in his report that the principal difficulties in definitively settling the code had been cleared up by the emperor himself, who had adapted the forms to the present wants of society. The fact is that Napoleon took no part in the discussion of this code, which was conducted during his journeys to Italy and to the camp of Boulogne, and during the campaign of Austerlitz. Besides, it was a dry and unattractive subject, very unlike that of the Civil Code, and the emperor finding himself a complete novice in it, gave it up entirely to professional lawyers. His general views would have been to simplify the forms, and to check the sources of chicanery, but he was not himself competent. One of his ideas was that solicitors and counsellors should not be paid unless they gained the cause. The routine lawyers, however, had too much influence in the work. (Thibaudeau, Histoire de France, p. 124-5.) The government afterwards published a table of the expenses, duties, fees, &c. attending civil process. This table, which is given at the end of the collection of the codes, presents a formidable appearance by the multiplication of the officers of the law, which acts as a check against the proceedings. Indeed this is the principal reproach made against the Code de Procédure, the multiplicity of formalities, written acts, registrations, stamps, &c. Another objection is, that this code is in some respects no code, but combinations over private parties. But the publicity of the discussions, the security to all civil proceedings by
means of registration, the well-defined authority of the various courts, the independence of the judges, and the established courts of all countries, and above all the institution of the supreme Court of Cassation—these are essential and lasting advantages.

The Code de Commerce was promulgated in January, 1807, in some respects upon the ordinances of 1672-81 of Louis XIV. Next to the Civil Code, it is considered the best part of French legislation. The institution of the commercial tribunals has been of great advantage to France, and has been adopted in other countries. These courts, of which there are 213, consist of a president and two or more judges, all chosen by the merchants among themselves, and for a time; they are not paid, but the greffier or registrar receives a salary. The Code contains many descriptions of commercial men, of the keeping of books, of companies and partnerships, of brokers, commissioners, carriers, &c.; the second treat of marine commerce, shipping, insurances, &c.; the third concerns bankruptcies; and the fourth treaties of the commercial tribunals, their jurisdiction and proceedings. Appeals for cases above 1000 francs lie to the court of cassation of the district.

Code d'Instruction Criminel.—The criminal laws of France under the old monarchy were defective, confused, and arbitrary. There was no penal code, but there were various ordinances for the punishment of particular offences. The ordinance of Louis XIV. for regulating the trials of criminal cases introduced something like uniformity, but it maintained torture, which in some cases was repeated, secret trial, and other anomalies of the legislation of the middle ages. Torture was abolished by Louis XVI. The first National Assembly of 1789 remodeled the French criminal law, and remodeled the criminal courts after those of England. Then came the reign of terror, with its exceptional laws, or rather no laws at all but the caprice of the ruling faction.

Bonaparte, when first consul, appointed a commission, consisting of Viellard, Target, Oudard, Treilhard, and Blondel, to frame a project of a criminal code. The fundamental laws were laid down in 1801, and were then discussed in the cour d'assise, which took a lively part in these affairs. The discussions, especially on the question of the institution of the jury, which he strongly opposed on the ground of the probable incapacity or party spirit of jurors; he looked upon the question in a political rather than a judicial light.

Portail, Simeon, Bigot de Prémaneu, and Séguir sided with Bonaparte. Treilhard, Berlier, Deformon, Cretet, Bérenger, Merlin, and Louis Bonaparte defended the jury. There is an interesting account of this discussion in Thibaudeau (vol. ii. p. 175). The question was whether the majority was favourable to the jury. The matter, however, was finally settled by suppressing the jury d'accusation, or grand jury, and retaining the jury d'jugement. The courts d'assise, which are taken from the people, are qualified to vote for a member of the legislature. The penalties are often exposed to vexatious interference; the too great excess was driven to the jurisdiction of the correctional courts, by which, in many cases, the citizens are deprived of the guarantee afforded by the jury; the restrictions on the choice of jurors, which is often made for political purposes, have the same effect on the institution of the special courts; and, lastly, the frequent abuse of the power of the police, by which its agents could issue warrants of arrest.

Projects and commissary-generals of police often had individuals arrested, and left them in prison waiting for the decision of the minister of police, who answered at his leisure, or at times confirmed the order of arrest for an indefinite time. And as by Art. 75 of the Consular Constitution, any citizen or any society of citizens was forbidden without an authorization from the council of state, there was in fact no redress against arbitrary acts." (Histoire de France sous Napoléon, vol. vii. pp. 154—5).

This last abuse is now corrected, or at least greatly mitigated. Other provisions of the Code d'Instruction, as well as of the Penal Code, have been also altered for the better by the law of 28 April, 1832, entitled "Modifications aux Codes d'Instruction et de Police," the latter included in the last of the latter collections of the French codes.

The Code Pénal, or laws defining crimes and punishments, was completed in January, 1810. Its discussion occupied fourteen sessions of the council of state. Of those sessions Napoleon attended only one (February 9). Cambacérès presided at all the rest. Napoleon was therefore by a stranger to its discussions; he only expressed an opinion that the laws ought to be concise, and leave much latitude to the judges and the government in the application
are condemned to hard work for a time. The law of France makes a wide distinction between native and foreign insolvents. Foreigners not domiciled in France, having no commercial establishment there, are liable to double the period of imprisonment that a Frenchman is, namely, two years for a debt less than 500 francs; four years for a higher sum under 1000 francs; six under 5000; eight years under 10,000; and 20 for 5000 and upwards. (Okey, Concise Digest of the Law, Usage, and Custom affecting the Commercial and Civil Intercourse of the Subjets of Great Britain and France.)

By the head "Violations des règlements relatifs aux manufactures, ou contre les autorités, qui unent à surveiller les manufactures, ou à intercepter la sortie de marchandises, contre lesquelles de l'étranger, ou qui se font avec les marchandises de l'étranger, ou qui se font à l'intérieur, et qui peuvent se faire soit d'une manière continue, soit de manière intermittent; et qui peuvent être commises par des personnes extérieures à l'empire, ou par des personnes intérieures à l'empire, et qui peuvent se faire à l'intérieur, ou à l'extérieur, ou à l'intérieur et à l'extérieur; et qui peuvent être commises par des personnes de tous les états de l'empire, ou par des personnes de tous les états de l'étranger, ou par des personnes de tous les états de l'intérieur, ou par des personnes de tous les états de l'étranger, et qui peuvent être commises par des personnes de tous les états de l'intérieur, ou par des personnes de tous les états de l'étranger, et qui peuvent être commises par des personnes de tous les états de l'intérieur, ou par des personnes de tous les états de l'étranger, et qui peuvent être commises par des personnes de tous les états de l'intérieur, ou par des personnes de tous les états de l'étranger, et qui peuvent être commises par des personnes de tous les états de l'intérieur, ou par des personnes de tous les états de l'étranger, et qui peuvent être commises par des personnes de tous les états de l'intérieur, or qui peuvent être commises par des personnes de tous les états de l'intérieur, or qui peuvent être commises par des personnes de tous les états de l'intérieur, or qui peuvent être commises par des personnes de tous les états de l'intérieur, or qui peuvent être commises par des personnes de tous les états de l'intérieur, or qui peuvent être commises par des personnes de tous les états de l'intérieur, or qui peuvent être commises par des personnes de tous les états de l'intérieur, or qui peuvent être commises par des personnes de tous les états de l'intérieur, or who may be imprisoned for one to three months; the leaders or originators of the coalition or attempt are subject to imprisonment from two to five years. By Article 417, any one who, with the view of injuring French industry, has removed to a foreign country the workmen who work in France, or who may be imprisoned for six months to two years, besides paying a fine of from 50 to 300 francs. Article 418: Any director, clerk, agent, or workman, of a manufactory, who may have committed the above offenses, may be imprisoned for a period of from one to three months, and any secret of the fabric in which he is employed, is punished by a fine of from 500 to 20,000 francs, besides imprisonment at the discretion of the court.

The above extracts are sufficient to show the spirit in which the French criminal code has been framed. It is, in fact, as harsh and inelastic in many of its enactments as that of any able government in Europe. In speaking therefore of Napoleon's legislation, it is necessary to discriminate between the civil and the criminal laws; and again between the laws themselves and the practice and rules of courts. The above remarks on the criminal code met with great opposition in Italy. At Milan the legislative body attempted to modify and adapt it to the habits and ways of the Italians. Two commissions were appointed by the minister of justice to obtain the code of instruction, and the other for the code penal. Their reports were sent to Paris, but were rejected by Napoleon, and an answer came with peremptory orders to translate literally, and enforce the two French codes without any alterations. At Naples similar objections were also made, but with no better effect. (Colletta, Storia dei Reame di Napoli, book vi.)

For comments and strictures by French jurists on the criminal laws of France, see Berenger, Des Institutions Judiciaires de la France en 1828, and M. M. Berenger, Recompositions sur plusieurs points importants de notre Legislation Criminelle and Bayoux, Lecons preliminaires au Code Penal, 1821.

There are in France more than 3000 judges, including those of the criminal courts, besides 30000 judges of the peace. The judges of the Tribunaux de Première Instance have salaries varying from 2000 to 6000 francs; those of the Courtes Royales, from 5000 to 8000. The presidents and vice-presidents receive more in proportion and the judges besides certain fees. The various courts, magistrates, greffiers, &c., cost the state about fifteen millions of francs annually. (Goldsmith, Statistique de France, 1832.)

For a general view of the judicial system of France, see Meyer, Esprit des Institutions Judiciaires, last vol.; and Rey, des Institutions Judiciaires de l'Angleterre comparees avec celles de France et de quelques autres Etats, 1836.
CODICIL, in English law. [WILL.]

CODICILLUS, the diminutive of Codex, signifies properly something written on a little wooden tablet. Cicero (ad Fam. iv. 12, vi. 18; ad Attic. xii. 8; ad Quint. Prat. iii. 10) often uses Codicillus for epistola, or letters. Codicilli, in fact, were attested by the diocesani, or witnesses to a solemn will, led to the use of Codicil.

It appears from Justinian's 'Institutes' (de Codic. ii. 23) that codiciles came into use in the time of the Emperor Augustus. Lucius Lucullus, of Asia, had made a codicil (that is, a letter) to Augustus, his testamentary heir, who complied with the wish of Lucullus, though he was under no obligation to do so. From that time codicil became legal instruments.

The Codicillus has been defined to be a supplement or addition to a testament, which is to be considered as annexed to the will itself, for the purpose of adding, explaining, or altering something in the previous disposition. But such a definition does not give an exact notion of the term, and besides this, it applies only to the cases where the person making the codicil dies testate; consequently it does not take in those cases where no will exists. More correctly, codicil is defined to be a less solemn will, in which, as with the testamentary will itself or testamentum facti, every disposition of property that can be effected by a last will may be made, except the appointment of direct heirs, and exhoratation, i.e., the disinheriting of sons, daughters, &c. Codicils were commonly used for naming bequests or legacies to be paid by the heirs at least when the codicil was testamento facti not (non confirmati). Before Justinian's time there were several differences between these two sorts of codicils, particularly as to legata and fidei commissa; but the different species of bequests being put on the same footing in the reign of Justinian, the distinctions ceased. In the time of Pliny the Younger, a codicil made before a subsequent will ought to be confirmed by the will (lib. ii. ep. 16); but this was afterwards altered (ad Inst. ii. 26). Sometimes future codicils were confirmed by the testamento facti, but not (non confirmati). Justianian required witnesses only of codicilli ab intestato, and to codicilli non confirmati; and Justinian required witnesses for all private codicilli.

A testamentary writing which the legal forms required for a codicil were observed, and the will contained the codicil-clause (clausula codicillaria). (See Brissoueus De Formul. lib. viii; Gaissii, lib. ii. Dig. 29, tit. 28, sect. 36; Gregorii Muralis.)

CODIFICATION. [LAw AND LEGISLATION.]

CODRUS (Κόδρος), son of Melanthius, and the last king of Athens, as to whom the following tradition is preserved. When some of the Doric states had united their forces for the invasion of Attica, they consulted the Delphic oracle concerning the issue of the expedition. The response implied that they would be victorious if the life of the Athenian king was spared. The Athenians being informed of this answer of the oracle by Cleomantis, an intendant of the Delphic oracle, Codrus hastened to determine to do himself for his country. Accordingly he went out to the gate disguised in a peasant's dress, and falling in with two Dorians, killed one with his hook, and was himself killed by the other. The Athenians demanded and got back the body; and Codrus received the crown of success, withdrew their forces. The exact spot where Codrus was said to have fallen was shown in the time of Pausanias (i. 19), near the altar of the Museon, on the Ilissus. Codrus had several sons: the two eldest were Menelaus and Nileus. Cleomantis and his descendants were rewarded with the freedom of the city, and a perpetual right to sit at the public table, which was kept in the Prytaneum at Athens. (Lycurgus against Leocrates, sections 194 and 196; Pausanias, vii. 22.)

CODRUS. [HIST.]

When two or more numbers are multiplied together, each of them is called a factor of the product, and a co-efficient (or co-factor, as it were) of the other factors. Thus the factors of the product $x \times y \times z$ are $x$, $y$, and $z$; and $a$ is the coefficient of $a^2$. But the word is most frequently used for that which should be distinguished as a numerical coefficient; thus in $2x + 3y$, 2 and 3 are respectively the coefficients of $x$ and $y$. This word is as old as the writings of Vieta, in which it has its present sense.

When there is a multiplier depending upon the result of experiment connected with any particular property of matter, the number is frequently called the coefficient of that property. Thus by the coefficient of friction for any substance, is meant the fraction of the pressure which is equivalent to the friction of that substance.

COEHNOR, MENNON, BARON DE, a celebrated Dutch engineer, who was born in 1632. He commenced his military career at an early age, and spent the leisure which the intervals of active duty afforded in improving the art of fortifying places, with the view of diminishing the inequality which, by the inventions of his contemporary Vauban, had been inflicted on the art of defence. The services which Coehorn rendered to his country, both as an engineer and a commander, at a time when the defence of its military posts was an object of the first importance, procured for him the admiration of a nation, and the envy of its enemies. A soldier can attain. He arrived at the rank of general of artillery, and was made director-general of fortifications and governor of Flanders.

At the siege of Namur in 1692, Coehorn gallantly defended the fort which he had constructed and fortified for the purpose of strengthening the citadel of that place, but being dangerously wounded he was at length compelled to surrender. It is honourable to the character of Vauban, who conducted the operations of the attack, that on this occasion he did not render full justice to the talents and valour of his rival.

Coehorn was engaged at the attack of Trarbach, Lignburg, Liege, and at that of the citadel of Namur, which three years before he had defended. In the year 1703 he was employed at the siege of Bonne, where, in three days, his heavy and well-directed cannonade caused the surrender of the place. Soon afterwards he forced the French lines at Hanau, and was appointed with his army to keep the Rhine. He was likewise made governor of the Rhenish Scheldt. This was his last service: in the following year (1704) he died at the Hague, at the age of seventy-two.

In 1685 Coehorn published what are called his Three Systems of Fortification; they are adapted to ground elevated but from three to five feet above the surface of water, and consequently they may be considered as applicable only to the towns of Holland. He was appointed to repair or reconstruct the fortifications of Nimeguen, Breda, Maastricht (since destroyed), and Bergen-op-Zoom. The siege of the last place in 1747, by its duration and the losses which the besiegers sustained in its progress, attests the merit of these systems on which the works were constructed.

COELIN, or SMALL MORTAR; throwing grenades, invented by the engineer of that name.

COELINUS. [HISP.]

COELIUS, or rather CELIUS ANTIPATER LT. GIUSIUS, wrote a history of the second Punic war, in a work bearing the name of 'Annals,' and extending to at least seven books. Some indeed are of opinion that the history embraced a much wider period, beginning with the first Punic war, and including the times of the Gracchi. It was written in Greek, and was translated into Latin by Lucilius dedicated his 'Satires.' The precise period of his birth or death cannot be fixed, but he is called by Cicero (De Leg. 1, 2) the contemporary of C. Fannius Strabo, the historian of the Illyrians, and by C. Flaminius, who wrote an account of the Narbonese war. See Seipio at Carthage in 146 n. c, and Consul in 122. That Celius lived about this period is confirmed incidentally by an anecdote recorded by Cicero (De Dionit. i. 26). When Cainsia Gracca was a candidate for the quaestorship, his
brother Tiberius appeared to him in a dream, and warned him that he would perish by the same violent fate which had befallen himself. And Cælius tells us, that he both heard of this dream and spoke of it to others before Cælius Gracceus was elected tribune, and consequently several years before it was fulfilled. Now the death of Tiberius Gracceus occurred in 123. His brother Cælius was quarrelling in 126, tribune for the first time in 122, and murdered in 121. Lastly, the orator, L. Crassus, born 140, was one among many pupils of Cælius. We shall therefore not be very wary if we suppose Cælius to have been born about the middle of the 3rd century.

The historical writings of Cælius were highly valued by his countrymen in the time of Cicero, who assigns to him the credit of having surpassed his predecessors in historic composition by the dignity and eloquence of his style. Through all that he has written in this country which is essential to an accurate historian, yet he was a man of an inquisitive temper, and seems generally to have the advantage in point of credibility where he differs from the historians of the same period. Marcus Brutus so highly prized his writings, that he made an epitome or abridgment of them, as he had before done of the histories composed by Polybius and Fannius. But the more complete work of Livy threw all the historical works of his predecessors into oblivion. Cælius was afterwards seldom read, except by antiquarians and those who sought in his writings examples of quaint words and obsolete phraseology: it is to the grammarians therefore that we are chiefly indebted for the fragments of his works that still exist. These fragments, together with those of other Roman historians, may be found in an appendix to Curt's and Havercamp's editions of Sallust. They have also been edited by Krause (Pute et Fragmenta Veterum Historiorum Romanorum, Berol. 1833). One of the most interesting among them is that in which he bears testimony to having seen a merchant who had sailed from Spain as far as Ethiopia, by which he probably meant the Coast of Guinea. It is Cælius too who gives the most direct evidence in favour of Hannibal's route across the Alps having been by the Little St. Bernard.

The Greek name Antipater, attached as a cognomen to that of Cælius, has with some reason led to the belief that he or his father was of Greek origin, and becoming a Roman prisoner and slave by the chance of war, was afterwards emancipated, and then took, as was the custom, the name of his Roman master. Such an origin is confirmed by the fact, that the name of one so distinguished by his talents, and especially his eloquence, is nowhere mentioned in connection with any public appointment. Two copious dissertations on L. Cælius, by B. A. Nauta and W. G. Van Prinsterer, will be found in the Annals of the Academy of Leyden for 1821. (See Krause as above.)

**CELIUS, MONS. [ROM.]**

**CULOGENUS.** (F. Cuvier), *Culogenus* (Illiger), a genus of Rodent animals, belonging to the division without clavicles. Its place among the older naturalists was either among the Rats (Mus) or among the Hares. Linnaeus, in his last edition (the 12th), arranges it under his extensive genus Mus, with the denomination of Mus Paca, and quotes, among others, Ray, who termed it Mus Brasiliensis. Klein separated the Cavy, Agouti, and the animal before us from the mass, under the generic appellation of Cavia Gmelin, in his edition of Linnaeus (the 13th), followed Klein, and added to the Cavies and Agoutis the Capybara, which Pallis, in his 'Spicilegia,' had termed Cavia Copypa, and Linnaeus had placed among the Hogs (Sus). M. F. Cuvier separated the Paca from the Capybara, the Cavies, and the Agoutis, which forms it shows a strong approximation, but from which it also presents considerable differences in many points, and especially in the complex structure of the molar teeth.

**Dentition, &c.—**Two strong incisor teeth in each jaw, the upper ones flattened in front and truncated obliquely, chisel-like; the lower slightly compressed laterally, and rounded on the anterior face. Both of these incisors, though of some strength, are small when compared to those of the porcupines and of the beaver. Like all the true Rodents, *Culogenus* has no canines, and a void space or bar separates the incisors from the molars, which amount to eight in each.

*W.B. There was a reference to Capybara from Cahil.* The reader will see that this animal, whose history was confused under the title referred to, is described in the article *Hiruscarus*,

... jaw, and are not unlike those of the Agouti, that is to say, they are composed of complicated riband-like plates of enamel set in the interior bony cement, which vary and become more or less visible according to the greater or less attrition which the crowns have undergone. But, in *Culogenus*, besides the difference in the complications, the molars augment in size from the first to the last, which is one-third larger than the tooth that precedes it. (F. Cuvier.) There is also a striking peculiarity in the great development and projection of the zygomatie arches, which are enormously large, giving great breadth to the face, and descending unusually low. These were remarked by Dau-benton; and Buffon observed that, on each side and towards the lower part of the upper jaw, there existed a sort of longitudinal fold, destitute of hair in the middle, so that, at first sight, it might be mistaken for the mouth of the animal. This fold, which Buffon does not seem to have investigated, is the opening of a shut see of some extent, extending upwards behind the arch formed by the cheek and temporal bones, whose inner surface, as far as the sac extends within them, is lined by a continuation of the integument of the face, and, in addition to it, the animal is furnished with true cheek-pouches in their usual situation. These last are capable of being greatly dilated, and when filled, they are said to occupy the whole space beneath the zygomatic arches.

**Dental formula: incisors, \(\frac{2}{2} + \frac{4}{4} = 29\)**

*Skull of Culogenus.*

**Upper jaw of the same.**

M. F. Cuvier observes that the Paeas are, among the Om nivorous Rodents, what the Capybaras are among the Her bivorous section. The first possess molars with roots distinct from their crowns, to the number of four on each side of either jaw. Those of the upper jaw are nearly of a size; but, in the lower, they diminish gradually from the last to
by the development of the zygomatic arch is lined on its inner surface with a continuation of the skin of the cheeks, which is reflected from the face, so as to form a hollow pouch, in which there is no other example among carnivorous animals, and the use of which is difficult to divine, if the great development of the zygomatic arch be not destined to preserve the true cheek-pouches (abojones) from external shocks. Strong whiskers spring from the sides of the cheeks, and from the large mustache at the base of the nose. The rows are so approximated, that when viewed in a particular direction they seem to form an uninterrupted line, and the row nearest the belly is almost confounded with the colour of that part, which is white, as well as the under parts of the legs, showing the internal surface of the neck and the claws. Length of body, from the occiput to the insertion of the tail, sixteen inches; length of the head, from the occiput to the end of the muzzle, five inches. Height to the shoulders twelve inches—to the top of the buttocks (train de derrière) fourteen inches, French. (F. Cuvier.)

Geographical Distribution. — This animal is better known as the Paca of zoologists generally, and, after the Cavybaras or Agoutis, it forms one of the largest of the rodents. It is the Spotted Cavy of Pennant and Bewick, the **Pac of the Brazilians, Paig of the inhabitants of Paraguay, Durana of some of the tribes of Guiana and Pakiri of others, the Pis of the colonists of Cayenne, and the Water Ochre of the missionaries of Surinam. It is known on the mon, with the exception of Paraguay, where, according to D’Azara, it is very rare. They formerly existed in the islands of the West Indies.

Habits. — In a state of nature the habituation of the Paca is in low humid forests, and in the neighbourhood of water. The animal digs a burrow like the rabbit, but much less deep; indeed it is so near the surface, that the foot of the pedestrian often breaks through and, sinking into the tunnel, drives out the tenant. The general methods of escaping a burrow, and the aperture of these the animal covers with dry leaves and branches. To take it alive, the hunter stops two of these apertures, and digs into the third; but when the penetrals are reached, the hapless besieged makes a most determined resistance, fighting the enemy with ferocity, and trying to bite. When undisturbed, it often sits up and washes its head and whiskers with its two fore-paws, which it licks and moistens with its saliva at each ablution, like a cat; and with these fore-paws, as well as with the hind ones, it often scratches itself and dries its fur. Though heavy and corpulent, it can run with a good deal of activity, and often takes lively jumps. It swims and runs with equal facility, and the noise it makes while running is the angry barking of a young pig. Its food consists of fruits and tender plants, which it seeks in the night, hardly ever quitting its burrow in the day, the strong light of which, as is the case with all night creatures of the true carnivorous animals, is oppressive to its eye; its planter often roves the visits morning and evening, scaring the storks to his sugar-canes. The female is said to bring forth at the rainy season, and to produce but a single young one, which stays a long time with the mother. The Paca are very cleanly creatures, never dropping their excreta near their dwellings, but going to a considerable distance for that purpose.

In captivity, according to M. F. Cuvier, no animal can exhibit a more intelligence. When it is fed, it throws itself violently at the object which has displeased it, and then makes a grumbling, which breaks out into a kind of barking; and when it is not eating it is sleeping. But it requires a soft and well-made bed; and, to obtain this, it collects with its mouth hay, herbs, straw, anything that suits its purpose, of which it makes a little hoop, and then lies down in the centre of it. This bed it never desert, but goes to the extremity of its cage the farthest removed from it, and therein rests itself without respite. If, says M. F. Cuvier, it is but little favourable on the side of intelligence, it appears on the other hand to be recumbent by a large share of instinct. to judge, at least, from the manner in which it is handled by the English and French. Bennett, from his observations on the habits of his Bohemian Paca, which lived for some months in the Refuge of the Zoological Society in the Regent’s Park, says that it is quiet and contented in captivity. Buffon, who kept one for some time in his house, found it familiar and mild. He gives a de-
tailed account of its manners and mode of life in the 10th
vol. of his works, to which we refer the reader.

The place is leased by him, and Maregrave is Piso, John
de Laet, Maffé, Jean de Lory, D'Azara, and Barrière all mention
it. Jean de Laet describes it in two different places
(pp. 551, 618) under the names of Pog, or Poage, and Pac.
Maregrave gave a very bad figure of it, Piso followed, and
Joannis copied Piso. Buffon gave a much better representa-
tion, copied by Schreber. Bewick's is not without character,
and the figures given by M. F. Cuvier (Histoire
Naturelle des Mammiferes, tome 3) and by Mr. Bennett
(Gardens and Menagerie of the Zoological Soc., vol. I.) are
good.

Utility to Man.—The flesh is stated to be excellent and
good flavour; but as it is very fat and rich, it soon cloy:
it is prepared for cookery by being sealed like a sucking
pig. Piso gives the following character of its merits for the
table:—Carne est tenera, pingui lardo non indigenes, si
assetur, sed inter eplas magnitut, sicut lepores et capre
in Europæ, habetur. Its skin is of no value to the furrer;
but its thickness might make it available in the useful arts.
M. F. Cuvier thinks that it would be possible to introduce
this animal into our European rural establishments, and
that it would form a very good acquisition in the depart-
ment of domestic economy

(Coleoena subimbricata)

COELOPTYCHIUM. [ZOOPTHARIA.]
COEMPITO. [MARRIAGE.]
COENOBITES. [CONVENT.]
CORIBEA. [Nectarinidae.]
CORNITIA. [OR CHLORONITA.]

The duchy of Anhalt It
then, in the territory of Anhalt, is bounded by
dominions of Prussia, Dessau, and Bernburg. It consists
of four detached districts: Göthen Proper, the bailiwick of
Warmsdorf, Linzau, and Dernburg. Göthen Proper is
situated on the north by the Fahne, and on the east by the
Saale. The whole comprise 310 square miles, and
contain 4 towns, 1 market-town, 94 villages, and about
6000 houses. The duchy altogether is a level, with the
exception of occasional and in considerable eminences. The
whole surface is covered with rich corn-fields and meadows,
whose fertility is proverbial. Nearly all the roads are planted
with fruit-trees. The climate is mild. Besides the Mulde,
Elbe, and Selke, the duchy is watered by the Elbe, Saale,
Wipper, Lichte, Sade, and other streams. A considerable
fishery is carried on in the Saale, Sade, and Elbe.
The chief products are rye, barley, wheat, buckwheat, vegetables
and fruits, hops, potatoes, rapeseed, oil, flax, &c. On the
left bank are more extensive quarries of limestone and gyp-
sium. The inhabitants are chiefly engaged in agriculture
and the rearing of cattle, especially oxen and sheep; they
are also employed in the manufacture of oil, yarn, linen,
wool, and leather, but in very considerable quantities. The
population in 1831 was 36,000, of whom 20,000 are em-
ployed in agriculture. Of the forty-eight parishes, twenty-
eight belong to the Reformed Lutheran, nineteen to the
Lutheran, and one to the Roman Catholic church. The
principal places of trade, besides Cothen, are Nienburg,
at the confluence of the Saale and Bode (about 1900 inhab-
ants), St. Giessen on the Wupper (about 1640), and Rosslau
on the Elbe (about 1400). The income of the duchy is
about 320,000 guilders, or 70,000l. sterling, exclusive of the
duties on large salt, hemp, and tobacco. The public debt
is about 115,000l. The duchy has also extensive private property
in the Russian province of Taurens, called Ascania Nova,
Coffea Arabica consists of much more valuable beans and a peculiar principle of alkaloid, termed caffine. [Caffeine], which contains more nitrogen than any other known vegetable substance. The seed is used in a raw state in medicine; but when roasted, both as a medicine and still more extensively as a stimulating article of food, it is a fruit when two or two and a half years old; but the quality of the seeds from young stems is not so good as that from stems four or five years old. The size and colour of the bean (as the inner part of the seed is called) vary considerably, those from the West Indies being larger than those from the East. Much more depends upon the manner of roasting and making the coffee, than upon the quality of the bean. The superiority of Mocha coffee, in the preparation of which little or no beans of a good quality are hard and heavy, sink quickly in water, are of a light yellowish green colour, not discoloured or black, and possess the odour of coffee, which though faint is peculiar, and traceable from any degree of age; if the beans are selected, or only two or three months from the tree, are not so good as those about a year old; when older than this they become deteriorated. From the analysis of Seguin and Schroder, coffee consists of coffee-bitter (impure caffeine), albumen, a little resin, a little tannin, and albumen (this albumen, according to Seguin, unites with the yellow coffee-bitter, and forms a green), and lignin. The taste of raw coffee is somewhat sweetish; but the application of heat in the process of roasting produces important changes. The bean increases to nearly twice the original size, while it loses about a third of its weight, and a more powerful and agreeable odour is evolved, and a large quantity of ezymes, which appears in small drops on the surface, is formed along with a bitter principle, produced by an alteration in the caffeine, and of the saccharine matter. The roasting should take place in a close revolving iron cylinder, over a clear but moderate fire, and should not be carried too far; when the beans have acquired a light chestnut colour, the roasting should be discontinued. The beans are then to be cooled quickly by being tossed up into the air, and the grinding, or rather rough pounding, should be performed in a covered mortar or mill. The drink should be hot from it as soon as it is made, and is which is preferable, unless some apparatus be employed by which a kind of decoction is made in a close vessel, such as Parker's steam-fountain coffee-pot. About half an ounce of coffee powder should be used for every eight ounces of coffee (by weight) of water. In Britain the roasting is generally carried too far; and the subsequent parts of the process, instead of being performed immediately, are often postponed for days or even weeks, by which the aroma is dissipated: when made, the liquid is generally deficient in strength and clearness. The employment of white of egg or fish-skin to clarify is decidedly objectionable; clearness is thus purchased, but at the expense of the strength. The addition of milk (which should always be hot) and sugar reduces the nourishing qualities of coffee and all other plants are so entirely and in the morning render it a more substantial article for breakfast. When taken after dinner to promote digestion it should be without milk, and, where the palate can be reconciled to it, without sugar.

The action of coffee on the human system is due chiefly to the empyreumatic oil, and consequently is greatest when roasted; but its extractive and also highly nutritive principle must exert considerable influence on the organs of digestion.

Coffee acts powerfully and peculiarly on the ganglionic system of nerves and their ramifications, and all the organs which are supplied by them. It elevates the vitality of the nervous system, and quickens all their functions. It is likewise markedly acted upon by it; and hence the increased sensibility and greater energy of that organ during the use of coffee, and the removal of all sense of fatigue or disposition to sleep. Upon this depends, in addition to its

\[\text{Coffee Arabica.}\]

- a. Coffea, showing the stamens; b. skiels; c. berry; d, e, sections of the seed; f. calyx.
local influence upon the organs of digestion, the utility of coffee in counteracting the effects of narcotic poisons, such as opium or belladonna, and the favour it has found among literary persons from enabling them to carry on their studies through the midnight hour without feeling oppression beneath their lids. It greatly promotes digestion if taken after dinner, and some believe it to be the cause of the nervous system arising from the too free use of wine. It excites the vascular system, and renders more powerful the contractions of all the muscles, both voluntary and involuntary. It amounts of coffee to be the cause of the influences of cold and damp, and is proper for night travellers and the inhabitants of humid climates, such as Holland. In warm climates it removes the languor which oppresses those who are exposed to the excessive heat, and helps the stomach to digest more rapidly.

It is not without its counterbalancing disadvantages. For plethoric persons, and those who have a tendency to abdominal congestions, it is unsuitable; and for persons subject to piles it is in general improper, as well as for females under certain states of their system. It is likewise hurtful to persons having a very excitable vascular system, being upon the whole more suitable for slender persons or those advanced in life, than for the young or very robust.

A strong infusion of coffee will also, when made with an injurious extent, give rise to disturbances of the nervous system, particularly painful twitchings of the upper eye-lid, to congection or hemorrhages, loss of digesting power, and obstruction of the bowels and menstruation. Unlike the nervous symptoms by low coffee, the greatest number of those complaints subside or disappear on discontinuing the use of the strong beverage.

Coffee is much more extensively used as an article of diet than of medicine. Raw coffee, either in the form of powder or of infusion, has been found very serviceable in the cure of intermittent fevers. (Edinburgh Medical and Surgical Journal, No. 182.) A strong infusion of coffee without sugar or milk often removes megrim or hemicrania. It is said in some instances in cases with tincture of opium, it has kept off the paroxysm. Strong coffee is the best and safest means which can be employed by unprofessional persons to obviate the effects of all vegetable poisons which act upon the brain, and induce a fatal sleepiness and torpor. It is much more proper than vinegar, which should never be given till all the poisonous substance has been removed from the stomach.

In some affections of the kidney and bladder, such as laxity and debility of these organs, coffee is of much service; and it has been stated by some writers that calculous complaints have diminished since its more extensive use.

Cafeine has not yet been used in medicine, but Geiger says that it appears to be used with advantage since the introduction of the English market by a discriminating duty of 84s. per cwt.

The effect of equalizing the duties upon East India and British plantations coffee has been to increase the total consumption of the kingdom to the extent of 1,763,544 lbs. During the first eight months of 1836, as compared with the corresponding period of 1835; which rate of increase, if continued throughout the year, will raise the annual consumption to 26 millions of pounds, or more than three times the quantity used before the reduction in 1825.

The price in London of fine Jamaica coffee in the beginning of each year, from 1820 to 1836, has been as follows:

The quantities ascertained by official documents have been imported in one year into different countries:

- France, 29,650 tons; United States of America, 46,078; Trieste, 9,000; Hamburg, 20,620; Antwerp, 10,000; Amsterdam and Rotterdam, 8530; Bremen, 4,500; St. Petersburg, 10,808; Norway and Sweden, 1476; Denmark, 1460; Spain from Cuba only, 1060; Russian Ports, 928; Naples and Sicily, 640; Venice, 320; Fiume, 172; United Kingdom, 18,250 (average of ten years)—total, 154,550 tons.

These quantities evidently do not comprise the whole consumption of coffee that passes annually between different countries; it is not possible to ascertain that total quantity, because no records of their trade are published by some governments. On the other hand some proportion of the imports as given above are again exported, and appear in the following table, which, though deficient inasmuch as it, yet exhibits a larger quantity than the whole presumed exports of the countries of production.

The imports, exports, and consumption of coffee in and from the United Kingdom in each year from 1829 to 1836, have been as follows:

- 1829, 7,000,000 lbs.; 1830, 7,500,000 lbs.; 1831, 7,000,000 lbs.; 1832, 7,500,000 lbs.; 1833, 7,000,000 lbs.; 1834, 7,500,000 lbs.; 1835, 7,000,000 lbs.; 1836, 7,500,000 lbs.

It appears from these figures that the reduction of the duty in 1825 was followed by an immediate and rapid increase, which rose from 84 lbs. of pounds in 1824 to more than 224 millions in 1830. At this point, the consumption having overtaken the supply of those kinds which were admissible at the lowest rate of duty, the progress stopped short, and the consumption has since remained almost stationary. To remedy this disadvantage, the duty on coffee, the produce of British possessions in India, was at the end of 1835 reduced to an equality with the rate charged on coffee of the British plantations; but it appears doubtful whether the benefit of the revenue will not before long require that the duty on coffee of foreign growth should also be brought more nearly to an equality with that charged on other kinds, which are now effectively shut out of the English market by a discriminating duty of 84s. per cwt.
Holland 1,777,931 lbs. Italy took 1,735,163 lbs., other ports in the Mediterranean 1,301,836 lbs.; Germany, 1,263,447 lbs.; Russia, 1,342,254 lbs.; Denmark, 629,167 lbs.; and Norway, 316,459 lbs. The shipments to other countries were of an incalculable amount.

COFFERDAM, called by the French Bateau arc, is a wooden enclosure formed in a river in order to obtain a firm and dry foundation for the piers of a bridge. The Cofferdam consists of piles, which are squared beams of wood, driven to the bottom of the river end and side, and then rounded at the top with an iron collar; these piles are driven into the bed of the river, and being braced together, form a wall of wood. The piles are sometimes grooved and tongued together; in other cases they are great as short distances apart, and boards are let into the grooves formed down their sides. Two such enclosures are formed, one within the other, and the space between the two is filled with clay or chalk rammed down hard. The water in the inner enclosure is then pumped out, and the object for which the cofferdam was constructed is attained.

If the river is rapid and deep, it will be necessary to use several rows of piles in forming these wooden walls. Cofferdams have been constructed of the depth of forty-five feet in the water.

In lieu of cofferdams, caissons have been sometimes employed. Caissons are enormous boxes framed of wood, and nailed together; the sides are so constructed, that after the piers are driven into the ground, the caisson can be driven down to the bottom of the river remaining as a foundation. The largest caissons ever constructed were those of Westminster Bridge, framed with 130 load of fir timber each. For a correct view of the interior, see No. 275 of the American Architect, in which there is a view of the cofferdam employed for the repair of Blackfriars Bridge. Alberti, we believe, the earliest writer on cofferdams.

COFFIN, the box or chest in which dead bodies are put into the ground; also in modern English a mould of paste for a pie: from the Latin coffinus, and that from the Greek κοφινος, which properly meant a wicker basket.

Wyntoun, in his 'Chronicle,' uses cofynie for a shrine or box; and for coffyn, for coffin. A grouch seen set edgewise at the sides and ends, and covered with one or more flat stones, was common among the Britons, and a few such are still seen in Wales. Stone coffins are frequently discovered in barrows which also contain Roman urns, proving their use in England at that period. Sir Christopher Wren found such of the Saxon times, at the rebuilding of St. Paul's: and Gough adds that, from the ninth century to the reign of Henry III., stone coffins were in general use; that is, for persons of particular distinction.

The bodies of the common people, not only in the Norman but also in the English era, as we see in the illuminations of antient manuscripts, were only wrapped in cloth, and so put into the ground. In this manner, Matthew Paris informs us, the body of St. Etheldreda was buried, till the time of Abbot Welin, who died in 1195. He ordered that they should be buried in stone coffins, as more decent. Matthew Paris, on this occasion (Vit. Abb. S. Alb., p. 95), charges him with innovations on established customs, to please the multitude. Strutt says, in the reigns of Henry V. and VI., stone coffins were made with nails, distinguishing the head and shoulders. Coffins both of lead and wood are of early use. The former occur in numerous instances through different countries; and that the Saxons, buried in coffins of wood, occasionally, we have the testimony of Bede. Ceadda was so buried (Hist. Eccl., l. iv., c. 53), as was Etheldreda, wife of Egfrid, king of the East Angles, as relates to (c. 29). The body of the Early Saxons, was buried at St. Paul's in a coffin of grey marble. (Ibid., l. iv., c. 11.) The forms and ornaments of various antient coffins, mostly of stone, may be seen in the plates of the individual works of Strutt: Manners and Customs, vol. i., pl. xxxii, xiv, xlviii, and in Gies: and that the Saxons mena. mensa.

We have a remarkable instance of the use of the word coffin for an ordinary chest, in the Wardrobe Accounts of King Edward IV., 8vo. Lond., 1830, p. 123:—"For cloysing and coffyning of ten double, and the kynge's books were conveyed and carted from the king's war.

COG. [WREN.

COKKAMAC. [BRANDY. CHARENTE.

COHESION (co-he-cidn, to hold together) means the common phenomenon of the adherence or coherence of particles of matter, by which they form collective masses, requiring the application of more or less force to separate the parts.

According to the common notion entertained of matter, it is solid, or at least composed of particles which come into absolute contact. If we could substantiate the first supposition, it would still be apparent that the term force of cohesion must take the place of force of cohesion, and would be the force which will hold the particles together, and even if we could imagine absolute contact of particles, we should find it necessary to appose a moment of some force by which particles in contact remain in contact when some other force tends to separate them. The force of cohesion is great at short distances, but even so, it is but a momentary force. But the balance of probabilities is very strong indeed against the supposition that matter is composed of particles in contact; so much so, that we are almost entitled to conclude it to be composed of particles separated by interstices of much greater dimensions than the particles themselves. If any one should assert the particles of the densest matter to be so far apart in proportion to their bulk as the bodies of the solar system, it would be impossible to bring any direct evidence in contradiction.

Such being the case, we may ask:—1. What is the force of cohesion? For such a force there certainly is. 2. What is that law of action by which the particles of bodies are not drawn into absolute contact, but compelled to remain separated, even yet press one against another?

With regard to the first question, it is most probable that as two bodies approach each other, a strong repulsive force is the cause of the first phenomenon which is perceived. After that moment, however, we have no evidence except that of our senses, of absolute contact taking place.

That is to say, we only know that the first visible action takes place when the distance of particles is too small for our eye to perceive. All the evidence which is at all conclusive is against the supposition of such contact being produced; and we are obliged to admit that our explanation must end in the statement that, arise from whence it may, there is a power in matter by which other matter as repelled, and that this power of repulsion is the force we call cohesion. But if two pieces of solid matter be pressed together with great force, it would seem as if the particles would thereby be brought within a degree of nearness at which an attractive force begins to act. Two bits of lead pressed together remain in coherence even in a vacuum; and metal plates can be hammered together until the cohesion is as strong as if they had been naturally united.

The cohesive force is an absolute phenomenon, but if we suppose cohesion to be on the higher coast, we must account for the adhesiveness of m., or impregnability, or similar words, which, if made accurate by close attention, and freed from such latent assumptions as arise from the unassisted senses, will be found to amount to the same idea.

In the first place, we cannot suppose that the force of cohesion is the reason for the adhesiveness of the most part with assumed forces, of which the effects are seen to coincide with the case of nature only by long and difficult mathematical deduction. In treating of attraction of cohesion we have the indications of real physical sensations, of m., or impregnability, or similar words, which, if made accurate by close attention, and freed from such latent assumptions as arise from the unassisted senses, will be found to amount to the same idea.

In the second place, the adhesiveness of mon. is that which we must first explain its cohesion or repulsion before we can apply it to explain that of other matter: if caloric be not matter, we gain nothing in the way of avoiding difficulty; for an agent which is not matter, but something
always the reward of merit: favour or money in some cases procured it (Cicero, Pis. 36); under the emperors it was bestowed generally from caprice (Vegetius, xi. 3, in Picturis, Lexor. Antig. Rom.) The badge of a centurion was a vine leaf sometimes a branch (Tac. Ann. i. 23).

The cohorts alares, or alarum (Livy, x. 40, 43), were the troops of the auxiliaries and the allies which were stationed in the wings (ala). The cohorts praetoria were a select band which usually attended the emperor (Sallustius, Catil. c. 60); (Picturis, Lexior. Antig. Rom., in Cohors, Centuria.)

COIMBATORE, a province situated in the region of the Eastern Ghaut mountains, in the South of India, about 150 miles N.W. of Madras and bounded on the north by Mysore, on the west by Malabar, on the south by the river Dindigul, and on the east by Salem and Trichinopoly. The length of the province from north to south is 50 miles, and its breadth from east to west about 45 miles. The surface of the country varies exceedingly. Towards the south the level is not more than 400 or 500 feet above the sea, but it gradually rises towards the north, and even in what is considered the lower country the level rises to 900 feet above the sea. About 11° 35' N. lat., the mountains called the Eastern Ghauts occur; the Kumbetpore hill, in 11° 25' N. lat., and 77° 20' E. long., is reckoned to be 5548 feet above the level of the sea. Some summits of the Neelgerry mountains, which are in the north-west part of the province, and parts of the Eastern and Western Ghauts, are still higher: one of the peaks called Moorechoorit Bet is 8900 feet above the sea. The soil is generally dry, but in the south there is some marshy ground. The low country is effectually sheltered from the violence of the north-west monsoon by the extent of land revenue, and in particular the Neelgerry mountains are resorted to by Europeans resident in India for the recovery of their health. In these hills the mean temperature in April and August is 62° Fahrenheit. During the cold season the thermometer sometimes sinks to the freezing point, when the air is peculiarly clear and elastic, and produces a cheering effect upon the spirits. Coimbatore is watered by the rivers Bhavani, Amaravati, and Cavery, the first and second of which are fall streams, and fall, as far as the town of Kudal, 58 miles north-east from the town of Coimbatore, in 11° 26' N. lat., and 77° 44' E. long., and the Amaravati about 10 miles below the town of Caroor. These rivers are filled by both monsoons; by the south-west in June, July, and August, and by the north-east in October, November, and December. The extent of land under cultivation in 1814-15 was 960,000 acres, and in 1825-26 was increased to 1,431,439 acres. Up to the former period the land revenue continued to be collected as before, but a permanent assessment being then made, not only upon every farm, but upon each field, and the ryots being confirmed in the possession of their lands, the improvement here noticed began. The government has fully encouraged the improvement; it continues to make advances for the payment of the land revenue, and in 1814-15 the extent of land under cultivation was 18,64,391 rupees, and in 1825-26 had advanced to 23,79,633 rupees, being an annual increase of 51,524. In 1814-15 the government assessment was considered to be equal to one-third of the gross produce of the soil, and in 1825-26 it did not exceed one-fifth; the price of land during that time was doubled. The population of the province in 1828 was 870,866; in 1825 it was stated to be 638,199; but in this latter number children under five years of age were included. The Mohammedans are the largest body, and the government are miserably deficient. According to the latest returns, the whole number of scholars was only 8930, of whom 8618 were Hindus, including 82 females, and 312 were Mohammedan. The principal places in the province, in addition to the capital, Coimbatore, are, Animalaya, Arawacourchey, Bhavan-Kudal, Caroor, Daraporm, Errold, Palace, Satimangalum, and Sivana Samudra. Animalaya is on the south of the state of the Amaravati, in 11° 23' 47" N. lat., and 77° 71' 14" E. long. This town, which contains about 400 houses, is the common thoroughfare between Malabar and the southern part of the Carnatic. A fort stands at a short distance west of the town, and had been ordered by the government to provide materials for repairing it, Tippoo pulled down five large temples. The forests in the neighbourhood contain abundance of fine timber, which is of little value from the want of means for transporting it. Aravacourchey, the seat of Arava, so called from the name of the founder, is
situated in 10° 41' N. lat. and 77° 54' E. long. The town was destroyed towards the end of Hyder's reign, by an English force under Colonel Laing, but it has since been rebuilt, and at the beginning of the present century it already contained 70,000 inhabitants and had 14 mosques. The inhabitants mostly speak the Tamul language. Bhabhan-Kulal, at the confluence of the Bhavan and Cavery rivers, contains two celebrated temples, one dedicated to Vishnu and another to Shiva. The former is considered the place of greatest sanctity by the Hindus. Caroor, on the north side of the Amarnat river, in 10° 53' N. lat. and 78° 4' E. long., is a considerable town, and contains 1000 houses; it was formerly a place of great commercial activity, but its trade has since been greatly diminished. Darasarapunram, or more properly Dharma-puram, is a populous town situated in an open country near the Amarnat river, in 10° 37' N. lat., and 77° 33' E. long. The streets are wide and regularly laid out, and the houses are spacious. It was a very considerable place during Hyder's reign, and contained 3000 houses; under the government of his successor it was much reduced; and during the invasion of the country by the English under General Meadows, the town was in a very great measure destroyed. It has since been partially restored, and has been made a military station.

Falachy is a small but thriving town, situated in a well-cultivated country, in 10° 39' N. lat. and 77° 6' E. long. Serampur and R-sex are situated in the vicinity. Serampur, a town and fortress, in 11° 31' N. lat. and 77° 16' E. long., contained, in Hyder's reign, about 800 houses, but the number has since been much reduced. The fort is large, and the town is built in a square, and measuring the sides of the fort, and contains a large temple dedicated to Vishnu. This place is considered unhealthy, and the air is mostly intensely hot. The island of Sivana Samudra, formed by the Cavery, is the site of the ancient Hindu city of Cunga Raja; two cataracts are here formed by the Cavery, one on its northern and the other on its southern arm. [CATTERY.] The city of Cunga Raja, supposed by Dr. Buchanan to have been founded not more than 300 years ago, is now completely deserted, and nothing remains but the ruins of several Hindu temples, in one of which is a colossal statue of Vishnu; but the whole place is choked by jungle, and occupied by banyan and other forest trees.

A considerable quantity of dry grass is raised in the province; cotton and sugar are likewise cultivated, and weaving is carried on extensively.

This province was acquired by the British from the raja of Mysoor in 1799. (Rennell's Memoir of a Map of Hindustan; Buchanan's Journey through Mysoor; Commissions to Madur; Report of Committee of House of Commons on the Affairs of India, 1832.)

COIMBATORE, the capital of the province, in 10° 52' N. lat. and 77° 9' E. long., is a well-built town, containing about 2000 houses, being little more than half the number which it contained under the government of Hyder Ali. His son Tippoo sometimes resided at Coimbatore, where he built a mosque. About two miles from the town, at a place called Perur, is a celebrated temple dedicated to Siva, and called Matt (high) Chitumbar, to distinguish it from another Chitumbar near Pondicherry. The idol is said to have placed itself here at a very remote period, and about 3000 years ago the temple was built over it by a rajah of Madura. This building exhibited a profusion of Hindu ornaments, but is destitute of elegance, and the figures are not only rude, but many of them indecent also. This temple was plundered of its gold and jewels by Tippoo, and it was desolated from the top downwards by order which he issued for the destruction of all idolatrous buildings; and although its splendour was then destroyed, the Brahminical worship has always been continued.

The town was taken by the English in 1783, but was restored at the peace in the following year. It was again taken by the English in 1790, and retaken by Tippoo's general, but was transferred with the province to the British government in 1799, and has since remained under their possession.

The travelling distance from Serampur is 122 miles, and from Madura 306 miles.
in his 'Dialogues on the Usefulness of Antient Medals,' has long convinced the world of the connexion of this science with poetry. As a branch of the arts it has been insufficient to say that some of the medals of Sicily belong to a period when sculpture had attained its highest perfection. We would particularly refer to the coins of Syracuse. In Sicily, during the preceding age, the art of sculpture in metal period yield to the Greek alone. From Augustus to Hadrian, the Roman mint was the seat of genius: and coins of admirable execution are found even down to the time of Posthumus. The generality of numismatic writers divide coins into Antient and Modern; the Antient, into the great divisions of Greek, Roman, and Barbarian.

The Greek they divide into cities and kings. Of the first they can make no chronological arrangement: it is almost incredible, under the name of the different kings. The kings commence with the age of Alexander the Great, and belong to the four kingdoms into which his empire was divided, besides the kingdom of Epirus. This series, in a chronological point of view, closes with the extinction of the dynasty of the Lagids in the Augustan age. The coins of the Greek cities were impressed either with appropriate symbols or the heads of deities. The coins of the monarchs bore the heads of the respective princes. Pinkerton observes that the first coinage of Greece was under the reign of Gelo; and that the Cion of Syracuse, about 490 years before our era; and that these were called Chalei, pieces of brass; others, of a more diminutive size, were called Lepta, or Kerma, as being change for the poor. He considers there is no proof of the coinage of the Philip of Macedon; and that there was no gold money at the beginning of the Peloponnesian war.

The Roman coins are divided into consular, imperial, and medallions. The subdivisions of the consular are into Roman asses and coins of the families. Of the imperial there are two subdivisions, Roman and Grecian; and the latter being again subdivided into those of provinces, colonies, and municipia. The medallions are likewise divided into Roman and Grecian. The earliest coinage of Rome was of copper, and was appear to have been struck in the reign of Servius Tullius, probably about five centuries before Christ. The Romans are supposed to have borrowed the art from their neighbours, the Etruscans. Of the as, its divisions and its compounds, we have already spoken in a former article. On some of the later Roman, as well as on what were called the Italian asses and their parts, the practice became prevalent of placing the names of many of the principal families of Rome upon the fields of the coins. These form the division which are called family coins. The silver coinage of Rome was introduced in the year 256 before Christ, when the denarius was so termed from its being equivalent to ten asses. Pliny informs us ('Nat. Hist. xxviii. 13, edit. Hard. ii. 20) that the coinage of gold was introduced sixty-two years after that of silver, and that the first coin of gold was called aureus. ('Aurum') The imperial coins of Rome form the most complete and most interesting series of any extant. Those of copper being found of different sizes, are of different value, the Aureus being the principal. Its importance, as is the case for the devices, the largest series is to be preferred. The largest imperial brass coin was the sestertius, and from the Augustan age went by the name of nummus, or aureus. It was worth twopence English. All the large brass coins were of yellow metal; the middle brass, yellow and red, the small, mostly red. No sensible diminution of the sestertius took place till the reign of Alexander Severus, when it lost upwards of a sixth of its weight, and considerably diminished in value. After Galerius, it was reduced in value, and was called aureus. Under Diocletian, copper was washed with the electrum of the coinage, a coin denominated the follis supplied the place of the sestertius; but the denarius arcie continued quite common down to Constantine I. He introduced a new coin called the antoninianus, and its subdivision; but its appellation derived to what had now become the largest brass coin of the Roman empire, to the most recent issues which we have of the Byzantine money. From the time of Augustus to that of Galerius, the imperial coinage, which was of brass, or assaria. Under Caracalla a larger denarius was struck, which had a third more, or twenty-four assaria, and was
called argentous: the common denominations of silver being then termed munus. Under Philip however the denominations became, and under Constantine I. and the two latter emperors were struck as late as the reign of Heraclius. Aurei and semi-aurei were the sole pieces in gold for near three centuries. Till Sulla's time the aureus continued at thirty six denarii. In the reign of Augustus and Tiberius there were twenty-five, and twenty denarii. Under Philip, aurei of two or three sizes first appear, of a rude fabric; one class of which were called trientes. The weight originally given to the aureus was 120 grains; it afterwards fluctuated to between 80 and 90 grains, and was at last fixed at 80 grains. The coin was sometimes of less weight. Constantine I. accommodated the aureus to his new coinage, and gave it the name of solidus, of six in the ounce of gold. The solidus passed for fourteen millionaires. It went for rather more than twelve shillings of our money, and continued of the same standard to the very close of the Byzantine empire. The medallions were struck both at Rome and in the provinces, whence the division of this class into Roman and Grecian. The term is applied to all those pieces of the Roman mint which exceeded the size of the ancient coins ordinarily current in size, whether in gold, silver, or brass. Though generally conceived to have been struck upon similar occasions to those on which we ourselves coin money, it is obvious that the circumstances which lead to the belief that they were intended for military purposes are not sufficient to prove this. Medallions, says Pinkerton, from the time of Julius to that of Hadrian are very uncommon and of vast price: from Hadrian to the close of the Western Empire, they are less rare. The types of the Roman medallions are often repeated upon common coin. Those struck in the Grecian territories are the most numerous, and are distinguished from the Roman by their thinness and inferiority of workmanship. Many Roman medallions have a c. upon them, as being struck by the senate; others have x. x. c. as being struck by order of the emperor. The Roman medals called Contorniata, it is the opinion of our first medallists, were no more than tickets of admission for different places at the public games.

The third class of antique coins, denominata Barbarian, consists of those of Lydia, Persia, Judæa, Phœnicia, Numidia and Mauritania, Carthage, Spain, Gaul, and Britain. The coins of Lydia and Persia have been already slightly noticed. The Darics, from their present extreme scarcity, are supposed to have been melted down for his own coinage by Alexander the Great, upon his conquest of Persia. A recent discovery of Darics in Syria is supposed to confirm this opinion of the coin being of silver. Nevertheless many of the silver Darics are equally if not more archaic in appearance. Of Persian coins there is a second series, that of the Sassanides, beginning about A.D. 211. Among these the earliest are the Gauda, or Dari, an imitation of the Parthian coin of the same period, struck by the Arabian caliphs. The Hebrew coins were struck under the dominion of the family of the Maccabees, and chiefly in the time of Simon the high-priest, about the year 140 B.C. They are nearly all of copper, and extremely rude in workmanship; the legends are in Samaritan characters, and the symbols are those appropriate to the nation, such as a spig, considered as Aaron's rod, sacramental cup, &c. The Hebrew and Galatian coins are supposed to have been coined of silver, out of the value of the Greek tetradrachma. Of the Hebrew coins pretending to an earlier date than the Maccabees are spurious. The Phœnician coins are in no instance considered older than the time of Alexander the Great, and are chiefly confined to the cities of Tyre and Sidon. The Numidian coins are those of Juba I. and II. The Punic or Carthaginian coins are believed to have been struck by Greek artists. Those of Spain agree in character with the other pre-roman nations. Even the most ancient colonies of that country were planted, Phœnician, Greek, Carthaginian, and others, and of many of them are inscribed with Phœnician; Greek, and Roman legends: a few others are merely distinguished by what are called Celtiberian characters, not unlike some of the Tyrian and Etruscan alphabets. Of the coins of Gaul, the most antient have no legends at all; they have very rude devices, and many of them are in base gold: after the Gauls had intercourse with the Romans, some of their coins bear inscriptions which look like Latin, mostly in single words, and not of easy interpretation: they are not unlike many of those which are called early British. Caesar describes the Britons as a people just emerging from barbarism, and no further acquainted with commerce than to have discovered that it was more advantageous to sell bullion than to change it. His account implies, however that they might have known its use, the Britons had not proceeded so far as actually to coin money: although they had a substitute for it in pieces of brass, or iron rings, or plates embossed with weight. He says, 'Utuntur aure seae, aut annulis ferreis, ad certum ponendas examinatias, pro nummo.' (Bell. Gall. v. 12.) The passage however is corrupt: for annulis some manuscripts read taliæ, and others lamiæ. Coins however are found among these remains, and the nearest resemblance to our early British kings, in gold, silver, and the inferior metals; ruder in fabric than they would have been had the Britons learned the art of coinage from the Romans. They are without legends, and many of them, like the eagle, Gaulish coins already mentioned, have unintelligible devices: they seem to justify our antiquaries in thinking that Caesar had not sufficient information to make his testimony quite conclusive. The use of a better sort of coin was therefore the first step towards the establishment of the Roman coins. Caesar says, 'Vincit arma victorem,' and immediately after this, he shews that the Romans very soon after Caesar's second invasion, when the types improved, and when no one who examines them carefully will doubt that Roman artists were employed upon the dies. The earlier coin which can, with the least appearance of probability, be ascribed to Caesar, is that of the Roman monarch, bears upon it the letters s x s, possibly for Segonax, one of the four Kentish monks who attacked Caesar's camp at the time of the invasion we have just mentioned; it has also the word rascio upon it. Within the last ten years, it has been seen upon numerous other coins which are undeniably British. Cunobelin was a later monarch of Britain, whose name is considered to be abbreviated upon the coins which have cvn, cyan, and cynbriu upon them, together with the word rascio. A coin of this monarch, struck on a scale of adulteration, his capital city, supposed to be either Colchester or Maldon in Essex, vrs, as well as vrsiam at length, for Verulam, occurs upon other coins of the same period. One has svco, which may or may not be a coin of Boudica or Boudicea, queen of the Iceni. It is probable that the British coinage closed with the money of Cunobelin; and in a very few years after his decease the second subjection of Britain took place under Claudius, and was so complete and severe, that the country became rather a Roman than a British island. Gildas (De Excidio Britanniae, c. v.) expressly speaks of a Roman edict which ordained that from that time all money current among the Britons should be British coinage, and that the Britons who followed up by the establishment of Roman mints in Britain is highly probable: and certain initial letters, as s. l. o. s., are brought forward as evidence of the fact; but most of these initials are equally applicable to issues of the same period, and the companies of the mints were established, and therefore do not afford a proof quite so conclusive as is wanted. The coins of Carausius and Allectus, the seat of whose empire was in Britain, have a strong claim to be considered as the production of British mints. Those who wish to see under one view the 'Coins of the Romans relating to Britain,' will find the fullest information in a little volume recently published under that title by Mr. John Yonge Akerman, 12mo., London, 1836.

Money is in Britain in general struck since the fall of the Western Empire; but it is impossible, in the space to which the present article is necessarily confined to enter into minute details respecting the series of coins in each country. We shall be brief in our notices of the greater part, that we may devote a larger space to the coins of England.

The series of the coins of Italy under the Ostrogoths began soon after the year 480 of the Christian era. The Ostrogoths, which had some intercourse with Spain, with Liwa, Prince of the Visigoths, soon after the middle of the sixth century, or about A.D. 567. The states of Germany appear to have struck money very early and notably for the city of Augsburg; and the independent Lombard cities, and the states of Italy, have series of money begins with Pope Huldilir I., A.D. 772. Denmark has coins of an early date, but few of them are

THE PENNY CYCLOPAEDIA

No. 444.

A text appears to be a continuation of a previous page, discussing historical and geographical topics, but the text is not fully visible or legible due to the angle and quality of the scanned image.
ume his father made him lord of Ireland; those which give the faces inclosed in a triangle, and JOHANNES REX, were coins of the second period. The coinage of modern times had been greatly improved. The coins of Edward I. (or the son of Henry III., usually not belong to Henry III.) have usually the numerals added to his name, HENRICVS REX IIII. Some of his pennies have HENRICVS REX TERCII, and a few HENRICVS REX ANG. His coinage, if we may judge from the quantity, was not an extremely rare one. Halfpence and farthings were spoken of in a record of his reign, but none have appeared. The pennies of Edward I., II., and III. are usually distinguished by our antiquaries from the later coins ascribed to the name of Edward I.; those with EDWA, EDWAL, and EDWARD, to Edward II.; those with EDWARDVS to King Edward III. A few with edw. are known certainly to belong to Edward I., particularly those which have a moneyer's name on the reverse, ROBERT DE HALEKIR, who is known from records to have been a moneyer in 1280. Both Henry III. and Edward I. struck pennies in Ireland, in the manner of John's later coins, representing the king's head within a triangle. A silver halfpenny and farthing in his coinage of 1279, which are not uncommonly met with in the cabinets of collectors, as well as halfpence and farthings with the Irish type, struck at Dublin and Waterford. In France also Henry III. regards the money coined under his name, as he used to coin pennies, and farthings, as that they continued in currency for several centuries. The last silver farthing is known to have been coined in the reign of Edward VI., but no specimen of it has been seen: the last silver halfpenny was struck under the Common- wealth, and is very rare. The last copper penny was coined in 1532, the penny weigh 224 grams troy. Towards the close of Edward III., the penny weighs 18 grams, and in the reign of Edward IV. it fell to 12, after previously sinking to 15. In Edward VI.'s time, 1541, the penny was reduced to 8 grams, and after the 43rd of Eliz. to 7½ grams, at which weight it still continues. The penny affords the best rule for estimating the other silver coins.

According to Grafton, Henry III., in 1249, ordered great coins, but none such are mentioned in any record. There is a large piece however found occasionally in the cabinets of the curious, sometimes ascribed to Edward I., but whether his, or Edward II.'s, or Edward III.'s, or Edward IV.'s, or Edward V.'s must be determined. It occurs in different types, from 80 to 138 grams, and represents the king's head on its obverse, within a double treble of four arches, with mulets and roses; inscribed EDWARDVS D. REX. ANGL. REX. The reverse, besides a copy of the king's titles in the outer circle, has CIVIL. LONDIN. Within an inner one.

There can be little doubt but that it was a trial-piece. Greats and half-groats were not introduced for currency till the 25th Edward III., and continue at present, though not for circulation. A great and a half-groat of a different type from the ordinary great, has been issued for circulation by King William IV., A.D. 1836. The great received its name from the French great, a large piece. In the time of Henry VII. and Henry VIII. grouts and half-grouts were struck in the archiepiscopal mints of Canterbury and York. It was one of the charges against Wolsey, that he had put the cardinal's hat upon the king's money, as is seen upon his York grouts and half-grouts.

The fine of Henry VIII. was fixed by Hene in 1503. The appellation of testoon was from the testo de tithe, the head of the king, upon it: that of shilling is of old but uncertain origin. Pinkerton says, that coins of that name had been struck at Hamburg in 1407. The rodding was fixed by the 24th of Edward I., in 1301.

Henry VIII. struck some patterns for a silver crown; but the first crown for currency was struck by Edward VI., with the half-crown, sixpence, and threepence. Queen Elizabeth, in 1558, coined three-halfpenny, and in 1561 three-farthning pieces. Pinkerton says they were dropped in 1585, but there is a three-halfpenny piece in the cabinets of the British Museum, bearing the date of 1599. Charles I. struck twenty-shilling and ten-shilling pieces in silver, but they were of very limited currency.

From these it appears that the denominations, weight, and fineness of English silver have remained the same. It is worthy of remark, that, during all his despotism, King Charles I. never debased his coin. The gold coinage of England is next to the paper in point of quantity. The coinage was not yet in 1510, till the 41st Henry III. was foreign. In that year, 1257, a manuscript chronicle, in the archives of the city of London, states that the king made a penny of the finest gold, which weighed two shillings, or its double weight of gold. Henry VIII. is mentioned as having struck a penny of the same weight, but no specimen of it is yet known to have been struck. The gold coinage was then to go for six shillings, though now it would be intrinsically worth nineteen. This coin being inconvenient, as forming no aliquot part of larger ideal denominations, seems to have been withdrawn. None have yet been seen since that time, and it is supposed that they are either of 1660, when the half and one-half-sheik is known. In consequence, in the same year, the nobles was published, of 6s. 8d. value, forming half a mark, then the most general ideal form of money, the mark representing the king standing in a vessel, asserting the corn and every piece of gold money which had been also attended by its half and quarter. This coin, sometimes called the rose noble, together with its divisions, continued the only gold coin, till the angels of Edward IV., 1464, competed with the new London money. The angels and half-angels were substituted in their place. Henry V. is said to have diminished the noble, still making it go for its former value. Henry VI. restored it to its true weight, and compelled it to pass for 10s. under the new name of royal. The weight of both the noble and royal was reduced to 6s. 8d., with their divisions of half and quarter, till in 1485, Henry VII. issued the double noble, or sovereign, of 20s., accompanied by the double sovereign of 40s. Henry VIII., in 1547, reduced the gold coinage to the crown and half-crown, at their present value, and in the same year gave sovereigns of 22s. 4d., ryalsof 11s. 3d. all of 7s. 6d., and nobles at their old value of 6s. 8d. In 1546 he struck sovereigns of the former value of 20s., and also half-sovereigns of 10s. 7s. 11d. from his silver coin, was in the latter part of his reign much debased. Edward VI. coined a treble sovereign; and under James I. the sovereign was called a unit. The former sovereigns increased in weight and value, till Charles II. coined the guineas, so called from the Guinea, out of which it was first struck in 1663, when it was proclaimed to go for 20s., but by tacit and universal consent never went for less than 21s. Charles II. likewise issued half-guineas, double guineas, and five-guineas pieces, which has successors, till King George IV., continued. George I. and George III. issued quarter-guineas; and George III. pieces of seven shillings in 1797. In 1813 sovereigns and half-sovereigns of 20s. and 10s. each were again coined, and the guineas and half-guineas gradually increased in weight and value.

With the exception of the styca, the copper coinage of England arose a thousand years later than its silver. Queen Elizabeth had a great aversion to copper money, although the necessities of her people for such change were obvious. She suffered a pattern to be struck at PLEDGE OF A. HALF PENNY, and James I. actually issued farthing tokens also as pledges; but no authorized coinage of copper was struck till 1672, when the halfpenny was coined at 4½ d., the threepence of the same metal, were struck by James II., and William and Mary, at 3 d. and 2½ d. respectively, copper renewed.

Pieces of a penny and threepence in copper were current in the reign of George III. The latter did not answer their purpose, and were soon discontinued. The penny pieces remain in circulation.
Our space will allow us to say less than we could wish upon the subject of the making or counterfeiting of money. The making of silver coins is punished by the laws of England, and the Anglo-Gallic silver coins we have described of Elnaor, wife of Henry II., as duchess of Aquitaine, with deniers and half-deniers of Henry II., and pennies and half-pennies of Aquitaine, and peace of Poitou and Rouen of Richard I. Of the various statutes in force for the protection of the currency, there is no more important or valuable than the law for the protection of gold and silver money; but there is a lion of billion of Edward I., coined during the lifetime of his father after he had received Gascony, and a plentiful series of silver and billon coins of Edward III., of Edward the Black Prince, of Richard II., Henry V., and Henry VI. The coins of Edward III. were the hard, double hard, great, half-groat, penny, and half-penny. In this class also fall the Calais groats and half-groats of the sovereigns of England, from Edward III. to Henry V. The greatest or most of Edward the Black Prince in the coinage of the realm; and of Henry V. the salutes, salutus, and alatores of gold. The equivocal specimens of silver coin, supposed to have been struck by Margaret of Burgundy for Perkin Warbeck, is usually classed with the Anglo-Gallic coins.

In a work on numismatic writers, we can only enumerate a few of the most important upon the various series of coins. On the Greek and Roman series, the best works are Eckhel’s ‘Doctrina Numorum Veteran,’ Rasche’s ‘La Monnaie des Romains,’ and de Sacy’s ‘Monnaies des Peuples de la France,’ 4 tomo, Paris, 1839. The prices of the different coins, fixed according to their rarity, in this work are now the guide to the coin-dealers and collectors throughout Europe. To the English reader, Captain W. H. Smyth’s ‘Descriptive Catalogue of a Cabinet of Roman Imperial Large Brass and Silver Coins,’ London, 1834; and Ackerman’s ‘Descriptive Catalogue of Rare and Unusual Roman Coins,’ 2 tomo, London, 1834, will be especially useful. Pinkerton’s ‘Essay on Medals,’ 2 tomo, 1828, with all its errors, is valuable as a general elementary treatise. On John and Henry III., and his ‘Numismata Hebreo-Samaritani,’ 4 tomo, 1781; and his ‘Numismata Hebreo-Samaritani Vindiciam,’ 4 tomo, 1790, are valuable works upon the Jewish coins. Among English coins, the best works are Leake’s ‘Historical Account of English Money,’ 6 tomo, London, 1745; Smelling’s various works; Folker’s ‘Tables of English Coins,’ as published by the Society of Antiquaries; and Ruding’s ‘Annals of the Coinage of Britain.’

Simons has written an Essay towards an Historical Account of Irish Coins, and Carpendale his ‘Numismata Scotiae, or a Series of the Scotch Coins.’ Anglo-Gallic coins, we have a quarto volume of Ducarel: a volume of similar size, A Description of the Anglo-Gallic Coins in the British Museum; and Illustrations of the Anglo-French Coinage, by Mayor-Gen. Ainisli, 4 tomo, 1790, are valuable works on the French coins.

On the French coinage, we have the works of Boutouer and Le Clerc; on the Papal coins, Floravante. Argelati and Zanetti have written on the coins of Italy; and Florez on those of Spain. For the coins of Germany, the learned and elegant, ‘Monn. der Cabinet,’ 1745–5; and Weise’s ‘Gulden-Cabinet,’ 2 tomo, Nurnberg, 1780–2. For Danish coins, the ‘Danske Mynter og Medaller,’ 3 tomo, fol., Copenhagen, 1791–4. On Bulgarian coins ‘Fraecich’s ‘Russian Monn. of John and Henry III.’ We know of no Anglo-French coinage; and weiss’s ‘Gulden-Cabinet,’ 2 tomo, London, 1823–5.

COINAGE. (Minr.)

COINING. The numerous and complicated laws upon the coinage, in process of time during several centuries, as occasion called for penal enactments to protect the coin of the realm, were repealed by the recent statutes.
authority shall lie on the party accused), have in his cus-

tody or possession any instrument, tool, or engine, adapted or

intended to be used in passing any of the king's current

coin; or if any person shall buy, sell, receive, pay, or put off, or offer to buy, sell, receive, pay, or put off,

any false or counterfeit coin resembling, or apparently in-
tended to resemble, or pass for, any of the king's current

coin, or at a lower rate or value than the same

by its denomination imports; every such offender shall be

liable to be transported for any term not exceeding seven

years, or to be imprisoned for any term not exceeding two

years; at common law shall tender, utter, or put off any

false or counterfeit coin resembling, or apparently intended
to resemble or pass for, any of the king's current coin,

knowing the same to be false or counterfeit, or shall

have the means of knowing the same, and shall in

his capacity as a party accused, or in his custody or

possession any punch, counter-punch, matrix, stamp,
die, pattern, or mould, or in upon which shall be

made or impressed, or which will make or impress, or

which shall be intended to make or impress, the figure,

marking, or resembling the edges of either or both of

the sides of any of the king's current gold or silver coin, or

any part or parts of both or either of such sides; or if any

person shall, without lawful authority (the proof whereof shall

lie on the party accused), make or mend, or begin or pro-
ceed to make or mend, or buy or sell, or shall, knowingly and

without lawful excuse (the proof whereof shall lie on the party

accused), make or mend, or begin or proceed to make or mend,
or buy or sell, or shall, without law-

ful excuse (the proof whereof shall lie on the party accused),
have in his custody or possession any edge, edging tool, col-
in, instrument, or engine, adapted and intended for the

marking or rounding the edges with letters,gravings, or other

marks or figures apparently resembling those on the

edges of any of the king's current gold or silver coin, such

person knowing the same to be so adapted and intended as

aforesaid; or if any person shall, without lawful author-

ity, to be proved as aforesaid, make or mend, or begin or pro-
ceed to make or mend, or buy or sell shall, or without law-

ful excuse, to be proved as aforesaid, leave in his custody or

possession any press for coining, or any cutting engine for

cutting edge, or any instrument, tool, or engine adapted or

intended to be used in rounding blank of gold, silver, or other

metal, such person knowing such press to be a press for coining, or

knowing such engine to have been used, or to be intended to be

used in rounding blank of gold, silver, or other metal, such

person's every such offender shall be liable to be

transported beyond the seas for life, or for any term not ex-

ceeding seven years, or to be imprisoned for any term not ex-

ceeding four years.

COKE, [Grinns.]  

COKE, EDWARD,* was born at Mileham, in the county of

Norfolk, on the 1st of February, 1512. He was the only

son of Robert Coke of Mileham, and Winifred, daughter and

one of the heirs of William Knaylby, of Murgare, Knay-

lby, in the same county. His father, who was a bencher of

Lincoln's Inn, died in the year 1561, when Edward Coke

was ten years old. Before that event he had been sent to

the Free Grammar School at Norwich, whence, in Sep-

tember, 1546, he was removed to Cambridge, and was admitted

as a fellow commoner at Trinity College. After having

spent three years at the University he went to London to

commence his legal education. According to the prac-

cise of that time, he took the first step of his legal course by

becoming a member of an order of parochial, or

infirmaries, dependent upon the Inner Temple, and was

admitted into the latter society April 24, 1572. On the

20th of April, 1578, he was called to the bar. During the

continuance of his studies in the Inner Temple, he is said

to have been the student of the king's customary

Meetings and Readings, which constituted a necessary part

of the education of an advocate in former times, and which

excited a great degree of interest and emulation among

the members who were adhering to the increasing number of

Order of Chancery.

In the course of the year after his call to the bar, the So-

ciety of the Inner Temple appointed him reader at Lyon's

Inn; and the intelligence and learning displayed by him,
in the conduct of the exercises at which he presided in this

capacity, were the means of obtaining him the permanent

office of king's visitor. Coke had opened the way to that extensive practice at the bar, which

he acquired with a degree of rapidity almost without a paral-

lel in the history of the profession. Lloyd, in his 'State

Worthies,' says that 'his learning so spread forth, his

fame that crowds of clients sued to him for his counsel.'

In the next term after he was called to the bar he argued

a case of much nicey and importance, known to lawyers

by the name of Lord Cromwell's Case, which he says, in

his own report of it (4 Rep. 146.), 'was the first cause that

he moved in the King's Bench.' About three years after-

wards he was associated with Popham, the solicitor-ge-

neral, in arguing before the chancellor and the twelve

judges the supposed conflict between the existing rule in the

law of real property, which has since become celebrated as the 'Rule in Shelley's Case,' was laid

down so distinctly that it has taken its name from this case,

though the rule itself is of much higher antiquity. At

the time of an annexation by 1586 solicited the resigna-

tion of Serjeant Fleetwood, unanimously elected Coke

their recorder; but he resigned that office in June, 1592,

being appointed solicitor-general. In the same summer he

became reader of the Inner Temple, having delivered

several readings on the Statute of Uses to a large audience,

consisting of not less than 160 members of the society,

when the appearance of the plague compelled him to leave

London abruptly for his house at Huntingfield in Suffolk.

He was one of the two gentlemen corresponding with the

profession, that on this occasion, as he records in his Notes,

he was accompanied on his journey as far as Romford by a

procession composed of nine benches and forty other mem-

bers of the Inner Temple. He was appointed a king's

apointed attorney-general, and as the office of solicitor

continued vacant until the close of the following year, the

duties and labours of both offices during that interval de-

volved upon him. At this period originated the animosity between Coke and Bacon, which prevailed with little intermission during the life of the latter. As soon as the office of attorney-

general became vacant, upon the removal of Sir Thomas

Bacon to the seashore, the earl of Exeter procured the most

strenuous efforts to induce the queen to bestow that place

upon Bacon, instead of promoting Sir Edward Coke from

the inferior office of solicitor-general. The letters of Bacon
to Essex and others, with relation to this intrigue, abound

with sarcastic and contemptuous expressions respecting

Coke, whose high reputation and great experience pointed

him out as at all events a fitter man for the office than his

rival, whose practice at the bar was never extensive, and

who was then scarcely known in the court.

The first and last division of the work is entitled 'The

Clare Attorney-General at the end of Elizabeth's reign were extremely laborious. The

sverity of the laws recently introduced against Roman

Catholics had occasioned a succession of plots by foreign

agents, and against the clergymen of the kingdom, the

investigation of which was necessarily committed to the attorney-

* Bacon, in a letter to Lord Pakenham, alludes to the objection made by the

queen to his appointment, as she thought that he was 'rather a man of study

than of practice and experience.' (Coke, p. 15.)
The treasons of Lopes, of Patrick Cullen, of Williams and Yorke, and numerous others of inferior moment, occurred about this period: and the business of constant examination at the Tower, added to his Star Chamber duties and his undiminished practice in the common law courts, must have occasioned considerable inconvenience to Coke. By an order of the Court of Wards, Coco was paid £300 for his attendance upon the service. In 1593, Coke, being at that time solicitor-general, was elected a member of parliament for his native county of Norfolk. In his own memorandum of the business he entered upon, that part of the government connected with the business of collecting the crown's duties was left to others, the marriage of the widow of Sir William Hamton, daughter of Thomas Lord Burleigh, and grand-daughter of the lord high treasurer, which, though an advantageous alliance in point of connection and property, was attended with domestic unhappiness. The marriage itself involved all the parties concerned in it in considerable embarrassment: for having taken place without licence or banns, Coke and his lady, together with the clergyman, Lord Burleigh, and all who were present at the ceremony, were all summoned to appear before the Archbishop's Court; and it was only in consequence of their making a full submission, and pleading their ignorance of the law (a singular excuse in Coke's mouth), that they escaped the heavy censure and penalties of excommunication.

Sir Edward Coke held the office of attorney-general until the death of Queen Elizabeth; and having always been favourable to the title of James I, cooperated cordially with Cecil and the other members of the late queen's council in making the necessary arrangements for the peaceable accession of the king of Scotland to the crown.

James, upon his arrival in London, received him into his full confidence and favour, and continued him in his office of attorney-general.

Coke's sound judgment and extensive legal knowledge, united with his fervent attachment to Protestantism, rendered him a valuable officer of the crown in the various proceedings against the Roman Catholics at the close of Elizabeth's reign. In this the king was assisted by Coke.

In the examinations respecting the several assassination treasons, which have been already mentioned, as well as that of Squire in 1598, of the Raleigh conspiracy in 1603, of the Gunpowder Plot in 1605, and of numerous other treasons committed by Catholics during the period that he filled the office of attorney-general, he engaged with a zeal and ardour far beyond mere professional excitement; and the temper displayed in his speeches and general conduct on the several trials is much more that of a religious partisan than of a legal advocate. It is common with Catholic writers to attribute to him the utmost barbarity in the use of the rack and the general treatment of prisoners under examination. That he may have used much more violence than was afterwards necessary in his official character the constant instrument of the crown for applying this odious process, is beyond all question: but it must be remembered that what he wrote on this subject was written long after the period of which we are speaking, and long after the day of the rack was a matter of history and not of practice. In the case of the Jesuit, the question as to whether this rack was ever used is properly one of procedure; and when the Jesuit in question was examined, there was no warrant for the use of the rack, and no evidence of its being used. The Jesuit was at first treated with courtesy and kindness.

There is no doubt however that as the advocate of the crown on trials for state offences, he displayed a degree of intemperance and asperity not only shocking to the feelings of readers familiar only with the more civilized character of criminal proceedings at the present day, but strongly offensive even to contemporaries.

With the trials connected with the Gunpowder Plot in 1606, the career of Sir Edward Coke as an advocate closed. In the month of June in that year he received his appointment as chief justice of the Common Pleas. He retained the situation upwards of seven years; and in the discharge of his judicial duties, and in the composition of the voluminous ms. which he filled with his profound learning and unwearied industry procured him the highest reputation. At this time too, though he has sometimes been reproached for a haughty and uncomollating temper, the bitter and censorious character which he had displayed at the bar appears to have been unaltered; and in several constitutional questions of the highest importance which occurred while he was chief justice of the Common Pleas, and in which he resolutely opposed the views of the king, especially in the conflicts between the ecclesiastical jurisdictions and the courts of common law, and in his resistance to the en-croachment of prerogative on the subject of royal proclamations, he displayed great integrity and independence.

With a view to correct this incorrect view of his uncompromising disposition, his crafty rival, Bacon, who was then solicitor-general, suggested his promotion to the chief-justiceship of the King's Bench; and accordingly he received his patent for that office in 1615, and a few months after his promotion a consequence of a special order from the king, took his seat at the board as a privy councillor. In the following year he was elected high steward of the University of Cambridge.

The project of making the chief justice "turn obsequious" by his own wish, was set aside, and his successor was Sir Thomas Overbury in the same year. He was tried by the court of King's Bench, and was convicted. Upon the examination by the grand jury, the chief justice was accused of "not delivering the prisoner, as he was lawfully committed by Sir John Coke, as afeigned by him, but never pressed or published, Coke, after long hesitation to deliver what he quently called an "auricular opinion," seems at last to have declared that the sentence was not treason. His exertions in the prosecution of the murderers of Sir Thomas Overbury in the same year, though praised by Bacon in conducting the case as attorney-general, gave displeasure to the king; and his independent conduct in the case of Commandments, which occurred in 1616, determined the court to remove him from office. The transaction was this: a sergeant-at-law, in the discharge of his duty as an advocate in the Court of Common Pleas, was supposed to have used matter in his argument which tended to question the royal prerogative; and the king was indignant at the conduct of the chief justice in the case without his warrant. The twelve judges were upon this message, and resolved that in a common dispute between party and party it was their duty to proceed notwithstanding the king's mandate. Upon this they were summoned to a special table, and the king dismissed the court by his commands by the king; and all of them, excepting the lord chief justice, acknowledged their error, and craved pardon for their offence upon their knees. Sir Edward Coke, on the contrary, after craving pardon for any formal errors which he might have committed, boldly justified his opinion upon the substantial point, contending that the king's command for staying the proceedings was a delay of justice, and consequently against the law, and contrary to the judges' oath.

The king, after much dispute in the council, delivered the following question to the judges:—Whether in a case where the king believed his prerogative or interest concerned, and required the judges to attend him for advice, they ought not to stay proceedings till his Majesty had consulted them? All the judges at once answered in the affirmative, except Lord Coke, who only said 'that, when the case happened, he would do that which should become an honest and just judge.'

The court now proceeded to the hearing the stubborn integrity of the chief justice, and determined at all events to displace him. Accordingly, on the 26th June, 1616, as a preliminary to his removal, he was summoned before the council and chief justice, and on the 27th, a new remonstrance was sent to him, which they were to be allowed to examine, and they were to return their answer to the council. At this time, some of them found upon alleged malversation, while he was attorney-general, to all of which he returned distinct answers. Four days afterwards, he was again summoned to appear before the council; upon which occasion he was
reprimanded, sequestered from the council-table during the king's pleasure, enjoined not to ride the summer circuit as judge of assize, and ordered to employ his leisure in revising many 'extravagant and exorbitant opinions' set down in his Book of Reports. In the course of the vacation he was again before the council-board, and answered a list of twenty-eight objections to doctrines contained in his Reports, which a contemporary writer observes, 'were either so weak in themselves, or so well answered, that they were read by the House of Commons' (Chambers' Letter to Sir Carleton, 26th Oct., 1616.) In November, 1616, he received his writ of discharge from the office of chief justice; and was succeeded by Sir Henry Montague, who was expressly warned by the lord-chancellor Egerton 'to avoid the false benefactor, who had been removed for his excessive popularity.'

From causes not very distinctly explained in the letters and histories of the day, which probably were connected with an intrigue for the marriage of his daughter to Sir John Villiers, afterwards Viscount Purbeck, Sir Edward Coke, though he never afterwards filled a judicial situation, was, at no long interval, restored to a certain degree of royal favour. In September, 1617, he was reinstated as a member of the privy council; and in July, 1618, he was appointed a commissioner for the exercising of the office of lord high treasurer of England, jointly with archbishop Abbott, lord-chancellor Bacon, and several others. (See Don-son's 'Records, temp. Jac. I.') In the course of the next three years he was so employed in other connections, as to have ceased to enjoy the active use of a public nature, and until the year 1620 he was constant in his attendance at the board. In the parliament which assembled in that year he was returned as a member for the county of Hereford. In 1621 he resigned the commission of the peace, and took an important part in that struggle between the prerogative pretensions of James and the freedom of debate, which ended in the celebrated resolution of the Commons, 'that the liberties, franchises, privileges, and liberties of parliament are as dearly bought birth-right and inheritance of the subjects of England.' During the year 1621, he attended only three times at the privy council; and on one of those occasions, namely on the 5th Oct., 1621, he seems to have appeared only to inform the board that he had induced one Johnstone to give up a grant which he had obtained from the king, as 'both a grievance to the subject, and a disservice to the state,' which information he desired might be recorded in the council book. His adherence to the popular or country party gave great offence to the court, and he was accused of various offences and malpractices. The king, at this period, was so incensed against him that he would not pardon a general pardon, at the end of 1621, he was told by the privy council to consult on the means of excluding Sir Edward Coke from the benefit of it; and on the 27th of December of that year, Coke was arrested and committed to the Tower, where he remained a close prisoner until the 8th of August, 1622. While he was in the Tower, proceedings were instituted against him both in the star-chamber and the court of wards, the precise nature and issues of which we now must be ascertained. Upon his enslavement from the Tower, he was ordered to continue himself to his house at Stoke Pogis, and not to repair to the court without express licence from the king. After his disgrace on this occasion, he was never again restored to the council-board. At the end of 1623 he was appointed a commissioner, together with Sir William Jones, one of the judges of the Common Pleas, and two other persons, to inquire into the church establishment in Ireland. That he was in the way of going on this mission appears from a passage in the 'History of Ireland,' 1623-4, actually granted by the council. Some accident however prevented his departure.

In the first parliament of Charles I., called in April, 1625, Sir Edward Coke again returned as one of the knights of the shire for the county of Norfolk, as he says in his 'Noto, sine aliquo motione aut petitione inde a me praebitis.' At the commencement of this parliament he adopted a moderate tone. He dissuaded the house from insisting upon grievances, and urged conciliatory measures; saying, that 'as it was the very beginning of the new king's reign, there could be no grievances as yet.' But this disposition to peace was overcome by the determined tendency of the crown to arbitrary measures; and the king being unable to obtain any answer to his demand of a subsidy, but repeated demonstrations against grievances abruptly dismissed his parliament. He was compelled, however, by his pecuniary wants, to assemble a new parliament in the course of the same year, having previously appointed Sir Edward Coke and three other popular persons in order to prevent their serving as members. Coke, having been in this manner named Sheriff of Buckinghamshire, was again returned as knight of the shire for Norfolk; and though in consequence of his unrelieved, he did not take his seat in this parliament, no man occupied his place, and it was considered that he was de facto a member of the house. He mentions this circumstance in his 'Fourth Institute,' p. 48, though he does not state it to have been his own case; and says, 'that his continuance, having been restored, entitled him to the seats with the county of Norfolk.' On occasion of the third parliament summoned by Charles I. in March, 1625, Sir Edward Coke was returned for two counties, Buckingham and Suffolk; but he tells us that 'he chose the former, because he resided there, and because his election for that county took place first.' In this parliament, though now in his 79th year, this extraordinary man gave evidence in public of his spirit and vigour, unaccompanied by the least symptoms of the infirmities of age, which at one period of his public career had so much excited the admonition of the Duke of Buckingham as the cause of all the misfortunes of the country. As a proof of the earnest feelings by which he was impressed, Rushworth records that, in one of the last sessions of his life, and to spend the remainder of his days in retirement on his estate at Stoke Pogis, in Buckinghamshire. Still it appears that his vigorous and active mind was not without employment; and the last thirty years of his life are said to have been occupied by the revision of the numerous works which he left behind him.

The last entry in his note-book, written with almost as firm a hand as he wrote at the age of 46, records the following event, which may possibly have been the cause of his death:—

'Memorandum. Die Jovis, the 3rd of May, 1632, riding in the morning in Stoke, between eight and nine of the clocke to take the syre, my horse under me had a strange stumble backward, and fell upon me (being above 70 yeares old), where my head lighted here to sharpe stubbes, and the heavy horse upon me. And yet, by the providence of Almighty God, though I was in the greatest danger, yet I was not quite fallen, but only fell upon both my hands and knees, and God saith by his prophet David, 'The angel of the Lord didst round about them that feare him, and delivereth them.' Et nonem Domini benedicitum, for it was his work.'

He died at the age of eighty, in September, the following year, repeating with his last breath the words, 'Thou art gone, I thy will be done,' and was buried in the family burying-place of the Coke family in the church of Tieshali, in Norfolk.

The works of Sir Edward Coke's works is the treatise commonly known by the name of 'Coke upon Littleton, or the First Institute.' It consists of a minute and laborious commentary upon the text of Littleton's 'Tenures,' the context of which almost the whole learning of the common law, as existed in his time, was implied. This book has, ever since the time of Lord Coke to the present day, been considered as a work of the highest authority in the municipal and constitutional law of England. The 'Second Institute' contains notes on several
antiquated statutes, the ‘Third Institute’ is a treatise on criminal law, and the ‘Fourth Institute’ on the civil and jurisdiction of different courts. Besides these works, Sir Edward Coke was the author of a treatise on copyholds, entitled ‘The Complete Copyholder,’ and a ‘Reading on Fines.’ He also published a collection of Reports, which are sources of great authority in the law, and are a model of learning and erudition. Col. Colle, from the Latin collis, ‘a hill or ascent,’ is a name given in Italian, and in the dialects of the Italian and Romance languages, to several mountains in the Alps and Apennines over which there is a road or pass. The name is applied both to the pass itself, and to the mountain. The principal Colas are the Col de la Seigne and Col de Bonhomme, in the Pennine Alps south of Mont Blanc; the Col de Balme and Col Ferret in the same chain north of Mont Blanc; and the Col d’Argentière in the Maritime Alps south of Mount Viso, and over which is a pass for mules leading from the valley of Barcelonette in France into the valley of the Stura in Piedmont. A branch of the ancient Via Emilia led over this pass on taking the road from Turin to Mount Viso, which has been repeatedly used by the French in their invasions of Italy. The Col di Tende lies between Piedmont and the county of Nice, on the road from Turin to the latter town, and is the only carriage-road over the Maritime Alps. [Alps.] The term Col implies a depression in the mountain, however high, which affords a natural pass; for instance, in the great ridge adjoining Mont Blanc, which divides the valley of Chamonix from that of Aosta, there is an ancient pass, called the Col du Grand, which is above 13,000 feet high. By the side of this great pyramid, and between it and Mont Blanc, there is a considerable depression, called Le Col du Grand, which affords a summer a practicable, though rough, pass between Chamonix and Courmayeur in the Val d’Aosta. The highest part of the Col du Grand is about 10,000 feet. This pass was also one of the most important in Tuscany, called Colle, from being built on some hill.

In Catalonia also, where a dialect of the Romance language is spoken, the appellation of Col is applied to mountains, and also to the hills. One rises from Viach, and Col de Balaguer, near the town of that name.

COLAPORE, a small independent Maharta state, situated within the province of Bejaopore, in the region of the Western Ghaut mountains, being partly below and partly within the Ghauts. The native inhabitants of the Colapore rajah is so intermixed with that of the British and of other Maharta chiefs, that it was difficult to describe its boundaries. [BEJAPORE.] The state of Colapore was founded by Socorro, his father, and fined tax for the Portuguese, and was confederated with the Nizam, and accompanied his army to Poom; and in 1731 a treaty was concluded between the Peshwa and Sumbajee, by which it was agreed that the lands of the province lying north of the Kistna should belong to the Peshwa, that all between the Kistna and Warna and the Tumbudu should belong to Sumbajee, and that all conquests south of the Tumbudu should be divided equally between them. The territory thus assigned to the rajah was a square, which included the whole of the Moguit, and partly of other chiefs, called Desses, who had set up for themselves. It was not until the subsequent reign of Mahdoor Rao, about the year 1762, that the whole was effectually brought under the rajah’s power. The chief towns are: the capital, Colapore, a town of war and turbulence, and a place of refuge for all the plunderers and pirates of neighbouring countries. In 1804 the rajah was at war with the Peshwa, and after a long struggle, in which the latter succeeded in capturing the chief places in the state, and in reducing the rajah’s government nearly to an kingdom without, in 1812, after which the state of Colapore enjoyed a long continued state of tranquillity, and was uninjured. In 1821 the rajah was privately assassinated in his palace, and was succeeded by a son of immature age, during whose long minority the country fell into a state of great disorder; the strong holds in the Ghauta were held by petty kings, who rebelled against the supremacy of the native rajah, and thus the disorganization became such as to call for a report to the English government from the political agent in the Deccan, in which it was stated that ‘robberies and other outrages are frequent in the remote parts of the Colapore country; and when one occurs, no person seems to be near the spot whose business it is to prevent the offence, or to secure the offender. After many delays a case of robbery sometimes finds its way to the rajah’s ears, and if he happens to be struck with its enormity, he orders out the Tippu-sarvans with a body of horse and foot to hunt the perpetrators. The party after scouring the country, and probably becoming as great a nuisance as the thieves themselves, return, and report that it arrived too late to trace them. Under such circumstances the rajah, with his eye on the common ruin of the country, was induced to be of an arbitrary disposition, and early lost the good esteem of his subjects by his exactions and his degrading vices. In 1825, 1826, and 1827, the rajah having committed aggressions on the territories of some Maharta Jaghoor-dars under the protection of the British, his territory was occupied by our troops, and the powers of government were temporarily placed in the hands of a minister appointed by the governor of Bombay. In each of the years just mentioned a treaty was concluded with the rajah, by which he bound himself to desist from acts of aggression; but these treaties having been forced upon him, their provisions were broken upon every occasion that presented itself, and in 1829 a definitive treaty restricted him from keeping up a greater force than 400 horse and 800 foot soldiers: some districts in which he had committed aggressions against the Zamin-dars were at this time taken from him; British garrisons were placed in the capital and in the fortress of Punnaughur at the rajah’s expense, and a chief minister for the future management of his government was to be permanently appointed by, and removable solely at the pleasure of the English government.

Selection of unpublished papers, from the records of the East India House, of the Committee of House of Commons on the Affairs of India, 1832—political section.

COLAPORE, the capital of the state just described, is situated in 18° 19' N. lat. and 74° 22' E. long., in a valley between a range of hills, by a mere village on three sides, the fourth side being protected by two hill-forts about ten miles north-west from the town. These forts stand upon rocks which are about 300 feet above the level of the valley, and which present natural perpendicular cliffs thirty to forty feet high. The two forts are connected together; one of them, called Pe-naghur, covers a space three and a half miles in circumference, in which area are several dwellings, lofty turrets, and a large building. The other is connected with the town of Colapure are not strong. The town is 12 miles south of Poom.

COLAPTES. [PIM.]

COLARIS. [PIM.]

COLBERG, a town and strong fortress in the administrative circle of Colnin, in the Prussian province of Pomernia, about 170 miles north-east of Berlin, and in 54° 9' N. lat. 13° 34' E. long. It is on the right bank of the Elbe, and commands the valley of that river, a country below the town, and at its mouth forms a harbour, called the Münde; which properly consists of two dams, carried out from the banks of the river into the sea, and protected by redoubts. Colberg contains 720 houses and 5900 inhabitants. It is the seat of the bishopric, a house of correction, an exchange, a foundation in a nunnery for seven daughters of noble families, and nine of citi-zens; an orphan asylum, a gymnasia, &c. Colberg has
a salmon, haddock, and lamprey fishery; manufactures of woollen, anchors, and brandy; also salt-works, which however do not yield above 1620 tons annually. The absence of fresh-water springs is supplied by admirable but very expensive water-works; the water, which is raised by a wheel to the height of forty feet, is conveyed in pipes to every part of the town.

Colberg was formerly one of the Hanse towns, and till 1812 the seat of a collegiate chapter. The modern fortifications and outworks were commenced in 1773. It was taken by the Swedes in 1697, and by the Russians in 1730; and was besieged by the Russians in 1758, 1760, and 1761, and surrendered to them by capitulation on the 16th December, in the last-mentioned year. The French invested the town in 1817, and took it by a combination of tactics and artillery, both inland and foreign, and a brisk woollen market. Its military strength is greatly increased by the swampy nature of the country around it.

Colbert, Jean Baptiste, born in 1619, Rheims, was brought up a businessman. He was first employed at Lyon, in a commercial house, and afterwards went to Paris, where he was introduced, about 1648, to Mazarin. (Groseley's Mémoires.) Mazarin employed him first as an amanuensis, but afterwards made him intendant or steward of his vast fortune. He appointed him his executor on his death-bed in 1661, and recommended him to the king as a man deserving all his confidence. Louis XIV., on appointing Colbert contrôleur-général des finances, had many counsellors who considered him as the chief benefactor of France. He was put into prison in 1674, he was pardoned on condition of Fouquet, the superintendent of the finances, who had assisted in dissipating the resources of the state to serve the cupidity of Mazarin. On the trial there was a man of the name of Pouget, who had been accused of having Fouquet condemned to death, but D'Ormeson, one of the reporting judges, stood firm; he found much abuse and mal-administration, but no proof of peculation. Fouquet was condemned to imprisonment, and his property was confiscated. Louis XIV. aggravated this sentence into imprisonment for life in the citadel of Pignerol.

Colbert advised the king to form a chamber of justice for the liquidation of the debts of the state. The finances were in a ruinous state; out of eight millions of which the people paid, the treasury received only thirty-two. The fictions of the revenue had in their hands all the resources of the kingdom; it was calculated that during the last five years they had appropriated to themselves eighty millions. They were now called to a severe account, and all the forms of inquisitorial process, torture not excluded, were employed to convict them. The result was that Colbert recovered for the king the sources of the public revenue, and astonishingly increased the resources of the state. He introduced the excise, which was, in fact, a real bankruptcy. Having got rid of the burdens, he next applied himself to simplify and improve the collection of the revenue. He reduced by two-thirds the stamp duty upon tobacco, which was distributed equally, owing to the exemptions of the privileged classes. Finding this tax unmanageable, Colbert preferred reducing it, to make it weigh less heavily on the poorer classes. He founded his chief dependence on indirect taxation, or taxes upon consumption, which he raised not less than tenfold. Besides the octroi, or barrier duty on provisions, of which he appropriated one half to the treasury, and the aids or excise duties on wine and spirits, he imposed a stamp duty upon all papers used in commercial and judicial proceedings, a stamp on plate, a duty on paper, a licence duty, and he established the monopoly of tobacco, &c. He also made a new and minute tariff for the customs duties. At his death, 1665, the regular revenue of France was 244 millions of livres, of which 177 millions were absorbed by the charges of collection and administration, and the rest or annuities due by the state, leaving ninety-two millions of net receipt, instead of thirty-two, which he had found when he began his office. (Les États Généraux, 1687, pp. 39 &c. Pécus Justiciables.) But one half only of this increase was obtained through additional taxation; the other half was the result of better order and economy. Colbert however, was a sovereign, kind, and gentle young, fond of pleasure, of pomp, and of war, seconded by his friend and amiable minister, Louvois. In the latter years of his administration Colbert was therefore obliged to have recourse to ruinous loans, an increase of the oppressive taxes, the sale of offices and honours, and other extraordinary war expences. This took place during the second war of Louis XIV., which began in 1672, and ended by the peace of Nimigoeau, 1678-9. Colbert's aversion to loans was very great. He said to Lamoignon, who had supported in the council the proposal of a loan, 'You don't know the man we have to deal with (meaning the king). You have heard of a sire which your grand-children will not be able to heal.'

Colbert's most strenuous and effective efforts were directed to the encouragement of commerce and manufactures. To accomplish his object, he adopted the only means known to him, the free grants of privileges, patents, monopolies, bounties, and honours. He generally looked upon as the inventor, or at least the principal promoter, of Colbert's tariff. He did not attempt to check the natural progress of commerce, but to stimulate it. He made numerous regulations to protect, as it was then called, the various branches of national industry. He also forbade the exportation of corn with the view of insuring plenty, but the result was that cultivation declined, and France suffered several severe dearths under his administration. He is accused of having sacrificed agriculture to manufactures, but in fact his principles were erroneous with regard to both. One merchant, more enlightened than the rest, being consulted by him on the best means of favouring commerce, answered him, 'Laissez faire et laissez passer,' 'let us alone, leave us free and uncontrolled in our transactions, and let goods pass freely,'—advice which Colbert did not understand. In 1671 a commercial treaty was concluded with the school, opposite to his, which saw in agriculture alone the real wealth of a state: these men were called 'économistes.' Mengotti, in his sensitive treatise 'II Colbert,' however, defended the Colbert system of both. But whatever may be thought of Colbert's measures, he certainly succeeded in giving a great impulsion to French industry; he roused and directed the national mind towards a new and useful exercise of its faculties: the history of French manufactures may be said to begin with Colbert. Woollen, silk, glass, pottery, leather, and iron manufactures, were either created by him, or greatly enlarged and improved. He founded Quebec and Cayenne, and the west and east coast settlements in America, and favoured the colonies of Martinique and St. Domingo. He chartered privileged companies for the East and West Indies. He turned his attention to internal communications, restored the old roads, constructed new ones, planned and effected the great roads of France, and projected another in Burgundy. He also established a free port at Marseille, sent consuls to the Levant, and thus secured to France a considerable part of that valuable trade. The fortresses of Flanders, from Charles II. of England, for the sum of five millions of livres (1662). He also founded the docks of Brest, Toulon, and Rochefort. When he was made minister of War in 1664, he was able to give the Charles II. of England, for the sum of five millions of livres (1662). He also founded the docks of Brest, Toulon, and Rochefort. When he was made minister of War in 1664, he was able to give the French navy a stronger fleet than that which was destroyed by the English in the Bay of La Harpe, placed it in two houses near his own hotel, and increased it from 16,000 to 40,000 volumes. At the same time he formed his own extensive and valuable library, the Louvois collection, which was divided amongst his grandson afterwards sold to the king. He instituted a commission of legislation which framed the various ordinances of civil and criminal process, of commerce, of the woods and forests, and of marine, published in 1670 and 1671. These codes constituted the first code of laws for France, and from which the various legislative commissions appointed by Napoleon drew most of their materials. (Codes, 1831.) It was the first separation of the various branches of legislation, which had till then been confused together in the
ordonnances issued upon the spur of occasions. He also had a series of laws compiled concerning the negroes and their treatment. By the British, he was called "Le Noir." A minister strict, orderly to minuteness, and averse to prodigality, could not well sympathize with Louis XIV.

Colbert was ambitious, and strongly attached to his plans, which he conceived to be for the prosperity and glory of France. In order to attain the object of his favour, he patronized the arts and sciences. Under his influence, the Académie Française was founded; the boulevards were opened; the focus of the Louvre, the triumphal arches of St. Denis and St. Martin, the Boulevards, and some of the quays along the Seine, were erected under him. He also began the structure of Versailles; but the king's passions were its ruin. Treasures that were bought to Colbert's intentions, and vast treasures were sunk in a
gorgeous and useless work. Colbert instituted the Academy of Sciences, and those of Inscriptions and of Architecture.

He reformed the Academy of Painting, and established the school at Rome for French artists. He transferred the Académie Française to the Louvre, and became one of its members. His temper was absolute, like that of his sovereign; he deprived Mazarin of his pension because he had written a pamphlet against Colbert, and the latter took over the influence of the parliament of Paris. His manners were cold and repulsive; a poet of the time called him 'a man of marble.' Slow in conceiving his plans, and cautious in deciding upon their execution, he consulted and listened to advice; but when once resolved upon, his will knew no obstacles either of delicacy, feeling, or commissoration. A clear judgment, an iron will, and an indefatigable labour, supported him through his twenty-two years of administration. At last, seeing no Avignon, returning the second church, the king's mind, Louis preparing himself for new wars, and maintaining the war-taxes which ought to have been pealed at the peace; grief also at the incipient persecution of the Protestants, whose church, and even the war industry Colbert fully appreciated, among whom he had chosen some of his best subalterns in the administration, and of whose services he was deprived by an edict which excluded the Protestants from financial appointments, Colbert felt all the pang of disappointment for his ill-appointed services. Exhausted with labour he fell ill, and shortly after died, 6th September, 1683, at sixty-four years of age. When near his death a letter from the king was brought to him, but he refused to open it. 'I will hear no more of him; he must have good news to now,' he said. 'Had I done for my God what I have done for that man, I should have been saved twenty times, while now I do not know where I am going.' Father Bourdaloue attended his last moments. The people, on hearing the death of the great body to pieces. He was buried in the night, attended by a military escort.

Colbert's first son was made Marquis of Seignelay, and another became Archbishop of Clermont. His brother held also high offices, and was made Marquis de Croissy. Colbert built himself a splendid mansion at Seaux, and he left a fortune of ten millions of livres, the fruits of his rigid economy and of the liberality of Louis. (Notice sur Jean Baptiste Colbert in the "Lemonty," vol. v., Périer Juste, Paris, 1829; see also Mémoires de Charles Perrault, Colbert's secretary; and Particularités sur les Ministres des Finances, par Montyon. The several Fies and Elges of Colbert are not worthy of much credit.)

The library. The remnant of the library of the state, and of the state church, is highly interesting. A fine semicircular retiring arch, with various mouldings of small Roman bricks and stone alternately, forms the doorway.

Colchester has returned to two members to Parliament since the 23rd of Edward I. At the first election after the passing of the Reform Act there were 1099 voters registered. The first charter granted to the corporation was by Richard I. in 1199. It was subsequently extended by Henry V. and Henry VIII.

The Corporation hold quarterly Courts of Session for the borough and the liberties: and two Courts of Pleas for the recovery of debts to any amount; one called the law huni, and the other, again named, on Monday. On which days, and on Thursday, called the Fore Court, for actions against strangers, or non-freemen. The Moot-hall is an ancient building erected by Eudo, and contains the Hall and Ex-

No. 445. [THE PENNY CYCLOPEDIA.] VOL. VII—9 X
Together with the anthers and stigmas, above the surface of the soil, while the tubular part, with the ovary and stigma, remain submerged. The flowers are enveloped by a sheath of the leaves, the edges of which are produced so as to form the calyx, and the sepals beneath the flower. Each stock produces six or eight of these flowers. The stamens are six, each with a long thread-shaped style, and not adhering in any degree to the tube of the flower. These are supplied with three little follicles, which slightly adhere to one another by their inner edge, and in the spring are elevated above the soil by their lengthened footstalk. At this time, the foliage makes its appearance in the form of an erect leaf with a point of branching leaves. Each follicle contains several oblong seeds.

Colchicum is so very like an autumnal crocus, that an inexperienced observer might readily mistake the one for the other. They are, however, to be distinguished by the crocus having only three stamens, one style, and one superior ovary, while the colchicum has six stamens, three styles, and a superior ovary—distinctions of no little importance when the poisonous qualities of colchicum, in which they are used as foods for all participants, are considered.

For medical purposes, the roots of colchicum should be collected at Midsummer, and they should be used immediately; for at that time the peculiar principles which contain are in the greatest state of concentration. If they are used as food late in the autumn, they will contain the principles of growth, especially when it is coming into flower, those principles are partly lost and decomposed by the growth of the plant, and there is no certainty as to the quantity of vertreia that a given weight of the root-stocks will yield.

Other plants are sometimes made use of, because of the sake of their flowers, but they are of no medicinal importance, and are very badly distinguished from each other by botanists.

Three different parts of Colchicum, Autumnale yield an active principle used in medicine, but they respectively contain it in different periods: the first part is during the first four seasons of the year; the cornus (incorrectly called root or solid bulb) having it in perfection about June or July, the flowers in September, and the seeds the following spring. The cornus is employed in Britain; but should the proper period (Midsummer) for collecting the cornus be neglected, the flowers may be substituted, though they can only be put to immediate use, as they do not keep well. The cornus are found at various depths under ground; when very deep, they are not so good, being the produce of old exhausted plants. Each cornus is about the size of a hazel-nut or walnut, ovate or heart-shaped, consisting of a white fleshy succulent substance, which, when cut across, exhibits a white fleshy marrow, which is sometimes made into a decoction which also may be discovered a groove, in which is lodged the stem of the flower-stem of the following year. The recent cornus has a nauseous radish-like odour; when dry, the powdered, a nauseous smell is found, which is sweeter-bitter, leaving an acrid sensation in the throat.

The seeds, which should be collected in May, are small, globose, about the size of a grain of millet, of an obscure fawn colour, opaque, rough, and wrinkled, with a white hilum at the base, very hard, tough, and difficult to reduce to powder. The relative proportions of the constituent ingredients of the cornus differ greatly, according to the season of the year when it is taken up for examination, as Stolze's analyses demonstrate. The active principle of colchicum was long considered to be the same as that of veratrum, and thence called veratrim; but Geriger and Hesse have shown that it is different, and have termed it colchicin. The seeds contain this principle, and likewise some thick oil. Colchicum imparts its activity partially to its seeds, and in other materials; a greater dose in larger doses, frequent evacuations from the intestines, accompanied with pain and tenesmus, and desire repeatedly, to empty the bladder. Still larger doses cause increase of all these actions, with vomiting and sense of burning in the throat, internal bleeding with a flow of blood into the intestinal canal, vomiting of blood, and a flow of bloody urine. Great disturbance of the nervous system is likewise observed, as in other cases of poisoning with acid substances. The same appearances are found in the intestinal canal, if the poison be injected into the veins.
Even the milk of cattle which have eaten the meadow-saffron becomes capable of causing death. (Vogt.)

In a moderate dose, colchicum seems to increase the quantity and improve the quality of all the secretions of the intestinal canal and the colli-tious viscera, especially the liver's; the liver's cough, which is caused by one of the colchicum heart. Chelius says that in twelve days it doubles the quantity of uric acid found in the urine, a circumstance which explains its utility in gout and rheumatism.

The diseases in which colchicum is most useful are, dropy, when a small dose is prescribed; gout, in which larger are used; and rheumatism, in which its beneficial influence is first felt on the liver (which is almost always disordered in these diseases), and afterwards on the kidneys, frequently leading to a disappearance of the formation of gout-stones (urea of soda) in some degree prevented. As acid in the stomach renders the action of colchicum more violent, magnesia is usually given along with it. The acetate and acetic extract are the best forms of administration.

COLCHIS, a country of Asia, extending along the eastern shore of the Euxine Sea, from the town of Tragpezus. (Strabo, p. 548, d.) It was bounded on the north by the Caucasus, on the south by Armenia, on the east by Iberia, and on the west by the Euxine. The modern Mingrelia includes only part of this country. The name Colchis appears in the early legends of the Greeks as connected with the expedition of the Argonauts [Argonauts], and the story of Jason and the Golden Fleece.

The chief river of Colchis was the Phasis, which, receiving the small streams of the Glaucus and Hippus from the neighbouring mountains, flows into the Euxine sea. (Strabo, p. 546, d.) Hippus is a long river, the great mart of the district, Phasis, on the river of the same name, where the Argonauts are said to have landed, Aea on the Phasis, and Ceta. Colchis was a very fertile district and abounded in timber, which was well adapted for ship building, in various kinds of fruits, and in flax. The inhabitants were famed for their linen manufactures, which formed a considerable article of export. The honey, which Strabo (p. 498, b) represents as being very bitter, produced in great quantity, and the wool, which the Colchis, east of it during the retreat of the Ten Thousand, deprived them of their senses, disabled them from standing up, right, and occasioned vomiting, &c., but finally all recovered. (Xenophon, Anab. iv. s. 20.) The richness of the country in silver and gold mines, some of which are said to be worked with profit at this day, was probably the cause of the Argonautic expedition. The pheasant (Phasianus colchicus) derives its name from its native place, the banks of the Phasis.

The Colchis were originally from Egypt, according to Herodotus (ii. 104), and part of the army with which Sesostri invaded Scythia. The facts on which he found his opinion are similarly of physical, features of language, and of peculiar races, and it was the result of a visit to the country. The swarthy complexion, on which Herodotus relies in support of his position, seem however no longer to exist in Mingrelia.

Colchis was governed by kings when we first read of it. Helius is mentioned by Diodorus as king before the Argonautic expedition. Zetes is mentioned by Strabo (p. 45, d) as king at the time of the expedition. Colchis was afterwards divided into several small kingdoms or states (Strabo, 45, d), and we hear nothing more of it till the time of Alexander, when he found the head of a son or grandson of Zetes reigning over the Phasiani. The Colchi were not then subjects of the Persian empire, but were independent. (Xen. Anab. vi. s. 25.) They opposed the Greeks in the retreat of the Ten Thousand. Mithridates afterwards subdued Colchis, and the government was administered by præfets, one of whom, Moaphnês, was Strabo's uncle. (Strabo, p. 449, a.) Under the early emperors, the family of Polemon, a Greek rhetorician, was made princes of Colchis. (Strabo, p. 449, a.)

COLD, in Natural Philosophy. [Hitz.]

COLD. [Catararrh.]

COLDEN, CADWALLADER, lieutenant-governor of New York before the revolution, was the author of numerous works on law and protection to the rights of property, and botany. His father was minister of Dunse in Scotland, where he was born in 1688. He received his medical education at the university of Edinburgh, and in 1702 he emigrated to Pennsylvania, where for several years he practised as a physician. After visiting England, and having established a reputation by "Remarks on Animal Secretions," he returned to Pennsylvania, and settled finally in 1718, in New York, where he was appointed surveyor of the lands of the colony and master in chancery, with a seat in the Assembly. His "A Treatise on Fruit," subsequently enlarged and republished as "Principles of Action in Matter," with a treatise annexed, on the "Elements of Fluxions, or Differential Calculus;" "An Introduction to Medicine," "Remarks on the Inaccuracy of the History of New York." His favourite species, Coleus, or Lycopus Minor (Acta Linn. Plantae Novoboracensis) contain his descriptions of several hundred American plants, of which 200 were new species. He left a long series of meteorological observations, and a daily register of the thermometer and barometer; and several valuable MSS. on the vital movements of light, intelligence of animals, and on the phenomena attending the mixture of metals. Among his correspondents were most of the leading scientific and learned characters of the age, as Franklin, the earl of Macclesfield, Gronovius, and especially Linnaeus, who honoured him by naming a new species of plants Coldemia. He died at his seat on Long Island at the age of eighty-nine. (Biographie Universelle; Encyclop. Am. South.)

COLEOPSIS, a cultivated state of the Bracichus Negus, which does not form a close head, like cabbagge, but has sessile heart-shaped leaves. It is cultivated for its seeds, from which an oil is expressed, which is much used for burning in lamps, and for frying vegetables. It is also a popular fish-pond plant.

There are two varieties of cole, one with white flowers and another with yellow; the latter is the hardest, and consequently most generally cultivated.

It requires a good loamy soil, well manured, to produce a good crop of cole seed. In rich soils, the head is small, but from pasture, or fenny land newly drained, it grows luxuriantly and gives a great return. It is thought to be a good exhalation of the soil. In a rotation, cole is considered a good cross-bed, where it does not succeed to a good crop. As another variety, it is sometimes sown to be fed off by cattle and sheep on land which is not so well adapted to the growth of turnips.

COLEOPTERA (coleoptera), in Entomology, a name first applied by Aristotle [Hist. Anim. i. 8c.], and now universal in the orders into which insects are divided, the species of which order are commonly known by the name of Beetles.

Nearly all the true beetles and some annelus animals which have six legs, exhibit, in a more or less developed state, four wings, or members, which, although they may not enable the animal to fly, occupy the same situation, and are analogous to those which in many insects are true organs of flight.

These members are modified in various ways to suit the habits of the species or of the groups in general; but in some insects whose habits are of a nature not to require the power of flight they are very small, eminently shrinking, being found either in a rudimentary state, or modified in their structure so as to perform some other office. In those instances where the wings are only rudimentary, we cannot often assign any positive use for them; we can only demonstrate that the individual possesses in their assistance in these respects—that is to say, those species which belong to groups where the individuals generally possess perfect wings will often possess these members in a rudimentary state with which they do not require the power of flying.* It appeared necessary to make these few general remarks before proceeding to give the distinguishing characters of a coleopterous insect, in order that the nature of these characters and the departures from them might be understood, and as it is difficult to give a strict definition of any group of animals.

The insects, then, which constitute the order Coleoptera may be characterized as having four wings, of which the two superior are not suited to flight, but are used covering for the body, and the inferior wings are of a hard and horny or parchment-like nature, and when closed, their inner margins, which are straight, touch and form a longitudinal suture (fig. 16, c); the inferior wings, when not

* The females of many moths have only rudimentary wings.
in use, are folded transversely under the superior, and are membranous. From this character of having the wings in a sheath, the term Coleoptera was applied, it being composed of the two Greek words κολεός, a sheath, and πτερόν, wings. The superior wings, which form the sheath, are generally called elytra.

The principal exceptions to this general rule are as follows:—those beetles which have no under wings, or have them in a rudimentary state, as in Carabus cancellatus; and those in which the elytra are solidly attached to the suture, in which case we believe no under wings are ever found.

Another species of Carabus (C. violaceus) and many among the Heteromera afford examples of this exception. There are several beetles in which the elytra do not close at the suture, and in which the under wings are not protected by them. Such is the case in the genera Sitaris, Rhipiphorus, and others in which the wing-cases, or elytra, are somewhat flattened; and in the genus Molorchus, among the Cerambicidae, the wing-cases are very short, and the wings are not folded beneath them when at rest. In the Staphylinidae the wing-cases are also very short, but the under wings, by a series of folds, are, when not in use, entirely concealed beneath them; and as in this tribe the elytra form a straight suture when closed, the only exception consists in the greater number of folds in the under-wings.

Numerous other exceptions might be noticed, but we will merely mention the genus Mete, where one elytron partly folds over the other; the families Lamyriidae and Telephoridae, in which the elytra are comparatively soft and flexible; and the glow-worm, the female of which beetle has neither elytra nor wings.

The larvae of Coleopterous insects are generally composed of thirteen distinct segments, the head included. They are almost always of an elongate cylindrical or slightly depressed form; the body is often soft and fleshy, and of a white colour: in those the head is always of a firmer texture, being of a horned nature. The principal parts of the mouth are the same, as to number, as in the perfect insect, although the parts are (as far as our observations go) always differently formed. The head is furnished with two antennae, which are generally minute, and composed of four joints, and swell, or simple eyes, on each side, situated near the base of the antenna. The body is furnished with six legs, which are attached, a pair to each of the three first segments, or those next the head: the legs are small, and usually terminated by a simple claw. Sometimes in addition to the ordinary legs, the larva is furnished with false legs (often termed pro-legs); these are fleshy tubercles which the animal can protrude at pleasure, and are used to propel the body. Some larvae have only two of these pro-legs, which are attached to the apex of the terminal segment of the abdomen, or placed beneath that segment; and in the larvae of the species Cerambycidae we find each segment of the body is thickened in the middle both above and below; these parts the animal has the power of protruding considerably, by which means it is enabled to thrust itself forwards or backwards in the holes in the trunks or boughs of trees which are formed by its feeding upon the wood.

The larvae of groups (generally believed to be natural) very closely resemble each other, though those of different groups are sufficiently distinct: hence a knowledge of the larva is of great use in determining the natural affinities of species when their families or sections are not well ascertained.

We select as an illustration of the principal characters of a Coleopterous larva, that of one of the Lamellicornes, a group which comprises the common cockchafer, and where the larvae generally, if not always, have their body bent and not so long as it appears in most cases to the naked eye.

We will now proceed to the pupa state of Coleopterous insects. Those larvae that live in the ground generally prepare for the pupa state by removing the soil which surrounds them, so as to form an open oval space: others form a case of cocoon around them, constructed of particles of earth, and other substances within reach, joined together by a kind of web or glutinous substance. Wood-feeding larvae, or those that live in the trunks or bark of trees, or in decaying wood, for the most part assume the pupa state without such preparation.

Some larvae which feed upon plants enclose themselves in a spherical cocoon; others again suspend themselves by the tail and hang from a leaf or stalk of the plant. In some instances we have known the animals to assume the pupa state within the skin of the larva. The pupa of Coleopterous insects are what is termed incomplete, i.e. all the parts of the perfect insect are distinctly visible, the legs, antennae, wings, &c. being each enclosed in a separate sheath, and not, as in the pupa of Chrysina, that of moths and butterflies, where all the parts are soldered together, or as in the pupa of the Hippoptera (bug tribe), or Orthoptera (locust tribe), in which stage the insect is active, and in which it is impossible to distinguish the parts of the insect. This character, of pupa incomplete, is therefore one of great importance, and is generally added to the definition of a Coleopterous insect, for there are no other insects which, in the pupa state, are so completely and which, in the insect, could be confounded with the Coleoptera.

Having traced the beetle through the larva and pupa states, we arrive at the last or imago state, the perfect insect.

Beetles belong to the Mandibulata, which forms the first of the two great sections into which insects are divided: a section, the individuals of which are distinguished by their possessing distinct mandibles; and as the insects of the order Coleoptera possess the mandibles and all other parts as in the perfect insect, and these are placed at the head of the insect tribe. We imagine, however, that the reasons stated for so doing are not sufficient.

It would require considerable space to enter into the anatomy of an insect: we will therefore at present confine ourselves to the external parts of a beetle, and to those only which it is essential to know, in order to understand the description of these insects.

When we look at a beetle, we perceive that it is composed of a head, a thorax, and an abdomen; the first and last of which are the highest and smallest parts. The head is the next; the next is called the thorax; and the last the abdomen.

The head is furnished with two eyes, two antennae, and the various parts of the mouth, called the trophi. The eyes are situated on each side, and are somewhat generally prominent, and always convex masses composed of an immense number of lenses arranged closely together, so that their interstices form hexagons. These are technically termed compound eyes, and are of a circular or oval form, frequently kidney-shaped, and in some instances (as in the genus Tetrops among the Cerambycidae) they are completely divided.

The antennae in Coleopterous insects have their origin generally near the eyes, and are situated for the most part either between them or before them. They are generally composed of eleven joints; in many, however, this number cannot be traced, whilst in some few there appear to be twelve. The form of the antennae is extremely variable, and will be best understood by an inspection of the following illustrations, among which will be found most of the more common forms, and some of the more extraordinary.

* Megalopsers, a little beetle, allied to the Dermestes, the larvae of which is described by Dr. Brongniart (Natural History Magazine). It appears that among the various characters which distinguish insects from other invertebrate animals, the great perfection of instinct displayed in all that tribe which exhibits this quality is the highest perfection, and at the same time that which possesses in a more or less conspicuous part of the body, an organ of instinct, ought, in our opinion, to be considered as the head of the insect.
are oval or round, and resemble a necklace of beads. Examples are found in many of the species of the section Heteromera.

There are many other variations in the antennae of Coleopterous insects which might be noticed, and for descriptions of which we refer our readers to Kirby and Spence’s *Introduction to Entomology*, vol. iv., p. 314. Most of those here noticed are the more common forms, and occur frequently in our descriptions of insects of this tribe.

We now come to the parts which constitute the mouth of a beetle—these, it is scarcely necessary to say, are situated in the fore part of the head; they consist of a *labrum*, or upper lip, two *mandibles*, or jaws, two *maxillae*, or under-lips, and a *labium*, or under lip. These are the six principal parts. We shall however also notice the portions called the *mentum*, or chin, and the *clypeus*, since they are frequently mentioned in descriptions.

The *labrum* is a movable plate, often on the same plane with the fore part of the head, which it terminates, and generally covers the base (at least) of the mandibles above; hence it is frequently called the upper lip, forming as it does the upper boundary of the mouth.

This portion, although of various forms, is less liable to variation than most of the other parts of the mouth. The most common form perhaps is somewhat quadrate, or broader than long, as in fig. 24, a.

Upon referring to the article CARAUS, it will be seen that that genus and some other closely allied genera are separated chiefly on account of the difference in the form of this member. In one it is described as bilobate; by this is meant, that the labrum is notched in the middle, so that the two side pieces form lobes (see fig. 25). When the labrum is not thus notched, but presents an even anterior margin, it is described as *entire*. In one of the other genera (*Procrustes*), where the labrum is described as *triboliate*, the only difference consists in its having two notches on the anterior parts, and thus separated as it were into three lobes.

The *clypeus* is the part to which the labrum is attached, and which is usually on the same plane with it. The term *clypeus* will seldom be found in descriptions, excepting in giving the characters of those beetles which belong to the Lamellicornes, a tribe in which this part is greatly developed (figs. 17 and 18, d), and where the labrum is hidden beneath it.

Under the labrum, the mandibles (mandibles) are situated. These, as their name implies, are the organs of manducation; they move horizontally, and are most com-
monly of a shape more or less approaching to a triangle. Their form however varies according to the food of the insect.

Generally speaking, in beetles which feed upon vegetable substances the jaws are broad, obtusely pointed at the apex, and have more or less broad flat surface at their base (often with little sharp ridges), which somewhat resembles a molar tooth of herbivorous quadrupedal. (See fig. 21.) In those species whose habits are carnivorous, the jaws are longer and less stout, have the apex acutely pointed, and several sharp tooth-like processes on their inner side. (See fig. 20.)

Next in succession follow the maxillae, or under jaws (fig. 17, n, and fig. 22): these organs are situated beneath the mandibles, and, like them, move horizontally. A typical maxilla consists of several parts, the principal of which are, the hinge (cardo), a piece situated at the base of the maxilla (fig. 22, d), the maxillary palpus (fig. 22, a), an articulated organ generally composed of four joints, the outer lobe (lobus inferior), which last portion constitutes the inner part of the maxilla, and is often formed like the blade of a knife, and furnished generally with a series of bristles or hairs on the inner edge. (See fig. 22, c.) The maxilla seem to be used with the labium in directing the food during manducation, and the bristles on the inner edge appear to serve as a kind of strainer through which the juice is strained, and, for we observe that solid substances are seldom swallowed by insects in their imagio state.

The labium, or under lip (fig. 17, h and g, and figs. 23 and 26), is a movable organ which serves to close the mouth beneath, and is generally divided by a transverse suture, in which case the lower portion constitutes the mentum, or chin. The tongue (fig. 23, c), which may be considered as a portion of the labium, in Coleoptera insects, is usually situated at the base of that member, or emerging from it. The labial palpi (figs. 22, b, b, and fig. 17, f) are two articulated organs, usually springing from the summit of the labium on each side.

Having now noticed the head and its parts, we come to the thorax. On this portion it will be unnecessary to dwell: we need only mention that the thorax in insects is composed of three first segments of the body, which in the larva state are usually distinct; these are termed the prothorax, mesothorax, and metathorax; and it generally happens that in the perfect insect one of these segments is greatly developed at the expense of the other two, particularly on the upper surface of the body; such is the case in the Beetle tribe, where the last portion or prothorax (fig. 16, a) and the small plate (fig. 16, b), which is a part of the mesothorax, are all that is visible from above when the elytra are closed. Some few entomologists, therefore, in describing beetles, call the part (fig. 16, a) the prothorax, but it is most commonly called the thorax. The small plate (fig. 16, b) above referred to is called the scutellum, and is usually of a triangular form.

To the thorax are attached the legs and wings: the anterior pair of legs are attached to the prothorax; to the mesothorax the intermediate pair of legs and the anterior pair of wings, or elytra, as they are termed in the Coleoptera; and to the metathorax, the posterior pair of legs and the hinder pair of wings. Of the wings enough has been said for the present in some they are formed for running (fig. 27), in others for swimming (fig. 29); here they are very broad and flat; in others again their structure is suited to burrowing habits (fig. 29); and fig. 30 represents the hind leg of a beetle, which has the power of leaping to a great distance, where the tibia is long and large.

A leg may be divided into five principal parts: the tarsus or hip (a, figs. 27 and 29), which is the first joint, or that joined to the body, where it plays a socket; the next part or second joint of the leg is the tibia (c, figs. 27, 28, and 29); the third is the femur or thigh (c, figs. 27, 28, and 29); the fourth joint is called the tibia or shank (d, figs. 27, 28, and 29); the fifth and last part is the tarsus (e, figs. 27, 28, and 29); in a lesser number is found, but in none do they exceed five: the last joint of the tarsus is usually terminated by two hooked claws called unguesculi (g, fig. 27), and the apex of the tibia is furnished generally with two straight spines called the calcaria. (See f, figs. 27 and 28.)

The object in noticing the above parts of a Coleoptera insect is principally to make our descriptions of the species of this order intelligible to the general reader; and as the abdomen offers nothing of consequence, or rather nothing but what may be understood by its description under the various heads, we refrain from making any further remarks on the anatomy of the Coleoptera in this article, and now proceed to the classification.

As regards the general classification of the Coleoptera, as well as of insects in general, in almost every work which treats of the subject, a new method is proposed. We shall content ourselves, however, with noticing two—that which is most commonly adopted amongst entomologists, and which is followed by most entomologists of our own country; the former is the method proposed by Latreille, and the latter, that by Mr. Stephens.

In the classification of the Coleoptera, published by Mr. Stephens in his 'System of British Insects,' the various sections and subsections are as follows.

Order. Coleoptera.

Sect. 1. Adephaga
Subsect. 1. Geodephaga
Subsect. 2. Hydradephaga
Subsect. 3. Philhydrida
Sect. 2. Chilognathomorpha
Subsect. 1. Clavigornora
Subsect. 2. Lamellicornora
Sect. 3. Staphylinidae
Subsect. 1. Euphodes
Subsect. 2. Brachytera

The arrangement of Latreille is founded upon the number of joint of the tarsi; he accordingly divides beetles into the following great sections:

Section 1. Pentamera, including all those beetles which have five joints to their tarsi.
Section 2. Heteromera, beetles with five joints to the tarsi of the two anterior pairs of legs; four to those of the posterior pair.
Section 3. Tetramera, beetles with only four distinct joints to all the tarsi.
Section 4. Trimeri, beetles with only three distinct joints to the tarsi.

On comparing these two arrangements, it appears that there is considerable difference of opinion between the authors of them as to the value of certain groups. The Trimeri, according to Latreille, is made one of the four great sections, whilst Mr. Stephens makes it a subgenus of a subtribe of a subgenus of a tribe and of equal importance with Latreille's first division, the Pentamera.

These discrepancies probably arise from the want of some standard by which the importance of genera, or even families, may be estimated. We find a great number of insects possess certain characters in common, but it often happens that we cannot ascertain what influence these characters have on the habits and economy of the individuals. In such instances the correct way perhaps would be to judge of the value of a character by its constancy; or, in other words, to consider that character of most importance, as regards classification, which is found in the greatest number of

* In the two better sections there is a minute rudimentary joint at the base of the terminal one.
species, these species agreeing more or less in some other points.

In all groups of animals there are, however, certain typical characters to which all the species approach more or less, and which perhaps the greater portion actually possess. The typical characters of a group, and the departures from them, often suggest the method of constructing new groups, natural and equivalent groups. In the Coleoptera, for instance, the typical structure is to possess five joints to the tarsi; Latreille's first section (the Pentamera) consequently comprises at least half the species and several distinct groups, each of which is equivalent to one of his other sections.

It appears to us, being guided by the points above mentioned, that the order Coleoptera contains, the thirteen following distinct sections, and that Latreille's groups are not natural.

All the Tarsi with five joints.

Section 1. Geodephaga, Mac Leay.
2. Hydradephaga, Mac Leay.
Nephephaga, Mac Leay.
1. Palpocornes, Lat.
7. Sternoxii, Lat.
8. Malacoderm, Lat.

Five joints to the tarsi of the two anterior pairs of legs, and four to the posterior pair.

9. Heteromer, Lat.

All the Tarsi with four joints.

10. Rhynchoptera, Lat.
11. Hyperpodia, Lat.
12. Cyclidae, Lat.

All the Tarsi with three joints.

13. Tripteri, Lat.

The number of species of beetles in existence may probably amount to between thirty and forty thousand.

The principal works on the Coleoptera are as follows:—Fabricius (J. C.), *Systema Entomologorum*; Olivier (A. T), *Lepidoptera, ou Histoire Naturelle des Insectes*; 3 vols., folio, with coloured plates; Passy (Gustavus), *Fauna Sueciae,* 3 vols.; Gyllenhal (L.), *Insecta Sueciae;* Schenck (C. J.), *Genera et Species Curculionium;* Dejean, *Species generis des Coléoptères;* five volumes of this work are published, and contain descriptions of the genera and species of the Carabidae and Coccinelle. Besides these, the works of German, Illiger, Sturm, Knoch, and Dufsehmid may be consulted; and the Coleoptera of our own country will be found described in Stephens's *Illustrations of British Entomology."

COLERIDGE, SAMUEL TAYLOR, was born at Ottery St. Mary in Devonshire, of which parish his father was the vicar, on the 21st October, 1772. He was the youngest of a family, and became an orphan at the age of nine. Owing to the straitened circumstances of his family, he was sent to be educated at Christ's Hospital, where the late Charles Lamb was among his contemporaries. Here he made very great progress in classical knowledge; as may be inferred from the fact that he had, before his fifteenth year, translated the hymns of Sinesius into English Anacreontics. His choice of these hymns for translation is explained by his having, even at that early age, plunged deeply into metaphysics. Speaking of him, Johnson used to say, "The philosopher of Lemont, or Lemont of Lemont" (vol. i. p. 16), he says, "At a very premature age, even before my fifteenth year, I had bewildered myself in metaphysics and in theological controversy. Nothing else pleased me. History and particular facts lost all interest in my mind." Poetry itself, verse, novels and romances, became insipid to me." From such pursuits he was however weaned for a time, while yet at Christ's Hospital, by the perusal of Mr. Bowles's Sonnets, which then had just been published. The powerful influence which these sonnets exercised upon his mind is described at length in the first chapter of the *Biographia Literaria.*

In 1791 Coleridge entered Jesus College, Cambridge. While at the university, he did not turn his attention at all to mathematics or divinity; he left the former, and distinguished himself in a contest for the Craven scholarship, in which Dr. Butler, the present bishop of Lichfield, was the successful candidate. He did not take a degree.

During the second half of his residence at Cambridge he suddenly left the university in a fit of despondency, occasioned, it is said, by unrequited love; and after wandering for a while about the streets of London in extreme pecuniary distress, terminated this adventure by enlisting in the 15th dragoons, under the assumed name of Col. Simplicissimus. On coming to himself, and de cognising his classical acquirements, was led to conclude that Colerback was something more than he professed. Questioning him in a friendly manner, and eliciting his real history, he communicated Coleridge's situation to his friends, who forthwith effect his discharge.

Coleridge now betook himself to Bristol, where Mr. Southey was then residing. He shortly after set on foot a periodical entitled *Watchman and Watcher,* and published liberal or cale rate opinions; and made a tour through the northern manufacturing towns for the purpose of canvassing for subscribers. An account of this tour, amusing on the whole, is contained in the 10th chapter of the *Biographia Literaria.* The periodical, owing partly to a want of punctuality in its appearance, and partly to the fact that its opinions were not those which its supporters had expected, did not live beyond the ninth number.

In the autumn of 1795 Coleridge married Miss Sarah Fricker of Bristol, Southey on the same day wedding himself to her sister. He now took a cottage at Nether Stowey, a village at the foot of the Quantock Hills, in Somersetshire, where he was in the immediate neighbourhood of his friend and future sister-in-law, Mr. Poole, and of Mr. Wordsworth, who was then living at All-Foxden. He was at this time in the habit of contributing verses to one of the London papers, as a means of subsistence. In 1796 he published a volume of poems, the greater number of which had been written at earlier periods, interspersed with some by Charles Lamb; and in 1797 a second edition appeared, with the addition of some poems by Charles Lloyd.

During the three years, moreover, in which Coleridge resided at Nether Stowey, the greater part of his principal poems was composed, though most of them were not published until later. In the conversations on poetry which constantly took place between Mr. Wordsworth and himself, Coleridge was first formosed of the plan of the afterwards famous *Lyrical Ballads,* and in pursuance of this the *Ancient Mariner* and the first part of *Christabel* were written in 1797. His tragedy, *The Remorse,* was also written at this period.

Coleridge was at this period of his life a unitarian. He says of himself, 'I was at that time and long after, though a trinitarian (i. e. ad normam Platonis) in philosophy, yet a zealous unitarian in religion; more accurately, I was a *paganianesque,* one of those who believe our Lord to have been the real son of God, and who regret the change in orthodoxy on the resurrection rather than the crucifixion.' (*Biog. Lit.,* vol. i. p. 168.) While at Nether Stowey, he used to preach in a unitarian chapel at Taunton.

In 1798 Coleridge, published, through the influence of the late Mr. Thomas Wedgewood, to visit Germany, for the purpose, as he expresses it, of finishing his education. At Göttingen he attended Blumenbach's lectures on physiology and natural history, and studied, in the notes of a young German student, Eichhoven, portions on the New Testament. He took lessons from Professor Tychsen in the Gothic of Ulphilas, being anxious to attain a critical knowledge of the German language; and went through a complete historical course of German literature. At this time the writings of the later German metaphysicians was not formed until some time after his return to England.

After his return from Germany, Coleridge resided at the Lakes, where Mr. Southey and Mr. Wordsworth had then settled, the one at Keswick, and the other at Grasmere. The appellation of Lake-poets, given to these three individuals after the publication of the *Lyrical Ballads,* is well known.

Coleridge now became connected with the Morning Post, and wrote both on politics and literature. From about 1808 to about 1814 he contributed to the Courier. In 1804 he had visited his friend Dr. Stoddart at Malta; and from May of that year to October of the next, he acted as

*It is stated in the *Biographia Literaria* (vol. i. p. 161) that the *Lyrical Ballads* appeared in 1798. The title-page of the earliest edition that we have been able to find (and the absence of the words, second edition, from the same title-page renders it improbable that there should have been an earlier edition than this) says 1797."
secretary to Sir Alexander Ball, then governor of the island. After leaving England in 1794, he delivered a course of lectures on poetry and the fine arts at the Royal Institution. The 'Friend' appeared in the course of the next year, being then published as a periodical at the Lakes. As a pecuniary speculation it was not much more successful than the scheme itself; nor was there any advantage was it more judiciously conducted; but it continued for a longer time. Mr. Wordsworth gave some literary assistance, contributing the 'Essay on Epithalamia,' which he surrendered to the 'Excursion,' and the 'Introductory Essay' of the third volume.

Coleridge left the Lakes in 1810, and did not afterwards return to them. On his first arrival in London he resided with Mr. Basil Montagu; and not long afterwards became the pupil of Wordsworth, whose housing he soon died. The many friendships which Coleridge attracted to himself through life, the sincerity and constancy of which were abundantly shown, place in a striking light the anxiety of his character.

It was not before the commencement of his residence in London that he formed any very extensive acquaintance with the writings of the later German metaphysicians; by the adoption of whose method and terminology, rather than by the development of a system, in his subsequent publications, he has come to be accounted the representative of German metaphysics among us. He published successively, between the years 1817 and 1825, the two 'Lays of the Rebellion,' the 'Biographia Literaria,' from references of the 'Friend,' the 'Christiankrieg,' and the 'Christabel, or the Church and State, according to the Idea of each,' and the 'Aids to Reflection.'

Coleridge having no profession, slothful and imprudent, was during the greater part of his life in pecuniary distress. He was at first with the newspaper editors, and his remaining hopes of self-support were derived from his later poetical and prose publications, his publisher became a bankrupt in 1819. This was a severe blow to Coleridge. The dependent situation in which it placed his proved much upon his mind. We may rely on a collection of his letters which has been lately published, projecting various schemes to relieve himself. One of these was a scheme of systematic contribution to Blackwood's Magazine, the publisher of which was his friend. Accordingly, No. 1 of a 'Selection from Mr. Coleridge's Literary Correspondence' appeared in the number of that Magazine for October, 1821, and was to have been followed by a sketch of the history and philosophy of Superstition, with other interesting disquisitions. But the No. 2 never appeared. Continued ill health, combined with, and to a certain extent caused by, a habit of using opium which Coleridge had contracted, having originally resorted to it, under a mistaken notion, for medical purposes which had taken away from him by a time even what little amount of perseverance he might once have possessed.

On the incorporation of the Royal Society of Literature by Act of Parliament in 1812, Coleridge was selected as one of the ten Royal Associates, and as such, was called upon from time to time 100 guineas a year out of the king's private purse. The annuity was withdrawn at the commencement of the present reign.

In his later years Coleridge was in the habit of holding weekly conversazioni at Mr. Gillman's house in Highgate. Those who knew little else of Coleridge are familiar by report with his extraordinary conversational powers. Of these the 'Table Talk,' which have been published give no adequate notion. It was the conversation was out in fragments, but was wont to continue without aid from others, in the way either of suggestion or of contradiction. For hours at a time. All things human and divine, joined with one another by subtle links, entered into his discourse; which, though employed upon abstract subjects, was a spell whose fascination even the most dull or ignorant could not resist.

In 1825 Coleridge was present at the meeting of the British Association of Science held that year in Cambridge. He died on the 25th July, 1834, in his 62nd year.

Though not a man of strong character, Coleridge possessed many amiable qualities. He had all the social affections strongly developed. Though he was not, in our opinion, a poet of the highest order of merit in attaining it, he had an earnest desire of truth. Thus he was by nature tolerant. But in his later years disease seems to have engendered an aspersion in judging of the motives of others which was by no means constant with the tenor of his earlier publications. To the same end and in a similar respect was the disposition, which is exhibited in almost all his prose writings.

He was in person, as Mr. Wordsworth has described him, 'a noticeable man with large grey eyes.' As a poet, he was for a long time coupled, owing to the joint publications of Mr. Southey and of Coleridge at Highgate, whose housing he occupied, and with the Coleridge which is exhibited in almost all his prose writings.

Coleridge's poems have been either in praise of the art of poetry or in praise of the art of poetry, and even in that department of poetry which pertains to melody, in which we admire Coleridge's excellence, we deem the 'Christian Krieg' in The 'Lotos-Eaters' far superior to Coleridge;

'Kubla Khan.'

As regards the attainment of their chief professional end, or the advancement of mental, moral, and political science, we consider Coleridge's prose writings of little or no value. To overthrow the ascendency of Locke and Paley was, we learn from himself, the object of his ambition. In the first place, we approve not of such an object; in the second place, we assert that next to nothing was done towards its accomplishment.

In mental science, or psychology, he espoused a particular hypothesis (that proposed by Schelling of the absolute. Now Schelling and Fichte and Cousin, and other philosophers of this school, appear to us to have preserved perhaps even preserved a spirit of materialism: Materialists. Each set of philosophers have transcended the limits of consciousness, and have left observation for conjecture. But, apart from the system itself, Coleridge has done little either to advance or diffuse it. As he got it from Germany, so has he left it; and his writings, from their method and style, are not fitted for the use of learners.

As the passage in Coleridge's writings which approaches nearest to a systematic exposition of his views, is the 16th chapter of the 'Biographia Literaria.' The following passage is from that chapter:

'In the metaphysics of Transcendental idealism, Mr. De Quincey (The 'Magazine,' Sept., 1845, in the previous number) has charged Schelling with the sin of scholasticism. Proportion to being few instances, of which this is one, of uncommon sagacity in other writers, he has founded upon these a charge of habitual perfidy.

As regards the particular charge, which relates to this passage in the 'Biographia Literaria,' the observations which this passage, charged Schelling in the preceding chapter, and which have been accompanied by Mr. De Quincey, are a complete refutation of the whole charge of perfidy. As regards the general charge, the instances brought forward are also to be met by the same mode of refutation. One of the passages of the 'Pythagorean System of the soul'; Schelling in the preceding chapter, and which have been accompanied by Mr. De Quincey, is a complete refutation of the whole charge of perfidy. As regards the general charge, the instances brought forward are also to be met by the same mode of refutation. One of the passages of the 'Pythagorean System of the soul'; Schelling in the preceding chapter, and which have been accompanied by Mr. De Quincey, is a complete refutation of the whole charge of perfidy. The next, though they are not adequate to establish a habit of plagiarism, are adequate to show a general and constant use of Coleridge's paper, which has been accommodated by Mr. De Quincey. In the notice of the 'Biographia Literaria,' it is observed that Coleridge's paper, which has been accommodated by Mr. De Quincey. In the notice of the 'Biographia Literaria,' it is observed that Coleridge's paper, which has been accommodated by Mr. De Quincey. In the notice of the 'Biographia Literaria,' it is observed that Coleridge's paper, which has been accommodated by Mr. De Quincey. In the notice of the 'Biographia Literaria,' it is observed that Coleridge's paper, which has been accommodated by Mr. De Quincey. In the notice of the 'Biographia Literaria,' it is observed that Coleridge's paper, which has been accommodated by Mr. De Quincey. In the notice of the 'Biographia Literaria,' it is observed that Coleridge's paper, which has been accommodated by Mr. De Quincey. In the notice of the 'Biographia Literaria,' it is observed that Coleridge's paper, which has been accommodated by Mr. De Quincey. In the notice of the 'Biographia Literaria,' it is observed that Coleridge's paper, which has been accommodated by Mr. De Quincey. In the notice of the 'Biographia Literaria,' it is observed that Coleridge's paper, which has been accommodated by Mr. De Quincey. In the notice of the 'Biographia Literaria,' it is observed that Coleridge's paper, which has been accommodated by Mr. De Quincey. In the notice of the 'Biographia Literaria,' it is observed that Coleridge's paper, which has been accommodated by Mr. De Quincey. In the notice of the 'Biographia Literaria,' it is observed that Coleridge's paper, which has been accommo...
In moral sciences, which, properly speaking, is no other than
what Hobbes long ago stated it to be, the science of what is
just and what is unjust, and which, thus viewed, has been
significantly named Deontology by Mr. Bentham, Coleridge
also followed the later German metaphysicians. These make
unions merely formal, and the will the final arbiter of
morality. In following them he thought it necessary to
declare eternal warfare against the school of writers who
have been absurdly named 'Utilitarians.' He contends for
a something within us which, 'being absolutely unimpeachable,
never failing in two years of age,' he calls the 'conscience'
'bearing the same relation to God that an accurate time-
piece bears to the sun,' faithfully tells God's will, and which
has the various names of 'universal reason,' 'practical
reason,' 'verbal reason.' He represented him as the renunciation
'of Good and evil,' 'just and unjust,' are determined by the
decisions, from which there is no appeal, of this inward
monitor. This system professes to be diametrically opposed to
that which makes the whole tendency of an action to affect
men's happiness, or the sum of possible happiness. But, inasmuch as they disagree
this aid, their system comes before us as one continued
petitio principii.

Coleridge's political doctrines are explained in the first
section of his Life, out of series of confusions and mis-statements. In the worst of our
phrases 'political justice' and 'origin of government' are
used as convertible expressions. Hobbes is made to deny
right and duty. Rousseau's theory of a social contract, as expressed in the words of government;
with proof that he could not and did not admit expediency as
the principle by which the government when should be
guided. Other similar instances might be easily cited.

Yet there is not one of Coleridge's prose writings which
has not incidental merits sufficiently many and great to
rescue it from oblivion—merits discernible either in scattered
criticisms on our older writers both of poetry and prose, or
in notes historical, or of knowledge which a very wide reading had amassed, or in passages of great
acuteness and sound practical wisdom, whenever the author
lowers his flight to subjects to which such qualities can be
applied with any hope of profit. And though, from the
combined effects of indolence and of an immense devotion
to conversational display, his ordinary style of writing is
rambling and obscure, these works contain occasional pas-
sages of great beauty and power. In treating lighter sub-
jects, he has shown that it is possible, and he has made an
account of Sir Alexander Ball in the third, and the tale of
Maria Schöning in the second, 'Landing-place of the
Friends.'

Coleridge's fame will principally rest upon his powers as
a critic in poetry and the fine arts. To establish his fame
in this respect, there are his Lectures delivered at the Royal
Institution (just published in the 2nd volume of Coleridge's
'Literary Remains'), his review of Mr. Wordsworth's poetry,
in the 2nd volume of the 'Biographia Literaria,' which
is perhaps the most philosophical piece of criticism extant
in the language, and also his review of Mr. Maturin's 'Ber-
tram,' which, though, when first published, it exposed him
to much obloquy and maledictions of jealousy, is distin-
guished from common criticisms, if by nothing else, by
a constant reference to first principles and a freedom from
personality.

He no place Coleridge in the first class of thinkers and
writers; nor do we consider his to have been, in any high degree, an original mind. In support of this opini-
on, our limits will now only allow us to adduce the two fol-
lowing considerations. First, he was ever changing his
opinions. His 'Biographia Literaria' is a book which was
peached with the utmost extravagance until it was in
its turn displaced by another. Secondly, one fault which
pervades his prose writings is an excess of quotation. They are
works (and, so far, we are willing to concede it) of a man of very extensive reading;
but they are also the works of one who requires something
from another whence to hang whatever he may himself have to say.

SIR THOMAS JOHN, the founder of St. Paul's School, was
born in the parish of St. Antholin, London, in 1466, and
was the eldest son of Sir Henry Colet, Knight, twice Lord
Mayor, who had, besides him, twenty-one children. In
1463 he was sent to Magdalen College, Oxford, where he
passed seven years, and took the usual degrees in arts.
Here he studied Latin, with some of the Greek authors
through a Latin speaking servant; and in 1470, when 27
years old, he returned to the rectory of Dennington in Suffolk, then being in ac-
olythe's orders, to which he was presented by a relation of his
mother, and which he held till his death. His father also
presented him to the rectory of Little Gidding in Huntingdonshire, which he resigned in 1493.
At Paris he became acquainted with Budaeus, and was afterwards intro-
duced to Erasmus. In Italy he contracted a friendship with
numerous eminent persons, and especially with some of his own contemporaries, among whom were Grevenouye, Lilcee,
Lilly, and Lattimer, all of whom were studying the Greek
language, but little known in England. Whilst abroad he devoted himself chiefly to divinity and the
study of the civil and canon law. During his absence from England he was made a prebendary of York in 1497,
and was also made a canon and prebendary of St. Martin's
-Le-Grand in London. He returned in this year, and was
confirmed in the prebendary of York, and held prebendary of the following year.
Soon after he retired to Oxford, where he remained,
and renewed his friendship with him. In Oxford he read
public lectures upon St. Paul's Epistles gratuitously.
In 1503, having proceeded in divinity, he became prebend-
ary of Durnford, and in 1504 he resigned his prebend at St. Martin's-le-Grand. In the same
year he commenced D.D. In May, 1504, he was instituted
to the prebendary of Mora in St. Paul's, London, and in
the same year, and month was apointed by order of the
office he reformed the decayed discipline of his cathedral,
and introduced a new practice of preaching himself upon
Sundays and great festivals. By his own, and by other
lectures which he caused to be read there, he mainly as-
sisted in raising the character of the prebendary, and
in preparing the way for the great lectures which eventually produced the Reformation;
but the contempt which he avowed for the abuses in religious
houses, his aversion to the celibacy of the clergy, and the
general freedom of his opinions, made him obnoxious to
some of the clergy, and especially to Fitzjames, then bishop
of London, who accused him to Archbishop Warham as
a dangerous man, and even preferred articles against him.
Warham however dismissed the case. From Bishop Latimer's
sermon on May 24th, it appears that Fitzjames had
stirred up the king and court against him. Tired with trouble
and persecution, Colet began to think of retiring from the world.
He had now an ample estate, without any near relatives,
for numbers of his brethren and kinsmen had lived them all. He resolved therefore, in the midst of life
and health, to consecrate his fortune to some lasting bene-
fit, which he performed in the foundation of St. Paul's
School, of which he appointed William Lilly first masters
1512. He ordained that there should be in this school a
high master, a sur-master, and a chaplain, who should teach
grats a hundred and fifty-three children, divided into eight
classes; and he endowed it with lands and houses then
then producing an income of £424 2r. 2d. per annum, of which
endorsement he made the Company of Mercers trustees.
The gross average income of St. Paul's School is now about
3300l. per annum. (Carlisle's Grammar Schools, vol. ii. p. 94.)
To further his scheme of retiring, Colet built for himself a
handsome house near the royal palace of Richmond in Sur-
rey, in which he intended to reside, but having been seized
by the sweating-sickness twice, and relapsing into it a third
time, a consumption ensued, which proved fatal, Sept. 16,
1515. He was interred in the choir, with an humble monument which he had himself pre-
pared some years before, bearing simply his name. Another
monument was afterwards set up for him by the Mercer's
Company, of which he was their servant, and is in the fire of 1666. It had previously been engraved
for Dugdale's 'History of St. Paul's.' Dean Colet's works
were, 1. 'Oratio ad Clerum in Convocationes,' anno 1511;
2. "The Canons of St. Paul's Life of Colet,' with an old English translation of it, supposed
to have been done by the author himself. 2. 'The con-
truction of the Eight Parts of Speech, entitled Absolutus
simus de octo Oratiorum partium constructione Libellus," 
Svo. Ant. 1520. 3. 'Rudiments Grammatices,' for the 
use of his school, commonly named 'The New Latin 
Col. col.: said not to be all of his com-
position. 5. 'Monition to a godly Life,' Svo. 1534, &c. 
Many of his letters are printed in Erasmus's Epistles, 
and five, with one from Erasmus, in the appendix to Knight's 
Life of Dr. John Collet, Svo. Lond. 1724; Wood's Athenae 
Oxonienses, v. 2. London, 1722, &c.; xx. pp. 31-36.)

COLIBRI. [HUMMING BIRDS.]

COLIC. (from Culex, col. dolor colicus, called by 
Sydenham and the old English writers the dry-belly-ache; a 
colic in the colonic, causing severe pain, assaulting and 
recurring at intervals, with constipation, and without 
out fever. The seat of this malady is conceived to be chiefly, 
if not entirely, in that portion of the large intestines called 
the colon, and hence its name. It arises from a great 
variety of causes, and assumes a corresponding variety of 
forms, many of which have received distinct names; but 
pain and constipation of the bowels, with the absence of 
fever, are common to them all; and this concurrence of 
symptoms is the essential character of colic that 

The pain in colic often most distinctly follows the 
course of the colon, while the morbid distension and contrac-
tion of the bowel (for these two morbid states alternate 
with each other, and attack successively different portions 
of the intestines) become visible symptoms of the 
Colic. The colon receives all that portion of the food which is not converted 
into chyle, together with all those portions of the pan-
creatic, biliary, and intestinal secretions, which do not form 
colompotent parts of the chyle. Consequently it has a con-
siderable mass of matter to carry downwards and convey 
out of the system. It is provided with muscular fibres, 
very much larger than those which belong to the small 
intestines. These fibres form three large bands, which are 
placed in the direction already described, which produce the effect of dividing the inner surface of the 
bowel into folds, so disposed as to form little distinct 
spotted cells. In these cells the feculent mat-
ter, which should be slowly but progressively carried down-
wards is sometimes collected and closely impacted, so that 
when at length rejected it has the form of 
those cells constituting hard rounded balls, termed scybales. The natural 
stimulus to the muscular fibres of the colon is the residue of the 
digestive juice, together with the non-nutritive portion 
of the aliment. It is easy then to conceive how a 
loss or diminution of the contractile power of these fibres 
may occasion the constipation incident to colic, attended 
with the retention of the feculent matter in the cells 
until it is too late to be removed; or, how soon after the 
bile may contribute to the same effect; and how an 
acid quality of the bile and of the non-nutritive portion 
of the aliment may produce the irritation and pain incident 
to the colon then, both from its structure and func-
tion, it is obvious must be peculiarly predisposed to such an 
affection as that to which, from the frequency with which 
it is the subject of the malady, it has given a name. It is 
perhaps desirable that the term colic should be restricted 
to the description of a disease having its seat in the 
colon; and some medical writers do so limit the use 
of the term, though others give it a more extended signi-
fication, and with less propriety include under it diseases 
which are attended with pain in the small intestines, but in some 
neighbouring organ, the colon being only secondarily and 
sympathetically affected.

Colic, properly so called, is attended with severe griping 
pains in the bowels, which often follow very accurately the 
course of the colon; it is a very alarming disease, and has the most severe 
portion of it and sometimes in another. These pains recur 
for a time, affording intervals of ease; but they soon return 
with increased violence. They are often relieved by pres-
sure, but by no means from which they are distinguished from pain 
occasioned by inflammation, the latter being always in-
creased by pressure. The pain is usually attended with a 
greater or less degree of flatulence. The flatus sometimes 
occurs so abruptly as to occasion a prodigious dila-
tation of the bowels, greatly interfering with the 
digestive process being perfectly natural, it is always at-
tended with the evolution of some portion of gas; in disor-
dered states of digestion, the quantity of gas is often very 
much increased. But in colic the quantity generated is someti-
me greatly increased, in consequence of the intestine 
being contracted, and by the irritation of a certain species of 
colon, excited by the irritating cause—whatever it may be 
—which produces the disease. These irregular spasmodic 
contractions of the colon are always present when this 
disease is severe, and are intensely painful. The constipation, 
which is so constant as to be a distinctive character of the 
malady, is often long continued and obstinate, and the con-
sequent accumulation of feculent matter is very great. 
To the preceding train of symptoms is very frequently 
superadded a sense of congestion of the bowels, retained 
swelling; and in cases of the greatest severity, the action of the 
whole intestinal tube above the seat of the disease is in-
verted, and the faces are mixed with the matter vomited. 
Occasionally there is hicoucho, and very often the griping 
pains are attended with loud rumbling noises in the interior 
of the intestines.

It is unnecessary in this place to enter into the details of 
the varieties of this malady to which physicians have 
assigned different names; but the various manifestations of the same disease produced by different causes. 
The preceding account will be sufficient to give to the general 
reader a distinct conception of the nature of the 
malady, and of the causes which produce it; and it is only 
necessary to add that the rules of the practice of medicine 
great principles on which the cure depends are the com-
plete evacuation of the intestine, and the strict regulation of the diet. It is indispensable that the evacuation 
of the intestine of its accumulated and irritating contents should 
be complete, and this is best affected by an alternation of mild 
and unirritating aperients, with opiates. After the intestine has been fully relieved of its load, it is neces-
sary to persist in a course of mild aperients for a consider-
able period of time. In convalescent or chronic cases the 
state, and very slight cautions are apt to occasion a relapse. 
For the same reason only the most bland and unirritating 
substances should be taken as food; all acid and acrid mat-
 ters in the solid and all stimulating matters in the fluid 
albumen should be most carefully avoided.

COLUMBY, GASPARD DE, born in February, 1516, 
was the son of Gaspard de Coligny, lord of Châtillon-sur-
Loing and marquis of France, and of Louise de Montmo-
preux, princess of France. He was one of the first 
men of the two kingdoms to espouse the cause of the 
Huguenots, and while his father was exiled in England, 
Coligny served in Italy under Frances I., and was present 
at the battle of Cerseis. Henry II. made him Colonel-
General of infantry, and afterwards, in 1532, Admiral of 
France. In the latter capacity he sent a colony to Brazil, 
in which he was slain, to the great regret of the 
guise. Coligny himself continued to serve in the army by 
land. He defended St. Quentin against Philip II., 
and was made prisoner at the surrender of the place. Having 
embraced the reformed religion, he became, with the 
son of Conde, one of the great leaders of the Protes-
tant party against Catherine de Medicis and the Guises, 
when the reign of Charles X. Coligny was much re-
spected by his party: he was prudent in his plans and 
coal in the field, and never trusting his brother to 
be defeated, he rode out after it as formidable as ever. 
After the loss of the battle of Dreux, in which Conde was 
taken prisoner, Coligny saved the remains of his army. The following year he was again at the head of a force of 20,000 men, but 
brick out again, and the battle of St. Denis was fought, in 
which the old Constable Montmorency, who commanded 
the royal or Catholic army, was killed. A short truce fol-
lowed, but hostilities broke out again in 1569, when the 
summer of 1557 was fought, and after which the prinep of 
Coligny took the command and saved his army, which was 
soon after joined by the prince of Bear (afterwards Henry IV.), then sixteen years of 
age, of which the son of Conde, who was still a child, 
was married. The prince of Bear was declared the head of the Protestants, 
but Coligny exercised all the functions of leader and com-
mander. On the 3rd of October, 1569, Coligny lost the 
battle of Moncontour, against the duke of Anjou (afterwards Henry VIII. of England), in which the prince of 
Loire gained several advantages, and at last a peace was 

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concluded at St. Germain in August, 1570, when it was called "la paix soit en la maison," because of the presence of the Sieur de Biron, who was lame, and of De Mesmes, lord of Malaisse. The peace however fully deserved its nick-
name, by the spirit in which it was concluded by the Court. The leaders of the Protestant, and Coligny among the rest, entertained discouragements in the event; but they were lured into security by the apparent frankness of Charles IX., and the approaching marriage of the prince of Bearn with the Princess Margaret, the king's sister. Coligny came to Coligny himself was not the murder to the house of the admiral, but remained in the court below, while Bessone, one of his servants, went up followed by others. They found Coligny seated in an arm-
chair; 'Young man,' said he to Bessone, 'do not expect my grey hairs; but do what you will, you can but shorten my life by a few days.' They stabbed him in several places, and threw him, still breathing, out of window into the courtyard, hewed with a hatchet the head of the duke of Guise. His body was left exposed to the fury of the populace, and at last hung by the feet to a gibbet. His head was cut off and sent to Catherine de Medici. Montmorency, cousin to the admiral, had his body secretly buried in the vaults of the church of Charity, where it was interred in a leaden coffin till 1786, when Montesquieu asked for the remains of Coligny from the duke of Luxembourg, lord of Châtillon, and transferred them to his own estate of Mayeurt, where he raised a sepulchral monument in the monument to the admiral. After the revolution the monument was transferred to the Musée des Monuments Français, and a Latin inscription was placed upon it by M. Marron, the head of the Protestant consistory at Paris. (Coligny's biography by his wife, Ketteler, La Jetée, and Dictionnaire Universel Historique, art. 'Coligny').

COLISEUM, properly COLOSSEUM. [AMPHITHEATRE].

COLLIUS. [FRINGILLIDAE].

COLLATERALS. [CONSIGNATORS].

COLLATION. [BENEFICE].

COLLEGIA, or CONGREGATION, from the word 'collegi,' 'to collect or bring together,' literally signifies any association or body of men. The word Corpus was also used, and it expresses the same idea as collegia and collegii. A collegium or corpus were hence called corporati. The word Universitas was sometimes used as equivalent to Collegium or Corpus, but it had also the more general sig-
ification of 'congregation,' as distinguished from the 'college' in the narrow sense of the word. In the Roman polity collegium signified any association of persons such as the law allowed, and which was confirmed by special enactment or by a senatus consultum, or an imperial constitution, in which case it was called Collegium Legitimum. A collegium necessarily consisted of persons at least. (Dig. 50, tit. 16, 1, 85.)

In general, any association or collegium, unless it had the sanction of a senatus consultum, or of the emperor, was not a corporate body; but when dissolved, the members were allowed to divide the property of the association ac-
cording to their respective shares. The members of a collegium were called sodales: the terms and object of their union or association might be any that were not illegal. A great variety of collegia of any of them like our companies) existed at Rome and in the empire, as we see by ancient writings and inscriptions, such as the Collegia Fabrorum, Pistorum, Pontificum, Fratrum Ar-
viantium, etc. Among these, such, as the colleges of Pontifices and Augurs, were of a religious character. These collegia possessed property as a corporate body; and in the time of the em-
peror M. Antoninus, if they held colliga legitima, they could be exempted from paying taxes. (Dig. 50, tit. 1, 20) In their corporate capacity. Collegia were allowed, as a matter of course, to have a common chest, and an actor, syndicus or attorney, to look after their rights and interests, and appear on their behalf. (Dig. 3, tit. 4, 1, 11.) The maxims, that what was due to a university was not due to the individual members, and that the master was not the debit of the individual members, and that even if the union of all the members was changed, the university still existed, comprehend the essential notion of a corporation as now understood. In most cases the members probably filled up the body; as to the mode of election in the college of Augurs, see AUGURS.

In England a College is an eleemosynary lay corpora-
tion, of the same kind as an hospital, existing as a corporate body either by an act of parliament or by the will of the king. It is not necessarily a place of learning, as Chriat's Hospital, London. Its partic-
ular form and constitution depend on the terms of the foundati-
ons. It consists of a body of provost (provostis), master, rector, principal or warden, and of a body of fellows (socii), and generally of scholars also, besides various officers or servants, according to the peculiar nature of the foundation. A college is wholly subject to the laws, statutes, and ordina-
tances which the founder makes, and to the visitor whom be appoints, and to no others. All elections, and the general management of a college, must be in conformity with such statutes or rules of the foundation. The king, in the case of any abbeys, determines the election of a monastic superior, and the king's courts have no cognizance, and expulsion of a member is entirely within its jurisdiction. If there is no special visitor appointed by the founder, the right of the heir of the founder is exercised, devolves upon the king, who exercises it by the great seer. When the king is founder, his successors are the visitors.

The general power of a visitor is to judge according to the statutes of a college, to expel and deprive for just reasons. He is also entitled to remove a provost, and to terminate the foundation by the founder's statutes, and if there are any exceptions to his power, the jurisdiction in such excepted cases devolves upon the king. Certain times are generally fixed in the statutes for the visitation, but the visitor may visit whenever he is called in, it being incident to his office to hear complaints. So long as a visitor keeps within his jurisdiction his acts cannot be controlled, and there is no appeal from him, as was decided in the well-known case of Heliastus. Bury, in his reports of King's Bench Cases, (Show. P. 35.) The visitors are not bound to any particular forms of proceeding, and, in general, want of jurisdiction is the only ground on which they are liable to prohibition. If a visitor's power is not limited by the statutes, he must act by his best discretion. If a power to interpret the statutes is given to any person, as to the bishop of the diocese, this will constitute him and his successors visitors. The heirs of a founder cannot alter the statutes, unless such a power is expressly reserved to them, but if the founder is dead, his successors cannot alter statutes without the consent of the college, unless such a power is reserved. But as to the power to alter statutes, it must be observed, that at present it has not been exercised since the reluct-
antly been done, though such a power might now possibly be disputed, unless expressly reserved to the founder and his heirs by his original statutes.

Whenever a visitor is appointed, the Court of Chancery never interferes with the internal management of a college; but this court exercises jurisdiction on all matters par-
taining to the management of the funds, considering that as to the funds of a college, those who possess the legal estate are in the situation of trustees. If governors, or persons called visitors, have the legal estate, and are in-
trusted with the rents and profits, the Court of Chancery will make them account. In colleges, when a new founda-
tion is enrolled as the old one, it becomes part of the old one, and subject to the same visorial authority, unless new statutes are given with the new foundation. The validity of all elections in colleges must be de-
termined by the words of the founder's statutes or rules. The disputes which arise on elections in the courts have generally been, whether the master's concurrence is nec-
essary, or whether a bare majority of the electors, of which electors the master is one, is sufficient. In Catharine Hall, Cambridge, fellows must be elected out of the commonium, non sub commune aut saltu, non sub commune magistri, et eis latis communitatis; and it was held by Lord Eldon, upon these words and another clause which follows, that no election was valid in which the master did not concur.

The statutes of Ciare Hall, Cambridge, requires 'that the
election of a fellow shall be by the master and the major part of the fellows present; and here it was held (A.D. 1788) that a valid election might be made without the concur-
currence of the master. But this interpretation is obviously
wrong, and is repudiated both directly and indirectly in the recent
cases of the Queen's College, Cambridge, and Russell.

Colleges (13 Eliz., c. 10), cannot grant leases of their
land beyond 21 years, or three lives; and in such leases the
acquiesced yearly rent, or more, must be reserved, payable
yearly for the term. By 1599, as well as in later times, in all leases
made by colleges in the universities, and by the colleges of
Winchester and Eton, one-third of the whole rent must be
reserved in corn. The Mortmain Act of 9 Geo. II., c. 36,
which has put an end to such leases, and for the use of such
land or money to be laid out in land in England, for
charitable purposes, does not extend to the two universities
of Oxford and Cambridge, or to colleges in the two uni-
versities, nor to gifts in favour of the scholars of St. John's,
Winchester, and Westminster. This statute contained a
restriction as to the number of adsworns which a college in
either of the universities was allowed to hold; but this
restriction was removed by 45 Geo. III., c. 101, having been
found, as the preamble to this statute sets forth, injurious
to learning. These colleges can therefore now purchase
and hold as many adsworns as they please.

A collegiate church is a church that has a college or
chapter of canons, but its bishop is subject to the
au thority of the Church. The canons require three canons
at least to constitute a collegiate church, because three,
according to the Roman law, were required to make a
college. These collegiate churches are sometimes simply
called colleges. A College of St. John's, Cambridgeshire,
e was directed to the bishop of Chester, as warden of
Manchester College, to admit a chaplain. The bishop
happened also to be visitor of the college. It was held by
the King's Bench, that in the case of a spiritual corporation
the jurisdiction was in that court, unless there was an
express visitor appointed, and the court interposed in the
present case because there was no separate visitorial power
then existing, owing to the union of the wardenship and
visitorship in one person. This was afterwards provided for
by an express Act, 2 Geo. II., c. 29.

As to the relation between the English universities and
the colleges within their limits, see University and
Colleges and Oxford. The nature of a college in the
English universities, considered simply in itself, will be best
understood by referring to the particular accounts of
colleges in this work, as Brasenose, All Souls, Balliol, &c.

The statutes of all the old colleges in England are in
Latin; and, indeed, with the exception of some compara-
tively modern endowments, probably all college statutes are
in Latin. Those of Eton College, of Trinity College, Cam-
bridge, and of St. John's College, Cambridge, which may
serve as specimens of the statutes of such foundations, are
printed in the Education Reports of the House of Com-
mons, 1818.

Meiners (Geschichte der Erziehung und Entwicklung
der Hohen Schulen, &c., Göttingen, 1862, vol. i.) has
given an interesting chapter on the origin of colleges in
universities. The colleges in the University of Paris were
the first institutions of the kind in Europe, though it is a
mistake to suppose them older than the university itself.
The terms college and university have been often confun-
ished in modern times, and indeed are now sometimes
used indiscriminately. Some of the incorporated places of
learning in the United States, which confer degrees, are
called universities, and some are called colleges, though there
is no essential distinction between these terms. In some of these
institutions called colleges contain the schools or departments of
arts, law, medicine, and theology; and some that are
called universities contain only those of arts, law, and medi-
cine. Colleges are in the United States conducted as to these the
objects of instruction, but still confer degrees. If we look to
the origin of colleges and their connexion with universities,
it will be evident that the indiscriminate use of these terms is
not without some inconvenience. When an incorpo-
rated college, such as the College of Surgeons in Lon-
don, is empowered to confer a degree or title after examina-
tion of candidates in a single department, some other name
would be more appropriate. The word Academia, which is the
term used in all the larger universities in the United States
for higher instruction, has been most usually applied to en-
compassed corporate bodies which have for their object the im-
provement of some particular science or some particular
branch of knowledge, in some cases with the power to con-
der degrees in such particular science, &c., and sometimes
without this power. Yet the terms academia and univer-
sity have been used indiscriminately. (Meiners, vol. iv.,
In the history of the Scotch universities shows that the
terms college and university were used indiscriminately for
the foundation of these institutions and subsequently also,
with little discrimination; and this carelessness in the
application of the terms has led to anomalies in their con-
stitutions, and no little difficulty in comprehending the
history and constitution of these establishments. (See Report
of the Royal Commission of Inquiry into the State of the Scotch
Universities, printed 1831; and Malden's Origin of Uni-
versities, London, 1835."

In France the term college signifies a school, though
the constitution of a French college is very different from
that of our grammar-schools. It comes nearest, perhaps,
to a German gymnasium. Of these colleges there are about
320, every large town having one of them. They are main-
tained by the towns, their masters and professors being paid
out of the revenues of the communes. They are all under
the superintendence of the University of France. There
are also about forty royal colleges, in which the directors
of them are appointed by the Minister of the University.
The College Royal of France, founded by Francis I., has about
twenty professors, who lecture on the various sciences and
the oriental languages. (See Journal of Education. No. III.
"On the State of Education in France."

COLLIER, Richard, COLLIER. Born the 33rd of Sep-
tember, 1650, at Stow Quay in Cambridgeshire. He
was educated under his father, who was master of the free-school
of Ipswich. In 1669 he was admitted of Caius College, Cam-
bridge, and in 1675 took the degree of M.A. He
remained some time as chaplain with the countess dowager
of Dorset, and then received the small rectory of Ampthor, in
Suffolk. In 1683 he resigned this living and came to
London, where he was soon appointed lecturer of Gray's
Inn. He was afterwards selected for the position of
government and the church as established under William III., and engaged in a hot controversy with
Burnet, afterwards bishop of Salisbury. One of his publica-
tions, 'The Deseriton Discussed, in a Letter to a Country
Gentleman,' (4to. 1658) gave great offence to the new
government, and Collier was sent a close prisoner to Newgate,
where he remained some months, and whence he was, at
last, discharged without ever being brought to trial.
This persecution did not cool his zeal: during the following
years he published a number of works, which were all of a
political and controversial nature. Towards the end of
1692 Collier, with Newton, who was also a non-juring cler-
gyman, was expelled from the University of Cambridge, and
took refuge in the court of the Dutch republic, because he had
been suspected of having gone for the purpose of communicating with the partisans of the house of Stuart
on the other side of the water. After a short examination
before the earl of Nottingham, secretary of state, he was
committed to the Gate-house. There was no evidence
against him; but in consequence of his questioning the legiti-
mity of the courts, and refusing bail, he suffered a short
imprisonment in the King's Bench.

In the course of 1692 and 1693 he published six more
works, all hostile to government. In 1696 he was prose-
cuted for giving church absolution to Sir John Friend
and Sir William Perkins, who were convicted of being assem-
blies in the plot to assassinate King William. Collier ab-
committed to the Gate-house. The trial was not pro-
voked, but the energetic divine, after the first rigour was
abated, seems to have cared little for it. He lived in
London or its suburbs till his death, supporting himself by
his literary labours. He left three sons, one of whom
in which he is now best known: 'A Short View of the Immo-
rality and Profaneness of the English Stage, together
with the Sense of Antiquity upon this Argument,' 1 vol. 8vo.
"A Short View of the Immo-

selves on the subject of stables, and theatrical writers as
Pynne's famous "Historia Manipuli," first published about 65 years before. It led to a controversy with

grave and Vanbrugh, in which many sheets were printed on both sides, many hard names exchanged, and in which Collier, to whom contest was a delight, is thought to have had the better of his adversaries. After three other defenses, he was at last in 1708, '排出 in the Play-house, in a Letter to a Person of Quality, occasioned by the late calamity of the Tempest.' This literary combat lasted ten whole years; but Collier lived to the wall of the English stage by much more decorously than it had been—an improvement to which he had doubtless contributed.

Between the years 1701 and 1721 he translated and published Morell's great 'Historical Dictionary,' and wrote and published 'The Reckoning of 1703.' Mr. B. in these two huge folio volumes. The history was attacked by Bishop Burnet and others, to whom Collier replied with his usual vigour. He was the author of a few other religious and historical works; and in 1756, in the 76th year of his age, and was buried in the churchyard of St. Pancras, London.

COLLIMATION, LINE OF, the line of sight in any astronomical or geodetical instrument. [Circle.] Where a telescope is used, this name is given to the line joining the centre of the object-glass and the intersection of the fine wires or spiderwebs in its focus, this being the direction of any object which is there seen bisected by the observer.

COLLIMATION, ERROR OF. In most instruments the line of sight is supposed to have a certain relation to other parts. Thus in a transit telescope it ought to be perpendicular to the horizontal axis, in a circle or quadrant it should be parallel to the plane of the circle, and the reading of the limb is 0° or 90°. When this is not the case, the difference between the existing and required position is called the error of collimation, which must be carefully ascertained, and be corrected for, or eliminated in the mode of conducting the observations. This will be particularly explained as each instrument comes under our notice. Many readers will have a general notion of the error of collimation from the mode in which a workman, in a horizontal line, looking through the telescopical tube of an instrument, will be able to see a line which in principle is nearly allied to the methods of astronomers. When the telescope was originally applied to astronomical instruments, the mystery of ascertaining the true direction of a line which could be neither mechanically examined, presented considerable difficulties to some observers. Hevelius of Danzig never could be induced to apply telescopic sights to his sextants or quadrants, and in consequence of this prejudice much of the labour of his long life was completely wasted.

COLLIMATOR, the name given by Captain Kater to his contrivance for determining the error of collimation in any principal instrument, without the reversal of the instrument, and in a manner troublesome to other instruments, and in mural circles and quadrants is forbidden by their construction. We shall give a sketch of Captain Kater's collimators and those antecedent to his invention, and a drawing and description of a level collimator, which on the whole we think best suited for common use. Where the adjustments, &c., mentioned are not described, the reader will find them in the article Circle.

On referring to the description of each instrument, it will be seen that the determination of the error of collimation requires—1. A well-defined object, of which the direction remains unaltered; 2. A reversal of the instrument, similar to that of the mason's level; 3. For angular instruments, a power of deflection during the rejection of that object to a vertical line. Now a near object cannot be seen on the wires of a telescope when they are in the focus of the object-glass; and a distant object is very seldom sufficient. The error may be supplied by a second telescope, having its axis parallel to the axis of the telescope under examination and nearly in the same right line, which has cross wires in its focus; the object-glasses being towards each other. As parallel rays diverging from the focus become parallel after refraction at the object-glass, and emerge as if they came from a real object at an infinite distance; hence the cross wires in the other or corresponding to the vertical section of the circle telescope. The circle will be seen distinctly in the direction of the line joining the cross and the centre of the object-glass, in whatever part of the cylinder of issuing rays the eye may be placed. Great care is requisite in adjusting the wires of the collimating telescope exactly to focus, especially if a short telescope be used; but the axes of the two telescopes need only be parallel and equal.

In many of the private observatories in England, a metal plate with sharp lines or dots engraved upon it, is firmly secured to an outside stone and viewed through a lens fixed in the wall of the transit telescope, the distance between the lens and the mark being equal to the focal length of the lens. It is evident that such a mark may be used for determining the error of collimation in altitude of a reversible circle, and in all cases where merely a distinct and distant object is required. If the position of the lens is not such that the focal length of the lens be considerable, this may be advantageously used as a meridian mark [Transit]; but then the lens should have a separate support within the instrument, and the position of the mark should be jealously watched and verified. Mr. Rittenhouse first made use of this substitute for a distant mark (American Philosophical Transactions, vol. ii. p. 181); and we believe Dr. Maskelyne at one time used an adaptation of the same principle, viz., a cap with a lens of low power fixed on the object end of his transit telescope, to view the south meridian mark at Greenwich, which was also near the observation to be seen distinctly.

The collimating telescope and its cross wires are thus made to supply the want of a distinct, distant, and immovable object. In the Astronomische Nachrichten, No. 43, Professor Gauss, after enunciating the optical property above mentioned, used it for measuring the intervals between the vertical images of the planets when viewed through the object-glass of the transit. In No. 61 of the same work, Professor Bessel applied the same principle to a still more important purpose, that of determining the horizontal fixture of the telescope of his meridian circle. After taking out the object-glass and eye-piece of this instrument (or the instrument might have been raised out of the way), he placed two collimating telescopes, one to the north and the other to the south of the circle, and adjusted them so as to view them through the object-glass of the transit. In this way, he adjusted to have their cross wires apparently upon each other, when the two object-glasses and the two crosses are evidently all in the same right line. The object-glass and eye-piece were then replaced in the circle telescope, and the angle between the two crosses of the collimator measured, which would have been exactly 180°, without fixture: hence the difference from 180° was the double horizontal fixture of the circle telescope. Bessel further remarks, that a vertical telescope turning freely round in its collars, and having a cross line attached, might be used for determining the true zenith point of any instrument, without reference to the angle of the latter. The date of this publication is July, 1824.

Captain Kater, who had not heard of either of these memoirs, gave, in the Philosophical Transactions, 1825, p. 147, a description and figure of a horizontal floating collimator. This is a telescope laid horizontally upon a block of cast iron, which floats in a vessel filled with mercury. This collimator was designed for determining the zenith point of mural and other irreducible circles. The cross of the collimating telescope is observed by the circle telescope in one direction, supposed to the north, and the divisions read off. The trough of mercury with the collimator floating in it, is then transported to the south of the circle, the divisions again bisected, and the divisions read off as before. If the angle which the line of sight of a collimating telescope makes with the horizon be supposed to be unchanged by this change of place, it is clear that half way between the means of the two sets of readings is the reading corresponding to the vertical position of the circle telescope. Again, as the difference of the north and south mean readings would equal 180°, if the collimating telescope were truly horizontal, half the excess of this difference above 180°, or half the defect from 180°, will be the angle which the line of sight makes with the horizon.

We believe however that, in addition to the trouble of moving such an apparatus, the permanence of the position of the collimating telescope could not be relied upon if at all disturbed.

In the Philosophical Transactions, 1828, p. 357, Captain Kater proposed a very much improved form of this in
instrument, which he called the vertical floating collimator. The iron float is here a ring swimming in an annular trough in the telescope, which is placed vertically, and has a clear view through the centre of the float and trough. This collimator may be placed below the instrument to be examined, when the collimating telescope will have its object-glass uppermost, or, as is most usual, above the instrument, when the collimating telescope looks downwards. A smooth rotary motion upon rollers can be given to the annular trough, when it is evident the line of sight of the collimating telescope will either be and continue to be vertical (supported by the position of the float to be examined), or will describe a conical surface of which the axis is vertical. Hence if the cross be bisected in two opposite positions of the collimator by the telescope of a circular instrument, the mean of the two readings will be the reading of the zenith of the instrument.

It will, generally speaking, be convenient to adjust the axis of the collimating telescope truly vertical. To do this, first observe the position of the cross by a circle or transit telescope, turn the collimator half round, and note the position again; then, by placing a small weight upon the float, bring the cross half way between the two observed positions. Turn the collimator a quarter round and perform the same adjustment for this and its reversed situation. The axis of the collimating telescope is now truly vertical. From some trials, which however we must admit were not made under favourable circumstances, we do not think the vertical floating collimator capable of giving results as accurate as may be obtained by other means; but it ought also to be stated that there is a great deal of difference of opinion among practical astronomers upon this point.

In the accompanying figure we have represented a more portable, and perhaps a more accurate instrument for determining the error of collimation, and also the position of the horizon, than either of the floating collimators.

The three parts of which this collimator consists have been separated from each other for easier comprehension. The telescope O E rests with its ground cylindrical collars, a, b, in the rectangular Y's, A, B of the stand. These collars should be truly cylindrical, and, if possible, exactly equal. There are cross wires which must first of all be placed correctly in the focus of the object-glass, when the screw c is to be tightened. To adjust the cross-wires bring the intersection of the cross to bisect any distinct and immovable object (the wire of another telescope, level L, and the foot screw S. When the cross of the collimator is bisected by the wires of the circle telescope, the telescope is horizontal, and the plane of its collimation is the reading of the horizontal point, which, if the circle reads altitudes, should be 0°, and if zenith distances, should be 90°. The difference from these values is the error of collimation. By this method, or any other side of the instrument any error of flexure may be detected.

We have said that the cylindrical collars should be perfectly equal, but it is not easy to make them so. The difference may be shown by the eccentricity of its Y's, end for end, and again applying the level. Suppose the level to have shown perfect horizontality before reversing, and that afterwards the reading towards O exceeds that towards E, m. It will easily be seen that m° must always be subtracted from the indications of the level towards O. It is equally evident, that if, after the above correction is made, the object end O appears too high by n°, that the true angle with the vertical is 90° + n°, or that the reading of the circle should show n° of depression. The different cases which may occur present no difficulty. If the collars are truly cylindrical and the level a delicate one, such a collimator should show the true horizontal point within 1°. The telescope should not be very small, not less than 12 inches.

It would scarcely be just to notice under this head an instrument by Roemer, which has as much merit, as an invention, as any of these which we have described. It consists of the same glasses fixed in a tube, the axes of which exceeding their focal length, with a system of wires in the focus of each, between the glasses. By applying the proper eye-piece at each end, the near wires, and consequently objects through the most distant object glass, are made visible. The two object-glasses and the crosses of the wires being all adjusted in the same straight line, it is evident that, on looking at each end of the tube, objects 180° apart will be seen on the crosses. Roemer called this tube an endoscope, or recticollinear telescope, and used it for the transit adjustment in collimation of his horai meridianes.

(Horrobin, Basis Astronomiae, p. 97.)

For further details, see Pearson's Practical Astronomy, vol. II., p. 446, plate xxii.

COLLIN, KOLIN, or NEKOLIN, a town in the Bohemian circuit of Kauzirm, situated on the Elbe. It lies in 49° 59' N. lat., 15° 10' E. long., and contains 420 houses and about 3800 inhabitants, among whom are numbers of Jews. Large quantities of gravies, topazes, and cornelians are found in the vicinity, and polished here. In the neighbourhood, between the castle of Chotzmitz and the village of Planian, general Daun, the commander of the Austrian army, gained the famous victory over Frederick the Great on the 21st August, 1757.

Collin contains a hauptschule, or grammar school, and a manufactory of potash and one of cottons; a monastery of Capuchins, a church and a town-hall, both in the Gothic style, and a castle with grounds and a botanical garden attached to it. The town is well built, surrounded by walls, and finely placed upon an elevated rock, beneath which the Elbe has a considerable fall.

COLLINGWOOD, CUTHBERT, ADMIRAL LORD, was born on the 26th of September, 1750, at Newcastle-upon-Tyne. At the age of eleven he was sent to sea, as a midshipman, under the care of Captain, afterwards Admiral Brathwaite, who was the son of his mother's sister, who seems to have taken extraordinary pains in giving him nautical knowledge. After serving some years with this relation, he sailed with Admiral Roddman. In 1774, during the American war, he went to Boston with Admiral Graves, and, in 1775, was made a lieutenant by him, on the day of the battle of Bunker's Hill, when Collingwood, with a party of seamen, supplied the British army with what it required. In 1776 he took the command of the Hornet sloop, and soon after met, at Jamaica, with his favourite companion Horatio Nelson, who was then lieutenant of the Indefatigable. Upon this occasion one of his interesting letters: 'We had been long before in habits of great friendship, and it happened here, that as Admiral Sir P. Parker, the Commander-in-Chief, was the friend of both, with a vast deal of respect, I sent him: first in the Lowestoffe, then in the Bagder, into which ship I was made commander in 1779, and afterwards in
the Hinchinbrooke, a 28-gun frigate, which made us both part captains.

Although Nelson, who was a younger man, always kept a remove a head of him, and came in for a much larger share of fame or popularity, Collingwood never had a feeling of jealousy towards his friend, whose merits he was always ready to acknowledge. Before he had even arrived at the age of a score, he had lost one whole hour of his life. Nelson, on his part, seems to have had a greater affection for Collingwood than for any other officer in the service.

In 1780 Nelson was sent, in the Hinchinbrooke, to the South Sea. In November 16, he was ordered to take the navigation of boats along the river San Juan, and the lakes Nicaragua and Leon—a physical impossibility which no skill or perseverance could surmount. Nelson caught the disease of the climate, and his life was with difficulty saved by the care of a man who had married him. One attack: his hardy constitution resisted them all, and he survived the mass of his ship's company, having buried in four months 180 of the 200 men who composed it. Other ships suffered in the same proportion. In August, 1781, Collingwood was wrecked in the middle of a dreadful night in the Pelican, a small frigate which he then commanded, on the rocks of the Morant Keys in the West Indies, and saved his own life without any honourable toil. The place of his appointment was to the Sampson 64. In 1783 he went to the West Indies in the Mediator, and remained with his friend Nelson on that station till the end of 1786. He then returned to England. He took the 'Berberia,' 'making,' as he says, 'my acquaintance with my own family, to whom I had hitherto been, as it were, a stranger.' In 1790 he again went to the West Indies, but a quarrel with Spain being amicably arranged he soon returned to England, and was not long in leaving the life of sea, he 'went into the north and was married.' In 1793 the war with the French Republic called him away from his wife and two infant daughters, whom he most tenderly loved, though he was never after permitted to have more of their society. As captain of the Barfleur he bore a conspicuous part in Lord Howe's victory of the 1st of June, 1794. In 1797 he commanded, with his usual bravery and almost unrivalled nautical skill, the Excellent 74, in Jarvis's victory of the 14th of February, off Cape St. Vincent. In 1799 he was raised to the rank of rear-admiral. The peace of Amiens, for which he had long prayed, restored him to his wife and children for a few months in 1802, but the renewed war called him to sea in the Spring of 1803, and he never more returned to his happy home.

This constant service made him frequently lament that he was hardly known to his own children; and the anxieties and wear and tear of it shortened his valuable life. Passing over these, it will not be without interest to hear his sentiments on the subject. Collingwood was second in command in the battle of Trafalgar, fought on the 21st of October, 1805. His ship, the Royal Sovereign, was the first to attack and break the enemy's line; and, upon Nelson's death, Collingwood claimed the victory and continued in command of the fleet. He was now raised to the peerage. After a long and most wear-}

ing blockade of Cadiz, the Straits of Gibraltar and adjacent coasts, during which, for nearly three years, he hardly ever set foot on shore, and showed no sign of patience and conduct never surpassed, he sailed up the Mediterranean, where his position involved him in difficult political transactions, which he generally managed with ability. The letters to foreign princes and ministers, and the negotiations, written from the cabin of the ship, from his childhood, are admirable even in point of style. Completely worn out in body, but with a spirit intent on his duties to the last, Collingwood died at sea on board the Ville de Paris, near Port Mahon, on the evening of the 7th of March, 1805. In command he was firm but mild—most considerate of the comfort and health of his men, averse to flogging and all violent and brutal exercises of authority; the sailors called him their father. As a scientific seaman and naval tactician he had few, if any, equals; and his conduct was such that his rage was warm. His mind was enlightened to an astonishing degree, considering the circumstances of his life; he was liberal and kind-hearted, and all his private virtues were of the highest. His conduct against the natural immunities of his condition, the education of his daughters are full of good sense and feeling. (A Selection from the Public and Private Corres-


COLLINS, JOHN, the son of a nonconformist clergyman, was born at Wood Eaton, in Oxfordshire, March 5, 1624. He was at first apprenticed to a bookseller at Oxford, but went abroad during the civil war, and served the Venetians at sea against the Turks. After returning to England he was made accountant to the excise office, which office was abolished before 1670. From that time he supported himself mostly by his skill in accounts. He died in London, in 1697.

Collins was an early member of the Royal Society, and contributed some fair papers to its transactions. (Numbers 30, 46, 69, 128.) He also wrote several elementary works, which it is not now necessary to mention. His claims to remembrance are the intimate communication in which his attainments placed him with all men of science at home and abroad, from Newton downwards. The influence of his request and recommendation produced (as is asserted) Barrow's Lectures, his Archimedes and Apollonius, Branker's Translation of Rhonius, Kersey's Algebra, and Wallis's History of Algebra. The esteem in which Collins, a poor accountant, was held by men so much above him in external position, as Newton, Barrow, Wallis, &c., was the more honourable to him. The principles of their epistolary intercourse is the work on the invention of fluxions, published in 1712, under the title of 'Commer- cium Epistolicum,' &c., which will be noticed in a separate article. (Commer. Epistolicum.) (See the Biog. Dict., which cites Birch; Hist. Roy. Soc.; and Wood, Fasti Oxon.)

COLLINS, ANTHONY, was born in 1676 at Heston, near Hounslow, in Middlesex. His father, Henry Collins, Esq., was an independent gentleman, with an income of 1800l a year. After the usual preparatory studies at Eton, he went to King's College, Cambridge, and had for his tutor Francis Hare, afterwards bishop of Chichester. He then became a student of the Temple, and married a daughter of Sir Francis Child, lord mayor of London. During 1703 and 1704 he carried on a correspondence with Locke, who appears to have cherished a most enthusiastic friendship for him. Twenty-five letters of Locke to Collins are preserved in the 'Collection of Pieces by Locke, not contained in his works,' published by Des Maizeaux, 5vo, 1729. In one of these, dated October 29, 1703, Locke says to his friend, 'Your complaining of a great many defects is the highest recommendation I could desire to make me love and esteem you, and do as much friendship; and if I were setting out in the world, I should think it my greatest happiness to have such a companion as you, who have a true reliosh of truth—would in earnest wish and pray to God I might see you, and to whom I might freely communicate what I thought true. Believe it, my good friend, to love truth for truth's sake is the principal part of human perfection in this world, and the source of all the virtues.' I hope you have as much of it as I ever met with in any body. What then is there wanting to make you a friend for any one to be proud of? In one dated Oates, September 11, 1704, he says, 'Your soul is enriched with the most valuable qualities of human nature, truth and friendship; what a treasure have I then in such a friend with whom I can converse, and be enlightened about the highest speculations. In one dated the 1st of the following October he says, 'My infirmities have so far hindered me from you make haste hither I may lose the satisfaction of ever seeing again a man that I value in the first rank of those I leave behind me.' In a remarkable letter, dated August 23, 1764, and addressed 'For Anthony Collins, Esq. to be delivered after my decease,' Locke asks, 'If you leave any book of the left property to Collins, and the guardianship of a young friend, concludes with 'May you live long and happy— I know you loved me living, and will preserve my memory after I am dead.' In 1707 Collins published an essay concerning human reason as supporting human testimony. It was replied to by Bishop Gastrell. The same year he entered into a controversy with Dr. Samuel Clarke, in support of Dr. Dodwell's "A Dialogue against the natural immunities." Five successive rejoinders were entered. (General Dict., ed. 1736; and Biog. Brit.) In 1709 he published "Priest-
craft in perfection, or a detection of the fraud of inserting and continuing this clause (the church hath power to define rites and ceremonies, and authority in controversies of faith) in the same manner. It passed through three editions in the same year, and occasioned a very general and anxious inquiry. Numerous pamphlets, sermons, and books discussed the question. Two works especially were written against it with great labour, and were supplied with hints and materials by the magistrates of the city, and entitled the Declaration of the Church of England from Fraud and Forgery, by a Priest, 8vo, 1710; the other, a long-delayed and elaborately essay on the Thirty-nine Articles, by Dr. Bennett, 8vo. The former was reprinted in his lifetime and edited on the Thirty-nine Articles, in 1724, proving (p. 277-278) that the clause has neither the authority of the conviction nor of the parliament. Collins' next work was entitled 'A Vindication of the Divine Attributes,' being remarks on a sermon of the archbishop of Dublin, which assumed the consistency of divine foreknowledge and predestination with human free-will. He went in 1711 to Holland, where he formed a friendly intercourse with Le Clerc, and other leading characters among the learned of that country. On returning to England he published, in 1713, his 'Discourse on Freethinking,' which excited much animadversion among the clergy. The most important of the replies which appeared was that by Dr. Bentley, entitled 'Remarks on the Discourse of Freethinking by Professor Leibniz, which is remarkable as a display of learned sagacity, coarse wit, and the most intemperate abuse. The object of Collins is to show that, in all ages, the most intellectual and virtuous men freethought; that is, followed of philosophical reasoning, in disregard of discredited and despised opinions. There are several French editions of this work. It was reprinted at the Hague, with some additions and corrections derived from Bentley's Remarks. On the continent it was unanswered by Crozeaus, and several others. The 'Gargantua's Thanks to Philaletheurus,' 1713, is, by Bishop Hare. Collins, on returning from a second residence in Holland, was made justice of the peace and deputy-lieutenant of the county of Essex, and in 1715 he was appointed judge of the Exchequer, a situation which he held until 1726. In 1715 he published his 'Philosophical Inquiry concerning Liberty and Necessity,' which was reprinted in 1717 in 8vo, with corrections. It was translated into French, and is printed in the 'Recueil de Poesies sur la Philosophie,' &c., by Des Maizieres, 2 vols. 12mo., 1720. Dr. Samuel Clarke replied to the necessary doctrine of Collins, chiefly by insisting on its incontinency, considered as destructive of moral responsibility. In 1718 Collins was appointed treasurer of the county of Essex, an office which he performed with great fidelity. He married, in 1724, his second wife, the daughter of Sir Walter Wrottesley, Bart. In the same year he published his 'Grounds and Reasons of the Christian Religion,' in which his object is to show that the holy scriptures are independent on Judaism; that the New Testament is based on the Old, as the canon of Christians; that the apostles and writers of the former establish and prove their propositions by arguments taken from scripture, and that which they adduce are literally, but merely typically, and allegorically applicable, by the assumption of a double construction. This work created a great sensation in the church, and drew forth a great number of replies from some of the most eminent divines. In the final answer of Collins, 'Scheme of Literal Prophecy,' 1726, he enumerates five- and thirty replies which appeared during the two first years after its publication. The artful way in which Collins arranged these disputes, as he has clearly shown respecting the corruption of the present Hebrew text, so provoked that divine, that he petitioned Lord Chancellor Kino, though without success, to remove Mr. Collins from the commissions of the peace. In 1727 Collins, in a long letter, replied to eight sermons of Dr. Rogers on the necessity of revelation, and the truth of Christianity. He died in December, 1729, at his house in Harley Square, London, in consequence of being long afflicted with the stone. In his last months he said to a friend: 'I always endeavoured, to the best of my abilities, to serve my God, my king, and my country, and I am certain I am going to that place which God has designed for those who love him, for the Catholic religion is to love God and to love others.' He was interred in Oxford Chapel, London. The long and elegant Latin epitaph on his monument, which there is inserted in the 'General Dict.' and in the 'Biog. Brit.' All parties agree that the moral and social character of Collins was remarkably amiable. Temperance and benevolence were its prominent points. His integrity and detached spirit, his magnifiance and commanding manner, his love of meditation, and his abstinence from all disorderly habits and company, and his dependence on the magisterial functions commanded the highest respect, and by all his conduct and writings he ardently endeavoured to promote the cause of civil and religious liberty. Collins, as a writer, is remarkable for the great shrewdness of his reasoning; and for still greater subtlety in marking the real drift of his arguments with orthodox professions. His library, which was of great extent and extremely curious, was open to all men of letters, to whom he readily communicated the manuscripts which were deposited in his library. He wrote and edited many books and arguments to refute his own writings. A catalogue of his books was published by the Rev. Dr. Styles in 1730. (General Dictionary, Biog. Brit.; Hollin's Memoirs.)

COLLINS, WILLIAM, the son of a latter at Chichester, was born December 25, 1720. He was educated at Winchester, from which he went to Queen's College, Oxford; but in about half a year he removed to Magdalen, on being elected a deacon, or scholar, of that college. Soon after taking his bachelor's degree he quitted the university abruptly, about 1744, and repaired to London as a literary adventurer. He won the cordial regard of Johnson, then a needy labourer in the same vocation, who, in his 'Lives of the Poets,' says of him that 'his appearance was decent and manly, his knowledge considerable, his views extensive, his conversation elegant, and his disposition cheerful. He designed many works, but his great fault was irresolution; or the frequent calls of fashion to modify his scheme, and suffered him to pursue no settled purpose.' His Odes were published, on his own account, in 1746. They were not popular; and it is said that, disappointed at the unsuccess of his first poems, he burned a quire of them with his own hands. He was relieved from his embarrassments by a legacy from an uncle of 2000/.; but worse evils than poverty overclouded the rest of his life: he sank gradually into a state of melancholy and intellectual languor, to relieve which he resorted to travelling abroad. He returned from his travels, which he perceived gathering on his intellect he endeavoured to disperse by travel, and passed into France; but found himself constrained to yield to his malady, and returned. He was for some time confined in a house of lunatics, and afterwards retired to the care of his sister at Chichester, where he died, in 1766, came to his relief. (Lives of Poets.)

COLLIN, Charles, is inferior to no English lyric poet of the eighteenth century except Gray. His Odes to 'Fear,' and the 'Passions,' afford the best specimens of his genius; and the well-known Dirge in 'Cymbeline' is admirable in a softer style. His poetical merits Dr. Johnson did not rightly appreciate, because 'the beauty of his poetry is in his harmony of sound, and his image in the unembodied ideal creations. As it was, he did not enjoy much of the public favour; but posterity has done him justice, and assigned him an honourable rank among those of our poets the most distinguished by excellence than by bulk. (Collison and Collier. (ed. Lord.) The striking against each other of two bodies in motion. The mathematical laws of collision are usually treated under the word Impact in English treatises, and under the head choc des corps in French treatises.)

COLLUINCIA. [Laniade.]

CULLRIO. [Laniade.]

COLMAN, George, commonly called 'the Elder,' was the son of Francis Colman, Esq, British resident at the court of the Grand Vizier at Constantinople, and was born in Anna-Maria Pulleoey, Countess of Bath. He was born at Florence about 1733, and was educated at Westminster. He afterwards became a student of Christ Church, Oxford, and forming an acquaintance with Mr. Bonnell Thornton, published in conjunction with that gentleman, the pasto
deal paper called "The Connoisseur." Fixing on the law for a profession, he was entered at Lincoln's Inn, and duly called to the bar. In 1760 he produced his first dramatic piece, entitled "Polly Honeycomb," at Drury Lane with great success. This was followed in 1761 by the comedy of "The Jealous Husband," and in 1761 by "The Clam-

destine Marriage," written in conjunction with Mr. Garrick.

In 1767 he united with Messrs. Harris, Rutherford, and

Powell, in the purchase of Covent Garden Theatre, and be-

cause the actress was too fat, he continued seven years, when he sold his share to Mr. Leake.

In 1777 he purchased the little theatre in the Haymarket of

Mr. Foote. In 1785 Mr. Colman was seized with the

palsy, and four years afterwards discovered symp-

toms of an alienation of mind, which gradually increased

terminated in a state of idiocy. He died at Paddington

on the 4th of August, 1794, aged sixty-two. Mr. Colman,

besides writing and adapting upwards of thirty dramatic

pieces, was the author of a very spirited translation in blank
verse of Terence, a translation of and commentary on

Horace's Art of Poetry, and several fugitive pieces.

COLMAN, GEORGE, 'the Younger,' son of the pre-

ceding, was born October 21, 1762. His education was

commenced at Mr. Fountain's academy in Marylebone, from

whence he was removed to Westminster, and after-

wards entered at Christ Church, Oxford. From thence he

was sent by his father to King's College, Old Aberdeen,

and on his return to London he entered Temple and

but following the peculiar bent of his genius and the ex-

ample of his father, he soon commenced writing for the

stage. During the illness of Mr. Colman, Sen., he directed

the Haymarket Theatre, and on the death of his father

King George III. appointed him to his place. He married

first Miss Morris, the sister of the present pro-

prietary of the Haymarket, to whom he sold his interest in

the theatre; and secondly, the popular actress Mrs. Gibbs.

Mr. Colman, Jun., was appointed by George IV. Examiner

of the Yeoman Guard (an office which he afterwards by per-

mission disposed of), and by his Grace the Duke of Mon-

trose, then Lord Chamberlain, Examiner of Plays, which

situation he held to the day of his death, Wednesday,

Ocotober 26, 1826, in his seventy-fourth year. Mr. Colman

was the author of several excellent plays and farces: amongst the most popular are 'John Bull' (for which comedy he received the largest sum of money perhaps ever paid for any drama), 'The Lord Gentleman,' 'Heir at Law,' 'Inkle and Yarico,' 'Iron Chest,' 'Moun-

taineers,' 'Surrender of Calais,' 'Ways and Means,' 'Re-

view,' 'Blue Beard,' 'X. Y. Z.,' and 'Love Laughs at

Locksmiths.' He also wrote the well-known comic tales

titled 'Broad Grins,' 'Poetical Vagaries,' &c., and a

variety of smaller poems. His last literary work was the

publication of his own memoirs up to the time of his enter-

ing on the management of the Haymarket, in 2 vols.

svo.

COLMAR, a town in France, capital of the depart-

ment of Haut Rhin; on the left or west bank of the river Lauch, just

above its junction with the Ill, and also on a branch or canal of the Fecht, another tributary of the Ill; 234 miles from Paris, in a direct line E. by S. or E.S.E., or 290 miles by the road through Châlons, Bar-le-duc, Nancy, &c. In

48° 5' N. lat. and 7° 20' E. long.

It has been thought by some antiquaries that Colmar was

built on the ruins of the ancient Argentovaria, or Argent-

tovaria (Ayseweide, Piedmont), near to which the Emperor

 Gratian defeated the Allemani a.d. 378; but the po-

sition of Argentovaria was probably nearer the Rhine, between

Markelsheim and Artenzheim. (D'Anville.) This town was much favored by the Emperor Frederic II., who

enlarged it. It was one of the imperial cities, and disputed with Ensisheim the preeminence among the towns of the

Upper Alsace. Having been ceded to France by the treaty of

Munster in 1648, the king of France, Philip IV., of

France, in 1673: Colmar is consequently an open
town. Under the old government of France the inhabi-
tants, though deprived of their ancient municipal consti-
tution, enjoyed several privileges; and the Reformed, who

constitute half the population, had, as well as the Catholics,

the free exercise of their religion. Colmar was formerly

included in the diocese of Porenntrou.

The town is beautifully situated in a plain near the foot

of the Vosges. It is a handsome place; the streets are wa-

tered by small streams from the Lauch and the canal of the

Fecht. The church of the Dominicans is the handsomest of

its antient buildings. The prisons and the theatre are also

worthy of notice. The inhabitants amounted, in 1832
to 15,131 for the town, or 15,442 for the whole commune

They manufacture printed calicoes, tapes and ribbons;

there is a powder-mill near the city. Considerable trade is

conducted in the agricultural produce of the district, wheat

and other grain, and wine of good quality. The town is

the seat of a Cour Royale, or supreme court of justice.

There is a college or high school, a societe d'émulation, and

a public library, one of the richest in France, containing

above 60,000 volumes. The revenue of the town is consi-

derable. Among the natives of Colmar may be mentioned

Martin Schoen, the earliest engraver in metal, and Rew-

bel, one of the members of the Executive Directory of

France.

The arrondissement of Colmar contained, in 1832, 189,589

inhabitants; it occupies the northern part of the depart-

ment. It is the seat of an extensive cotton manufacture.

The mountain streams which traverse it supply a moving

power for machinery.

COLBROOK. [BUCKINGHAMSHIRE.]

COLNE. [THAMES.]

COLUMBUS (Zoology), a genus of Quadrumanous mam-

mifers (Cheiropods of Mr. Ogilby); established by Illiger

and adopted by M. Geoffroy. The latter places the genus in the group of Satyra calcarina, or monkeys of the old

continent; a group distinguished by having their nostrils

separated by a very thin partition, and by possessing five

molar teeth only on each side of the two jaws.

Generic character.—Facial angle from 40 to 45 degrees;

muzzle short; face naked; body elongated and small; ex-

tremities slender; the anterior hands deprived of a thumb;

the fingers rather short; the posterior thumb very distant

from the fingers, and placed very much backwards; tail

longer than the body, small, and tufted at the end; cheek-

pouches and callouses on the buttocks.

The Colobi, which are supposed to be inhabitants of

the Coast of Guinea, seem to be in the old world the represen-

tatives of Ateles, whose locality is South America. Ex-

ample:—Cebus polykomos, Geoffroy.

This species, which is the Simia polykomos of Schreber,

the Simia comosa of Shaw, the Cebus a maculat of Buffon,

and the Full Bottom of Pennant, is very handsome. The

head and upper part of the body are covered with hair.

[Colobus polykomos.]
falling over the shoulders and forming a kind of hood and
peigne, from whence it derives the name given to it by
Buffon, while the resemblance of this chêvêtre à la wig
determined Pennant to give it the English name above
recorded. This ornament is composed of floating hairs,
which are yellow mingled with black; the face is brown,
and the rest of the body is covered with very short close
hair of a jet-black, a colour which sets off the snow-white
tail, which is much longer than the body and not prehensile.
In this last particular, in the possession of cheek-pockets,
and in other characters, it differs from Ateles, while in
some points, and especially in the absence of the thumb in
the anterior hands, it resembles it much.

Locality, the forests of Sierra Leone, where the natives
give it the name of 'the King of the Monkeys' (Roi des
Singes), apparently, says Desmarest, on account of the
beauty of its colours, and its 'camail,' which represents
a sort of diadem. They attach great value to its fur, for
which they make ornaments, and apply it to various
purposes.

Besides M. Geoffroy's other species, Colobus ferrariguinus,
Stimia ferrariguina of Shaw, Autre Guenon of Buffon, the
Bay Monkey of Pennant, which is by many considered to
be only a variety of Colobus polycomos, the French zoonô-
l'ité mentions another species, Colobus Temminckii, KuhI,
which is described by them as extremely scarce, and its
locality unknown. The specimen belonging to M. Tem-
minck came from Bullock's Museum, and together with
many other rarities was suffered to leave this country
when that fine collection was broken up, to the great regret
of all English zoologists, and to the manifest advantage of
foreign establishments.

Such was the history of this curious genus; when in
June, 1832, several imperfect skins of mammalia, recently
obtained by Mr. Gould from Algoa Bay, were exhibited to
the Zoological Society of London. One of these skins,
that of a monkey, deficient as to the head and hands, was,
Mr. Bennett remarked, evidently referrible to the Colobus
polycomos of Illiger; the long milk-white tail strongly con-
trasting with the bright deep-black fur of the body, being
fully sufficient to characterize it. On the upper part of
the skin, above the shoulders, some nearly white hairs were
intermingled with the black ones. The only discrepancy
observed between the specimen and the description of the
species given by Pennant was in the great length of the
hairs of the body, the greater number of them being four
or five inches long; this, it was stated, might be dependent
on age or locality. Another skin, equally imperfect with the
preceding, was declared to be that of the Colobus ferrar-
guinus of Illiger, with the state of which, described by Mr.
KuhI under the name of Colobus Temminckii, the specimen
agreed in every respect, except in the absence of any yellow
tinge in the rufous fur covering the under surface of the
body.

In July, 1835, Mr. Ogilby exhibited to the same Society
several rare and undescribed species of mammalia and birds,
brought from the Gambie by Mr. Rendall. Among them
were materials which, together with the specimens then
lately brought from Abyssinia by Dr. Rüppell, gave Mr.
Ogilby an opportunity of revising the natural history of the
genus Colobus, six species of which he then recorded.

1. Colobus polycomos, Schreber, with the head and
shoulders covered with long, coarse, flowing hair, of a dirty
yellowish colour, mixed with black; body, arms, and legs,
of a fine glossy blackness, covered with short hair; tail of
a snowy whiteness, with very long hair at the end, forming
a tuft. (Pennant.) Locality, Sierra Leone.

2. Colobus Ursinus, Ogilby, with very long glossy black
hair over the whole body and extremities, and a long snowy-
white tail, tufted at the end; described from two imperfect
skins, without heads or hands, the same as those noticed by
Mr. Bennett and above referred to. These skins, Mr.
Ogilby remarks, were considered by Mr. Bennett as refer-
rible to the Colobus polycomos; and the general colour of
the body and tail, as well as a slight appearance of grizzled
or grey hair about the neck, where the head had been cut
off, would, at first sight, Mr. Ogilby allows, appear to justify
Mr. Bennett's views; but the words of Pennant (the only
original describer of the species) imply that the 'long dirty
yellowish hair,' which he compares to a full-bottomed peri-
g, grows from the shoulders and neck, as well as the
head, and expressly declare that the hair on the rest of
the body, as well as on the legs, is short. Now, in the speci-
men as present under consideration, the very reverse of
this is observable. The black hair of the shoulders, as
already observed, has a partial mixture of silvery-white on
the anterior face, just where the head has been cut off;
but it is not longer than the hair upon the rest of the body
and limbs, which is moreover five or six inches in length,
and in texture and appearance not unlike that of the Urus
labiatus. The whole animal, in fact, resembles a small
bear, and is covered with the same uniform, long, black,
and glossy fur upon every part except the tail, which, at
the root more particularly, is furnished with much shorter
hair. Whether or not this species, like the polycomos, has
the head of a different colour from the body, is a subject
for further observation: the white or silvery hairs already
mentioned as still remaining about the shoulders render
it extremely probable that it has, but in no case can it
form the striking contrast in length, nor present the long
flowing mane or wig-like appearance ascribed to the animal
observed by Pennant. Mr. Gould, who procured these
skins for the Society, reported them as coming from Algoa
Bay: we know enough of the zoology of that part of Africa
to render this account extremely doubtful, and the proba-
bility is, either that Mr. Gould was misinformed, or that he
may have mistaken Duquesa Bay for Algoa, which, from the
similarity of sound, might readily happen. If this conjec-
ture should prove correct, it would follow that the Colobus
ursinus was the analogue of the Colobus polycomos, on the
opposite coast, and the conjecture receives further coun-
tenance from the fact of many other known species of
mammals having such analogues in the same localities.

3. Colobus Guereza, Rüppell, with the head, face, neck,
back, limbs, and basal half of the tail, covered with short black hair; the temples, chin, throat, and a band over the eyes, white; the sides, flanks from the shoulders downwards, loins and buttocks, clothed with long flowing white, which hangs down on each side like a loose garment; the tip of the tail tufted with dirty-white. Locality, Abyssinia. There is no specimen, one of Dr. Ruppell's, in the British Museum.

4. *Colobus ferrugineus*, Geoffroy. Crown black; back of a deep bay colour; outside of the limbs black; cheeks, underparts, and inside of the tail, black. (Péan's Description.) Locality, Sierra Leone.

5. *Colobus fuliginosus*. Smokey-blue above, dirty yellowish-gray beneath; cheeks, throat, tail, and extremities, brick-red. (Ogilvy.) Locality, the Gambie. Mr. Ogilvy observes that the males of 5, 465 villagers, in 2 months, 19 churches of Reformed; 40 Protestant and 5 churches of ease, 3 free churches, 211 Roman Catholic chapels, and 34 synagogues. The population in 1816, including the military, was 329,518; in the year 1828, 383,665, of whom 265,626 were Roman Catholics; 52,096 Protestants; and 4069 Jews; and in 1831, 386,938. It contains one university, that of Bonn, and four gymnasia. The stock consisted, in 1819, of 13,854 horses, 137,738 horned cattle, 51,368 sheep, and 1,716 goats. In 1831, of 15,610, 120,892, 82,421, and 10,465 respectively. The principal employments are the working of coal, lead, and iron mines, the potteries, and the manufacture of woollens, linen, leather, Cologne water, sugar, tobacco; besides dyeing, cotton printing, and tanning.

COLOGNE (Coln), the capital of the circle, in 59° 58' N. lat., and 6° 53' E. long., extends in a crescent-shape along the left bank of the Rhine. It is enclosed by a lofty wall, 12 and 1/2 miles long, defended by nine towers, 297 feet in height, and surrounded with ramparts and deep ditches. It has twenty-four gates on the land and water-sides; and in front of seven principal gates strong redoubts have been erected. Cologne owes all its origin to the circumstance that it is a Roman station, and subsequently a colony, under the name of Conflavia Agrippinensis, so called from the Emperor Claudius and his wife Agrippina, who was born here while her father Germanicus commanded in these parts. Agrippina adorned it with hospitals, a theatre, temples, aqueducts, &c., the ruins of which may still be traced. It continued to be the capital of Lower Rhinish Gaul till 330, and after a frequent change of masters was annexed to the Frankish monarchy in 780. It took part in some of the many disputes which arose in the empire, and was besieged by Henry V. for its attachment to his father Henry IV.; and afterwards unsuccessfully by Philip of Swabia, for having proclaimed his rival Louis of Bavaria, as having the right of the empire, which province was then in the imperial possessions. It continued the same fearful persecutions as in other places, shut themselves up with their wives and children, and set fire to their houses; upon this, the surviving Jews were compelled to leave the city, and though they subsequently obtained permission to return, they were again obliged to quit it in 1429.

Cologne was one of the most powerful and wealthy cities of the Hanseatic league. At that time it mustered an armed force of 20,000 men, and its population amounted to 150,000 souls. When the Hanseatic league engaged in a war with England in 1422, Cologne sided with England, on which account it was formally excluded from the league; but on the conclusion of peace by the treaty of Utrecht in 1474, it was re-admitted to this privilege upon the intercession of the Emperor Frederic III. During the whole of this period the commerce of Cologne was extremely flourishing. In the eleventh century the Cologne vessels carried Rhinen wine, corn, oil, salt, beer, linseed, and other German produce to all countries lying on the German Ocean and the Baltic, to England, France, Spain, Portugal, Italy, Norway, Sweden, and Russia, and brought back the produce of those countries.

The trade of Cologne with England at this early period was very considerable, and King John condescended to the merchants of Cologne privileges rarely granted to his own subjects. While all was the property of the St. Peter cathedral, trade, carriage, and commerce were conducted in Norway and the Netherlands; and all vessels navigating the Rhine were obliged to unload their cargoes at Cologne, whence they were conveyed in its own ships. The arts and sciences were equally flourishing; its university was one of

2. Z.
the most famous in Germany. The specimens of its architecture, paintings on glass, sculptures, and pictures, which still exist, attest the perfection which its artists had attained. Intestine divisions, the expulsion of the Jews, the public destruction of its looms, which compelled their owners to destroy their goods and various other facts hastened its decline. It ceased to be a free town in 1792.

Cologne is divided into four sections, and is built in a very irregular manner; the streets, many of which still recall the Roman times, are narrow, crooked, and crooked, and paved with basalt. It contains twenty-five churches, eight chapels, a synagogue, and many public buildings, the most remarkable of which is the cathedral, which, if completed, would be the most magnificent monument of Gothic art in the world. It was begun in 1248 by Archbishop Conrad of Hochstettern, called the Solomon of his age; it is in the form of a cross, 400 feet in length, and 186 in breadth; the roof rests on 100 columns, of which the four central ones are 30 feet in circumference. The only part however which is finished is the splendid choir, with its surrounding chapels and its superb painted glass windows. Of the two towers, which were intended to be 500 feet in height, one is raised only half this elevation, and the other not more than 21 feet. Considerable progress is now making in completing various parts of the cathedral, under the direction of the Prussian government. It contains the tombs of many of the most illustrious of the French and German kings and princes, and above all, the relics and curiosities, especially the tomb of the Magi, which is richly adorned with gold and precious stones. Among the other interesting churches are those of St. Ursula, celebrated from the legend of the martyrdom of her-schollars, and the semi-legendary of her companions in arms, which is often called the Fabrique of Rubens, representing the martyrdom of that apostle. The other buildings of note are the ancient cathedral convent, the town-hall, the hotel of Guerzont, where the diet and festive meetings were formerly held, the hall of justice, the archiepiscopal palace, &c. Between Sajoine and Deutz is a bridge built in 1822, which rests on 1250 piles in the river Rhine.

Cologne is the centre of the provincial administration, the residence of the archbishop, and the seat of various public boards. It contains two gymnasiums; one Roman Catholic, which in 1827 had 484 scholars, and the other Protestant, with about 290 scholars; the latter has a valuable library of 33,000 volumes, an observatory, and a botanical garden. There is also the library of the town-hall, of the archbishop, which contains 16,000 volumes, a public archive, with 40,000 rolls, the oldest archives, and many manuscripts, MSS., coins, natural history, &c. Besides several elementary schools for Protestants and Roman Catholics, the town has a grammar-school, a school of trades, three of commerce, a school for的艺术 schoolmasters, an orphan-asylum, hospital, mad-house, &c.

The population in 1827 was 57,022, of whom 34,000 were Roman Catholics, and 23,500 Protestants; at present it exceeds 60,000. The chief resources of the inhabitants, besides agriculture and the cultivation of the vineyards, are manufactures, especially of cotton yarn, cotton goods, hosiers, woollens, silks, velvets, tobacco, brands, and spirits, Cologne water, &c. Being the central mart of the Rhine trade between the Netherlands, Germany, Alsace, and Switzerland, many of the inhabitants are engaged in shipping and navigation. Cologne being a free port, a considerable traffic is carried on in corn, wine, rape-seed, rape-seed oil, coal, &c. In the vicinity of the city are several coal-mines, and also a district of a particularly fine pottery clay.

COLOMBIA is the name which was adopted by the northern countries of South America in 1819, when New Granada and Venezuela united and established one central government for the purpose of existing the Spanish government. In 1829 Venezuela renounced the union, and constituted itself a separate republic. After the resignation of Javer 1820, it again joined New Granada; but this union lasted not more than a short time. In November, 1831, a new separation took place, and at the same time it was decided that the former province of Quito should constitute a separate republic under the name of Ecuador. Thus Colombia was divided into three republics of Venezuela, New Granada, and Ecuador.

COLON. The alimentary canal below the stomach is divided into the small and great intestines. The former consist of the duodenum, jejunum, and ileum; the latter of the colon and rectum. The colon commences a little above the right groin, in the right flexa fossa [ADOMEN], in the form of a dilated pouch, which is called the caput coli, or head of the colon; and extends almost to the ileo-cecal valve, into the ileal portion.

The ileum opens obliquely into the left side of the pouch, its inner or mucous membrane projecting so as to form the ileo-cecal valve, which, permitting the contents of the small intestines to pass into the caecum, prevents their return, except in peculiar cases of diseased action. Near the same part of the caecum opens also a slender contorted intestine about two inches long, likewise blind, which is called the appendix vermiformis, from its recent shape of a worm. It is known that this appendage is unknown: in some animals, as the sheep, it is much larger, and is probably of more importance than the man. From the right iliac region the colon passes upwards along the side to the under surface of the liver. Hence it turns to the left, stretching over the upper part of the belly just below and in front of the stomach, to which it is connected by the common attachment of both organs to the omentum, a loose pendulous membrane, formed by a double fold of the peritoneum, and spread like an apron in front of the small intestines. Having reached the opposite side of the abdomen, the colon passes downwards to the left iliac fossa; thence, taking two sudden turns to the left, it passes under the inferior part of the diaphragm, and abdominal cavity, and ends in the last lumbar vertebra, and becomes continuous with the rectum. The double turn just mentioned is the sigmoid flexure; the transverse part is called the arch of the colon. From the right iliac to the descending or lateral parts, as they lie immediately above each other, is called the transverse or lumbar portions. The central space thus nearly enclosed by the colon is occupied by the convoluted heap of small intestines. The length of the whole canal is six or seven times that of the body in man, the end, and about a fifth part. In graminivorous animals its length is proportionately greater; in those which feed exclusively on flesh it is less.

The canal is enveloped in the serous membrane called the peritoneum, which forms the external covering of all the abdominal visceræ. [ADOMEN.] This outer tunica pass entire round it, meets behind, and forms a duplicature called the mesocolon, which attaches it, more loosely at the arch than at the sides, to the spine and loin, and serves as a medium for the passage of nerves and vessels, and the vesel of absorbent glands. Between the peritoneal coat and the internal mucous lining there is a layer of muscular tissue, which enrobes the bowel in scattered bands, and serves to diminish the size and regularity arranged in three distinct longitudinal bands, contract its length; and their combined actions, taking place successively in different parts of the intestine, but on the whole from above downwards, agitate its contents backwards and forwards, and urge them ultimately into the rectum.

The colon is amply supplied with blood-vessels, nerves, lymphatics, and ducts, which pour out the mucus that lubricates the interior as well as various excrementitious matters more separated from the blood as being injurious or useless. The canal is not smooth and uniform, like the small intestines, but bulges out between the bands of muscular tissue, and is more or less irregular in its form, in which the feces lodge for a time and become deprived of much of their moisture as they are rolled onwards by the peristaltic action. Hence arises their lobulation of irregular form, more observable in some of the lower animals, as the horse and sheep. It is in the colon that the faces acquire their peculiar odor, which is not perceived above the ileo-cecal valve. It is in this part of the alimentary canal that the fluid part of the food is absorbed, and the oxalic acid is produced to keep the nutritive particles in suspension. The lymphatic vessels of the colon are consequently found distended with a transparent fluid, and not the milk-like chyle absorbed by those of the small intestines. [LACTEALS. LYMPHATICS.] For further information on this subject the reader is referred to the account of those of the alimentary canal in general, given under the head of DIGESTION.

The colon is alone or conjointly the seat of many diseases, such as colic, constipation, diarrhoea, dysentery, enteritis, ileus, intemperance, obstruction; and is
with Boniface VIII. are recorded in the history of the middle ages. In the early part of the fifteenth century, one of the Colonna family was made pope under the name of Martin V. A century later, two cousins of the same family, Fabrizio and Prospero Colonna, distinguished themselves in the service of Ferdinand of Aragon, and afterwards of Charles V., against the Turks. Several of the same family attained high honours in the kingdom of Naples and in Spain, and others are numbered among the cardinals of the Roman church. Some have also emigrated to the New World, as the Sigliano of Naples and the Sciarra Colonna at Rome continue to exist. The Colonna have an extensive palace with gardens on the slope of the Quirinal at Rome.

COLUMNA. [CIVIL ARCHITECTURE.]

COLOMA. In Latin colonia, a word derived from the verb colo, colere, to till or cultivate the ground, originally signified a number of people transferred from one country or place to another, where lands were allotted to them. The people themselves were called Coloni, a word corresponding to our term colonists. The meaning of the word was extended to signify the country or place where colonists settled, and is now often applied to any settlement or land possessed by a foreign state, as the British, Dutch, and the Mauritius are called British colonies, though they are not colonized by Englishmen, the former being inhabited by natives, and the second by French or descendants of French colonists. The proper notion of the word 'colony' is therefore the place determined by a state or nation to extend its influence as a tract of land, either wholly or partly colonized, that is to say, possessed and cultivated by natives, or the descendants of natives, of another country, and standing in some sort of political connection with and subordination to the mother country.

The formation of colonies is among the oldest occurrences recorded in history or handed down by tradition. Maritime states, such as those of Phoenicia and of Greece, possessing only a small and inconsiderable territory, were forced in the course of time to seek colonies either by necessity or by a desire of emigration as their population increased. In both these countries the sea afforded a facility for transferring a part of their superabundant citizens, with their families and movables, and their arms, to some foreign coast, either uninhabited or thinly peopled by less civilized natives, who
by good will or by force, gave up to them a portion of their land. The emigration might be voluntary or forced; it was no doubt in many cases the result of civil contentions or foreign conquest, by which the losing parties were either driven away, or preferred seeking a new country to remaining in their homeland. The support of such emigration in a country abundant in valuable productions would decide others. Lastly, the state itself having discovered, by means of its merchants and mariners, some country to which they could trade with advantage, might be the inducement for sending out a part of its inhabitants. The republic should establish a factory there for the purpose of sale or exchange. In fact commercial enterprise seems to have led both to maritime discovery and to colonization as much as any one single cause. Such seem to have been the means by which the numerous Phoenician colonies with Tyre and Sidon at a very early date, were planted along the coasts of the Mediterranean. Tyre itself was a colony of Sidon, according to the "Old Testament," which calls it the "daughter of Sidon." Léon Magna, near the great Syrtes, was also a colony of Sidon, according to Scollus (Jugurth. c. 78). Hippo, Hadrumetum, Utica, and Tunis, were Phoenician colonies, and all of greater antiquity than Carthage. The Phoenician colonies extended along the north coast of Africa as far as the Pillars of Hercules (the Straits), and along the opposite coast of Spain, as well as on the Balearic Islands, and Sardinia and Sicily. Those on the Spanish coast seem to have been at first small settlements or factories for the purpose of trade between the mother country and the new country. Among the cornets she has mentioned the name of Nebelun, and a few others, however, such as Gades, by degrees took the trade into their own hands and became independent of the mother country. The foundation of Carthage was an instance of another kind. It resulted from some desperate measure of the Phoenicians, exasperated by the tyranny of a king of Tyre. There is another confused tradition of a Phoenician or Canaanite emigration to Mauritania, occasioned by the conquest of Palestine by Joshua, and mentioned by Ptolemy and Strabo, and the mother country, and the Phcenicians, and the Carthaginians in their history; and after him by Thucydides, who says that the Phoenicians and the Carthaginians inhabited most of the islands, and carried on piracy, until Minos, king of Crete, drove them away, and planted new colonies. Herodotus says they had once a settlement in the island of Thasos, where they worked the gold mines. They also had a settlement on the island of Cythera (Cerigo), which lay conveniently for their trade with the Peloponnesus. Thucydides (vi. 5, s.c.) also mentions the Phcenicians and the Carthaginians establishing a factory on the promontories and small islands on the coast of Sicily, from which they traded with the native Siculi; but that when the Greeks came to settle in great numbers in the island the Phcenicians abandoned several of these posts, and concentrated themselves at Motya, Soloei, and Panormus, now Palermo (which last probably had then another name), near the city occupied by the Elymians or Phrygian colonists (who had emigrated from Asia after the fall of Troy, and had built Entella and Esegia), trusting to the friendship of the latter and also to their proximity by sea to their countrymen of Carthage. These three Phcenician settlements were however merged afterwards into Carthaginian dominions. The Phcenians seem also to have occupied Melita or Malta, and the Lipari islands, according to the report of Strabo, and Caralis (Cagliari) and Sulki. A Phoenician inscription was found in a vineyard at Cape Pula, belonging to the country of Motya, and was explained by De Rossi, Emendamenti Lettere di Cesare, 17. But the undoubted field of Phcenian colonization was the north coast of Africa. There the Phoenician settlements seem to have been independent, both of the mother country and of each other. We have the report of Utica and Tunis, which continued separate communities even after Carthage had attained its great power; Carthage only exercising the hegemony or supremacy. This seems to have been the case among the original Phoenician towns; Sidon, Tyre, Aradus, &c., each a distinct commonwealth, forming a sort of federation, at the head of which was the principal city, at first Sidon, and afterwards Tyre. A feeling of mutual regard seems to have prevailed between the various Phoenician towns and colonies, including Carthage, as members of the same nation. The colonists were faced with dangers by the Carthaginians in the interior as well as on the coast of Africa, Sicily, and Spain, were upon a different plan from those of the Phoenicians; they were made through conquest and for the purpose of trade. In the west was Carthage, founded by the Romans [Carthage], with the remarkable exception of the emigration colonies taken by Hannibal to the west coast of Africa.The earlier Greek colonies appear to have owed their origin to the same causes, and to have been founded upon the same plan as those of the Phoenicians. Thucydides (1.) says, that after the Trojan war, and the subsequent conquest of Peloponnesus by the Dorians, Greece being restored to tranquillity, began to send out colonies of the Athenians, whose country was overflowing with people from other parts of Greece, who had fled thither for security, began to send out colonies into Ionia and to many of the islands; the Peloponnesians sent theirs to Italy, Sicily, and some parts of Greece. But all these colonies were sent after the Trojan war. The Dorians from Megara, Argos, Corinth, and other places, colonized some of the larger islands, part of Crete, Rhodes, Coreya, as well as Aegina, Phylia, Samos, &c. But the Peloponnesians sent colonies to the coast of Caria, in Asia Minor, which district took them the name of Doris. A colony of Lacademonians founded Cyrene. The Megarians founded Chalcedon, Byzantium, Selymbria, Heraclea, and other places on the coasts of Italy. The Etruscans made several attempts at immigration, of which Syracuse was a Corinthian colony, which afterwards founded Acre, Camarina, &c.; Gela was a colony of Rhodians and Cretans, and Agrigentum was a colony from Gela. The Megarians founded Selinus. The Chaldeians founded Naxos, which was the first Greek settlement in Sicily, and afterwards took Leonitini and Catana from the Siculi. For a more detailed account of the numerous Dorian colonies see K. O. Müller's History of the Doric Race. The Dorians also colonized the islands of Lesbos, Tenedos, and others in that part of the Aegean. These emigrations continued for a long time, and the result was the formation of a kind of federal union. About eighty years before the Aelians and Achaeans, two nearly allied races, being driven away from Peloponnesus by the Dorians, had emigrated to the coast of Asia Minor. These had also established colonies as far southwards as the Hermus. Phocaea was the most northern of the Ionian towns on the borders of Asia. The Aelians also colonized the islands of Lesbos, Tenedos, and others in that part of the Aegean. These emigrations continued for a long time, and the result was the formation of a kind of federal union. The Aelians at a later date colonized Euboea, where they founded Chalcis and Eretria, and they also sent colonies to Naxos, to the islands of Ceos, Sikinos, Seriphos, and other islands of the Aegean. Many of these colonies having thriven and increased, became colonizers in their turn. The enterprising mariners of Phocaea formed various colonies, the most celebrated of which is Messina on the south coast of Gaul. The Chaldeians also colonized the coast of Italy, in the country of the Opici. Pirates from Comile founded Zancle, but a fresh colony of Samians and other Ionians escaping from the Persian invasion, in the time of the first Darius, took Zancle, and were afterwards in their turn displaced by the Anthus, tyrant of Rhegium, who called the town Messene (now Messina), from the name of his original country in the Peloponnesus. The Aelians founded Poseidasia, afterwards Puteoli, and they with the Chaldeians established colonies as far north as Naples. Ionian colonists settled on the coast of Sardinia. The Greek colonies on the coast east of Italy, setting aside the confused traditions of Arcadian immigrations, must be looked to the period taken place before the Trojan war, consisted chiefly of Dorians and Achaeans, and the Peloponnesians. Croton, Sybaris, and Puedo were colonies of the latter. Tarentum was a colony of Laconians, and Locri Epizephyri of the Locrians. Greek colonies were settled both on the north and east sides of...
the Pontus (Black Sea), and also on the north coast in the modern Crimea. [Bosporus]

As to the relations subsisting between the colonists and the natives or prior inhabitants of the countries which they occupied, it was undoubtedly in most cases strictly in subjection. The light of day in which the aged and the natives withdrew into the interior and left the ground to the new occupants, as the Siculi did in several instances, or they resisted, in which case, when overpowered, the men were exterminated or reduced to slavery, and the colonists, with the country over which they had the dominion, was a consequence of any original right of dominion as supposed to have belonged to the mother country, as the case of the colonies, especially the earlier ones, which were the consequences of civil war or foreign invasion, were formed by large parties of men under some bold leader, without any formal consent being asked from the rest of the community: they might have some movable things with them, to conquer a new country for themselves; they left their native soil for ever, and carried with them no obligations or ties. Those that went off in more peaceful times, by a common understanding of the wealth, the possession, and, in general, with as little inconvenience as possible, into the hands of the conquerors, so that they might live as they chose. The same was the case with the Greek colonies in the time of Thucydides, and with their disposition of their new possessions.

What were the relations between those Greek colonies? What were the relations between those colonists and between those colonies that were of a kindred race? This may be gathered pretty clearly from Thucydides. Epidamnus was a colony of Coreya: but the leader of the colonists was the son of a Corecean, or the person under whose conduct it was settled, a Corinthian, who was invited, says Thucydides, from the mother city (called by the Greeks the metropolitan, μητροπολις, or parent state), according to an antient usage. Thus it appears that if a colony wished to send out a new colony, this was properly done with the sanction of the metropolitan. Some Corinthians and other Dorian Joins joined in the settlement of Epidamnus, which became a thriving community, and governed itself independently of both mother countries. In the course of time, however, civil dissensions and attacks from the neighboring barbarians induced the Epidamnians to apply to Coreya, as their metropolitan, for assistance, but their prayers were not attended to. Having had pressed by despair, the Epidamnians, as it were, finally laid down their arms, and gave up their town to them, as being the real founders of the colony, in order to save themselves from destruction. The Corinthians accepted the surrender, and sent a fresh colony. Epidamnus, giving notice that all the new settlers should be received. The Epidamnians, who did not choose to leave home were allowed to have an equal interest in the colony with those who went out, by paying a sum of money, which appears to have been the price of allotments of land. Those who went out gave their services; those who stayed at home gave their money. 'Those who went out,' says Thucydides, 'were many, and those who paid down their money were also many.' For the Epidamnians it was in fact an affair of pure speculation. The Corinthians, who gave up their colony, Corelyn, having become very powerful by sea, slighted their metropolitan, and 'did not pay to the Corinthians the customary homage and reverence in the public solemnities and sacrifices, as the other colonies were wont to pay to the mother country.' They accordingly took offense at the Corinthians accepting the surrender of Epidamnus, and the result was a war between Coreya and Corinth. (i. 24.)

Again, the Corinthians were not satisfied with simply obtaining the surrender of the Athenians against Corinth, stated, in answer to the objection that they were a colony of Corinth, that 'a colony ought to respect the mother country as long as the latter deals justly and kindly by it, but if the colony be wronged by the mother country, the tie is broken, and they become alienated from each other, because, said the Coreceans, colonists are not sent out as subjects, but as free men having equal rights with those who remain at home.' (i. 34.) This shows the kind of relation as understood by the Greeks between the metropolises and its colonies. The colonies were in fact foreign states, attached to the mother country by ties of sympathy and common descent, so long as those feelings were fostered by mutual good-will, but no further. The Athenians, it is true, in the height of their power, exacted from the colonists in other countries who were at variance with other people, and punished severely those who swerved from their alliance, such as Naxos; but this was not in consequence of any original right of dominion as supposed to have belonged to the mother country, as the case of the colonies, especially the earlier ones, which were the consequences of civil war or foreign invasion, were formed by large parties of men under some bold leader, without any formal consent being asked from the rest of the community: they might have some movable things with them, to conquer a new country for themselves; they left their native soil for ever, and carried with them no obligations or ties. Those that went off in more peaceful times, by a common understanding of the wealth, the possession, and, in general, with as little inconvenience as possible, into the hands of the conquerors, so that they might live as they chose. The same was the case with the Greek colonies in the time of Thucydides, and with their disposition of their new possessions.

Before we pass to the Roman colonies, we must say something of the system of colonization among the other inhabitants of the Italian peninsula in the Ante-Roman ages. The Etruscans, who extended their dominion over the Apennines in the great plain of the Po, and founded there twelve colonies, the principal of which was Felsina (Bologna). They afterwards, having defeated the Umbrians, many years before the assumed foundation of Rome, extended themselves over the country of the South Latins, and taking Latium, and took Campania from the Oscans, where they founded likewise twelve colonies, the principal of which was Capua. The Etruscans, being skilled in architecture, surrounded their towns with solid walls built of massive stones without any cement; they were also well versed in agriculture and hydraulics, and several of the earliest drains and canals in the Delta of the Po are attributed to them. They subjected, but the influence of the newly civilized, the people among whom they settled. Their colonies have formed independent communities, though allied by a kind of federation. The Etruscans also founded colonies in the Picenum, such as Hadria [Arca] and Cupra Montana and Cupra Maritima. They took from the Ligures the Phocaeans, and drove them out of Corsica. The Etruscans civilized Italy by means of their colonies, but, unlike Rome, they did not keep them united under a central power.

The Sabini, an agricultural and pastoral people, living in a mountainous country, sent colonies in very remote times to other parts of Italy. It was their custom, after the lapse of a certain number of years, to celebrate solemn sacrifices
in the spring season, and to consecrate to the gods a number of young men, who were to quit their native land, and proceed under the auspices of Heaven to seek a new country. In this manner the Sabines, the Latins, the Etruscans, and all other tribes are said to have been colonized by the Sabines. The Samnites in their turn sent out other colonies, and the Lucanians were one of these. The Samnites as well as the Sabines were entirely given to agricultural pursuits.

But the greatest ages of the republic, adopted the system of sending out colonies to the conquered countries. But the Roman colonies were different from those of most other people, inasmuch as they remained strictly subject to the mother country, whose state they were, so to speak, the means of enforcing upon the conquered nations. They were, in fact, like so many garrisons or outposts of Rome. Servius (An. i. 12) gives the following definitions of a colony, taken from much older authorities:—"A colony is a society of men led in one body to a fixed place, furnished with dwellings given to them under certain conditions and regulations." Again, 'Colonia is so called a colonio; it consists of a portion of citizens or confederates sent out to form a community elsewhere by the cession of their state, or with the general consent of the people from whom they are departed. Those who leave without such a consent, but in consequence of civil dissensions, are not colonies.' The notion of a Roman colony seems to be this: the colonists occupied the area of the territory, and the Romans occupying the same area, it was, perhaps, an exception or two, was the general character of the Roman colonies in Italy Proper. When the Romans afterwards extended their conquests into countries where there were no cities where the population was being ferried over hostile, the Roman settlers must be ever on their guard against them, they built new towns in some favourable position. Such was the case in several parts of Gaul, Germany, Dacia, &c. But the Roman colonies in Italy consisted of Roman citizens, who were sent as settlers to fortified towns taken in war, with land assigned to them at the rate of two jugera of arable land or plantation for each man, besides the right of pasture on the public or common lands, and any other rights the Romans might confer, or dispose of all their property; the general rule was, that one-third of the territory of the town was confiscated and distributed among the colonists, and the rest was left to the former owners, probably subject to some charges in the shape of taxes, or services. The colonists constituted the opulosis of the place; they alone enjoyed political rights and managed all public offices, the old inhabitants being considered as the plebs. The ownership of the public or public property, including the pasture land, was probably also vested in the new settlers. It is natural to suppose, that for some generations at least, no great sympathy existed between the old and the new inhabitants, and hence we frequently hear of revolts of the colonies, which means, not revolt against the city, but against the new colonists, who were not original inhabitants, who rose upon and expelled the colonists. But these events generally ended by a second conquest of the place by Roman troops, when the old inhabitants were either expelled or sold as slaves, or, under other unfavourable circumstances, lost at least another third of their property. In later times, during the civil wars of Rome, new colonies were sent by the prevailing party to occupy the place of the former ones; and the older colonists were then dispossessed of their property either wholly or in part, just as they had dispossessed the original inhabitants. Hence the saying, 'Veteres migrate coloni.'

Sometimes colonies, especially at a great distance from Rome, having discovered newcomers living in dangerous or populous colonies, asked for a reinforcement, when a fresh colony was sent, to whom the old colonists gave up one-third of their property. Each of the older colonies, it is observed by Galba (xv. 15), was a Rome in miniature; it had its senators called Decuriones, its Duumviri, Ediles, Censors, Sacerdotes, Augures, &c.

A distinction must here be made between the Roman colonies and the Latin colonies. The former had all or most of the rights of the citizens, the latter only certain privileges, and some others pretend that they had not the jus suffragii; and yet, in various passages of Livy and others, colonists are styled civis et Romanus. The Latin colonies had not the jus Quiritium, but only the jus Latii. At Sutri they had the jus colonorum, but only the jus Latii. After the Battle of Sentinum, the jus colonorum was bestowed upon Latium, although the administration of the colonies had been much extolled. In the time of St. George, at Genoa, there is a valuable unpublished MS. containing the whole colonial legislation of the Genoese in the middle ages.

The Roman colonies in Africa, except Sardinia from the Moors, sent colonists to Cagliari and other places. Their settlements in the Levant were mere commercial factories.
The Venetians established colonies in the Ionian islands, Candia, and Cyprus. Their systems of colonizing, part of Rome, they ruled, by means of their colonies and garrisons, over the people of those islands, whom they left in possession of their municipal laws and franchises. These were not like the settlements of the Genoese, merely commercial establishments and the they became centers of commerce; in fact, Candia and Cyprus were styled kingdoms subject to the Republic. The Venetians had also at one time factories and garrisons on various points of the coasts of the Levant, but by far the best of them were in the Morea, Euboea, Syria, and the Isthmus, either through the Genoese, or afterwards by the arms of the Ottomans. We can hardly number among their colonies the few strongholds they had until lately on the coast of Albania, such as Butrinto, Preveza, Parga, &c., any more than we can the main extent which the French, and more especially the Spaniards, made in Barbary. The French on the coast of Barbary, Oran, Melilla, Ceuta, &c. They were merely forts with small garrisons, with no land attached to them. The name used in the Mediterranean for such establishments is phosphate; and they are often used as prisons for criminals. An essential qualification of a colony is that it should have and cultivate land, and consist at least in part of civilians. The great agitation now in France, with regard to Algiers, turns upon this,—whether the French are merely to occupy the towns on the coast as military and in some degree commercial colonies, or establish a great agricultural colony in the interior, by taking possession of and cultivating the land. This question, as well as the English, and nearly all modern colonies, touches several points both of justice and policy. In the main, the spirit in which the country occupied by a few hunting tribes, as was the case in part of North America at the time the English settled there, and as is now the case in New Holland, the taking possession of the first few small numbers by peaceful colonization is attended with the least possible injury to the aborigines, while, at the same time, it has in its favour the extension of civilization upon a new shore. The savages generally resist before civilized man; a few of them adopt civilization and become civilized themselves; but when the limits are confined, the progress towards extinction is exceedingly rapid. The aborigines of Van Diemen's Land are now, as we are informed, reduced to a very small number. The last small number, in this instance, has been reduced to nothing. This, however melancholy in one point of view, has been, from the earliest times, the great law of the progress of the human race. But the case is much altered when the natives are partly civilized, live in domestic societies, have settled habitations, and either cultivate the land or feed their flocks on it. The colonists in such case do what the Romans did in their colonies; they take part of the amble land, or the whole of the soil in respect of their own concerns, and the land being so enclosed, and cultivated, has been much more prosperous than where they are left by amicable arrangement. This system of purchase from the natives has been practised both by the English and Anglo-Americans in North America; but though it has the special name of bargain, it has often been nothing more than a fraud, or sale under compulsion. The man of Europe has been long accustomed to regard the possession of the soil as that which binds him to a place, and gives him the most secure and least doubtful kind of property. It is undoubtedly a right which transcends into his children a permanent possession, make him countervail the acquisition of land. In whatever country he has set his foot, and once got a dominion in the soil, neither contracts, nor mercy, nor feelings of humanity, nor the right of conquest, can ever take it away from him, from seizing on the lands of the owners, and punishing their resistance with death. The modern colonies in Asia and America have been formed partly on the Roman or Venetian plan, and partly on the Genoese or old Phoenician plan. When the Portuguese first began their voyages of discovery in the 14th century, they took possession of some islands or points on the coasts of Africa and of India, and left there a few soldiers or sailors under a military commander, who built a fort, protected the trade, and thereafter also to keep those natives under a sort of subjection. No great emigrating colonies were sent out by them, except in after times to Goa and the Brazil, which latter is really a colony of Portuguese settlers. The Spaniards, on the contrary, when they discovered America, the possession of the soil, and formed real colonies kept up by successive emigrations from the mother country. In the West India Islands the natives were made slaves, and by degrees became extinct. In the same manner the Spaniards in New Holland; they were exterminated in some places, and in others reduced to the condition of serfs or tributaries. The Spaniards colonized a great part of the countries which they invaded. The Spanish American colonies had for their objects both agriculture and mining. The North American colonies were the consequence of emigration, either voluntary or produced by religious persecution and civil war at home. The Puritans went to New England, the Quakers to Pennsylvania, and the Cavaliers to Virginia. They formed communities under charters from the crown, and had local legislatures, but were still subject to the sovereignty of the mother country. The mother country sent its governors, and governed directly or indirectly, the civil functionaries. The precise form in which the colonies then owed to the mother country cannot be exactly defined. The American revolution only showed that it did not extend to a certain point, without showing how far it did extend. A new feature has appeared in modern European colonization, that of penal colonies, which was an extension of the principle of the presidio on the coast of Barbary, already mentioned. Convicts were sent by England first to New South Wales, in 1788, and thence to Botany Bay, now Sydney, to Guiana, by Portugal to the coast of Angola, and by the Dutch to Batavia. They were either employed at the public works, or hired to settlers as servants, or were established in various places to cultivate districts for which they paid rent to the government. The policy of penal colonies has been much discussed. They may afford a relief at least temporary, but at a great cost to the mother country, by clearing it of a number of troublesome and dangerous characters, especially so long as criminal legislation and the system of prison discipline continue as imperfect as they are at present in most countries of Europe; but with regard to the convicts themselves, and the population of those colonies, the policy of sending convicts to be absorbed, and to aid in the development of the colonies, has been more favourably of such colonies, under proper regulations and discipline, and to prefer the penal colonies of Great Britain to such ill-regulated places of punishment, which do not even afford to be placed of reform. With regard to the advantages resulting from colonies to the mother country, they appear to be, the extension of trade and exchange, the consequent employment of a number of additional hands, and the giving the means of acquiring property to the parties engaged. Many individuals also realize fortunes in the colonies, with which they afterwards return home, and thus add to the national wealth. Much has been written upon this subject by politicians and commercial writers, and the advantages of colonies have been exaggerated by some, and perhaps too much underrated by others. In a general point of view, as connected with the progress of mankind, a busy prosperous colony on a land formerly wild and desert is truly beneficial. Other colonies are valuable to the particular nations which they form, and are useful for protecting traders in remote and half-barbarous countries. But the proper question as to the policy of colonies now is this,—should a state form as many colonies as it has power to的情形? Which of them have been useful to the state of its citizens forming colonies by voluntary associations, or should it favour such associations by offering facilities to them, or at least putting no obstacles in the way; and should the state allow such associations of
emigrants to form such a political community as they choose? This subject is properly discussed under the head of Emigration.

An account of the great modern colonies is given under the respective heads, such as Barbados, Brazil, Canada, Cape of Good Hope, Jamaica, &c.

The colonies of England are: the British West Indies Islands, with the Bahamas and Bermudas, and British Guiana in South America; Sierra Leone, Cape Coast, and Cape of Good Hope in Africa; the islands of St. Helena, Mauritius, Ceylon, Pulo Penang, Singapore, and Malacca; the settlements in the coasts of Australia, and Tasmania, or Van Diemen's Land. The vast possessions of the East India Company in India cannot be called colonies, though they are dependencies of Great Britain, by which name also Gambia and Malta must be designated. The British West Indies, and French Guiana in America; Senegal, on the Coast of Africa; the island of Bourbon; and Pondicherry, in the East Indies.

Spain has lost her vast dominions in Mexico and South America, but has retained the finest islands of Cuba and Puerto Rico; she has also the Philippine Islands. Portugal has lost the Brazil, but has still numerous settlements on the coast of South and East Africa, at Angola, Benguela, Loango, and on the Mozambique; but these settlements are of the most degenerate of all European colonies.

In India the Portuguese retain Goa, and they have a factory at Macao, and a settlement on the northern part of the island of Timor.

The Dutch have the islands of Curaçao and St. Eustatius, and Surinam in Guiana. In Asia they have the great colony of Batavia with its dependencies, various settlements on the coasts of Borneo, Sumatra, Celebes, and the Molucca islands. The Danes are possessed of the islands of St. Croix and St. Thomas in the West Indies; Christiania, near Aarhus, on the Guinean coast; and Tranquebar in the East Indies.

The Swedes have the island of St. Bartholomew in the West Indies.

A society of North American philanthropists has founded since 1821, on the Guinean coast, east of Cape Mesurado, a colony of emancipated negroes, who have been transferred thither from the United States. The colony is called Liberia, and has two small towns, Monrovia and Caldwell.

On the subject of modern colonies, Raynal, Histoire des Établissements des Européens dans les deux Indes, may be useful, though it is often exaggerated and turgid; but the best authorities are the original accounts of the various discoverers and founders of the colonies, such as have been published by Navarrete for the Spanish, Barro for the Portuguese, &c.

The English Colonies, as a general rule, local legislatures, elected by the people, and a governor and council nominated by foreign companies, and subject to the control of the mother country, and put on such a footing as generally to allow the products of the colonies admission into British ports on more favorable terms than those of other countries. To this advantage the British are entitled, by the advantage of a monopoly in the markets of the mother country.

The old strict colonial system, of excluding foreign countries from direct commercial intercourse with the colonies, has the defect in view of securing all the supposed advantages of the exchange of British for colonial products, and giving employment to the British merchant navy. The rigour of this system however, has gradually relaxed, and given way to clearer views of self-interest; the colonial system of Great Britain, presents in many instances examples of foreign possessions which are expensive to the country, without any apparent corresponding advantages; and also of foreign possessions, the trade with which is still encumbered with regulations either unfavourable to the producers of the mother country, or favoured by discriminating duties which are an unfair tax on the domestic consumer. The expenditure in some of the colonies for the purposes of administration is beyond the colonial revenues to meet, and the deficiency must of course be supplied by the parent state. The immense patronage which colonial possessions put at the disposal of the government is naturally one reason why colonies are looked upon as a luxury, even those which participate in the advantages of posts and places in them. On the other hand, those only who contribute to these expenses may not unreasonably ask for some proof of solid advantage to the nation in return for this annual outlay. Setting aside the question as to the value of the colonies to the mother country (omitting, as before mentioned, the value of the patronage to those who confer places in the colonies and the value of the annual relief of the mother country), what advantage do the colonies yield? — what advantage is this said colony to the productive classes of the country and to those who consume the products of the colony? A question not always easy to answer; but this question, though important in the highest degree whether a colony ought to be maintained or not, if we look only to the interests of the mother country. If we look to the interests of the colony, it may be in many and certainly in some cases, the interest of the colony to remain as it now is, under the protection and sovereign authority of the mother country. But again the question recurs, what is the advantage to the mother country? If some advantage cannot be shown, the maintenance of a useless colony is a pure set of national benevolence towards the colony and to those who suffer from the want of its trade. There is a sort of relation with a colony such as Jamaica or Canada entails any expense on the mother country, we may ask whether all the commercial advantages that result from this relation would not be equally secured, if only the free circulation existed and that of administration were to cease. In support of this view, it is shown that the commerce of Great Britain with the United States, now free and independent, has increased most wonderfully since the separation, and probably more rapidly than it would have increased under the colonial system. This being the case, a similar increase might be anticipated in the trade with all those foreign possessions whose trade is really of any importance. This argument, to which it is difficult to reply, is met by saying that if we give up those colonies, the expense of the part of the mother country, some of them at least would be a prize for other nations, who would exclude us from the commerce of those former colonies, or allow it only on unfavourable terms; or that those colonies would throw themselves into the arms of foreign nations, and the same result would follow. To this it is replied, that no other nation is in a condition to take on itself the management of the colonies, and as nations, like individuals, will, if let alone, buy where they can buy cheapest, and sell where they can sell dearest; and that if we should be shut out from the commerce of any of our present colonies, there are equally good or better markets from which we could now draw our produce, to which we would proceeding to those very regulations, which only exist because we have colonies to maintain.

The colonial administration of the British colonies is an important department of the general administration. At the head of it is the Board of Trade, consisting of three secretaries of state, assisted by two under secretaries.

COLOQUI TID A. [CUMMINS, CUMMINS] COLUMAR'DO, a river of Mexico, falls into the northern extremity of the Gulf of California, somewhat south of 32° N. lat. To judge from its appearance at its mouth, we should not suppose this river to have a course of 230 leagues or about 640 English miles, which Humboldt assigns to it; for it has often not more than six feet of water, and its breadth at low water may be changed, and has been at times maintained by the current of the Salado and its mouth are called, by Hardy, Montagu and Gore. Its banks here low, but the western is somewhat higher than the eastern. About 30 miles from its mouth, Hardy found only two feet of water in the channel. Sixty miles from its mouth in a straight line, the river may be traced by the Rio Gila, a river which runs east and west for about 300 miles, and has its source in the Sierra Mogollon, the southern extremity of the Rocky mountains, about 34° 20' N. lat., and 107° 20' W. long. The means of the United States for the survey of the Rio Colorado has been visited by Dr. Coulter, who states that the country between the rivers, as well as on both sides of them, is a sandy desert, without potable water, and subject to excessive heat; the thermometer in one instance rose to 104°.

The remainder of the course of the Rio Colorado is entirely unknown, the country having only been visited by:
two monks, according to whose reports, as Humboldt tells us, the river is formed by two upper branches, the northern, Rio Zaguanam, rising in about 40° N lat. and the southern, Rio Nabajos, rising in about 39° N lat. Both descend from the western declivity of the Rocky Mountains. [Colton, 1832, p. 935]. The same monks also report that they and the people of the town of Colom actually lived on the backs of the turtles, the inhabitants of the river behind him, a native of the Moquis, far advanced in civilization. They passed there through a considerable town, which had two large squares, and a straight and wide street leading to several strong and flat roofs, on which the people assembled in the evenings. The fact however seems to be very doubtful. Dr. Couler does not mention it, though he had frequent opportunities of communicating with the American hunters, who traverse these country in great numbers. Couler, Hardw, Dr. Couler, in London Geogr. Journal, vol. v.] 

COLOSSEUM. [AMPHITHEATRE.] 

COLOSSES, EPISTLE TO THE, A canonical epistle of the New Testament, addressed by St. Paul to the Christians of Colos, a city of Phrygia. The date generally assigned to this epistle by the commentators and critics is A.D. 62. [Tabletus Chronologicus, par l'Abbe Lenglet Dufresnoy, tome ii. p. 211. Dr. Adam Clarke's Sarbati-Media or Christian History, vol. i. p. 485. Colson's Epistles of St. Paul, p. 334.] It is assigned to A.D. 63, or the 9th of Nero. In the Dissertations on the Harmony of the Gospels, by the Rev. Mr. Greswell (vol. ii. pp. 63–66), it is shown that the Epistles to the Ephesians, to the Philippians, and to Philemon, were written by St. Paul at Rome, a city now the capital of Colos. The latter is, namely, in A.D. 60, nearly at the termination of the apostle's first imprisonment at Rome; and Epaphroditus in Philemon is considered by Mr. Greswell to be the same person as the Epaphroditus mentioned in the Colossians, Colson, the author of the Christian History, assigns it to A.D. 62, and is supported by some who think that St. Paul himself was personally unknown to the Christians of Coloss; but others, especially Dr. N. Lardner (Credibility of the Gospels), who argues on the statements of Theodorus of Mopsus in the Province of Colchis, hold that St. Paul preached and planted the church at this city. According to Eusebius, this city was one of three which, in the 10th year of Nero (that is, a year after the reception of this epistle), were totally destroyed by an earthquake. The chief object of St. Paul in this epistle appears to have been to exhort the Christians of Coloss to adhere steadfastly to the doctrines which he taught, and to reject the opinions of the Jews and the Pagan philosophers. The succeeding sentence of the fourth chapter states that the conveyance of this address was committed to Tychicus and Onesimus. For a list of published sermons on texts from Colossians, see Watt's British Biblioth. Brit. (Eichhorn, Michaelis, Horne.) 

COLOMBO. [CAPITOL.] 

COLOM, JOHN, born about the beginning of the eighteenth century, studied at Emmanuel College, Cambridge, and was master of the free-school at Rochester till 1739, when he succeeded Sanderson as Lucasian professor at Cambridge. He died in 1760. He is worthy to be remembered for his English edition of Newton's Fluxions, London, 1736; and his translation of the Analytical Institutions of Maria Agnai, which lay in manuscript till 1801, when it was published by the Rev. John Hellins in the expense of Baron Massey. 

COLUMBA. [COLUMBA.] 

COLESFOOT, the common name of Tussilago Farfara. 

COLOBUS, a sub-genus of Ophidians, or serpents. The genus Coluber of Linnaeus comprised all the serpents whatever venomous or not, whose scales beneath the tail are divided into two, or more properly speaking, arranged in pairs; but the term is generally applied by Cuvier and other authors to those serpents which have transverse plates on the belly, and the plates under the tail arranged in a double row, a flattened head with nine larger plates, teeth almost equal, and no poison-fangs. 

Laurenti placed the Colubridae between the rattlesnakes (Caecaluzon) and the vipers. Scopoli's genera were those of Linnaeus. Lacépède describes the Colubrina as the head at the base of his nunc genera of serpents, and next to them came the boa and rattlesnakes. Alexander Brongniart made them the last but one of his six genera of Ophidian, arranging them under the boas. The genus Aplinim was given to the genus a place between Cellaria and Despina in his family of Anguimprae. Daudin comprehended 17 species under the genus. In the synoptical table of Daurat and Bibron, Cuvier is made to place it between Dipsas and Cerberus. Oppel subdivides his section (the second) the Squamata (Ecarealas) into seven families, of which the Colubridae (Coulouërures) are the last, coming immediately after the Pseudovipers. Merrem divided the serpents into two sub-tribes: in the first sub-division, the iepidues, or serpents without venom, of the genus (Galbula), Coluber appears between Setaile and Hurricah. De Blainville separated the serpents into Dipsodes and Apodes; Coluber, coming immediately after Boa, is placed in the innocuous division of these Apodes. Mr. Gray, in 1825, divided the Ophidians, his fourth order of reptiles, into two great groups, venomous and innocuous, and the Colubridae were placed by him between the Hydrades and Boidae, the three families of the second group. Dr. Harlow, in the same year, made the order Cotta, order Ophidion, order Coluber, order Colubridae, order Echisaurus, family Ophicus, family Iphigenus, and placed Coluber between Ophicusaurus, his first, and Vipers, his third genus. Mr. Haworth, in the same year, arranged the genus between Setaile and Dryatus, among the true serpents (Pisadoes or scyphophobes, or serpents without eye-lids), and under the innocuous branch of the Gidontia. Fitzinger (1825) placed the Colubridae between the Pythomelides and the Burganorides, in his comprehensive tribe Mammops squamata. Ritter (1828) arranged the Colubride and the Boidne under the Macrochordides, the third sub-division of the first sub-division, Holodonidae, with (entire teeth), of his third sub-order of scaly serpents. Wagler, whose untimely loss all zoologists deplore, published (1830) his 'Natureliches System der Amphibien.' He makes his fourth order, the serpents, consist of one family only, comprehending ninety-seven genera, and places Coluber the forty-ninth between Sylates (Wagler), and Heryptolepis (Boiè). In 1831, Mr. Gray, in Griffith's Cuvier, published a synopsis, in which he makes some alterations in his original classification. The Squamata form the second section, and the Ophidians its third order, which is divided into two sub-orders, the venomous and innocuous, the upper jaw of which is toothed, but without fangs, or very small ones: in the first sub-order, the Colubridae are again placed with the boas and the hydrids. In 1832 Professor John Müller, of Bonn, published his system: the Colubers are arranged by him immediately after Dryatis, as the last of the Ophidias, the third family of his second order, uniting the Microstomeis which correspond to the Heterodorim of Duméril. 

The species of the genus as left by Cuvier, are very numerous, and their geographical distribution is very wide. The foreign species are some of them remarkable for their vivid colouring, and others for the regularity of the pattern, so to speak, with which they are marked. Others, again, are singularly slender in form, but none grow to a large size. 

The harmless common snake, or ringed snake, Natrix natrix, of the genus Natrix, is a species of the family, and Coluber, the snake which typifies the Hebrew word Beth, and the name of the place, will serve as an example of the form. [Natrix.] 

COLOMBIA. [COLOMBIA.] 

COLOMBIA NOACH (constellation), the dove of Noah, a constellation formed by Halley, close to the hinder feet of Canis Major.
COLUMBARIUM, a place of sepulture used for the ashes of the Romans after the custom of burning the dead had been introduced among them. The word columbarium signifies a dovecote; and its application to the Roman places of interment has arisen from the resemblance between the small arched holes which contain the sepulchral al urns and the receases formed for the doves in a dovecote.

Thus application of the word columbarium is proved by ancient inscriptions, but we are not aware that the term is used in this sense by any extant Latin writer.

In the Villa Doris Pamphil at Rome was discovered, some years since, a very extensive columbarium, or rather an assemblage of columbaria, which are shown on the accompanying plan. It was surrounded by a wall, with a triple entrance, formed by two columns. The columbaria, which are on a very diminutive scale, are placed without any regularity. One building, A, superior in workmanship to the others, appears to have been a small temple in antis, built with red bricks, set with very delicate joints, and rubbed on the surfaces. The chambers, B, B, B, &c., were superior columbaria, with large niches, which contained double ollae or vases for the ashes of the dead, with small tablets let into the wall below each niche. The small structures at C, C, which most resemble the dovecotes, are supposed to have been the sepulchres of the slaves. They are built with reticulated work, and are filled with rows of pigeon-holes, which contain ollae: they have no inscriptions. The brickwork of these columbaria is of several dates, if we may judge from the diversity of construction. The chambers B, B, B, have stone doorways, in the Egyptian style. The interior of these little structures, and the temple, have been stuccoed and ornamented with reliefs, and painted. The small room V, in the British Museum (Townley Marbles), represents a columbarium on a large scale: the niches are represented with sculptured and plain tablets. In the immediate neighbourhood of the Columbarium, in the Villa Doris Pamphil, are numerous inscriptions, tablets, and monumental urns, which belonged to these sepulchres, but having been removed from the ollae, they lose part of their interest. There are several columbaria in the neighbourhood of Rome, among which that of the family Pompeia is remarkable for its tablets, &c., and an account of which is given in the Encyclopaedia Methodica. A sepulchral columbarium was discovered in the year 1746 near the gate of San Sebastian at Rome. (See plates to Moses's 'Classical Ornaments, Vases, Candelabra,' &c.)

COLUMBIA DISTRICT OF, lies on both sides of the Potomac, and is bounded by the State of Maryland on the north-east, north-west, and south-east, and by the State of Virginia on the west and south-west. It forms a square of 64 square miles. That part of it which lies on the south side of the Potomac was ceded by the State of Virginia and that which is on the north side of the same river, by the State of Maryland, to the United States, July 16, 1790, when it had been determined to establish the seat of the Federal Government on the banks of the Potomac, became the seat of the Federal Government in 1800. The Potomac traverses the district in a south-east direction, and receives within it a small stream called the Eastern Branch. By the junction of this stream with the Potomac a spacious harbour is formed, with sufficient water for the largest vessels. The tides of the Atlantic ascend as far as Georgetown in the district.

The surface of the district is diversified by slight elevations: the soil is rather light and porous. The three towns which it contains are Alexandria on the Virginia side of the river, Washington, the seat of the general government, and Georgetown. The Virginia part, which contains about thirty-six square miles, forms the county of Alexandria, and the Maryland part forms the county of Washington.

This district is immediately and exclusively subject to the Congress of the United States. By Act of Congress, February 27, 1801, the laws of Virginia and Maryland prevail in the parts which were respectively ceded by these States. Alexandria, Washington, and Georgetown, are under the immediate government of their several corporations, which however, as already stated, are subject to the control of the Congress of the United States. The inhabitants of this district are not represented in Congress. The object in forming this district was to secure the functions of the Federal Government from the local authorities of any single state, and all collision with its authorities.

In 1820, the population of the district was 22,615 whites, 4048 free coloured, 6376 slaves, total 33,093; in 1830, the numbers were whites, 27,635; free coloured, 6150; slaves, 6119; total, 39,904. The shipping of the district is about 17,500 tons. The capital, Washington, is in 39° 53' 30" N. lat. and about 76° 35' 30" W. long. from Greenwich.

COLUMBIA. [CAROLINA, SOUTH.] COLUMBIA RIVER, is the largest of the American rivers which flow into the Pacific, running probably 2000 miles more than the Rio Colorado, whose course is terminated by Humboldt at about 640 miles. Its numerous upper branches rise in the Rocky Mountains, between 42° and 54° N. lat., and are at their source about 650 miles from the Pacific, in a straight line. The principal branch rises in a lake, near 56° N. lat., and runs first in a north-north-western direction along the base of the Rocky Mountains; but in the neighbourhood of Mount Brown (near 52° lat.) it suddenly turns to the south, and continues in that direction through more than three degrees of latitude, until it meets another of its great branches, the river Clarke, which also rises in the Rocky Mountains, near 43° N. lat., and traverses more than three degrees of latitude in a north-western direction. At the point of junction the Columbia turns to the west, but by degrees declines again to the south, so that at its junction with the river Lewis or Sephi it has a complete southern course. The river Lewis rises also in the Rocky Mountains, near 44° N. lat., and runs first to the west, then to the north, and towards its mouth again to the west. Though its course is long, it is much inferior in magnitude to the Columbia at its junction. The width of the latter being 360 yards, while that of the Lewis is only 180 yards. Between the mouths of the Columbia and the Clarke River and the Lewis occur the greatest impediments to navigation. Not far below the mouth of the Clarke River are the Kettle Falls, 21 feet high; and above that of the Lewis are other cascades, where the descent in 1280 yards is 37 feet 6 inches, and where the rapids extend from three
to four miles. The river is here contracted to 45 yards in width. After its junction with the river Lewis, the Columbia still runs upwards of 300 miles, first for a short distance south, and afterwards in general in a western direction. In this part it is from one to three miles wide, embracing a number of islands, some of which are of considerable extent. It empties itself into the Pacific, a little north of 46°, and the tide ascends near 180 miles above its mouth. The Indian name of the river is Oregon. It appears, from the most recent information, that the head waters of one branch of the Columbia, of the Colorado, and of the Platte and Yellow Stone, both branches of the Missouri, rise within a few miles of one another. (Lewis and Clarke: Map of the Society for the Diffusion of Useful Knowledge.)

**COLUMBIDÆ.** Pigeon tribe, a natural family of birds comprising the pigeons, doves, and turtles.

**Natural History.**—Aristotle mentions five, if not six, birds of this genus: *Homo*, *Oenas*, *Spero*, *Phasus*, and *Tomopteris*, which Atheneus (Deipn., book ii. c. 11) and others consider to be one of the Columbidae, while others again hold a different opinion, inasmuch as Atheneus states that Aristotle has distinguished five species of pigeons, and enumerates *Phasus* as the nest and of the Columbia and the Platte, (book vii. c. 3), but he mentions *Alcace* elsewhere (book vii. c. 13), and it is clear to us from the context that *Phasus* signified one of the Columbidae, *Persepoleus*. There is certainly an *Alcæus* in M. Vieillot's register. (cf. M. Rev. 1795.)

Aristotle intended to designate by the terms above given, and some of them have been applied by modern ornithologists to signify forms which he probably never saw. Only two, or at most three, can be identified with anything like certainty. One (Nat. Hist. p. 334) writes de Columbia, and (c. 35) de Palumbus. He enters, moreover, largely into their habits in other parts of his *Natural History."

*"My doubt seems to have prevailed as to the proper place of the pigeons in the system. Belon collected the few species known to him under the title Rhami, Tourterelles, Bises, Pigeons Fuyards, and Pigeons, among the birds 'qu'on trouve sur le rivage indifféremment en tous lieux,' placing them between the Coraci and Turacos, Wrynecks, and Merles bleu, blue thrush. Gesner arranged them between the gallinaceous birds and the bustards; Aldrovandi placed them between the domestic cock and the sparrow; Waller arranged them in the same way; and they gave them the same place. Brisson, Pennant, and Latham insolated them in a particular order. Pennant also arranged them between the Gallinae, and Passenger birds, and Latham between the Passeres and the Gallinae. Other authors have placed them in the Columbidae. Linnaeus made them a genus of his order Passeres, arranging them between *Tetrao* (the grouse and prairies, &c.) and *Alauda* (the larks). Cuvier placed them among the Gallinaceae, next to the Tinamous (*Tinamus, Latham, Crypturus, Illiger*), making them the last of the order. In his arrangement, the Echassiers (*Grallatores, wading birds*) form the order which immediately follows the Gallinaceæ. Lacépède had previously given them the place they now hold, and did also Dumeril. Meyer had insolated them as his seventh order, coming between the Chelidonæ (swallow tribe) and his eighth order, Gallinae; and Illiger had found a situation for them under his Passeres, the Rascular birds. Le Vaillant, who assigns to have been the first who separated the Columbidae into well-defined divisions, arranged them in three sections: the first containing the Columbæ, Ramiera, and Tourterelles; the second, the C-tomares; the third, the Columbae. The last section he made the last family but one (Columbae) of his second tribe (Anisodactylæ), arranging them between his Ophiophagi and Alectridæ. M. Temminck clasized them as his ninth order between the Chelidonæ and the Gallinaceæ, some of whose names are: Sponsores or les Columbæ contained these birds, and came between the Saltatoræ (Passeres) and the Gradatoræ (phesants or partridges); in his amended method, as developed by M. Lærmeri, they occupy nearly the same position between the Passeres and the Gallinacæae birds. C. Bonaparte (prince of Musignano) assigns the same place to them. (*Specchio comparativo.*) When he wrote the article *Pigeon* in the *Dictionnaire d'Histoire Naturelle,* M. Vieillot confirmed to the opinion of Linnaeus in placing these birds among the Passeres, because of its natural great analogy to the last-mentioned group, like nearly the whole of which the pigeons pair in the season of love, the male and female working jointly at the nest, taking their turns during incubation, andparticipating in the attendance of the young. The young pigeons, however, are hatched blind, fed in the nest, which they do not quit till they are covered with feathers. and are supported by their parents some time after their departure from it, having their quill points of resemblance. Their dissimilarity consists in their mode of drinking and feeding their young, in the nature of their plumage, and the singularity of their courtship and of their voice, points of difference which also separate them from the true Gallinaceæ birds, with which, says M. Vieillot, they have no analogy in their instincts, their habits, or their loves.

Nearly all the Gallinaceæ birds are polygamous, and lay a great number of eggs each time they incubate, which is rarely more than once a year in the temperate zones; while the true pigeons lay only two eggs each time, incubate frequently during the year, and are monogamous. Among the Gallinaceæ birds, as a general rule, the male does not solicit the female at the time of building the nest and caring for the young, as they are out of the egg-shell, quitting their nest, and seeking their own food immediately. Finally, a striking character removes the pigeons from the Gallinaceæ birds, common to them in the Columbidae and Columbæ of the Passeres, namely, the possession of a posterior toe articulated at the bottom of the tarsus, upon the same plane as the anterior toes, touching the ground throughout its length in walking and embracing the root of the pedal, whereas in the true Gallinaceæ birds the hind toe is articulated upon the tarsus higher than the others, and only touches the ground with its claw, or at most with its first phalanx, and remains perpendicular upon the tarsus the entire time. Nevertheless it must be confessed that there are found among the pigeons, species which participate in some degree with the Gallinaceæ birds in regard to their manners and gait (allures) or some other exterior conformity. Such are the *Colombi-galline,* the *Pigeon-catte* of le Vaillant, to which must be added the *Colombi-galline* of M. Temminck, the Mountain partridge of Sloane, the blue-headed pigeon, the Cocotier, &c., all which have their feet more elongated than those of their Gallinaceæ consorts, the toes are rounded and pointed, i.e., the two quills shorter than the third or fourth; but for the rest, all, with the exception of the *Colombe-galline* of le Vaillant, approach the other pigeons in some of their habits, as in bringing up their young in their nest, &c., so it is of the birds which M. Picadoir and Martiniac bear the name of partridge; and M. Vieillot quotes Dutertre, who says that "according to the common opinion of the inhabitants of Guadaloupe, there are three sorts of partridge, red, black, and gray, which have never passed in my mind for aught but turtles (tourterelles); for they have not the short quality of flesh belonging to our partridges, they have the straight bill, slender perch and hair, and only lay two eggs," &c. (Hist. des Antilles, tom. ii.) These facts, adds M. Vieillot, have been confirmed to me by the inhabitants of Martinique and Guadaloupe. Of all the pigeons and turtles, continues this ornithologist, I have had occasion to notice in the living state, and which appear to me to have the greatest relation to the partridges: their haunt is always in the fields and savannahs; they there seek their food, and never resort to trees; they play like the pigeons, and are observed flying far a short flight alight upon the ground. For this reason the English and the inhabitants of the United States call it the *Ground Dove.* But the habitat of frequenting the ground, &c. does not belong exclusively to the *Colombi-galline* and *Colomba Chalcopetra* (Phas.), which M. Temminck arranges with his *Colombæ* (Vieillot's first section), has the same habits, so that the English of New Holland call it the *Ground Pigeon.* (Vieillot.)"
among the perforing and gallinaceous orders, and not un-

eyer formed as a separate order between the two, at

one indicates where the point of junction exists between the
two. In one instance, I am not aware of any known

tations" which forms his Passeres, I do not hesitate in

arranging, contrarily to the opinion of M. M. Viguier

and Illiger, as a subdivision of the gallinaceous birds.

In the last group we have to assume the character of each order, their affinity with the latter is con-
siderably stronger than that which approximates them to
the former. Their food and habits, their internal economy,
and the formation of their bills, and the disposition with which they use them, are termed the Ruo-

res; while, on the other hand, the characters which bring

them near the Inaeosores, their divided toes and com-

paratively short legs, are weakened by the resemblance

which those members bear to the same parts of the con-
tinuous order in their general structure, and more particu-

larly in the bluntness of the nails, so strongly indicative

of the raorial habits of the Gallinaceus tribes, and so strik-

ingly contrasted with the sharpness of the nails in the Lin-
nian Passeres. They are much more nearly allied to these

latter tribes by their habits of perforing and building their

nests in trees or rocks, by the absence of the spur on the

legs of the male, and by the inferior number of their tail-

feathers.

In note to that part of the text which alludes to the

raorial habits of the Gallinaceus birds, the author cites

the habits of Columba Niovarica, Columba corauulacea,

and Columba passerina. Mr. Vigo's accordingly places the

Columbias in the Passeres group. M. Viguier, on the con-

trary, states: 'It is already observed, when speaking of the affinities," says that ornithologist in the paper above quoted, "which connect the orders of birds together, that the Columbias form the passage

from the Inaeosores to the Ruoress by their habits of perfor-

ing and their powers of flight. The hind-toe is articulated

as in the Passeres, and their tarsi are shorter, more particu-

larly in the earlier groups, than those of the Gallinaceous

Birds in general. The first group which we meet in this ex-

amination is the genus Fluvia, of which species Fluvia

Columba Bocis, Linna., may be considered to form the type.

Hence we are led by several intervening species to the Co-

lumbi-Gallines of M. Le Vaillant, which, still retaining the

same general name, is the establishment of a new order of

Columba, which is one of the most important in the avian

kingdom. The Columba Bocis, Linna., may be considered

together with the naked face and caruncles of the Linnean

Galline; and another group, the Lophyra of M. Vieillot,

which exhibits the size and general form of the same birds,

as well as the singular plumage of a much more frequently

decorate their head. This last-mentioned writer is, for an

tinent ornithologist of the present day; who, from having

made those birds his peculiar study, is in one sense pre-

eminently qualified to give a decided opinion. The prin-

tic characters of the Inaeosores, and on which this opinion conse-

sequently is founded, is, that whenever intermediates are

discovered which serve to unite two neighbouring ge-

nera, such genera should invariably be unite." After

studying them, he has been the first to write on the

"Zoological Journal." Mr. Swainson thus continues:

"I am admitted that there are certain peculiars of form and of

economy among the Columbides, which point out natural

divisions. Some of these have been used for the construc-

tion of genera, by M. le Vaillant, Vieillot, and Cuvier,

and of sections by M. Temminck; but the immense num-

ber of species of birds, and the difficulty of distinguishing

some of them, renders it essential that many others should

be formed. As we labour under a comparative ignorance of

the natural history of the vast number of tropical species so rarely described, any attempt to these Columbae and their
descendants, the entire structure of the group. We are

therefore in some cases may be erroneous, in others we shall

be far from the truth. The passenger-pigeons, for instance, have

their first quill-feather as long as any of the others—a sure

indication of that rapid and long-continued power of flight

they are known to possess. The Columba-Gallines of M. Le

Vaillant are described as having naked and somewhat

lengthened tarsi; a structure well adapted to those ambu-

lating habits which bring some of them close to the Pha-


tamant. Vigers, and others to the Quail, and birds of the

same group. Another group of M. le Vaillant's (Columba

Treron, Vieill.), have a strong hard bill; and their short

clapping tarsi covered with feathers lead us to conclude

they seldom perch upon the ground; in fact, M. le Vaillant

and Cuvier state they never do. I may here refer to the

tropical forests of the Old World. Apparently confined

to the same regions, we see another group, wherein the bill

pattakes of that weak structure observed in the generality

of pigeons, while the tarsi are thickly clothed with feathers;

similar to the group last mentioned. These pigeons, may be

be the principal divisions among the Columbides. Minor distinc-

tions may be founded on the relative strength and structure

of the quill feathers, which in some are very peculiar, and,

which, being considered by the same authors, deserve our

attention. Some writers have attached more importance

to the form of the tail, and have therefore divided the

Columba into two great divisions, separating such species

as have this organ rounded or lengthened from those in

which the tail is short and even. This plan, however, it

may help to discover a species, is obviously artificial, and

totally inadequate to give us any ideas on natural groups.

The tail in fact is but an accessory help to the wings, and

in those cases where it is important, may be due simply to

the exigencies of the mode of life of the birds. I have

therefore employed the order of families as the basis of

a system, and to this section I shall adhere, and the

family with the sides of their tarsi margined by a

row of minute feathers, which often conceal the

knees. Their first quill feather is also very broad, and almost

as long as any of the others; if these characters hold good in

more instances than those I have quoted, we shall be

applied in using them in a generic sense, by separating

these birds from the Columba-Gallines of M. le Vaillant.

Allied to the ground doves in manners, but greatly distinguished

by the structure of their feet, is the S, under Columba Ectopistes migratoria, he has the following note:

As ornithologists do not appear to be aware of the great
difference which exists in the groups of this family in the

structure of their feet, we shall be led to draw their

attention to the principal group of the passenger pigeons of Europe, North America, and the Old World,

* * * Zool. Journal, vol. i. p. 470, 1827. 
† So printed, but see: * Columba Ectopistes migratoria. 
§ Perov, the Ruins, 1831.
forming the restricted genus Columba, the external and internal anterior toes are equal. In the lovely genus Ptilinopus, Swainson confined to the greater pigeons of the Indian and Australian isles, and in that of Vinago, Cov., formed by the thick-billed species of the same countries, the inner toe is much shorter than the outer; but in the sub-genus (?) Elopista, Swainson, and the small turtle dove, it is the reverse, the third toe being the longest. In the beautiful genus Peristera, Swainson, which comprises all the bronze-winged pigeons of Australia and the ground pigeons of America, the tarsi are more elevated, the third toe shorter, and the inner toe is likewise the longest. We have been for some time engaged in analyzing this family, with the view of ascertaining the relative value of all these groups.* Dr. Rügen (1828) makes the genus Columba, Linn., form the third family (Herperchopterygii) of his first tribe (Charpopote) of his second series (Xerornithes) of birds of the dry land) in his trichotomous system, as applied to birds.

P. J. Selby, Esq., in the 'Naturalist’s Library' (1835), characterizes the following genera, Carpophaga, Pharops, and Geophaga. He thus speaks of the classification: 'Of the sub-families or five typical forms of the Columbidae, we can only speak with difficulty and uncertainty, as no analysis of the species sufficiently strict or extensive has hitherto been instituted, from whence conclusive deductions can be drawn. We shall only cursorily observe, that the arboreal pigeons, embracing Vinago, Swainson’s genus Ptilinopus, our genus Carophaga, and some other undefined groups, with feet formed expressly for perching and grasping on branches, from their peculiar weight, are supported in the necessary connexion with the insensorial order is supported, are likely to constitute one; the true pigeons, of which our ring pigeon and common pigeon may be considered typical, a second; the turds and their allies, with feet of different proportions from the preceding, and graduated tails, a third; the ground pigeons, or Columba galinae of the French naturalists, a fourth; and the fifth is not unlikely to be represented by Vieillot’s genus Lophrys, in part of which the tarsal form is not to that of the typical Cases, but to the Cricradis, placed at the farther extremity, and, like the Columbinae, another aberrant family of the Rasinoid order.*

Organisation.—Of a part of the internal organization of the pigeon is worthy of special notice. The crop in the state which is adapted for ordinary digestion is thin and membranous, and the internal surface is smooth; but by the time the young are about to be hatched, the whole, except to the trachea, becomes thicker and puts on a glandular appearance, having its internal surface very irregular. In this organ it is that the food is elaborated by the parents before it is conveyed to the young; for a milky fluid of a greyish colour is secreted and poured into the crop among the grain or seeds undergoing digestion, and a quality of food suited to the nestling is thus produced. The fluid coagulates with acids and forms curd, and the apparatus forms, among the birds, the nearest approach of the warm-blooded animals; hence no doubt the term pigeon’s milk. The number of vertebrae amounts to 13 cervical, 7 dorsal, 13 sacral, and 7 caudal = 49 (Cuvier). The sternum is narrow with a deep keel, the inferior border convex, and the anterior one curved forwards, thin and trenchant; the mammary process is strong and bifurcate, the costal processes short. The posterior margin is cleft by two fissures on either side of the mesial plane, the lateral and superior fissures being the deepest; the mesial process, the ciliary cornu consists of a foramen. The costal surface of the lateral margin is, as in the gallinaceous birds, of very little extent. In the crown pigeon the superior fissures are so deep and wide as to convert the rest of the lateral margin into a mere flatened process, which is dilated at the extremity. (Owen.)

Geographical Distribution.—Very extensive, the form occurring almost everywhere, except within the frigid zones. Species most abundant in Southern Asia and the Great Indian Archipelago.

Columbia.

Bill comparatively large, strong, thick, and solid, compressed at the sides; the tip very hard, hooked, and inlated; the nostrils comparatively exposed, and with the swollen or projecting membrane but little developed. Tarsi short, partly clothed with feathers below the tarsal joint; sole wide, the membrane being extended, and the whole foot formed for perching and grasping; the outer toe longer than the inner, claws strong, sharp, and semicircular, closely resembling in form those of the woodpecker or other Scenorial birds (Selby). Wings of mean length, strong and pointed, second and third quills about equal and the longest in the wing. Mr. Selby says, that in all the species submitted to examination, the third quill has the central part of the inner web deeply notched, as if a piece had been cut out; and that the prevailing colours are green and yellow of different intensities, contrasted more or less in certain parts with rich purple and reddish brown.

Geographical Distribution.—Intertropical Asia* and Africa.

Food.—Berries and fruits.

Habits.—The genus is shy and timid, and inhabits the woods. Mr. Selby gives the following on the authority of Mr. Neill, who speaking of Vinago sphenura, says, 'I had two, but both I believe were males. Both had a song, very different from the more cotinga of the ringdove. When they sang in concert they gave the same little tune, but on different keys. After the death of one the survivor used to sing at command, or, at all events, when incited to by beginning its tune.'

Example.—Vinago aromatica, Columba aromatica, Latham. The Aromatic Vinago is a mild and timorous disposition, and is generally seen in flocks or societies, except during the period of reproduction, when they pair, and retire to the recesses of the forest. The nest is simple, and composed of a few twigs loosely put together, and the eggs are two. . . . The base or softer part of the bill is a blackish-grey, the tip yellowish-white, strong, much hooked, and bulging on the side. The forehead is of a bright siskin green, the crown greyish, the chin and throat greenish-yellow, the remainder of the neck, the breast, belly, lower back and rump, yellowish-green. The upper back or mantle, and a part of the lesser wing coverts, are of a rich brownish red, and exhibit a purplish tinge in certain lights. The greater wing-coverts and secondary quills are greenish-black, with a deep and well-defined edging of gamboge-yellow throughout their length. The tail has the two middle feathers wholly green, and slightly exceeding the rest in length; these are of a dark blue-grey, with a
dark central band. The under tail-coverts are yellowish-white, barred with green. The legs and toes are red, the claws pale grey, strong, sharp, and semicircular. (Selby, and see Temminck.)

Locality.—The continent of India, Java, and other adjacent islands.

Habits.—Mr. Selby, in the interesting work above quoted, gives the following note which accompanies the skins of Pinago militaris, and Venago aromatica. 'Green Pigeon.—This beautiful bird has brilliant red eyes. Its feet are something like that of the parrot, and it climbs in the same way as that bird. It is very difficult to find; for although infested with tree vipers, yet its colour is so similar to the leaf of the banyan (on the small red flag of which it feeds), that if a bird does not move you may look for minutes before you can see one, although there may be fifty in the trees.'

Ptilinopus (Swainson.)

Wings moderate, first quill contracted towards the apex, third and fourth longest. Bill slender. Tarsi feathered.

Mr. Swainson says that in proposing the characters of this genus, he wishes them to be considered more as indicating a group, by which the genus Treron, Vieill., (Pinago, Cuv.) may be united to the naked-legged pigeons, than being so rigidly framed as to exclude all other species which do not strictly present the same structure. 'It is quite evident,' continues Mr. Swainson, 'from consulting the recent figures of M.M. le Vaillant and Temminck, that there are many males of both in India and Australasia, which have the feathered tarsi of Treron, accompanied by the slender bill of the other Columbidae, and thereby clearly indicate an intervening group: yet among these birds this quill is suddenly narrowed, and resembles the blade of an obtuse pen-knife. This singular formation, however, I have detected in several of the naked-legged pigeons, such as the Col. striata, Lath., and the Col. humeralis of Temminck, two birds from Australasia in the Linnean Society's collection; and likewise in two other species from Brazil now before me. This character, therefore, will not be peculiar to Ptilinopus; but when coupled with the feathered tarsi and slender bill, may indicate a group to which the Col. striata, of Temminck, and the Col. humeralis of Temminck, most probably belong. The Col. magnifica may thus form the type of a subordinate section, more closely approaching to Treron; while the narrow quill-feather of Ptilinopus presents a nearer approach to the naked-legged pigeons. In the first volume of 'The Natural History and Classification of Birds,' the same author says, 'Sometimes one-half or more of some of the quills are (is) of the usual breadth, while their terminating end is suddenly contracted and obtusely pointed: this formation is seen in some few species of the exotic pigeons belonging to the genus Peristera and Ptilinopus. It cannot, however, as some have imagined, be taken as a subgeneric character, because the whole series of this genus has it not; and it is probably only a sexual distinction.' (p. 56.)

Mr. Selby, in 'The Naturalist's Library,' feels inclined to still further subdivide the group, restricting the genuine title of Ptilinopus to that group of smaller pigeons in which the first quill feather becomes suddenly, orgradually, or attenuated towards the tip, and the tarsi are feathered almost to the division of the toes.

Habits and Food.—Geographical distribution of the restricted genus.—The Moluccas, the Celebes, and the islands of the Pacific (Selby.) Habits retired, in forest solitude. Food, fruits and berries.

Description of the restricted genus.—Bill comparatively slender, the base slightly depressed, and the soft covering of the nostrils not much inclined. The tip, though hard, is little inflated, with a gentle curvature; the frontal beak is rather low and depressed; the legs are short but strong; the tarsi clothed with feathers nearly to the division of the toes; the feet are calculated for grasping, and are similar in form to those of Pinago, the sides of the toes being enlarged by the extension of the lateral membrane, and the outer longer than the inner one; the wings are strong and of moderate length, the first quill feather considerably shorter than the second, and suddenly narrowed towards the tip, a peculiarity also possessed by several pigeons belonging to other distinct groups, and by which means the connexion is thus kept up between them. The third and fourth quills are nearly equal to each other, and are the longest in the wing. The tail is of proportionate length, and generally square at the end. Predominating colour like that of Pinago, green, varied in parts with yellow and orange, and in some, beautifully encrested with masses of purplish red and vivid blue. (Selby.)

Example.—Ptilinopus cyano-striata, Col. cyano-striata, of Lesson, who described it in 'Voyage de la Coquille.' The bird is termed Monasa in the Papuan tongue, and inhabits, says Lesson, the profound and still virgin forests (encore vierges) of New Guinea. It was in the neighbourhood of the harbour of Dorely that we procured the greatest number of individuals. Their low cooing was heard frequently from the large trees, and everything in dicated that they were common.

Description.—Total length from the end of the bill to the extremity of the tail, eight inches six lines (French); bill delicate and black; iris of a red brown; tarsus short, and nearly entirely feathered; toes with a membranous border, and of a lively orange colour; head, rump, upper part of the body, wings and tail, of an agreeable green; a large patch (calotte) of a beautiful indigo blue covers the occiput; elongated blue spots occupy the centre of the subalar feathers, which are bordered with a straight yellow line; the internal and hidden part of the same feathers is brown; the quills are entirely brown, and bordered at the external edge with a line of canary yellow; the tail is square and rectilinear; the feathers which compose it are fourteen in number, brown, their extremities white below, and of a green similar to that of the back above, passing into black in the middle, and each terminating within with a white spot; the two exterior ones are brown, bordered with yellow externally, as are the two or three next; the shaft is brown, the throat to half-way down the neck is ash-grey; the breast is greyish-green; the belly and the flanks are at first green mingled with some yellow borderings, and then comes a large patch of yellowish-white extending on each side so as to form a kind of girdle; the feathers of the thighs are green; those of the vent, white and pale yellow; the lower tail covers are yellow mingled with green. M. Lesson mentions another individual rather smaller, with some differences of plumage, which he supposes to have been either a female or a young one. Mr. Selby remarks upon the peculiarity that it is often confusingly mistaken for the first quill feather, as in this description, and regards it, but entertains little or no doubt of its presence in nearly a similar form to that assumed by the rest of this group, of which Ptilinopus purpuraus is the type. Locality, New Guinea.
Carpophaga (Selby).

'Tis this group,' says Mr. Selby, 'which is composed of birds of a much larger size than the preceding, the wings, though possessing the same relative proportions, have no emaciation, or sudden narrowing of the tip of the first quill. Their tail is also not so thickly or entirely feathered; and the two outer webs of the tail, as is the case in the preceding genus, are continued to the very end of the bill. In some species, green, yellow, and purple are the prevailing colours; in others, a rich bronze or metallic colour composes the upper plumage, exhibiting shades of deep green and purple, the shining teeth of light in which it is viewed, while in those which lead the way to the typical pigeon, the tints become less vivid and more uniform in their distribution. Their bill is considerably depressed at the base, the membrane in which the nostrils are placed but little prominent or swollen, the tip compressed, and narrowly arched, the tomia slightly sinuate. The forehead is low, and the feathers advance considerably upon the soft portion of the bill. In many of them a caruncle, or gland, varying in size and shape, grows upon the basal part of the upper mandible during the season of propagation. This is supposed to be common to both sexes, as the female is described with it in Audubon's 'Voyage.' After this epoch it is rapidly absorbed, and its situation scarcely to be observed upon the surface of the bill. The feet are powerful, and formed for grasping, the soles being flat and greatly extended. As in the other members of this group, the hind toe is fully developed and long, and the external longer than the inner toe. They inhabit the forests of India, the Moluccas, Celebes, Australia, and the Pacific Isles. Their food consists of fruits and berries. That of the precious nutmeg, or rather its soft covering, known to us by the name of mace, at certain seasons affords a favourite repast to some species, and upon this luxurious diet they become so loaded with fat as frequently, when shot, to burst sooner when they fall to the ground. And here we may remark on the remarkable provision Nature has made for the propagation as well as the dissemination of this valuable spice, for the nutmeg itself, which is generally swallowed with the whole of its pulpy covering, passes uninjured through the digestive organs of the bird, and is thus dispersed throughout the group of the Moluccas and other islands of the east. Indeed, from repeated experiments, it appears that an artificial preparation analogous to that which it undergoes in its passage through the bird, is necessary to ensure the growth and fertility of the nut; and it was not till after many unsuccessful attempts had been made that a lixivium of lime, in which the nuts were steeped for a certain time, was found to have the wished-for effect, and to induce the germinating enlargement of the kernels. The Pteropus religiosus (religiosa), the sacred tree of the Hindoos, is also a favourite repast of all the pigeons of this group, as well as of the stronger-billed Vinago.'

Carpophaga oceanica, Columba oceanica, Linn. Etymology. This species, according to Lesson, is the Moulouessa, ou mouloues, of the natives of Oualan, and though it approaches the Nutmeg Pigeon, Columba (Carpophaga) cersea very nearly, it differs from it in size, being one third less, and in the diminution of some of its colours. 'The Nutmeg Pigeon lives more particularly in the eastern Moluccas, and especially at New Guinea and Waigou, while the Oceanic Fruit-Pigeon is abundant in the little isle of Oualan, in the maremare, the coast of the Carolines, and seems to exist in the Polaw Islands, where Wilson mentions it under the name of syep.' Lesson further observes, that it may be possibly spread over the Philippines, and at Magadzaoo.

Carpophaga, fourteenth inches (French), including the tail, which measures five; the bill, an inch long, is black, strong, and surmounted at its base by a rounded and very black caruncle; the feet are very strong and well equipped with the necessary apparatus for grasping. The feathers of the forehead, cheeks and throat, are whitish mixed with grey; the head and the back of the neck are of a deep ashy grey; the back, rump, wing-coverts, quills, and tail feathers, are of a uniform metallic green, passing into brown on the interior of the great feathers; the breast and upper part of the belly are grey, with a tint of rust colour, the lower part of the belly, the vent, the thighs, and the lower tail-coverts, are a deep ferruginous red; the tail-feathers on the under side are a bright reddish green (vert rougreté clair). (Lesson).

M. Lesson thinks that this, very probably, is the species mentioned by the celebrated naturalist, Forster (and not Captain Forster), the reading is, twice, in M. Tenmimck's work, tom. i. p. 89, 8vo, quoted by C. H. J. Danna, one of the New Hebrides (Cook's 'Second Voyage,' vol. iii. p. 179, 4to), a Nutmeg Pigeon of the same species as that which occurred at the Friendly Islands.

The caruncle shown in the cut is dissipated after the breeding season, leaving nothing but a slight cutaneous wrinkle. M. Lesson says that the bird feeds on a berry which is very abundant in the small Isle of Oualan, and that it is not disturbed by the natives.

[Carpophaga oceanica.]

M. Selby gives as a form apparently belonging to this division of the Columbidae, the following species: Columba Phasianella (Temm.), the structure of the bill being, as he observes, intermediate between that of Vinago and Columba, and the feet formed upon the same plan as those of the rest of the Phalaenoptila. Description.—Length from fourteen to sixteen inches, the tail being seven, and rather more. Wings short, reaching, when closed, about an inch and a half beyond the root of the tail, rounded, and with the third quill longest; the first and fourth being equal to each other. Bill, measuring from the forehead nearly three quarters of an inch long; the tip of the upper mandible moderately arched, and with a notch; that of the lower angulated and strong. Throat, yellowish white. Head, sides, and front of the neck, and whole of the under plumage, orange-brown. Hind part of neck changeable rich violet-purple, with brilliant gold reflections. Back, wing-coverts, and the rest of the upper plumage, deep reddish-brown, shot with bronze in some lights. Tail graduated or cuneiform, the two middle feathers brown, the lateral marked obliquely with a black bar. Feet and naked part of legs reddish brown. Sole of the hind and inner toes much expanded.

Young differing from the adult in having the neck dirty reddish brown, with deep bars of black; belly of a pale reddish-grey, minutely and darkly speckled; back inclining to hair-brown; and smaller wing-coverts deeply edged with orange-brown.

M. Temmick first described the species in the 'Linnean Transactions,' from an Australian specimen. It has since been observed in most of the Philippine and Molucca Islands, Java, etc. Columba Phasianella is an inhabitant of the woods. Its food is said to consist of a kind of nimento and of other aromatric berries, swallowed entire. The flesh is dark, but its flavour is stated to be excellent.

Mr. Selby makes the group to contain Columba Macura, Auct. Col. mucula, Wagler; and Col. leucostrepes, Temm. 'Of its precise situation,' says Mr. Selby, 'in the circle of the Columbidae, we speak with some degree of
hension. In the types the exterior and interior toes are of equal length. The wings are fully developed and somewhat pointed; the second and third quills are the longest. The tail is generally square, and moderately long.

In those species, says Mr. Selby in the work above quoted, which are the media of connection of other groups, the above characters become partially modified, as we see exemplified in the species nearest allied to the Pitulinopsine, or arboreal pigeons, their feet losing the true character of that of the common pigeon, and assuming more of the grasping form than that fitted for progress upon the ground.

The species are very numerous, and spread over every quarter of the globe.

'The typical colour of the pigeons is bluish-gray, of various intensities and shades, frequently embellished upon the neck with feathers having a metallic lustre and peculiar form, and which exhibit various tints of colour according to the light in which they are viewed. They are naturally birds of a wild and timid disposition (though one species has been partly reclaimed), and usually live congregated in extensive flocks, except during the season of reproduction, when they pair. Most of the species seek their food upon the ground. This consists of the different cereals, as also acorns, beechnuts, and other seeds, and occasionally of the green and tender leaves of various plants. Their flesh is sapid and nutritious, being of a warm and invigorating nature. Their flight is powerful, very rapid, and can be long maintained, and many species are found making distant periodical migrations. They are widely disseminated, species of the genus being found in every quarter of the globe, and in all climates, except the frozen regions. In the two hemispheres, they build in trees or holes of rocks, making a shallow nest of small twigs kept compactly put together. Their eggs are never more than two in number, their colour a pure white; they are incubated alternately by both sexes, and are hatched after being sat upon from eighteen to twenty-one days. The parents upon exclusion, are thinly covered with down, which is rapidly succeeded by the proper feathers.' (Selby.) The apparatus for preparing the food for the nestlings has been before adverted to.

Examples.—Columba apudica. Mr. Selby places this species as connecting the arboreal species with the typical pigeons, but arranges it under the Columbinae not without doubt, 'for although it presents characters in some of its members approaching those of the pigeons, it cannot be denied that, in its general appearance, and the metallic lustre of its plumage, it also shows evident marks of a near affinity to several species of the genus Cuculopsina, and it might, perhaps, with equal propriety be placed in the extremity of that group: and regrets the little information extant of its peculiar habits and mode of life, which would have assisted in forming a more satisfactory conclusion as to its proper position. He adds, that from the form and size of the species of this group, he may judge that its habits are more those of an arboreal than terrestrial bird, though its claws want the great curvature of those of the Pitulinopsina, and show its capability of occasionally resorting to the ground for food.

COLUMBINA. Auct.

Most ornithologists are agreed that the sub-family Columbina contains the type of the form of the Columbidae, and that we are to look among the species of our own country for that type. The ring pigeon, Cushat or Quest (Columba Palumbus), the wood pigeon (Columba Linnæa), and the rock pigeon or bizet (Columba Héva), are considered to be the forms in which the peculiarity of structure and habits of the family are most perfectly developed, and of these Columba Palumbus is generally taken as the typical point of comparison. The Columbinae are distinguished by a bill of moderate strength, with a hard tip, bulging and somewhat arched. The nostrils are partly clothed by a soft membrane, and the orbits of the eyes are more or less denuded of feathers. The feet may be called both terrestrial and inessential; for they are so organized, that the action of walking or perching may be performed at pleasure, for the back toe is moderately long, and the claws are so formed and placed as not to interfere with terrestrial progression, while they are at the same time calculated for arboreal pro-
breast, belly, vent, and tarsi, are pure white. The upper part of the tail is brown, slightly tinged with greenish; and below it is brown, which is deepest within and at the extremity.

_Colomba diopha._ 'In this curious species,' says Mr. Selby, 'besides the ordinary crest, an ornament which is found in many other birds, there is an additional one in front, composed of long recurved and lax feathers, which not only occupy the forehead, but also the superior part of the soft or basal portion of the bill. This double crest gives the head of the pigeon a character unlike any of its congeners, and more resembling that of some of the created Phasianidae or Crecideae, with which an analagical relation is thus sustained. In other respects its characters agree with those of _Col. spadicea_, the proportion of the wings and the form of the feet being nearly the same. Temminck, who first described it, observes 'cette nouvelle espèce a le plus de rapport dans toutes ses formes avec la _Colomba spadicea_ et toutes les deux sont tres peu différentes de notre _Ramier d'Europe._' In the concluding observation we cannot concur to the extent implied by that eminent naturalist; for, although an approach from the fruit-eating pigeons, or Carpophages, to the true pigeons, is made by _Col. spadicea_ and _diopha_, still the form of their feet, evidently better adapted for arboreal than terrestrial habits, and their general aspect, are such as to show that some intermediate form is wanting to bring them into that immediate connexion with the group represented by the European ring pigeon, which M. Temminck seems to intimate.'

Description.—Size nearly that of _Col. spadicea_. Wings long and powerful, reaching when closed beyond the middle of the tail, second, third, and fourth feathers longest, and nearly equal, fifth shorter than the first. Bill rich orange, tip of under mandible obliquely truncated, tip of upper mandible compressed, somewhat arched, culmen rounded. Frontal crest beginning on the upper part of the bill immediately behind the horny tip, and above the nostrils, composed of long curved feathers, soft and loose in texture, and bluish grey tinged with rufous in colour, pointing backwards. Occipital crest rich rufous, banded on each side from the posterior angle of the eye by a streak of grey-black, decumbent, composed also of long soft feathers with open barbules, each feather widening towards the tip. Side and front of neck and breast pale-grey, black at the base of the feathers, which is hid. The feathers here are tridib at the end: on the back of the neck they are acuminate, but not distinctly divided as upon the breast. Back, scapulars, and wing-coverts deep bluish-grey, the feathers darser at the margin; quills and secondarys bluish-black; under plumage grey. Tail square, basal part and narrow band pale-grey tinged with reddish, tip and broad intermediate bar black; length seven inches. Naked parts of tarsi and toes crimson-red; hind toe strong, with a broad flat sole, and exceeding the furcous in length; nails long and somewhat curved. Locality, New Holland and Java.

_Passing the Columba Palumbus_ (Ramier of the French, Torquato, Ghiandarta, &c. of the Italians, according to Belon; Colombaccio, Palombo, Piceone da Ghianta of the same, according to Prince Bonaparte; Ringdusco of the Fauna Suecia, Wildtaube, and Ringủa-Taupe of the Germans, Ring-dove, Gueuse, and Cuchat of the British, Yeuguthan of the ancient British, and, in Belon's opinion, the Ætna of the Greeks), and the Columba Ænas, (Palombella, Palombella di macchia, Piceone topocchio of the Italians, Le Pigeon Sauvage of Brisson, Stock-Dove and Wood-Pigeon of the British) we come to the _Columba livia_; but, before we enter upon the history of the last-named species, we must observe that the Cuchat most probably sat for the pretty picture of Virgil's 'serio Palumpe,' and that it is considered the type of the Columbae. Instances have been known of its laying in aviaries, and Mr. Selby states that it has been informed 'that a pair of ring pigeons, in one of the aviaries of the Zoological Gardens, this last year built their nest in a tree or shrub contained within it, and that the female laid two eggs, which unfortunately were destroyed by some accident during incubation. This fact shows, that, under favourable circumstances, and when the habits of the bird are attended to, a progeny may be obtained.' Of _Colombia Ænas_ Mr. Selby observes, 'Near as it approaches the common pigeon in size and form, no mixed breed that we are aware of has ever been obtained between them, although repeated attempts to effect an intercourse have been made. This in our mind appears a strong and convincing proof, that all the varieties, generally known by the name of Fancy Pigeons, have originated from one and the same stock, and not from crosses with other species, as some have supposed the produce of which, even could it be occasionally obtained, we have no doubt would prove to be barren, or what are generally termed mules.'

_Colomba livia._ This, the Pigeon prince of Belon, Le Pigeon domestique and _Le Biset_ and _Le Roccherego_ of Brisson, Coulon, Colombe, Pigeon of the French, Palombella, Pazione di tore, Picozane di rocca of the Italians, Feldtaube, Hasstaube, Holhtaube, Blau Taupe, and Holts Taupe of the Germans, Wild Rock Pigeon of the British, Colommeen of the ancient British, is the stock from which ornithologists generally now agree the domestic pigeon and its varieties are derived. 'Under this species,' writes Mr.
Selby, 'we include not only the common pigeon, or inhabitant of the dove-cot, but all those numerous varieties, or, as they are properly termed, of domesticated pigeons, so highly prized, and fostered with such care and attention by the amateur breeder or pigeon fancier; for, however diversified their forms, colour, or peculiarity of habits, they are considered by them as emerging from a few accidental varieties of the common pigeon, and not from any cross of that bird with other species, no signs or marks whatever of such being apparent in any of the numerous varieties known to us. In fact, the greater part of them owe their existence to the interference and the art of man; for by separating from the parent stock such accidental varieties as have occasionally occurred, by subjecting these to captivity and domestication, and by assiduously propagating them together, or by careful and discrepant selection, he has at intervals generated all the various races and peculiar varieties which, it is well known, when once produced, may be perpetuated for an indefinite period, by being separated from, and unmixed with, others; what by those interested in such pursuits is usually termed 'breeding in and in.' Such also, we may add, is the opinion of the most eminent naturalists as to their origin, and it is strongly insisted on by M. Temminck in his valuable work on the 'Class of Domesticated Pigeons.' 'Hence,' he continues, 'the fact that all the variousities, however much they may differ in colour, size, or other particulars, if permitted, breed freely and indiscriminately with each other, and produce a progeny which is derived from another and a different breeding prope, their common and self-same origin; for it is one of those universal laws of nature, extending even to plants, and one which, if once set aside or not enforced, would plunge all animated matter into indescribable confusion, that the offspring produced by the intercourse of different, that is, distinct species, is incapable of further increase. That such an intercourse may be effected is well known to all; but it is generally under peculiar or artificial circumstances, and rarely when the animals, birds, or whatever they may be, are in their natural state, and in a condition to make their own election. It is seen in the crosses obtained in a state of confinement between the canary and goldfinch, linnet, &c., in which two different species of Anisognathus, when domesticated or kept in captivity, in the cross between the pheasant and common fowl, &c.***

*The bastard produce of the common wild turtle (Tarttus tarttus) with the turtle of the aviary (Tarttus turtia) has been proved by frequent experiment to be barren, although the two species from whence it originates appear to be closely allied, and a mixed breed is easily procured; and such, we have no hesitation in saying, would be the event, if a cross could be obtained between the common pigeon and the ring pigeon, the wood pigeon, or any other species.***

These observations are worth all our attention. The assertion respecting the bastard produce of the turtles, made above, is corroborated by M.M. Boitard and Corbié in their History of the Pigeons de Volière, and the principle is further confirmed by the experiments of Mauduyt, Vioillet, and Corbié.

The varieties of this bird, produced under the fostering hand of man, the tumblers, croppers, jacobins, runts, spots, turbots, owls, nuns, &c., &c., would fill a volume. Our limits will not permit us to figure or describe them. The carrier however demands notice. In one of his odes (τις πετατρινος) Anacreon has immortalized it as the bearer of epistles. Tarsotrophis sent to his expectant father, who resided in Αργινα, the glad tidings of his success in the Olympic games on the very day of his victory. Pliny (Nat. Hist. lib. x. 37) says that the communication was kept up between Hirtius and Decimus Brutus at the siege of Mutina (Μοτίνα; "what avoided An.:—the trench and the watch of the besiegers; what avoided the nets (retia) stretched across the river, the messenger was clearing the air (per columna untenuntur). The crouders employed them, and Joinville records an instance during the crusade of Saint Louis. Tasso, (Gierusalemme Liberata, cant. xvii.) sings of one that was attacked by a falcon and defended by Godfrey, when Chaistianus ad un hio suis, vocavit et hic Hicianum carta, et sotum an alia aescida.

— which carta' Godfrey of course reads, and is put in possession of all the secrets. In the same way Ariosto (cant. xxi.) tells Damon of the adventures of Damse' spread the news of what was going on in the camp.***


Orillo's death all over Egypt. Sir John Mansfield, knight, warrior, and pilgrim, who penetrated to the borders of China in the reigns of our Second and Third Edward, thus writes: 'In that contree and other contrees besides, they ha a custom, when thei schullo use wene, and when men holde sege abouten icye or castell, and thei wiben dur not senden out messagers with letters, for lord in lord, for to ask sokour, thei maken here letters and bysden them to the nekke of a Colver, and letten the Colver flee and the Colveren ben so taughte, that thei flee with the letters to the very place, that men wolde sende hem to. For the Colveren ben norysch in the places, where thei ben sent to; and thei senden hem thus for to seren here letters. And the Colveres retornen azen, where thei ben norisacht and so thei don comonly.'

The carrier however gradually sank, in this country at least, to the bearer of the intelligence of the falcon's death at Tyburn—Hogarth's print will occur to every body: it became the messenger from the race-course and prize-ring, and is now said to be largely used in stock-judging transactions. Every day we read reminiscences on this subject, and accounts of some of the hapless messengers being shot: nor, the fostering of a breed of falcons has been threatened, to oppose their progress to our shores. Some idea of the astonishing fecundity of the domesticated pigeon may be derived from the assertion of Biber, who observes that if you suppose two pigeons to hatch nine times a year, they may produce in four years 14,760 young.***

In its wild state the rock pigeon is widely distributed; the rocky islands of Africa and Asia, and in the Mediterranean, abound with them. Virgil's beautiful simile in the Fifth Æneid evidently relates to this species:—

*Col domus et dulcis latebrae in pammeo siti.*

In the Orkneys and Hebrides it is said to swann. 'It is also met with upon the northern and western coasts of Sutherland, the perforated and cavernous rocks which gird the eastern side of Loch Eriboll, and those of the limestone district of Durness, furnishing suitable places of retreat; and again upon the eastern coasts of Scotland it is seen about the rocky steeps of the Isle of Bays and the bold promontory of St. Abb's Head.' (Selby.)

Description of Columba livia in its wild state.—Bill blackish brown; the nostril membrane red, sprinkled, as it were, with a white powder. The iris pale reddish orange. Head and throat bluish grey. Sides of the neck and upper part of the breast dark lavender purple, glossed with shades of green and purplish red. Lower part of...
breast and abdomen bluish grey. Upper mandible and wung-covertes blue grey. Greater coverts and secondaries barred with black, so that there are two broad and distinct bars across the closed wings. Lower part of the back white; rump and tail-covertes bluish grey. Tail deep grey, with a broad band on the under. Legs and feet pale purplish red. Wings when closed reaching within half an inch of the end of the tail. (Selby).

Ectopistes (Selby).

Turtur.
Bill more slender than that of the pigeons. Tip of the upper mandible gently deflected, that of the lower scarcely exhibiting the appearance of an angle. Tarsi rather shorter than the middle toe. Feet formed for walking or perching; inner toe longer than the outer. Front of tarsi covered with broad imbricated scales. Wings, first quill a little shorter than the second, third longest of all. Tail rounded or slightly graduated. (Selby).

Example—Turtur riorior, Columba riorior, Auct.; Turtur torquatus Senegalentis, Brisson; Tourterelle a coller, Buffon; probably the turtle of the Scriptures, and still plentiful in Egypt and other eastern countries, where it is often kept in confinement. The relics of Greek and Roman art give a very fair representation of this species; but Belon and others seem to be of opinion that the Turtur commutus, common turtle-dove, was the receo of the Greeks.

Description of a wild specimen from Southern Africa.
Length about ten inches. Chin whitish; from the corners of the mouth to the eyes a narrow streak of black. Forehead pale bluish-grey; crown darker; cheeks, neck, breast, and belly grey, tinged with vinaceous or pale purplish-red; the hind neck with a demi-collar of black; some of the side feathers of the collar tipped with white. Back, scapulas, and rump, pale clove brown, with a greenish tinge. Margins of wings, greater coverts, and under wing-covertes blue grey. Greater quills hair brown, delicately edged with greyish-white. Vent and under tail-covertes white. Legs and feet grey; inner toe a little longer than the outer. (Selby).

Habits and Food.—In its natural state it haunts the woods, where it breeds, making a nest like that of the common turtle, and lays two white eggs. It seeks its food in the open grounds, and subsists upon grain, grass seeds, and pulse, &c. Its trivial name is derived from a fanciful resemblance to the human laugh in its cooings. (Selby).

Hybrids.
A race between the common turtle and this species has been obtained; but the males are stated to have been invariably barren. Mr. Selby provisionally places the Columba lophotes of Temminck under this genus.

Ectopistes (Swainson).
Bill slender, notched. Wings rather elongated, pointed; the first and third quill equal; the second longest. Tail rounded, or curved. Feet short, naked; anterior scales of the tarsi imbricate; lateral scales very small, reticulate. Types.—Col. speciosus, Temm.; Col. migratoria, Linn. (Swainson).

Example.—Ectopistes migratoria, Columba migratoria, Auct. The Passenger Pigeon, Wilson, Audubon, and others. Wilson does not give a detailed history of any length of the habits of more than one species, we have selected Wilson’s graphic account of this elegant bird as the most striking.

The roosting-places are always in the woods, and sometimes occupy a large extent of forest. When they have frequented one of those places for some time, the appearance it exhibits is surprising. The ground is covered to the depth of several inches with their dung; all the tender grasses and underbrush are destroyed; there are also large limbs of trees, broken down by the weight of the birds collecting one above another; and the trees themselves, for thousands of acres, killed as completely as if girdled with an axe. The marks of their desolation remain for many years on the spot; and numerous places could be pointed out where, for several years after, scarcely a single vegetable made its appearance. When these roosts are first discovered, the inhabitants, from considerable distances, visit them in the night with guns, clubs, long pales, pots of sulphur, and various other engines of destruction. In a few hours they fill many sacks, and load horses with them. By the Indians, a pigeon-roost or breeding-place is considered as of inestimable price; and on the first intelligence of such a place in that season, and all their active ingenuity is exercised on the occasion. The breeding-place differs from the former in its greater extent. In the western countries, viz., the states of Ohio, Kentucky, and Indiana, these are generally 100 miles back woods, and are now extended in nearly straight line across the country for a great way. Not far from Shelbyville, in the state of Kentucky, about five years ago, there was one of these breeding-places, which stretched through the woods in nearly a north and south direction, was several miles in breadth, and was said to be upwards of forty miles in extent. In this tract almost every tree was furnished with nests wherever the branches could accommodate them. The pigeons made their first appearance about the 10th of April. In the photograph attached to this volume, taken before the 23rd of May. As soon as the young were fully grown, and before they left the nests, numerous parties of the inhabitants, from all parts of the adjacent country, came with wagons, axes, bows, and cooking utensils, many of them accompanied by the greater part of their families, and encamped for several days at this immense nursery. Several of them informed me that the noise was so great as to terrify their horses, and that it was difficult for one person to hear another speak without bawling in his ear. The ground was strewn with broken limbs of trees, eggs, and young squabs, pigeons, which had been precipitated from above, and on which herds of hogs were feeding. Hawks, buzzards, and eagles were continually seen in the air, and several of the squabs from the nests at pleasure, while, from twenty feet upwards to the top of the trees, the view through the woods presented a perpetual tumult of crowing and fluttering multitudes of pigeons, their wings roaring like thunder, mingled with the frequent crash of falling timber; for now the axemen were at work, cutting down those trees that seemed to be most crowded with nests, and contrived to fell them in such a manner, that in their descent they might bring down several others; by which means, the falling of one large tree sometimes produced 200 squabs, little inferior in size to the old ones, and almost one heap of fat. On some single trees, upwards of 100 nests were found, each containing one squab only; a circumstance in the history of this bird not generally known to naturalists. It was dangerous to walk under these flying and fluttering millions, from the frequent fall of large branches, broken down by the weight of the multitude in, and while on, their descent, often destroyed numbers of the birds themselves; while the clothes of those engaged in traversing the woods were completely covered with the excrements of the pigeons. These circumstances were related to me by many of the most respectable part of the community in that quarter, and were confirmed in part by what I myself witnessed. I passed for several miles through this same breeding-place, where every tree was dotted with the remains of those above described. In many instances I counted upwards of ninety nests on a single tree; but the pigeons had
abandoned this place for another, sixty or eighty miles off, towards Green River, where they were said at that time to be equally numerous. From the great numbers that were constantly passing over our heads to or from that quarter, I had no doubt of the truth of this intelligence. The mass had been chiefly consumed in Kentucky; and the pigeons, every morning a little before sunrise, set out for the Indiana territory, the nearest part of which was about sixty miles distant. Many of these returned before ten o'clock, and the great body generally appeared on their return a little after noon. I had left the public road to visit the remains of the breeding-place near Shelbyville, and was traversing the woods with my gun, on my way to Frankfort, when, about ten o'clock, the pigeons which I had observed flying the greater part of the morning northerly, began to return in such immense numbers as I never before had witnessed. Coming to an opening by the side of a creek called the Benson, where I had a more uninterrupted view, I was astonished at their appearance; they were flying with great steadiness and rapidity, at a height beyond gun-shot, in several strata deep, and so close together that, could shot have reached them, one discharge could not have failed or bringing down several individuals. From right to left, as far as the eye could reach, the breadth of this vast procession extended, seeming every where equally crowded. Curious to determine how long this appearance would continue, I took out my watch to note the time, and sat down to rest. It was past one o'clock, and I had been at it for more than an hour, but instead of a diminution of this prodigious procession, it seemed rather to increase, both in numbers and rapidity; and, anxious to reach Frankfort before night, I hastened on my way. About four o'clock in the afternoon, I crossed Kentucky river, at the town of Frankfort, at which time the living torrent above my head seemed as numerous and as extensive as ever. Long after this I observed them in large bodies that continued to pass for six or eight minutes, and these again were followed by other detached bodies, all moving in the same south-east direction, till after six o'clock in the evening. The great breadth of front which this mighty multitude preserved would seem to indicate a corresponding increase in their breeding-place, which, by several gentlemen who had lately passed through part of it, was stated to me at several miles.

Wilson then enters into a rough calculation of the numbers of this mass, and he comes to the conclusion that its whole length was 240 miles, and that the numbers composing it amounted to 2,230,272,000 pigeons, observing that this is probably far below the actual amount. He adds, that allowing each pigeon to consume half a pint of food daily, the whole quantity would equal 17,424,000 bushels daily. Mr. Audubon confirms Wilson in every point, excepting that he very properly corrects that part of the narrative which would lead to the conclusion that a single young pigeon has hatched in a day. The bird observes that the bird lays two eggs of pure white, and that each brood generally consists of a male and female.

Description—Wings long and acuminate, having the second quill feather exceeding the others in length. The tail is greatly cuneiform or graduated, and consists of twelve tapering feathers. Bill black, and like that of the turtle. Legs purplish-red, short, and strong. Iris bright orange-red, the naked orbit purplish-red. Head and cheeks pale bluish-grey. Fore-neck, breast, and sides brownish-red, with a purplish tinge. Abdomen and vent white. Lower part and sides of neck purplish-crimson, reflecting tints of emerald green and gold. Upper plumage deep bluish-grey, some of the scapulars and wing-coverts spotted with black, the back grey, tinged with blackish-grey, the greater coverts blackish-grey, the outer web blackish-grey. Tail with the two middle feathers black, the other five on each side grey at the base, with a black bar on the inner arch, and gradually tending to the extreme tip. The female is rather smaller, and has the colours of her plumage much duller than those of the male, though the distribution is the same. (Selby.) Locality. North American Continent, between the twentieth and sixty-second degrees of latitude. Mr. Selby has figured one as a visitant to our shores, on the authority of Dr. Fleming, who, in his 'History of British Animals,' says that one was shot in the parish of Monymedal, Fife-shire, on the 31st December 1832.

Mr. Selby refers provisionally Columbia Capensis, Auct., Columbia Macgarrili, Lesson, and Columbia venusta, Temm.

to his group of Eltopista, and thinks that by these and some other nearly allied forms, a passage to the next group, Peristerina, the ground doves, is effected.

[Eltopista migratoria]

Peristerina (Selby).

Distinguished from the preceding groups by their terrane habits, and their evident approach in many points to the more typical Rosaries or Gallinaceae birds. In these the bill is rather slender, frequently subemarginate, and the tip of the upper mandible but slightly deflected; the wings are generally short and rounded, and in many instances concave, as in the partridge, grouse, &c. The legs are considerably longer than in the typical pigeons; the tarsus usually exceeding the middle toe in length, and the feet better adapted for walking than grasping; the claws are obtuse and slightly arched. The tail is shorter, and its relative position different from that of the arboreal species. Their plumage is plainer and more uniform in tint than that of some of the preceding groups, though it is still brilliant in those species which connect them with other forms. They live almost entirely upon the ground, and many of the species run with great celerity, on which account they have been called partridge pigeons. Their flight, which is usually low, is effected with greater exertion than that of the pigeons, and is never long sustained. (Selby.)

Mr. Selby observes that this division contains a great number of species, and is of opinion that when better investigated, it will be found distributed into a variety of minor groups or genera. He places under it Phapæ, Chamaepela, and Peristeria. This group is distinguished by a longer bill, very faintly emarginate, and by its tarsi, which are moderately long and slenderly divided into two series, and the sides and hinder part reticulated with minute scales. Another group, he adds, seems indicated by certain Asiatic species, conspicuous for the rich metallic green of the plumage of their backs, resembling therein some of the Phapæ genus. The tarsi of these are destitute of scales, except a few indistinct ones in front, just above the toes. The bill is rather long, and destitute of a notch. They live mostly on the ground, but their flight is powerful. Mr. Selby takes Copsa, superciliosa of Wagler as the type of the last-mentioned group.

Phapæ (Selby).

Bill moderately long, rather slender; upper mandible gently deflected at the tip, and with the indication of a notch or emargination. Wings of mean length; second and third feathers longest, and nearly equal. Tail slightly rounded. Legs, tarsi as long as the middle toe, the front covered with a double row of scales, sides and back reticulated with small hexagonal scales. Hind toe short, inner toe exceeding the outer in length. Claws blunt, slightly arched. Type, Columbia chalopera, Latham; Columbia elegans, Temm.; and Columbia picata, Wagler. belong to this group. (Selby.)

Example—Phapæ chalopera, Columbia chalopera, Latham; Columbia Lunachelle, Temm.; bronze-winged ground dove.

Size about that of Columba oenas. Total length, about fifteen inches. Bill, from edges of the gape, hardly an inch; black anteriorly; reddish near the base. Forehead,
stripes below the eyes, and throat white; crown brown, tinged with reddish, filleted with dusky red; cheeks and sides of neck bluish-grey; bottom of neck in front and breast purplish-grey. Belly and vent grey, with a pale purple tinge. Back, scapulars, rump, and upper tail-coverts brown tinged with greenish in some lights, the border of each feather paler. Wing-coverts bluish-grey, but the outer webs of every feather have a large ovate spot, producing various tints of metallic brilliancy according to the direction of the light. Quills brown above, with the inner surface of the webs, the axillary feathers, and under wing-coverts bordered rather deeply with pale orange-red. Tail slightly rounded, bluish-grey, with a black band. Legs red; two rows of scales in front, the sides reticulated.

**Locality and Habitat.**—Australia and islands in the Pacific. In the neighbourhood of Sydney, from September till February. 

**Haunts** dry and sandy places, where it is generally seen on the ground, and occasionally perched upon the low branches of shrubs. Nest inarchitectural, in holes of low trees or decayed trunks near the ground; sometimes on it. Eggs two, white. Those birds go in pairs generally; their cooing is loud, and has been compared, when heard at a distance, to the lowing of a cow.

![Illustration of Chlamypterus](image1)

**Chlamypterus** (Swainson)

Bill slender, entire. Wings rounded, the first quill short and abruptly attenuated, second and fifth equal, third and fourth equal and longest. Tail rounded. Feet strong, naked, somewhat lengthened. Anterior scales of the tarsi imbricate, lateral scales none. Type, *Columba cincta*, Temm. (Swainson).

**Example.**—*Peristera typhon, Columba typhon*, Temm. Length about nine inches; upper plumage brown, slightly tinged with grey on the neck; large spots of shining dark-green on the outer webs of three or four of the greater wing-coverts; middle tail-feathers brown; the two exteriors on each side grey, with a broad black bar near the tip; inner webs of greater quills deep brown; forehead, streak over the eye, and under plumage pure white; under wing-coverts and sides pale orange-brown; under tail-coverts brown; bill and legs grey, the latter with a reddish tinge.

**Locality.**—South Africa, where it is said to haunt woods. The species does not seem to be common.

![Illustration of Peristera](image2)

**Peristera** (Swainson)
tail, which it carries hanging down like that of a partridge, and rounded wings, points which bring it near to the Gal-
line.' A passage is thus formed by it, in his opinion, be-
tween those birds and the pigeons. The nest, composed of
twigs and the dried stems of grasses, is formed in some
slight hollow of the ground, and there the female lays six
or eight reddish-white eggs, which are incubated by both
the parents. The young are hatched clothed with down
of a reddish-grey, run immediately and follow their parents,
which keep them together by a peculiar oft-repeated cry,
and brood over them with their wings. Their first food con-
sists of the larvae of ants, dead insects, and worms, which
the parents point out to them. When strong enough to
find their own food, they live on grubs of various sorts,
berries, insects, &c., and keep together in owls like the
partridge and other Tetraonidae till the pairing-time.

If the wattles of the last-named species recall to the ob-
server the same parts so highly developed in the Gallinae-
cous birds, the species which we next present will remind
him of the hackles which ornament the Galline.

Geophius? Nicobaricus, Columba Nicobarica, Latham; C.
olumba Gallina, Wagler. Length hardly fifteen inches:
bill slender, about 1½ inch long; but little bent down-
wards; the tail pure white, the quills deep blackish-blue,
with varying tints of green; all the rest of the plumage
rich metallic green, shooting, according to the light, in
to the variegated tints of golden green, bronze, bright copper
colour, and deep purplish-red; neck-feathers long, narrow,
and pointed, like those of the domestic cock; barbules to-
wards the tip silky and distinct; tail short, pendant, nearly
square; wings, when closed, reaching nearly to the termi-
nation of tail; legs strong, moderately long, black, covered
with hexagonal scales; nails yellow, gently curved, blunt.
Upon the base of the upper mandible of the male a round
fleshy tubercle (probably apparent in the breeding season
only). The female resembles the male in colour, but her
neck-feathers are not so long, and she has no tubercle.

Geophius Nicobaricus.

Locality and Habits.—The isles of Nicobar, Java, Su-
matra, and many of the Moluccas. Authors differ about
its habits, some asserting that its nest is placed on
the ground, and that the female lays several eggs, the young
running as soon as hatched; but Mr. Bennet, who saw them
in Mr. Bent's aviary at Macao, says that they were usually
seen perched upon the trees, even upon the highest branches,
and adds, that they build their rude nests and rear their
young upon trees, similar to all the pigeon tribe.

Lophyrus (Vieillot).

Bill moderate, rather slender, and slightly gibbous to-
towards the tip; upper mandible channelled (siliconée) on
the sides, inclined towards the point; nostrils situated in a
groove; wings rounded (Vieillot).

Example.—Lophyrus coronatus, Columba coronata, La-
than; Phasianus cristatus Indicus, Brioan; Columb.
Hoco, Le Vaill.; Columba Gallina Goura, Temm.; Great
Crested Pigeon, Edw. A species similar in size to all the
other Columbiae. Total length from twenty-seven to
twenty-eight inches; bill two inches long, black, tips of
mandibles thickened, that of the upper one somewhat de-
flected; head with a large, elevated, semicircular, com-
pressed crest of narrow straight feathers, with decomposed

Geophius coronatus.

Locality and Habits.—South Africa, where it was discov-
ered in the Great Namaqua country by Le Vaillant, who
gives the following account of its habits and affinities:—To
the pigeons its affinity is shown by the form of the bill and
the plumage; while it differs from them in the pendant
wattle, elongated tail, rounded body, less graceful form,
found in Sweden are tantalite and yttrotantalite. The first, sometimes called also Columbite, is a rare amorphous and nodular, and also crystallized in the form of a right rhomboic prism. The massive variety is either granular or compact; the crystals are greyish-black; fracture uneven.

**Locality and Habits.**—Many of the islands of the great Indian group. Not rare in Java and Banda, abundant in New Guinea, and in most of the Moluccas. Nest built in trees; eggs two; cooing of the male hoarse, accompanied by a note somewhat like that of a turkey cock when strutting; foot—berries, seeds, grain, &c.; flavour of the flesh said to be excellent.

"In this magnificent and beautiful bird," says Mr. Selby, "we observe a combination of form different from that of the ground pigeons, so lately described; for, instead of the marked affinity to the typical rascal families, the Paradise and Tetraonidae, so decidedly exhibited by these species, both in their mode of life, and in their deviation from the usual Columbine figure, we have, in the present instance, an approximation of structure much nearer that of some of the Cuculidae, another tribe of birds which constitutes an aberrant family of the Racial Order, and it is on this account we think that this bird cannot well be placed in the same division with the ground doves, but must constitute the type of a separate group."

**Fossil Columbine.**

Dr. Buckland enumerates the bones of the pigeon among the remains in the cave at Kirkdale, and figures a bone which he says approaches closely to the Spanish runt, which is one of the largest of the pigeon tribe, meaning, we suppose, the Columbidae.

**COLUMBINE**. [Aquilaria.]

**COLUMBIA, a metal discovered, in 1801, by Mr. Hetchell in a frruginous mineral from North America. It was afterwards detected in some Swedish minerals by Ekeberg, who supposed it to be a different and new metal, to which he gave the name of Tantaltum. Dr. Wulstaen showed that the metals were the same. The minerals**

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**Oxygen and Columbium combine in two proportions, forming columbic acid and oxide of columbium.**

Columbic acid may be obtained by burning the metal in the air: it is colourless, insipid, and does not act upon vegetable blue colours. When heated with charcoal it is reduced to the state of oxide. If heated with iron it loses oxygen, and an alloy of iron and columbium is formed. Columbic acid combined with carbon forms a water-soluble, white, amorphous, and amorphous vegetable blue. It combines with salifiable bases to form salts which are called columbates, but no one of them of any importance, or applied to any purpose whatever.

*Oxide of Columbium* is composed of

\[
\begin{align*}
3 \text{ equivalents of oxygen} & \quad 24 \\
1 \text{ equivalent of columbium} & \quad 185
\end{align*}
\]

**Equivalent** = 209

Oxide of Columbium is obtained by heating columbic acid to whiteness in a covered crucible. It is of a greyish black colour, very hard, and almost in fusible.

Oxide of columbium consists of

- 2 equivalents of oxygen = 16
- 1 equivalent of columbium = 185

**Equivalent** = 291

Columbium combines also with chlorine and sulphur, &c., but these compounds are little known and of no importance.

**COLUMBO, or COLOMBO,** the capital and seat of the British government in Ceylon, is situated on the western coast of the island, 9° 37' N. lat., and 90° E. long., 368 miles S.W. from the equator. The city and the two-thirds of the extent of which is washed by the sea. It derives strength from art and from nature: it embraces a circuit of about a mile and a quarter, and has eight principal bastions. These bastions are towards the sea and three face a lake and command the narrow approach from the town. The fort is surrounded, except on the side of the sea, with a deep moat, and a lake bordering on the glacies adds to the strength of the place. On the side of the sea, where the surf does not render a landing impracticable, every part is well commanded by the batteries. Inside the fort are several straight and regular streets. The residence of the governor, called the 'King's house,' is in King's Street; and behind it is the light-house, a beautiful edifice, lately erected, the light of which is ninety-seven feet above the level of the sea. The principal government offices and courts are within the fort; also an English church, a library, a medical museum, an hospital, two hotels, and numerous shops.

The lake before alluded to, being connected by canals with the Mutwal river, almost insulates the town. In the centre of the lake is a piece of land called Slave island, covered with cocoa-nut trees, and the city was founded on a small stone bridge. It is the head-quarters of the Ceylon Rifle regiment.

Columbo has a small semicircular harbour admitting vessels not exceeding 200 tons. Ships of larger burden anchor off the roads. In the S.W. monsoon from April to October, the best anchorage is found in seven to eight fathoms, light-house bearing S. by E. & E., and the Dutch church E. by S. In the N.E. monsoon, from November to April, it is more convenient to anchor in six and half fathoms, light-house bearing S. or S. E., and the Dutch church E.S.E.
The town is regularly built with fifteen streets, eight running E. and W. and the others at right angles to them. The houses are of cobbol, white-washed, and presents a good appearance. In 1814 there were 2654 houses within the graven*. Between 1820 and 1829, 63127. was collected by assessment for lighting and repairing the streets. The sum collected is greater than what is expected, and the surplus money is put out at interest, it being intended to discontinue assessments when the interest of the surplus shall amount to 12004 per annum. Among the public buildings are a Supreme Court house, the various public offices. There is also a library belonging to the burghers, a small-pox hospital, a masonic hall, and a number of religious edifices. The Dutch church, erected in 1746, is a lofty building in the form of a cross, standing in the centre of the town. A cross and several steam-engines are several native presses used in the manufacture of cocoa-nut oil.

The population is composed of Europeans, burghers, Malabars, Singhaloos, and others, besides some Malays, Chinese, Parsees, Cydrariss, and Pattnags; and according to the census of 1832, amounted to 31,519.

The commerce, external and internal, is very extensive, and daily increasing. The exports to Europe are cinamon, pepper, nutmeg, cocoa-nut oil, pigmeat, cordage, arms, camomons, elephants' tusks, deer horns, tortoise-shells, ebony, satin-wood, &c.; and the imports consist of articles of European manufacture.

The climate of Colombo is very salubrious. The mean depression of the temperature is from 76° to 86° Fahr. The tropical rains are here sometimes accompanied with dreadful thunder storms.

Colombo is mentioned in Singhaloos history as early as 495 A.D. About the year 1371 it was frequented by trading vessels, and a colony of Malabars took possession of the place, and threw up fortifications, but they were soon expelled. The Portuguese visited Colombo in 1518, and soon after erected a fort; but the Singhaloos,roused to resentment by the treaty of the Portuguese, invested the fort with an army of 20,000 men, and besieged it for six months, when the Portuguese were enabled, by means of reinforcements from Goa, to expel the insurgents, and maintain peace. The fort was at one time demolished incompletion in orders from Portugal, but a new fort was afterwards erected; and being firmly established in it, the Portuguese, by taking part in the intestine wars, gradually extended their influence over the whole island. In 1656 the Dutch wrested Colombo from them after a siege of seven months, and expelled them from the coast. In 1796 the Dutch surrendered it to the British.

COLUMBUS (a name latinized from the Italian Colombu) and the Spanish Colon) was born at Genoa, about the year 1445 or 1446. His father, who was a wool-comber, sent him to Pavia, then the great seat of learning in Europe, where he showed a taste for geometry, geography, and astronomy, and, as it was then termed, astrology, went to sea at fourteen years of age. In addition to the hurried encounters and dangers attending the sea-faring life of that age, he was often under the rigid discipline of an old relation of his, and Colombo, who carried on a predatory war against Mohammedans and Venetians, the great rivals of the Genoese. In February, 1487, Columbus, in order to ascertain whether Iceland or some of the unexplored northern isles beyond the arctic circle, was sent to find the sea-faring people. He also visited the Portuguese fort of St. George la Mina, on the coast of Guinea.

About the year 1470, he settled at Lisbon, then the great resort of travelers and navigators, where Prince Henry, the high enquirer, was encouraged. Here Columbus married the daughter of an Italian, called Patzzastro, who had colonized and who governed the island of Porto Santo, and whose papers, charts, and journals, formed the basis of his expeditions to the Canaries, the Azores, and the Portuguese settlements of Africa, and for the construction of the maps and charts, which he so much admired.

The town of Colombo is divided into four districts. The Old Town, a district of its own, but with the same public buildings, is inhabited by the inhabitants of the city of Colombo, and is separated from the rest of the town by a small river. The other districts are called the New Town, the East End, and the West End, in which reside the foreigners and the Indians. The government of the city is exercised by a council of the New Town, and by a mayor and a council of the East End. The expenses of the city are defrayed by a tax on property, and the revenue is largely increased by the sale of the cocoa-nut oil, which is manufactured in the town.

subject, he immediately went to Santa Fe, where she was then superintending with Ferdinand the close investment of Granada. Isabella, who had never heard the proposition urged with such honest zeal, enthusiasm, and eloquence, and who was besides more open to noble impulses than her husband, was at last most deeply moved by it. Granada, however, was checked by her confessor Talavera, who, being now raised to the see of Granada, was more astonished than ever at the lofty claims of this ingent and threadbare solicitor. The claims could be exorbitant in ease of success, he observed; how unlikely that with the means they possessed in case of failure, which was almost sure to happen, and which would prove the gross credulity of the Spanish monarchs. More moderate, yet highly honourable and advantageous terms he thought to be more in harmony with his business and interests, beneath the dignity of his enterprise, and determined once more to abandon Spain for ever.

Some friends, who considered his departure as an irreparable loss, once more remonstrated with Isabella, who at last offered her own jewels to defray the expenses of the expedition, and thus overcame the coldness of Ferdinand. Accordingly, a messenger was sent to overtake Columbus, who, after some hesitation, returned to Santa Fe. Stipulations were at last signed by Ferdinand and Isabella, at Granada, the 17th of April, 1492.

On Friday, the 3rd of August, 1492, Columbus, as admiral of the seas and lands which he expected to discover, set sail with his fleet of tiller, near Palos, consisting of 19 men, who were full of doubts and fears, and were partly pressed into the service. Two of these vessels were caravels, or light barques, no better than our river and coasting craft. This, however, Columbus considered an advantage, as the Guaita, or Santa Maria, was his flagship, and he felt fearful of the riches of Solomon, but he gave it the Latin diminutive of Hispaniola, from its resembling the finest tracts of Spain. Leaving here the gern of a future colony, he set sail homeward the 4th of January, 1493. A dreadful storm overtook him on the 12th of February, on his way to Spain, fearing the loss of his discovery more than the loss of life, retired to write two copies of a short account of it. He wrapped them in wax, enclosed them in two separate casks, and, of which he threw into the sea, and the other he placed on the poop of his vessel, that it might float in case she should sink. Happily the storm subsided, but another drove him off the mouth of the Tagus on the 4th of March; and although distrustful of the Portuguese, he was obliged to take shelter there. At last he landed at Palos, the 15th of March, 1493. In his journey through Spain, he received princely honours all his way to Barce- lona, where the court last got. His entrance here, with his argument in the mouth of the Tagus, his discovery of islands, was a triumph as striking and more glorious than that of a conqueror. Ferdinand and Isabella received him seated in state, rose as he approached, raised him as he knew his hands, and ordered him to be seated in their presence.

On the 25th of September, 1493, Columbus left Cadiz on a second expedition, with seventeen ships and 1500 men. He discovered the Caribbee Islands, Puerto Rico, and Jamaica; and after repeated mutinies of his colonists and great hardships, he returned against the trade-winds to Cadiz, June 11, 1496. Having dispers'd all the calumny's that had been accumulated upon him, Columbus embarked the 30th of May, 1498, at San Lumar fortissimo, media, on a third expedition, with only six vessels. In this voyage he discovered La Trinidad, the mouths of the Ori- noco, the coast of Paria, and the Mactarita and Cubagua Islands. On the 4th of August he bore away for His- paniola to recruit. The voyage was accompanied by great calamities; here, the calumny's of miscreants who had been shipped off to Spain, countenanced as they were by envious courtiers at home, the unproductiveness of the new settlement, and regret at having wasted such an army of men, 1500, at San Lumar fortissimo, who could now be dispensed with, induced Ferdinand, in July, 1505, to dispatch Francisco Bovallida to supersede Columbus, and bring him back in chains. Valloje, the officer who had him in charge, and Martin, the master of the ship, were then executed. The Narvaez controversy continued till the death of the admiral. The same cluster, although this supposition is at variance with all the particulars of San Salvador, which are abundantly described in the last chapter. Owing to this mistake, the expedition of indians was extended to the whole of the Aborigines of America.

It is imagined that this event proceeded from the tree of life in the midst of Paraiso, the situation of which was supposed to be in the remotest parts of the east.

* He adopted throughout the voyage the system of keeping two registers, one true and private, for his own guidance, the other merely for the crew, to keep in ignorance of the great distances they were advancing.
The caravel, would have taken his chains off; but Columbus proudly said, 'I will wear them till the king orders otherwise, and will preserve them as memorials of his gratitude.'

He hung them up in his cabinet, and requested they should be buried in his grave. The general notion of the Indians was not improved through the whole Spain, on the arrival of Columbus in fetters, compelled Ferdinand himself to disclaim all knowledge of the shameful transaction. But still the king kept Columbus in attendance for nine months, which was sufficient to collect all the trustless solicitation and false redress of the last appointed Nicholas Orlando governor of Hispaniola in his place. With restricted powers and a broken frame, but with his ever-soaring and irresistible enthusiasm, Columbus sailed from Cadiz again with 13 men, and in May of the same year he arrived with 150 men, in search of a passage to the East Indies near the Isthmus of Darien, which should supersede that of Vasco de Gama. Being denied relief and even shelter at Santo Domingo, he was swept away by the currents to the N.W. but the Isthmus of Yucatan and Mexico, and at last reached Truxillo, whereon he crossed

Honduras, the Mosquito shore, Costa Rica, Veragua, as far as the point which he called El Retrete, where the recent westward coasting of Bastidas had terminated. But here, on the 5th of December, he gave up his splendid vision, and yielded to the clamours of his crews to return in search of gold to Veragua, a country which he himself mistook for the Aurora Chersonesus of the ancients.

But the vanishing of Columbus and the crazy state of his ships forced him, at the close of April, 1503, to make the best of his way for Hispaniola with only two crowded wrecks, which, being incapable of keeping the sea, carried him to the 5th of May, to anchor off the coast of Jamaica. There he was faint and despair had occasioned a series of mutinies and disasters farther greater than any that he had yet experienced, as he at last arrived, on the 13th of August, at Santo Domingo. Here he exhausted his funds in relieving his crews, extending his generosity even to those who had been most outrageous. Sailing homewards on the 12th of September, he anchored his tempest-tossed and shattert bank at San Juan, the 7th of November, 1504. From San Juan he proceeded to Haiti, where he returned the news of the death of his patroness Isabella. He was detained by illness till the spring of 1505, when he arrived, wearied and exhausted, at Segovia, to have only another courtly denial of redress, and to linger a year longer in neglect, poverty, and pain, till death gave him relief at Valladolid on the 20th of May, 1506. Thus ended a noble and glorious career, inseparably connected with the records of the injustice and ingratitude of kings. To make some amends for the sorrows and woe of this great man, his remains received a pompous funeral, and his grave and coat of arms the following motto:

"A Castilla y a Leon / ha mandado se de Colon."
But the treatise on agriculture by the latter appears to have superseded Columella's work, and to have thrown it altogether into oblivion. Besides the great work of Columella, which we have described, there is a single book entitled, 'De Arboribus,' in which reference is made to a preceding book now lost. These two appear to have been a portion of an early edition of the work on agriculture, probably in four books, which being afterwards enlarged, swelled into the twelve we now possess. Accordingly the matter of the 'De Arboribus' will be found with some alterations and many additions, in the third, fourth, and fifth books of the greater work; and Cassiodorus actually speaks of sixteen books written by Columella. In ignorance of this, the writers of many of the MSS., as well as the early editors, have inserted the minor treatise after the second book of the more complete work, thus causing many contradictions and great confusion in the numbers of the following books.

The writings of Columella have generally been published together with the works of the other authors 'De Re Rustica.' The chief editions are these: 'The Princeps,' Venice, fol. 1472; Bologna, fol. 1494; by Aldus, 8vo., 1513, or rather 1514; by R. Stephens, 8vo., 1543; by Gesner, Leipzig, 2 vols. 4to., 1735; and what may now be looked upon as the best, the edition by J. G. Schneider, 4 vols. 8vo., 1744-47. We are not acquainted with any English translation of Columella.

Columella, the central part or axis in the theca of a moss, around which the spores are arranged without having any definite connection with it. Also the axis of any kind of fruit when separate from the carpels: in the latter case it is a hardened state of the growing point.

Columella/Graec. A small diandrous order of monopetalous Exogens, with a superior five-parted calyx, a rotate corolla, three-lobed anthers bursting outwards, a two-celled ovary with an indefinite number of ovules and a capsular fruit. They are South American and Mexican bushes, looking like monopetalous Onagraceous plants, of doubtful affinity, and of no known use. (Lindley's Natural System of Botany, ed. 2, p. 240.)

The elliptical figures are the cartouches on the column, drawn to a larger scale. The height of the column is 12 ft. 1½ in.

The five orders are the Corinthian, Ionic, and Composite, which is a mixture of the two former; and the Doric and the Tuscan—two orders very similar in appearance and character to each other.

The Greek Corinthian, Doric, and Ionic differ from the Roman. The proportions of the orders vary slightly in almost every example of antiquity; but the distinguishing features are the capitals. The bases also vary in proportion, and sometimes in the profiles of their mouldings; but this is not so apparent to an ordinary observer as the difference in the capitals of the orders.

The Corinthian capital consists of the leaves of the acan-
thus, with two spiral horns at each of the four angles of the abacus. In the centre between these horns are two smaller spirals attached to the bell of the capital; under these are two rows of acanthus leaves regularly disposed, eight being placed in each row, and eight large double leaves supporting the angular horns, called also volutes. These are the leading features of the Corinthian capital, although some are more ornamented than others, and have enriched details about the abacus and the bell, which others have not. The most striking difference between the character of the Greek and Roman foliage of the Corinthian column is this: the leaves of the Greek have angular points, and are almost straight on the sides; the Roman are rounded on the sides; the section of the hollow of the former is angular, while the latter is either a segment of a circle, or formed of two segments of a circle meeting in the centre of the hollow of the points of the acanthus leaf. The Greek leaves may be said to have more of the natural character of the acanthus, or the thistle, while the Roman is more artificial, and consequently less like the model from which the Greeks drew their capital. There are examples of the Greek Corinthian capitals, although much mutilated, in the Elgin collection in the British Museum; and casts of the Roman examples from the temple of Jupiter Stator, Mars Ultor, and the Pantheon, also in the British Museum. The bell of the Corinthian capital may be clearly understood from the annexed drawing of the mutilated single Corinthian capital.

order of the Temple of Vesta at Rome, which very much resembles the order of the Temple at Jackly, was most probably copied from it. Among other peculiarities, it has the same defect of the leaves projecting beyond the line of the shaft, and is the only building of the Corinthian order, in Rome, which has a Greek character. Some Greek Corinthian capitals have only one row of acanthus leaves, and are without the horns under the abacus, the bell being
examples is richly decorated; the baluster is also occasionally enriched. In some Ionic capitals all the faces of the volutes are conjoined at the extremities, the faces being curved inwards as in the Temple of Apollo at Bassae. Ionic columns placed at the angles of porticoes have sometimes the volute ingeniously formed at the angle, so as to present a voluted face either ranging with the volutes of the portico, or with the volutes of the columns at the side of the portico. The angle column of St. Pancras Church, London, has the angular faces curved. The angular volutes in some Roman examples are formed of two half volutes placed at right angles to each other. The bases of the Ionic vary perhaps more than any other order. In Roman examples the Attic base is employed.

The Composite column, as its name implies, is a compound. It is formed of the Corinthian and Ionic, but partakes more of the Corinthian character and proportions.

The Roman-Doric and Tuscan columns are shafts with moulded capitals and bases. The Doric only having a slight decoration of rosettes and buds in the neck of the capital, and some trifling additional mouldings. The Grecian Doric differs from the Roman both in proportion and in the mouldings of the capital, in the fluting being without fillets, and in its being almost always without a base. An order includes the column with the whole of the entablature, or the superstructure raised on it, which is divided into architrave, frieze, and cornice.

All the great architects of the cinque cento, and after them those of the later Italian and French schools, have differed in the proportions and details of the orders, but for the most part in a trifling degree. The proportions of the five Roman orders which we have adopted here as our rule are those laid down in Sir William Chambers’s Architecture, and which are generally employed by the English architects of the present day. The proportions of the orders used by the Greeks are from the authority of Stuart. The measure by which the proportions of the orders are determined, is the diameter of the base of the shaft of the column, which is divided into two parts called modules, and each module is divided into 30 parts called minutes. This scale is in general use in all countries which derive their architecture from the Greeks and Romans.

Thus the height of the shaft of the Tuscan order, from the upper line of the fillet of the base to the upper line of the astragal of the neck of the column, is 12 modules or semidiameters high; the base, including the plinth, is 30 minutes; the capital, 30 minutes; the architrave, 31½ minutes; the frieze, 31½ minutes; the cornice, including the bed-mould or ogive, 42 minutes; and the projection of the cornice, 42 minutes. The shaft of the Doric order is 13 modules, 28 minutes; the base, 30 minutes; the capital, 32 minutes; the architrave, 30 minutes; the frieze, 45 minutes; and the cornice, 45 minutes. The projection of the cornice is 57 minutes. The shaft of the Ionic order contains 16 modules, 9 minutes; the base, 30 minutes; the capital, from the upper line of the astragal, 21 minutes; the architrave, 40½ minutes; the frieze, 40½ minutes; and the cornice, 54 minutes. The projection of the cornice is 54 minutes. The Corinthian order has the shaft 16 modules, 20 minutes; the base, 30 minutes; the capital, 70 minutes; the architrave, 45 minutes; the frieze, 45 minutes; the cornice, 60 minutes;
and the projection, 58 minutes. The Composite order is similar in its general proportions to the Corinthian; and the columns of the Roman orders diminish in diameter about one-sixth, that is, 50 minutes at the upper diameter of the shaft. * The Greek Doric varies very much in its proportions. The Doric of the Parthenon has the shaft and capital 10 modules 8 minutes high, and the entablature 3 modules 15 minutes. For a scale of the proportions of the leading features of some of the best known examples of antiquity, see the end of this article.

The Tuscan order, which is simple in its design, has a base formed of a plinth or squared piece of stone as a foundation, and a torus above it, surmounted with a fillet. The shaft is terminated with a fillet and an astragal, on which the capital is set, consisting of a necking (a prolongation of the shaft) and an ovolo moulding supporting the squared abacus, which is surmounted with a fillet. The architrave is a plain face with a broad fillet. The frieze also is a plain face. The cornice consists of an ogee, a fillet, an ovolo forming the bed-mould of the cornice, which consists also of the corona and fillet, surmounted with a cymatium.

The Roman Doric, resembling in some particulars the Tuscan, is however very much richer. The Doric base consists of a plinth, a torus, a hollow moulding with a fillet above and below it; on the upper fillet is another torus and fillet, from which rises the shaft, curved where it springs from the fillet. This is the Attic base, which is most commonly used in all the orders except the Tuscan. The shaft of the Doric is terminated like the Tuscan, and from the summit springs the capital with a neck enriched with rosetts and buds. Above the necking are three flat annular rings or fillets, then an ovolo moulding surmounted with the abacus, which is finished with a small ogee moulding and fillet. The architrave is a plain face, with a flat band (leminia) and a fillet under the triglyph, with six guttae or drops under the fillet. The frieze is divided into compartments with a triglyph over each column and one or more between, according to the width of the intercolumniation. The triglyphs which project slightly from the face of the frieze are channelled with angular channels and two half channels at the sides of the triglyph. The metope, or space between two triglyphs, is square or nearly so; this, however, depends on the intercolumnium. The triglyphs are bound together by a facia, surmounted by a small fillet under the bed-mould of the cornice, which is an ovolo moulding or an ogee. Over this is the mutule band with the mutules, square in form, projecting over the triglyphs; an ogee surmounts the mutules and the mutule band. The mutules support the cornice, consisting of the corona, an ogee and fillet, and a cavetto or hollow moulding. The soffit or unice is sometimes composed of pannels, and guttae are placed under the mutules. The Doric of the theatre of Marcellus at Rome has dentils with an ogee bed-mould in the cornice in lieu of the mutules; and the basilica by Palladio at Vicenza is without either mutules or dentils, having instead of them a bold ogee and ovolo moulding, and the architrave divided into two facies.

The Greek Doric differs considerably from the Roman, being almost always executed without a base. The fluting of the shaft are twenty in number without fillets; some examples are fluted only at the upper and lower extremities. The capital consists of a solid-looking abacus without any moulding above it, but supported by a very elegantly-curved echinus-moulding, which swells gradually out of the line of the shaft, being bound round by three annulets or rings near the top of the shaft, and on the under extremity of the echinus. A part of the shaft is also cut off by a sinking, or channel, cut into the shaft, forming the necking of the capital. The features of the entablature are very simple. [CIVIL ARCHITECTURE.] The triglyphs are not very dissimilar in the Roman and Greek Doric, except in the setting them off on the frieze. In the Roman they are invariably set over the centre line of each column, the angle of a building being terminated by a portion of a metope. In the Greek the triglyph is invariably commenced at the angle of the building, and not over the centre line of the column generally.

* By a reference to the proportions of some of the columns of ancient edifices at the end of this article, some proportion and appearance will be imparted to the images. The lower diameter of the shaft of a column is always measured from the point where this curve ends, and is joined to the straight line of the shaft.

[Half the capital of the Parthenon at Athens.]

The Roman Ionic has an Attic base. The capital is formed with two volutes on two faces, and the volutes are connected by horizontal lines, though sometimes, like the Greek, the curved line is employed. The abacus is formed of a fillet and an ogee. Under the horizontal lines connecting the volutes is an echinus and astragal or bead-moulding enriched. The architrave is divided into two facies: the upper face is surmounted with a fillet and ogee enriched, and the lower with a small echinus, also enriched, having a narrow fillet underneath it. The frieze is usually plain, though the temple of Fortuna Virilis at Rome has a meagre decoration. The cornice is supported by an ogee moulding and dentils surmounted with a fillet, a bead moulding, and a large enriched echinus moulding. The cornice itself consists of a corona with a small ogee and fillet, on which is placed a cymatium. The volutes of the capital are connected at the sides by a pulvinus, or cushion, commonly called the baluster of the Ionic order. The Greek Ionic varies in its proportion, and is superior in beauty to the Roman example. The method of drawing the Roman volute called Goldman's volute, is described in Sir William Chamber's Architecture.

The following is a very accurate method of drawing the
Greek volute similar to the form of the volute of the Erechtheum or Minerva Polias at Athens. Divide any perpendicular height, A B, into 12 equal parts. Through the 7th division g from the top, draw the line C D at right angles to A B. Then upon the line C D, from the centre g, set off towards C six of the seven divisions between A and g. Draw the lines G H and E F, at angles of 45 degrees to the lines A B and C D respectively. Bisect the line joining A and C by b a, and produce it till it cuts E F in d. Then from d, as a centre, with the radius d A or d C, describe the quadrant A C of the volute. Then join C d, cutting the line G H in e, from the point e describe with the radius e C or e B the quadrant C B, passing through B, the extremity of the line A B; and proceed in this manner with all the quadrants till you touch the centre. The centres of the segments A C, C B, B D, &c., are always found on the diagonal lines E F and G H.

The best examples of the Roman Ionic order are fluted, with twenty-four flutings, or semicircular channels, divided by a narrow fillet, which is part of the surface of the shaft of the column. Some Greek examples, as at Bassae, have only 20 flutings, and are without fillets.

The general proportions of the Corinthian and Composite are the same, and they differ but slightly in their mouldings and enrichments. The base of both Corinthian and Composite is the Attic. The flutings of the shaft are, as in the Ionic, twenty-four, and divided by fillets. The capital is composed of two rows of acanthus leaves, eight in each row, and the upper row is placed between and over the divisions of the lower row. Four spiral volutes in each face rise out of two bunches of the acanthus leaf, and two of them are connected at the angles, and support the abacus formed of a cavetto and fillet, and an echinus, which are, except the fillet, sometimes enriched. The face of the abacus is formed of the segment of a circle, whose extremities are supported by the spiral horns, or volutes. The connected ends of the abacus form a narrow face, round which the mouldings are continued, although in some rare instances these ends are pointed by the intersection of the two curved faces of the abacus. The leaves and volutes are carved round what is a continuation of the shaft, formed into the shape of a bell reversed. The lower row of leaves generally follow the line of the shaft, which is considered the best system of setting them off round the bell, although the Temple of Vesta at Rome has the leaves projecting beyond the shaft, and Inigo Jones has adopted this system in the Banqueting-house at Whitehall. The Corinthian architrave is divided into three faces, the Composite into two. The upper face is surmounted with an astragal and ogee enriched with a fillet; the middle face has above it a small enriched ogee, and the lower face an enriched bead. The frieze is enriched with figures or ornaments. The cornice is distinguished by its modillions, the latter are supported by an ogee and astragal enriched: the former by an enriched echinus and astragal. The modillions, which is set at intervals under the cornice, will be better understood by the annexed view of a modillion of the Temple of Jupiter Stator, showing also the soffit, or under-side of the corona, with the enriched panel between the modillions. The modillions support the corona, which
s terminated with a cymatium, and this moulding in the example before us, is decorated with lions' heads.

In the Composite, mutules are sometimes employed instead of the Corinthian modillion. The orders are sometimes set on pedestals, consisting of a square shaft, called the dia, with a moulded base set on a deep plinth. The dia is surmounted with mouldings forming a capital, but in reality resembling more the corona of an entablature. Chambers allows, for the proportion of the dia of the Tuscan pedestal, two modules, twenty-four minutes; for the Doric, three modules, six minutes; the Ionic, three modules, eighteen minutes; and the Corinthian and Composite, four modules. The bases and capitals are respectively—Tuscan, base twenty-eight minutes, capital fourteen minutes. Doric, base thirty-two, and capital sixteen minutes; Ionic, base thirty-six, and capital eighteen minutes; and Corinthian, base forty, and capital twenty minutes.

Greek mouldings vary from the Roman, and are remarkable for being almost invariably drawn by the hand, and not formed, as in the Roman examples, of parts of circles struck with the compasses.

The flutings of columns vary in the depth and form of their curvus; some, as in the Doric orders, are flat segments, without fillets between them, others are deep segments and semicircles, and others are semi-elliptical, and sometimes more than semi-elliptical, on the plan, as in the Jupiter Stator. Some columns of antiquity are decorated with spiral flutes, and some with leaves, as in the Temple of Cithaenum, and in a fragment in the British Museum. Townley Marbles, room IX.

The method of drawing the entasis of the columns employed in Roman architecture is described by Chambers, p. 114 of the Preface. It is done by means of a sliding rule, called the rule of Nicomedes.

Some account of the entasis of columns, by Mr. Jenkins, is given in the 4th vol. of Stuart's 'Athens,' with comparisons of the entasis of several columns. The Greek entasis is more subtle than the Roman.

We may here observe, generally, that the principle of a base is support, which is admirably shown in the Attic base, wherever the two tori are proportioned and arranged, with the graceful sweep of the cassetto or hollow moulding between them, to sustain the shaft. The hollow moulding gives additional height to the base, and the profile is in no part within the perpendicular line of the shaft, which would give it a weak appearance. The annexed variety of bases, from Greek examples, present some of the beauties and some of the defects even of Greek architecture. The base of the Apollo Dидymaeus shows weakness, and the torus of the Minerva Polias, at Priene, appears too heavy for the delicate astragals and cassettes beneath.

Some columns, instead of being fluted the whole height of the shaft, are, for about one-third from the base, made polygonal, each side being the width of the flute. This is particularly the case at Pompeii, where the Doric columns are often very slender. In the interior of the Pantheon, the flutings are filled with cabling about one-third of their height. Cabling is a carved band projecting out of the fluting.

A Modillion or Console of the cornice of the Temple of Jupiter Stator at Rome.

![Image Description](attachment:image1.png)
of the intervals between the companies or battalions of which it is composed.

The armies of the Greeks and Romans may be said to have been generally formed in columns both for attack and defence. The troops having nothing to fear, in their 'serried' ranks, from a distant artillery, could, by such a disposition, more effectually command the enemy than, if on the defensive, resist the shock of his assault: and even after the use of fire-arms was introduced in war, and the successes of Gustavus Adolphus had proved the advantages of a different order of things in our day, many, for the sake of preventing the prejudices which attached them to the practice of keeping the troops in dense array. The Chevalier Polard, in his 'Traité de la Colonne,' has given at great length every argument that can be brought on behalf of this practice; but compared the column to a moving rampart capable of resisting every effort of the enemy to penetrate through it, and in this respect he considers it far preferable to a hollow square: he compares it also to a torrent hurrying away the enemy by its fearful impetus. He observes besides that it may be deployed and re-formed quickly, and that it can easily accommodate itself to any evolution which may be required. Lastly, he contends the opinion that its order will be destroyed by the effects of the enemy's fire, alleging that while the column is in motion, a distant cannonade is nearly harmless.

Such also are nearly the arguments lately used by Bulow and Jomini in favour of the system of attack by columns. The enemy's disadvantages by this superiority tactically, as the general practice of Napoleon, which was to concentrate a great body of troops opposite some one point of an enemy's line, and lead them to the attack. It must not however be forgotten that had the French, not according to Rogniat, the defeat of the French at the battle of Eylau was caused by the failure of an attack made in that manner against the centre of the Austrian line. In Spain, and on the field of Waterloo, their columns were invariably repelled by the firm resistance opposed to them by the British line of battle.

It is evident however that the advantage of attacking in columns will be great when the force of the enemy is too much dispersed, and when his line has been previously dispersed by a fire of artillery directed against it; for then a great body of men may be thrown upon a point which is too feeble to resist it, and the line will be penetrated or turned before troops can be brought up from the remoter parts to check the assault. The duke of Wellington appears to have always deployed his columns in line previously to making an attack, and his successes prove the merit of the practice; but it requires great skill in the commander to choose the proper moment for executing it. The column should take place at too great a distance from the enemy's line, since the impediments of the ground may cause that of the assailants to be broken again before it arrives at the place where the charge is to be made; neither should it be postponed till the whole of the columns of the enemie, since then the fire of the latter might cause such confusion among the troops as to render them incapable of executing the manœuvre.

The marches are necessarily made in columns, the breadths of which are of course regulated by the nature of the roads along which they are to move. When an army divided into columns has to proceed by different routes into a new position, the number of battalions of which each column is to be composed may be determined, that all the columns, by arriving at their places on the ground at the same time, may be enabled immediately to form the line of battle.

COLON (COLON). [MADREPAVILLAICA.]

COLUMN। (a1 κολώνα, colōn). The term was originally applied to any great circles of the sphere passing through the poles, but came at last to mean only the circular path of a star, or the equinoctial and solstitial circles, which are distinguished as the equinoctial and solstitial colures. These terms are now of very little use, as the fact of a star being upon either circle is attended with no remarkable phenomenon. One would be disposed tocribe a star on the equinoctial circle as having either no right ascension, or twelve hours of right ascension, according as it is on the vernal or autumnal half of the circle; and a star on the solstitial circle as having either six hours or eighteen hours of right ascension, according as it is on the summer or winter side of the heavens. If we say that the sun is on the equinoctial circle at the quarter days of March and September, and on the solstitial circle at those of June and December, we rather elucidate the term colure than derive information from it.

The solstitial circle, as a disposition through the poles of the ecliptic also, and might be called an ecliptic colure; but the other circle, which passes through the equinoaxes and the poles of the ecliptic, has no distinct name, and would be best described as the circle from which celestial longitude is reckoned, with difficulty by the observer, the point where the circle cuts the ecliptic being out of sight.

COLOURI. [SALAMIS.]

COLUTEA, a Papilionaceae genus of Exogenous plants, consisting of hardy shrubs, with pinnate leaves and indigo flowers. The practice of growing and feeding them for the sake of their leaves, which are much used for food, has been much encouraged of late years, and they are now universally cultivated for the sake of their leaves, which are much used for food. The species have yellow or yellow and red flowers of some beauty; and are all found either in the South of Europe, in Palestine, and in the mountains of the Himalayas.

COLVILLE, JOHN, of the family of Colville, of East Wemyss, county of Fife, was sometime minister of Kilbride, and chanter of Glasgow, of which latter office the church of Kilbride was the appropriate prebend; but disliking the poverty which, on the Reformation, had become incident to the condition of a Scots clergyman, he abandoned that profession about the year 1578, and was in consequence ordered by the General Assembly 'to be taken out of his office of minister' (M. Deb., session 1578). He was introduced to court, and the following year we find him attending the Privy Council as Master of Requests. (Act. Parl. iii. 150.)

He was afterwards engaged in the treasonable conspiracy of the Raids of Ruthven, and was on that occasion sent by the party that had seized the king's person as ambassador to Queen Elizabeth, who had favoured the enterprise. On the king recovering his liberty, Colville was seized at the instance of Arran, and was committed to Edinburgh Castle, and on the 22nd of August, 1584, forfeited in parliament (Act. Parl. iii. 334, seq.) His forfeiture however was in all likelihood reversed, and himself restored to his full estates; for on the 23rd of June, 1587, he was appointed by the king a lord of session in the room of his uncle, Alexander Colville, commissary of Culross, who resigned, 'because through great sickness he could not await and serve the cure of the said senatory.' (Books of Sean. R.) But Colville's authority, on the 21st of the same month, he gave up the place again in favour of his uncle, and got some appointment, as it seems, in relation to the supply granted by parliament for the king's marriage expenses, probable to the amount of £200, to provide clothes for the king, and other necessaries. (Moyer, p. 159.) About the same time also he sat in parliament for the burgh of Stirling. (Act. Parl. iii. 524.)

He was probably disappointed in his expectations at court, however; for near the time he joined the turbulent earl of Bothwell in his attack upon the king in December, 1591, for which he was again forfeited in parliament. (Act. Parl. iii. 538; Pict. Crim. Tr. 1. 2707.) The next year he accompanied the same nobleman, Sir Holyrood House in a new attack upon James. But the party being discovered and defeated, Bothwell was obliged to flee; and Colville, by betraying his associates, obtained a pardon. Bothwell was afterwards excommunicated by the church courts, and the king then found it convenient to call Colville to thence to France, whither Colville also proceeded. The latter several times requested permission of the king to return, and for that end used various arts toINGTON himself with his friends. In the year 1600, he published at Edinburgh a treatise entitled 'The Palinode, which he represented as a refutation of a former treatise of his own against James's title to the English crown, which, in malice, in time of his exile, he had penned,' whereas, in fact, it was a very short work, not so much an answer as a basis of the action (Hist. 457.) All his arts to obtain his recall to his native country proving unsuccessful, he at length professed himself a Roman Catholic, and became a keen writer against the Protestant faith. In 1601 he wrote a 'Parwest to Ministers of Scotland,' which was printed later in Paris the following year. He wrote also 'Capita Controversia,' and 'De Causa Comitis Bothwell,' who, like himself, had turned Roman Catholic. Charteris (Lives of Scots Writers) mentions another work
the 'History of Sutherland' speaks of a manuscript left by him touching the affairs of Scotland.

He died while on a pilgrimage to Rome in the year 1606.

**COLUMBUS.** [Divers.]

**COMA.** A Greek word (κωμή) signifying profound sleep; a morbid condition of the brain, attended with loss of sensation and voluntary motion, the patient lying as if in deep sleep.

It can scarcely be considered a primary or idiopathic disease; it is rather symptomatic of that condition of the brain which, when in sufficient intensity, produces apoplexy. In fact, it is occasioned by the peculiar condition of mechanical irritation, as when being pricked or pinched, the affection is called Carus. But when the insensibility is so great that the patient indicates neither sensation nor feeling, whatever mechanical stimulus is applied to the parts, the result is the apoplectic remission. Coma. This comatose state invariably accompanies apoplexy, and, as has been stated, coma, when intense, passes into apoplexy.

The abolition of sensation and voluntary motion (animal functions), which constitutes coma, is always attended with a greater or less disturbance of the organic functions. The circulating system is disordered: the pulse at one time is slow and full, and at another quick and small. The respiration is laboured and is commonly post-naturnisally slow.

The power of generating animal heat is almost diminished, the skin being cold and clammy, though there are cases in which the temperature is elevated somewhat above the natural standard. The countenance is usually pale and sunk; the pupils dilated, but in the worst cases contracted; the position of the body is supine; in the worst cases there is a constant tendency to sink down in the bed; the limbs are motionless; and the evacuations, if not wholly retained, which are usually passed without straining.

In coma there is an exhaustion or suppression of the sensorial power; in other words, an abolition of the cerebral functions. This state of the nervous is always attended with a morbid condition of the vascular system. There is either a congestion in the capillary blood-vessels, occasioning obstruction of the blood circulation in the brain, or there is too rapid and violent a flow of blood through the cerebral vessels; or an inflammatory condition of the blood-vessels; or an extrinsic pressure on the brain, an effusion of serum into the cerebral substance. In addition to its disordered motion, there is also sometimes a depraved quality of the blood. There is reason to believe that to some morbid change in the constitution of the blood, the coma incident to bad types and advanced states of fever and other diseases is owing.

The morbid condition of the brain, on which coma depends, may be induced by any of the causes which have been enumerated as constituting the predisposing and exciting causes of apoplexy. [Apoplexy.]

**COMA.** Which may depend on directly opposite states of the nervous and sanguineous systems, requires, in different cases, directly opposite modes of treatment. On the discrimination of the exact pathological condition with which, in any given case, the disease is mixed, and on the remedies employed to that pathological condition, life depends. If coma results from a simple depression or exhaustion of the nervous energy, and be attended with a feeble, irregular, and intermittent pulse, a cold and clammy skin, and a pallid and pale appearance, the smallest quantity of bleeding or purgation will be certainly fatal. In this modification of the affection, not a depressant, but the very opposite, being stimulating treatment is required. The most appropriate stimulants are those denominated the diffusible, such as arsphenamine, camphor, &c.; but remedies of this class, whether used externally or internally, or both, must be employed with caution, and their effect watched with vigilance; for the too violent or the too long continued use of them, may actually superinduce a more dangerous form of disease, and convert simply exhaustive into congestive coma. Counter-irritants are also always safe, and often highly useful; such as blisters to the nape of the neck, or over the scalp, or behind the ears.

When coma depends on congestion of the capillary vessels of the brain; when the pulse is oppressed, irregular, and slow; when the respiration is laboured and laboured, and the countenance is tumid, and of a purple or livid colour, local depriotions, as by cupping applied between the shoulders, or at the nape of the neck, or by leeches to the temples, counter-irritants and active purgatives, constitute the most efficient remedies.

When coma depends on the too rapid and violent flow of blood through the cerebral vessels, or on an inflammatory condition of those vessels, indicated by the full and strong pulse, and the hot skin, the same remedies must be employed, but with much greater activity. Life or death depends on the extent to which these remedies are carried, on the decision which sees how far to go, and the discernment which knows when to stop. [Apoplexy.]

**COMA BERENICAE.** (Constellation), the hair of Berenice, placed among the stars by the astronomer, Conon, in memory of Berenice, the wife of Ptolemy Euergetes. (n. c. 246.) The legend is, that she had dedicated this hair to Venus, in case of her husband's safe return from Asia, and that it disappeared from the temple in which it was placed, and was never seen again till found in the starry heavens, where it now is, close to the tail of the Lion, and passing the median line of that hour in the west of Carus. [Berenice.] Geminus attributes the constellation to Callimachus, who mentions it, as do Catullus and Piny. Ptolemy does not place the stars now belonging to this constellation by themselves, but in the tail of the Lion; and Hyginus makes no separate mention of it. It was constantly mentioned by writers on the sphere, but not figured or catalogued separately, as far as we can find, till the time of Tycho Bræhe.

The principal stars are as follows:--

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The constellation Coma Berenices will be found shut up in the triangle formed by the three bright stars, Areturus, S Leonis, and a Canum Venaticorum. [COMATULA (poetry), Lamarck, Alecto, Leach, a genus of radiated animals. Linnaeus appears to have confounded the form with the other star-fishes; for it is only noticed by him as a species of his genus Asiaires. Neither Gmelin nor Pennant disturbed the arrangement. M. de Fréminville (Noue. Bull. des Sciences,) seems to be the first who formed a genus for it, under the name of Antedon. Leach characterized it generally under the name of Alecto. Lamarck makes it the first genus of his

*This star has been repeated twice by Flamsteed. It is 36 Virgin (Dela.)
first family (Les Stellitides) of his order of Echnodontomastoid
Raduria, placing it immediately before Eurulea. Cuvier
arranges the genus under his Echinodermes Pédiculés; 
observing, that it is near to the division of the Euruleas and
Comutula, and that in the branchial apparatus it has come
under his first section (Free Astereocerinid
-lean) of his second family (Asterocerini
dean) of his third order (Stellallexean) of his first class (Cirriborhadernian)
of his first type (Echinocirrionarian) of zoophytes. Mr. Thomp-
son is of opinion that his Pentacirrion Europeanus is the
young of Comutula.

M. de Blainville, whose observations appear to be founded
on examination of a foreign species preserved in spirit, and
of which he says that its larvae are characterized by
Body orbicular, depressed, membranous; protected above
by an assemblage of calcareous pieces, of which one is
medio-dorsal, with one or two rows of accessory articulated
simple rays, and provided on its circumference with five
great rays, deeply bifid and pinnated, commencing with
three basal pieces. Mouth rather anterior, isolated,
membranous, at the bottom of a star formed by five bifur-
cated channels. A large pseudo-anal orifice at the fringed
corona, lateral to the anal orifice.

The following details of structure are given by the same
author. The body of Comutula is almost entirely mem-
branous below; above, on the contrary, it is protected by a
sort of capsule, which is thick, and composed of calcareous
material, and is held together by a very delicate
hardly distinct skin. This capsule is formed by a centro-
dorsal part, in which two pieces placed one over the other
enter. It is round the first that the auxiliary rays are arti-
culated, and to the second the great rays are joined by
means of their basal part.

The auxiliary rays, whatever may be their number—for
they may form one or two rows—are always simple; that
is, they are composed of simple articulations joined end to
end, and the orifice is terminated in a round orifice.

(fig. 5.) They are never pinnated, and it would appear
that they are not provided with any suckers.

The great rays enter by their base into the composition
of the capsule or cell in which the visceral mass is contained.
Each of them is formed by a simple basal part, and
another much more extended, divided, and pinnated.
The basal part is composed of three joints, a first articulated
with the centro-dorsal piece, a second intermediate, and a
third terminal, with which the two principal divisions of
the ray are joined, and which on that account is shaped into
an angle at its summit. The joints of this basal part
not only articulate with each other, but laterally they touch
the body of the two principal divisions of the ray, by
such a disposition, becoming more and more complex, it
is that the heads of Encrinites and the genera allied to them
are formed. With regard to the pinnate or complex part
of the ray, it is at first constantly double, that is, formed
of two divisions, which are themselves often subdivided in
a variable manner; so that sometimes the comutula bears
a resemblance to a great figure of a sun: each subdivision
is composed of joints in general but little elongated, which
augment but little in number in a given space or propor-
tion as they approach towards the extremity. The
remarkable points are, that they alternately differ a little in
length, and that the longest carry, right and left, on their
internal surface, compressed triangular pinnules nearly
evenly disposed in regular series, and of a number of short articulations.
The result is, that when the
animal is dead the digestion resembles the leaves of
the mimosa, because the pinnules in repose cling to a
object, so that the sensory organs are sensitive throughout
the length of the thallus when they are closed. But the principal
character which distinguishes the great rays from the
accessory ones is, that through the whole length of the
axis and pinnules, the buccal or labial channel, fleshy and
provided with sensory organs, serves as a kind of mouth
star with thick folded borders, and finally at the mouth
which is at the bottom. The star formed by the junction
of the channels of the rays is not symmetrical, that is, its
branches are very unequal; some of which we shall call the
anterior ones being shorter than the others, or posterior
ones. The result is, that the mouth is not at the centre of
the star, but much nearer one side than the other: it is
difficult to be seen in the case of the small species, but
especially of the larger, because in that case the fleshy
series by which we shall presently discuss, and which M.
Lamarck seems to have taken for it. The mouth is deeply
buried in the star of the channellings, is round, unarm,
and composed of several small papillae. The orifice of
which in general is very indistinct, and obtuse, perhaps
in the interior of a large cavity, of which it remains to
speak. This cavity entirely membranous—at least below,
for above and on the sides it is doubled by the solid parts
—surrounds the visceral mass, and detaches itself from all
the rest of the animal, except its mouth, where it is
continued. The internal orifice M. de Blainville was un-
able to discover. It is perfectly smooth, but it is prolonged
externally into a sort of bladder (vesicule), the base of
which is contiguous to the mouth, and abruptly truncated.
This free summit passes even a little beyond the mouth as its
vessels below it. It is pierced by a large gaping orifice,
provided with a circular row of tentaculaform papillae.

This," says M. de Blainville, "is the part which M. de La-
march has named a testa, and which I have considered to
be the vent; it is really neither one nor the other. He
then asks whether it may not be a sort of respiratory or
locomotive cavity, or the termination of the ovum, a question which he was unable to solve, un-
less as much as he could not find the organs last named in
the only individual which he dissected. However that may be,
he adds, "it is at least easy to perceive, from what has been
said of the organization of the Comutula, that these animals
are not only sessile, but that they cannot be distinguished from
other carnivorous echinoderms; and their habits are different, so far as is known."

Probably free wanderers in the seas which they inhabit,
it is asserted that they attach, or rather anchor themselves
to rocks by means of their accessory rays, using the others,
which they extend on all sides, to reach their prey and
bring it to the buccal orifice. It is worthy of inquiry,
whether the Comutula do not make use of the abdominal
bladder for the purposes of locomotion, in contracting it
enough to give rise to a motion which, or rather which
they would call, would be in the same manner as the
mesentery of the species. (Actinologia.)

In the 'Descriptive Catalogue of the Museum of the Col-
lege of Surgeons' (Physiological Series, vol. i.), there is a notice
regarding Aleoto Glaciatae (No. 433, a), which imports that
the species is still alive; and that the visceral mass is contained
in the sub-central opening at the convergence of the radiated
canals to the opening at the extremity of the fleshy tube
which projects forwards by the side of the mouth, forming
a second distinct orifice or anus. Mr. Owen first followed
Lamarck in considering this tubular orifice as the mouth;
but after dissecting a specimen carefully, and considering
the analogy of Aleoto with the other Anterior, he regarded it
as the superannuated orifice, and the sessile orifice at the com-
Bourbon, as a new opening of the anal canals or sinuses,
and consequently the mouth. He is of opinion that this
tubular orifice cannot be the opening of the ovum, be-
cause the ovaries are situated in membranous expansions
underneath the surface of the animal, as will be de-
scribed in another part of the ' Physiological Catalogue.'
That the tubular cavity should be a locomotive organ he
considers most improbable, to use no stronger term; in-
deed the animal is so well provided with movable rays,
that an animal which is placed in such a position less than
the remaining ones, and possessing a thick and fleshy
some respiratory actions are effected by the fleshy tube and
the receptacle is another question, requiring observation
on the currents, &c. while the animal is living, for its
solution.

Pénor states that these Radiata suspend themselves by
the small arms from fuci and polyparies, and in that position
watch for their prey, which they entrap in their spreading
arms. Geographical Distribution. The form is widely dis-
tributed: it occurs in our own seas, and in the southern
ocean. In the museum of the College of Surgeons are two
FOSSIL COMATULIDE.

Goldfuss enumerates four species from Solenhofen (Oolite group). (See Scholetheim, Petrographikunde, p. xxviii, fig. 1-4): and this is doubly important by Dérange, in his tableau, of one from the chalk.

COMBINATIONS AND PERMUTATIONS. By the word combination is usually meant the arrangement and arrangement of the objects, and different permutations of four. The investigation of questions relating to combinations, &c., is the principal mathematical part of the theory of probabilities, and was first considered in detail, with reference to that science, by James Ber

1. The number of permutations having $x$ in each, which can be made out of $X$ quantities, is the product of $x$ terms of the series.

$$X, X - 1, X - 2, X - 3, \ldots$$

Thus out of 10 quantities, there are $10 \times 9 \times 8$, or 90 permutations of two; $10 \times 9 \times 8 \times 7$, or 720 permutations of three; $10 \times 9 \times 8 \times 7 \times 6$, or 5040 permutations of four; and so on. Finally, the number of different arrangements which the whole ten will admit of is the number of changes which can be rung on ten bells, is

$$10 \times 9 \times 8 \times 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1 = 3,628,800.$$  

II. When the whole number of quantities, $X$, contains $a$ which are alike of one sort, $b$, which are alike of another sort, &c., the total number of arrangements of the whole, is not the product of $X$, $X - 1$, &c., down to 1, but that product divided by the product of $1, 2, 3, \ldots$ up to $a$, then by that of $1, 2, 3, \ldots$ up to $b$, &c. This result can be most easily formed by striking out common factors from the numerators and denominators.

III. In the last case, the number of permutations of $x$ out of $X$ being required, no simple rule can be given, but each case must be solved by itself. For instance, how many permutations of three can be formed out of

$$a \ a \ a \ b \ b \ c.$$  

(1.) All being different, 3. 2. 1. or 6. (2.) Where $a$ is repeated twice, we have 6. (3.) Where $a$ is repeated three times, one only. (4.) Where $b$ is repeated twice, we have 6. In all, $19$. IV. The number of combinations of $x$ quantities out of $X$, all different, is

$$\begin{align*}
\text{prod. of x terms of X, } & X - 1, X - 2, &c. \\
\text{divided by } & \text{prod. of x terms of 1, 2, 3, &c.}
\end{align*}$$

Thus out of 10 quantities, the number of combinations of four is $10 \times 9 \times 8 \times 7$, divided by $1 \times 2 \times 3 \times 4$, or 210. The best way of arriving at this result is by destroying common factors, which shows it to be 5. 3. 2. 7. Observe also that we may shorten this process when $x$ is greater than the half of $X$, by finding out, not how many selections can be taken, but how many remainders can be left. Thus the number of combinations of 25 out of 36 is the same as the number of combinations of 11, for 25 can only be taken in as many ways as 5 can be left.

V. The number of ways in which $n$ places may be filled up with $x$ letters, allowing any letter to be repeated in all or any of the places, is $x^n$. This result is correct, but the product of $x, x, x, \ldots$ ($n$ factors in all.)

VI. The total number of combinations of all sorts out of $X$ quantities, from one at a time up to all together, both inclusive, is $2^n$, or 2. 2. 2. 2. \ldots. (i.e., factors in all) diminished 1. Thus out of 4 quantities, or less, there are $2^n - 1$ or 15 different selections: they are

$$\text{abcd, } \text{bcd, } \text{acd, } \text{abc, } \text{ab, } \text{ac, } \text{ad, } \text{bc, } \text{bd, } \text{cd, } \text{a, } \text{b, } \text{c, } \text{d.}$$
Among the curiosities of this subject, it will suffice to mention the following: The number of all possible arrangements of letters, repeated or not, and capable of being pronounced or not, up to words of 24 letters, is of the following order of magnitude. Take a million of millions: repeat it a million of million times: the result is between 1391 and 1392 millions of such numbers. As an instance of the manner in which the dropping of consonants and confusion of vowels may permit possible alterations of spelling, M. de Marain computed that the word Hainaut might be spelt in 2304 different ways, so as to be pronounced in the same way by as many different Frenchmen, or very nearly so.

The most useful proposition in the higher part of the theory of combinations is the reduction of the formula 

\[ (x - 1) \times \sqrt[2]{\frac{x}{x^2}} \]

very nearly;

which is a little too small, but the error is only about the 12th part of the whole: less than 1 per cent. even when \( r \) is so low as 10. The expression can easily be calculated by logarithms. Tables of the logarithms of this product will be found at the end of the Article, 'Theory of Probabilities,' in the 'Encyclopaedia Britannica.' For an instance of the computation, see the 'Library of Useful Knowledge,' 'Examples of Arithmetic,' &c., p. 45.

COMBRAILLES, a district in France, in the former province of Auvergne; it is the north-west part of that province, on the confines of La Marche, and traversed by the upper waters of the Cher, a tributary of the Loire. It is divided into Combraillies, properly so called, of which the capital is Ervaux, or Ervois; and Frain-Alieu, of which Sermin is the chief place. Combraillies is now included in the department of Creuse.

COMBRETA/C/E, an order of polypetalous exogens, with one-celled inferior fruit, the seeds of which are solitary or nearly so, and pendulous, the stamens definite in number, and the petals, free. The whole plant is usually a shrub or tree, with alternate or opposite leaves destitute of stipules, and long slender stamens. The order does not contain any plants of much importance for their useful properties, and, indeed, the majority of them are without any, or for the most part, of a feeding nature, and the kernels of the seeds are estable; they are chiefly valued for their brightly coloured showy flowers, especially in the genus Combretum.

COMBUSTION. [HEAT.]

COMENIUS, JOHN AMOS, was born in 1592, at Comna, in Moravia, from which place he assumed the name of Comenius. His parents were of the sect of Moravian brethren. After studying at Herborn, near Nassau, he retired to Bohemia, and was for a time in the service of the King of Moravia; but that town being burnt during the religious war then raging, he lost his property, including books and MSS., and took refuge at Lesna, in Poland, where he became rector of a Moravian school. He there published, in 1631, his 'Janua Linguarum,' in Bohemian and Latin. This work established his reputation as a philologist, and was translated into most European and some of the Oriental languages. An edition in Latin, English, and French, was published in London, 1639: 'The World Walled up and comblocked and open'd, or else a Seminary or Seed-plot of all Tongues and Sciences.' It is a sort of encyclopedic phrase-book, in 100 chapters, every chapter being devoted to a separate department of the arts, or to various professions, sciences, and trades, &c., introducing most of the words belonging to each, and giving by means of the context an explanation of the same. His 'Orbis sensualium pictus, hoc est, omnium fundamentum in mundum, in vita actionum pictura et nomenclatur,' Latin and German, Nürnberg, 1659, is a vocabulary of technical words, likewise arranged in chapters, but not in connected sentences, each chapter being illustrated by woodcuts representing the objects therein mentioned. These two works resemble each other in many other respects in the arrangement. The 'Orbis' also has been often reprinted, and translated into various languages. A Latin and English edition appeared in London, 1777. Comenius was sought after by several governments for the purpose of reforming the system of public instruction. He came to England in 1638, and afterwards went to Sweden in 1642, where he was introduced to the Chancellor Oxenstiern: but he soon after left Sweden and retired to Elbing, where he attended chiefly to the publication of his works. In 1648 he returned to Poland. On the invitation of Prince Ragozne, he went to Transylvania, where he established a school which he afterwards transferred to Piatik, near Tokay. After directing the school for four years, he returned to Lesna in 1654, but was driven away from thence by the ravages of the religious war which continued in Poland. Lesna was burnt by the Catholics, and Comenius again lost his books and MSS. He at last settled at Amsterdam, where he found a protector in Laurence de Geer, who defrayed the expense of the publication of his 'Opera didactica,' fol., 1657, in which Comenius collected several of his works already published separately. The principal of these are: 1st. 'Novissima linguarum methodus,' a sort of universal grammar, with references to the German, Greek, Hebrew, Hungarian, and Turkish languages; 2nd. 'Janua Linguarum Novissima Clavis,' 3rd. 'Lexicon janaulacum, seu Sylva Latina Linguum,' 4th. 'Schola Ludus,' which contains the basic pieces compressed in the several languages, and Lesna, and in which men of various classes and conditions are introduced, each speaking about his own profession or trade, and using the technical words belonging to it. Comenius's 'Opera didactica' works might even now furnish useful suggestions for a system of elementary popular education. He wrote numerous other works, some historical.

'Historia Ecclesiae Schalonic.' Amsterdam, 1660; 'Historia Persecutionum Ecclesiae Bohemicae,' called also 'Maristrologia,' in Bohemia, Berlin, 1687; 'Memoriae Comenianae,' against the Socinians; 'Antiquitates Moraviae,' which is still unedited; a Map of Moravia, with names in German and Bohemian, Amsterdam, 1627; 'Pedromos Pansophar.' London, 1639, a sort of prospectus of a universal encyclopedia, with the dream of a system of education, to be listened to some fanatics and religious visionaries, who were then making a noise, and he seemed to believe in their revelations. He died at Amsterdam, November, 1671.
COMET (κομήτης, from κομίζω, hair). This term, though no doubt originally derived from the tailed comet of the heavens, yet was at one time pretty generally applied to phenomena of which it may be doubted whether many were anything more than atmospheric meteors. Since the time when others, or, rather, the heroic age of the heavens, was a teaching was considered as the definition of the word:—

a heavenly body, of a luminous and nebulous appearance, which approaches and recedes from the sun, after the manner of a planet. The formation, duration and decay of both the comets which return, and revolve in ellipses, and those which, for any thing established to the contrary, may move in hyperbolae or parabolae.

The present is a epoch peculiarly favourable for finding and calculating the motion of comets, for the physical constitution of comets, the question whence they come and whither they go, and every point on which curiosity could be excited. It must be fresh in memory that in the year 1832 two predicted comets arrived within telescopic reach, one of which crossed the place where our earth was to be a month after. The public attention was roused almost to a pitch of terror, the result of which was that much was written on the subject, and the facts which had lain unnoticed except by astronomers were drawn forth and made as common as any other fundamental points of the solar system. Still more recently still in the history of Halley's comet, for different reasons, both astronomers and the rest of the world fixed an almost exclusive attention for months together. With three comets ranking as planets both in theory and practice, we might almost as well enumerate the astrologers and their predictions. The question of the return of Halley's comet, which, for different reasons, both astronomers and the rest of the world fixed an almost exclusive attention for months together. With three comets ranking as planets both in theory and practice, we might almost as well enumerate the astrologers and their predictions. The question of the return of Halley's comet, which, for different reasons, both astronomers and the rest of the world fixed an almost exclusive attention for months together. With three comets ranking as planets both in theory and practice, we might almost as well enumerate the astrologers and their predictions. The question of the return of Halley's comet, which, for different reasons, both astronomers and the rest of the world fixed an almost exclusive attention for months together. With three comets ranking as planets both in theory and practice, we might almost as well enumerate the astrologers and their predictions. The question of the return of Halley's comet, which, for different reasons, both astronomers and the rest of the world fixed an almost exclusive attention for months together. With three comets ranking as planets both in theory and practice, we might almost as well enumerate the astrologers and their predictions. The question of the return of Halley's comet, which, for different reasons, both astronomers and the rest of the world fixed an almost exclusive attention for months together. With three comets ranking as planets both in theory and practice, we might almost as well enumerate the astrologers and their predictions.

A fair average description of the phenomena of a viable comet is as follows:—

A faint luminous circle is discovered by aid of good telescopes; the appearance increases gradually, and after some little time a nebula appears, that which is more condensed in its light than the rest, sometimes circular, sometimes oval, sometimes even rippled like a star. The appearance still goes on increasing, the nebula round the nucleus becomes less regular, and tail begins to form, which looks as if one side of the nucleus were projected in a stream of light away from the body of the comet, which stream grows fainter as it recedes, and finally ceases without any definite boundary. This tail increases in length, so as sometimes to spread across the whole visible heavens; sometimes there are more tails than one, and sometimes the tail seems broken off in parts; it is generally turned directly away from the sun, but this rule is by no means universal. From times it approaches fleshy, undulating and irregular curve, sometimes nearly in a straight line: it generally crosses the part of the heaven in which the sun is found so near to the latter body as to be lost in its rays; but emerges again on the other side usually in a perfectly straight and length of tail. The phenomena of disappearance are then, in the inverse order, the same as those of its appearance. Frequently it is observed that the dimensions of the comet contract a little as it approaches the sun, and dilate as it recedes.

During such appearances, astronomical observation has always, for the last two centuries, confirmed the hypothesis that the irregularity in the motion of comets arises from their motion combiné with each other, and that the fact that the sun and the earth is either in a parabola (the infinitely elongated ellipse), or in an ellipse so elongated as

to be insensibly different from a parabola within visible limits, or finally in a measurable ellipse, which being an oval curve, ensures the periodic return of the luminaries. In fact, the laws under which the orbit is described are precisely the same as those of the planets to the eye of reason, the only difference being the different visible phenomena. But the stages of discovery were at considerable distances from each other as to time. Aristotle and his contemporaries supposed comets to be igneous vapors formed by the sublimation of snow, and 'in the opinion of Seneca, that comets were species of planets, was a bold and happy advance upon his age. Even Galileo and Francis Bacon were of the meteoric party; though Tycho Brahe had distinctly shown from observation that his comet (Brahe, Tycho) was above the moon in height. Both Tycho and Kepler supposed the orbits to be straight lines. Hevelius (1668) ascertained the concavity of a comet's orbit. Doerfel (1681) is believed to have been the first who laid down the parabolic hypothesis. The Principia of Newton confirmed the physical part of this conjecture (in 1687), and the practical part with regard to the comet of 1680. Newton distinctly calls the old planets planets without tails. The well-known conjecture of Halley, obtained in 1705, that the motion of 24 comets, with his prediction, and its subsequent verification, will be treated under Halley's Comet. We may here also observe, that we shall refer the second periodical comet, as all specific information to Newton's Comet. In the memoirs of the Royal Society, and the Philosophical Transactions of the Royal Society, corresponding to this article, from its having been omitted in the proper place. The steps which have been made in positive knowledge of the orbits of comets since Halley are closely connected with the planets, theory, and will be found in articles on that subject. (Gravitation, planetary theory, &c.)

Resuming the general statistics of cometary orbits, we may observe that in 1662, 1682, 1758, and 1832, 46 orbits were recorded: that 46 had been added up to the year 1781, that 80 orbits had been calculated in 1792; and that in 1831, 137 orbits had been calculated. But it must be remembered that many of these are returns of the same comet; and that many of the old comets are very doubtful.

Having examined the particular evidence for eight reputed appearances of what afterwards became Halley's comet, we can observe that the cases of the return of the comet 1782, 1799, and 1831, established the most ordinary historical fact; and when we state that in one instance at least the original authority for the comet lived ten centuries after the appearance, we leave our readers to reduce the number 415 according to their own judgment.

The present average seems to be something more than one comet in each year; of which, however, it is not to be presumed that one in ten is visible to the naked eye.

Of the 137 comets whose orbits were known, in 1831, M. Arago made an instructive and curious analysis, which we shall here give.

Number of comets which came to perihelion (nearest point to the sun) in different months.

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<th>Month</th>
<th>January</th>
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The number in winter is 81; in summer 56. This probably arises from the facility which long nights and feeble sunlight give to the discovery. Of these comets 69 moved directed (in the order of the signs of the zodiac) and 36 retrograde. The three following columns show, 1. the number of comets of which the orbits were inclined to the ecliptic between 0° and 10°, 10° and 20°, &c.; 2. the number in which the longitudes of the descending nodes (in the sign of the zodiac) were between 0° and 30°, &c.; 3. the number in which the longitudes of the perihelia were between 0° and 30°, &c.
from which it seems that great inclinations are more probable than small ones, that the nodes of comets are pretty equally distributed in the two halves of the ecliptic, but that the perihelia seem inclined to cluster about the summer and winter solstices. Laplace, in applying the theory of probabilities to the subject of the inclinations of the ten planets, which are not altogether as great as any one of them might have been (or 96), ascertained that it was ten million to one in favour of some special cause for the inclinations of planets being what they are. But on applying the same analysis to a large number of comets, he was not able to detect as much as three to one for a similar supposition in the case of comets.

With regard to the magnitude of the perihelion distances, it was found that—

Nearer than Mercury there were 30 comets

Between Mercury and Venus there were 210 comets

Between Venus and Earth there were 270 comets

Between Earth and Mars there were 270 comets

Between Mars and Jupiter there were 270 comets

Further than Jupiter there were 340 comets

or the number of perihelia does not by any means increase in proportion to the spheres within which the several planets are contained. If the perihelia were distributed throughout the system as thickly as between the Sun and the orbit of Mercury, there would be three millions and a half of comets within the sphere of Uranus.

With regard to the periodic time of comets there is little to be said, owing to the small number of verified instances. Encke's comet revolves in 3 years, Biela's in 62 years, Halley's in 75 years (roughly): these are the three verified instances.

Of predictions remaining for verification we have the following (Airy, Rep. Brit. Ass. vol. 1.):—

1807

Year of Comet. Supposed Period. Authority.

1807 1543 years Bessel.

1811 (celebrated) 3383 Bessel.

1815 2898 Argelander.

1818 72-77 Bessel and others.

1819 (2nd comet) 55 Encke.

1819 (4th comet) 38 Encke.

1821 12 Encke.

1822 (2nd comet) 1500 Encke.

1823 (3rd comet) 1871 Rumker.

1825 (4th comet) 256 Bessel.

1825 (?) 265 Moscovi.

The short comets of 1819 have not been seen again, but this is not conclusive, as they were excessively feeble, and were very near the earth when observed. It must be remembered that these determinations are not of very high probability, since a determination of the length of the major axis is very uncertain from observations made near the perihelion, and comets are visible at no other time. The time of a comet's duration must be determined by its position, and the major axis of a comet's orbit very completely; but it is difficult to determine the major axis with sufficient correctness by any other observations.

With the general knowledge of the orbits of comets, we shall only further remark that an instance which might once have led to doubts regarding the universality of the Newtonian principle, has become a striking confirmation of it. We allude to the comet of Lexell, which appeared with brilliancy in 1770, and remained in the heavens for several months (as was found) moving in an elliptic orbit of five and a half years in period. But it has never appeared again. It was found however, from theory, that a near approach to Jupiter in 1767 changed an orbit of long period, if not a parabola or hyperbola, then in course of description, into the ellipse just alluded to, and that an orbit of long period was afterwards restored by the action of the same planet; it being easily shown that it would depend on the relative positions of the comet, the sun, and Jupiter, whether the perturbations of this would lengthen or shorten the period. This must have appeared a pure hypothesis to all who could not verify the process; it must have seemed that the perturbations of a planet were always ready to explain the disappearance of a predicted comet. But in the meanwhile, more than the half century has passed since it was first appeared, and it has been proved by the instances of the three verified periodic comets, that the calculated perturbations will enable astronomers to predict with great exactness the actual place in which a comet is to be seen. Consequently, to the appearance of the comets which, if the Newtonian theory be correct, should appear, we may add the disappearance of those which on the same supposition should disappear. But it is hardly necessary now to insist on such comets.

We leave the certain and numerical field of observation of orbits, and proceed to what we know of the constitution of comets. The most interesting question is that of their masses—are they solid, or more clouds of gaseous matter? Do they derive light from the sun, or are they luminous of themselves? Do they gradually waste away, or do they continue at the same magnitude and intensity of light? These are the only questions which it is worth while to attempt to decide, supposing the only one of these hypotheses for which concrete can be given. The question relative to the masses of the comets has been pretty well settled. It may be stated as a certain fact, that though several comets have been placed in situations in which a satellite of an earth-like kind would have produced sensible effects of perturbation, no such effects have been produced. The comet of 1770, it had been only the five thousandth part of the earth, would have altered the length of our year more than that of time, which must have been observed again and again before now. The same comet must have passed in 1779 between the satellites of Jupiter; but it had been the fiftieth part of one of them in mass it must have affected that system sensibly. The comet of Biela came in very near the earth in 1832; note the smallest effect of perturbation has been observed. But the question has been lately brought within still narrower limits. The tail of a comet, supposing it to consist of matter like the gaseous on our earth (on which supposition every speculation must proceed), is a continual efflux from the body. It is impossible that a permanent atmosphere could be in equilibrium under such a form. The attraction of the body of the comet itself upon such an atmosphere must be exceedingly slight. Again, it is known from the old planets that if space be filled with any fluid, such a fluid must be excessively rare and elastic, or it would show some effect in gradually causing the planets to approach the sun, and shortening their orbits. The speed of rotation at the same receptacle has been observed: not that small accelerations cannot be detected, for that of the moon (Lunar Torsion) depending on other causes, has been detected, though only amounting to a minute of space in six centuries. Nevertheless, just in the same at the tail of the comet, it shows to the sphere, though that of a bit of lead does not, it may happen that a fluid pervading all space, and so rare as not to affect the planets sensibly for many thousands of years, may soon show itself on such a mass as that of a comet. According to the observations of Encke, the comet which bears his name is gradually shortening its period, at the rate of something less than one day out of 2500, being precisely the sort of effect, and up to this time the only known effect of the attraction of the sun, as a resisting medium. A translation of the memoir of Encke on this subject was published by Professor Airy in 1832, and both the author and translator declare themselves perfectly convinced of the accuracy of the conclusion. M. Arago seems to be of the same opinion, as does M. Poisson. We cannot go such a length; for though we should not be willing to assert a positive conclusion against such authorities, we are obliged to suspend our opinion, and until the case is brought to an issue, or until some decisive proof shall be given, that the probable errors of terms rejected in the approximation to the perturbations are not sufficient to explain the phenomenon. But in the time a resisting medium is established: this conclusion is one of considerable probability; and feel inclined to expect that when the comets of Biela and Halley shall be as well known as that of Encke, we will confirm the result.
It is most probable that a comet is altogether gaseous, without any solid matter whatever. Stars have been repeatedly seen through the thickest parts. Sir J. Herschel, for instance, has reported seeing in many such regions a luminosity which appears nearly definite, and magnitude almost through the centre of Biela's comet. We shall on this subject content ourselves with citing some authorities.

Sir Arago.—"I think we should conclude, 1. that there are comets without nuclei; 2. comets of which the nucleus is perhaps transparent; 3. comets more brilliant than the planets, of which the nucleus is probably solid and opaque.'" Sir J. Herschel.—"Whenever powerful telescopes have been employed, they have not failed to dispel the illusion which attributes solidity to that more condensed part of the head, which appears to the naked eye as a nucleus; though it is true that in some a very minute stellar point has been seen, indicating the existence of a solid body.'" Mr. Green.—"Nothing more important has been learned, except that they appear to be wholly gaseous.'" We cannot help being convinced that every probability leans towards the truth of the gaseous hypothesis. If this be true, we might as well attempt to ascertain how far a cloud which is driven against a mountain will tend to break off the top, as speculate upon any mechanical danger to the earth from contact with a comet. The effect of such a cloud against the atmosphere, amounting to 24 or 31 billion tons, would be immense, being equal to the removal of all the coal of the world in a few minutes.

That comets receive their light from the sun is made evident by their alterations of brilliancy. If they shine by their own light, the size would vary with the distance, but that is not the case, as the stars in 67, 19th year, 15th of May, 1853. But nothing like phases have been observed, except in a very few instances, which are satisfactorily shown to be either doubtful as to the fact, or not such phases as should have been, the position of the sun and earth being considered. This absence of phase is in favour of the supposition of an irregular gaseous mass.

If we take all the recorded accounts, we should certainly be inclined to imagine that the whole system of comets is diminshing in brilliancy and magnitude. But these accounts were written under the bias of terror, and must be considered as most probably exaggerated. It is impossible to see how the waste which arises from the tail can be reabsorbed by the comet itself. It might be possible, however, that the comet of Halley, which in 1682 was as round and clear as Jupiter, was not visible to the naked eye in 1759, and in 1836 exhibited a medium brightness, being then in a much more favourable position. The question as to waste is therefore mixed up with others, from which it cannot at present be separated.

The nuclei of comets (so far as observed) have varied from 30 to 3000 miles; the lengths of their tails from nothing up to more than a hundred million miles.

The following are references to works which are easily obtained:


COMET OF BIELA. In 1805 Gauss found that one of the comets of that year appeared to have a short period of about 1731 days. No prediction was attempted, nor, as it turned out, could have been made successfully. In 1836, February 27th, Mr. Galle discovered a comet which, it seemed, 'he had partly expected, (Rep. Brit. Ass. v. i. p. 163); but whether on account of Gauss's determination, it was not informed. It was soon found, however, that it had a period of about six years and three quarters, or about 2460 days. Its return was predicted for 1832, and it appeared that the orbit crossed that of the earth about a month before the arrival of the latter at the point of intersection. This annunciation excited much curiosity, but the prediction was not verified, as the comet did not pass near enough to be picked up.

Mr. Airy in his Astronomische Nachrichten, No. 103. To each element is annexed the effect which could be produced by the discovery of an error in the major semiaxis of the ellipse, amounting to 11.66. The perihelion passage is mean time at Paris.

Parabolic passage 21.39297 Nov. 30th 1230566.0 6665767 a a
Inclination 13°13' 39°45' 51°54' 31
Long. Asc. Node 249 15 15 14 6°719 7
Dist. of perih. from asc. 221 45 3 96 4°186 5

Perih. distance, Earth's distance being 1

0°8790998 + 0°0000854 1 a

Perihelion, major axis = 3.25653 + 0.01 a

COMET OF ENCKE. [Encke's Comet.] COMET OF HALLEY. [Halley's Comet.]

COMINES, PHILIPPE DE, Lord of Argont, was born at the chateau of Comines, near Menin in Flanders, about 1445. His father was in the service of the King of France, Charles the Good, Duke of Burgundy, who was also sovereign of Flanders, and Philip himself was early introduced into the court of Charles le Teméraire, Philip's son, whose counsellor and favourite he became for a time. When Charles made Louis XI. prisoner at Pavia in 1495, Comines exerted all his influence to culminate the master's violent temperament; he acted as the conciliator between the two princes, and succeeded in bringing about a treaty of peace between them. This timely service was not forgotten by the King of France, and Comines all at once took the service of the Duke of Burgundy, and passed into that of Louis XI., who received him most graciously, and made him his chamberlain and seneschal of the Realm. The reason for the sudden elevation of Comines remained a secret; probably he was tired of Charles's violent temper, and foresaw his impending ruin. Comines married Hedvice, the daughter of Prince of Monseveux in Artois, who brought with her the marriage portion the fiefs of Argenton, Courpay, Brisson, and so forth. Comines was employed by Louis XI. in several diplomatic missions to Savoy and other places. After the death of Louis, Comines having joined the party of the Duke of Orléans (afterwards Louis XII.), who aspired to be regent during the minority of Charles VIII., was arrested in 1466 on a charge of treason, and shut up for several months in an iron cage at Loches, and afterwards transferred to Paris, where, instead of being subjected to humiliation, and his property was confiscated, but the sentence was not executed, and the fame of his abilities induced Charles VIII. to employ him in several important negotiations. He accompanied Charles in his Italian campaign, of which he gives a good account in his memoirs. Previous to the return of the king through North Italy, in the midst of the hostile armies of the Italian princes, Comines was sent to Venice to endeavour to detach that state from the league, but his mission was not successful, and his imprisonment and incarceration at one time suffered severe imprisonment and risked his life, but Louis does not seem to have noticed him by any other means.
marks of favour. Comines returned into the country, and he died at Argentor at Poitou, October, 1509, at the age of sixty-four. His body was transferred to Paris, and buried in the Church of Saint-Denis, where Comines had built himself a chapel. The monument has been transferred to the Musée des Monumens Français. He left one daughter, who married a Count of Penthièvre.

The memoirs of Comines contain the history of his own times, from the year 1464 to the death of Charles VIII, in 1498. They are full of anecdote, of faithful piety, and a good and complete picture of the character of the officer of Louis XII, whom he greatly extols for his political art. He is also a great admirer of the Venetian government. He was a cool and sagacious observer, and seems to have been unfettered by the prejudices of his times.

The two Great value of Comines' Memoirs consists in his frankness and sincerity. He is a matter-of-fact historian; like his contemporary Machiavel, he paints men and politics such as he found them to be, with all their selfishness, craft, and evil doings, which he relates with great impartiality. Those historians are the mirror of their age, and what that age may be conceived by reflecting that Louis XI, Ferdinand of Aragon, the Borgias, Ludovico il Moro, and others of the same stamp, were the contemporaries of Comines. The Memoirs of Comines have been often reprinted, and translated into various languages. The edition by Godfrey and Lenglet du Fresnoy, London, 1747, consists of 4 vols., 4to, of which Mr. Hume, in the first edition, has only given an extract, and of the other three being filled with numerous historical documents and additions.

COMITIA. Comitia originally signified a place of meeting, a council, and was one of the four chief magistracies of Rome. Hence it was called the comitia, and also, from the plain on which the Romans met the Sabines, in order to agree on the terms of a treaty, was called 'comitia.' The plural 'comitia' denotes general assemblies of the Roman people, convened by the constitutional authority of some magistrate, in order to enact or repeal anything by their suffrages. The comitia were also called 'calata,' from calare, to call or convene. There were three kinds of Roman comitia:

1. The centuriae, comitia of the centuriae, which met and voted in curia. Romulus, it is said, divided the whole Roman people into three tribes, and each tribe into ten curiae, which were subdivided into decuria. The word curiae is derived from curare, to take care of or superintend civil and religious affairs. Each curia formed a separate community for the celebration of sacred rites, for which purpose a particular priest, called curio, was attached to each curia, and a decurio to each decuria. But all the curiae were under the suzpreminence of a curio maximum. A separate place, which was also called curio, was assigned to each curio for performing their sacred rites. The members of a curio were called curiales, and had some authority and doubt about the antient constitution of the curia and comitia curiales. However, it seems certain that the curia had the superintendence of sacred matters, that all the public power was united and centralized in the comitia curiales, and that the patrician order must have possessed a great preponderance in them. (See Niebuhr's 'Rome,' vol. i., on the Curiae.) In these comitia laws were made or repealed, capital crimes judged, and the king as well as the other chief magistrates of the state elected. The place of sitting (comitium) was in the forum, and in its northern corner were the rostra. There was no fixed time for the meeting of the curia, but they met as business required.

2. The comitia curiata had instituted the comitia centuriata, and the latter, possessing powerful through the comitia centuriata, the comitia curiata gradually lost almost all political power. However they still passed enactments under the title of comitia curiata, which, before the institution of the comitia centuriata, was done by the comitia curiata; but afterwards that term was limited to express a few political rights, still reserved to the latter comitia, particularly that of granting military power (imperium) to the government and magistrates who were elected in the comitia curiata, which could only confer civil power (protestatio). Finally, the power of the comitia curiata was reduced to a mere formality, and represented, in Cicero's time, by the curiales. Still these curiales retained the privilege of adrogation. Though their political power was lost, the curiales retained their religious functions till the last times of the republic, and always elected the curio maximum and the flamens. Their number was never augmented, as was the case with the tribes.

2. Centuriata. Servius Tullius, according to tradition, in order to diminish the power of the patricians, and to give the plebeians a voice in the government, called a new division of the Roman people into six classes, which were subdivided into centuries. There has been much dispute about this division and the number of the centuries; and the controversy scarcely admits of decision, as the senate and the people were called upon to singultare false names. (Cicero, "De Repub.," ii. 22) are of different opinions. But the nature of the institution is not so doubtful. According to the more probable opinion, the chief classes were composed of 15 centuries of citizens; the second class of 18 centuries of knights and 80 centuries of those "deserti simi" whose fortune amounted to at least 100,000 asses; the second class (ditoris) contained 22 centuries, and consisted of those who possessed at least 75,000 asses; the third class (modici) 30 centuries, of those who possessed 12,500 asses; the sixth class contained but one century of capite censi, i.e. persons counted by head and not by estates: they were also called proletarini, or marini.

According to this division the Roman people met in the comitia centuriata, in order to vote in centuries on public law. In each century, and the plebeians, having counted the votes of the centuries. As the first class alone contained more centuries than all the other classes together, it may be said that, as Romulus had created an aristocracy and a monarchy, so Tullius created a new aristocracy and a democracy by his new division. In order to preserve that advantage, when the plebeians had obtained more power, the century, which was to give its suffrages first, was appointed by lot. The century upon which the lot fell was called praebentem, or the other centuries voted according to the order of the classes, and were called jure vocate. The decision by lot being regarded as a divine omens, the centuriate jure vocate commonly followed the religion of the year and the holydays; thus the power of the first class was balanced in some measure. A contest however sometimes arose whether a matter was to be decided in the comitia centuriata or tributa.

Every Roman citizen (in the best sense of the word, civis optimo jure) had the right of giving his suffrages in the centuries. The magistrates who were competent to call these comitia were the consul, the praetor in the absence of the consul, and the dictator. The magistrates who presided at the comitia centuriata were not lawful; the days on which they could be held were called dies comitiales. The place of meeting was the Campus Martius. Before the business began the auspices were taken, and if they were not favourable, the meeting was declared void, and proceeded the next day; but if auspices were not favourable, the business was opened by reading either the names of the candidates, or the proposition of a law (rogatio). Originally they gave their suffrages aloud (voto rogo), but afterwards by ballots, or ballot; which mode of voting was established by the laws tabellariae, in order to secure the freedom of election. It was not till after a long contest, commenced by the tribune Gabinius, n. c. 140, that the plebeians obtained the protection of the ballot.

As the comitia curiata originated the sovereignty of the people, so, after the time of Servius Tullius, it came into the hands of the comitia centuriata.

In the first place all legislation belonged to these comitia, and the laws were made by the comitia curiata, the comitia curiata, being obligatory upon all the Romans. A law was first proposed both from a decree of the senate (senatus consultum), and from an enactment of the comitia tributa (plebiscitum), which only bound the respective estates of the patricians. The people, a law was to be proposed to the comitia centuriata, it was to be promulgated (promulgata), that is, notice of it was to be given on three market-days before the day of assembly. The proposed law being assented to by the people, the people, by the term "per ferar," was, after being confirmed by the people, engraved on a public tablet and deposited in the aeraum. Henceward all magistrates, both ordinaries and extraordinary, were elected at these comitia, as consuls, praetors, censors, decemvirs, and military tribunes. Those who
sought for office appeared in a white toga (toga candida, and hence they were called candidati) before the people on three previous market-days. The candidate who was elected was proclaimed by the praeco, orcrier; and if this formality was not observed the election was null. Until the magistrate elected entered upon his office he was called ‘designatus.’

The comitia centuriata were also the court of the people (tyadicum populii), for judging public crimes (crimen pub licum), crimes against the state or people; as for example, attempts upon the freedom of the people, attempts of individuals to seize on the sovereign power, insult to or the murder of a tribune. Such crimes were called crimina perduectionis, different from the crimes majestatis. (Helleme, Antiq., iv. 18, 46 and 47.)

3. The Comitia tributa were the comitia wherein the Roman people met and voted according to tribes. The plebeians having acquired considerable power in the state, these comitia were established, a.c. 491. Neither birth nor fortune gave advantage in these comitia, as was the case in the other comitia. Every Roman citizen who was classed or registered in a tribe was permitted to vote in these comitia. The place of meeting was not fixed, but the ordinary meeting-place was the Campus Martius; sometimes also the forum or capitol, or Circus Flamininus. The same minute formalties with respect to the auspices were not necessary as at the comitia centuriata. The electing the tribune, who also presided, if tribunes or ediles were to be elected; but at elections of other magistrates, or if laws were to be made, consuls and praetors also might preside.

In addition, subordinate minor inferior magistrates, ordinary and extraordinary, were elected in them, as tribunes, ediles, questores, proconsuls, and propr torii; the election of the pontificem maxime, and of various other religious functionaries, was made in these comitia. They also sat in judgment in certain inferior cases; but for capital punishments the comitia centuriata only had competent authority, and the trial of Coriolanus, as the story has come down to us, must be regarded as an anomaly and an accident.

It has been already mentioned that enactments made by the comitia tributa were called plebiscita, and at first bound only the plebeians. But as the power of the plebeians became enlarged by degrees, the plebiscita, after many contests between the plebeians and patricians, were made equal in effect to the legis, by the lex Hortensia, a.c. 288. (Gaius, i. 1.) From this time these comitia possessed the complete legislative power, thoroughly independent of the senate. Any plebeian enactments for making war or peace, or granting a triumph, were frequently pressed against the will of the senate.

In the later times of the republic, the management of the comitia became an important object both for ambitious aspirants to power, and for those who wished to maintain the rights of the people. Caesar, after being made perpetual dictator, virtually continued them authority by himself appointing consuls, and naming half of the other magistrates; and finally, the elections of the comitia became a mere formality.


COMMA, in music (σύμμε) is the difference between two sounds whose ratio is 81: 80, or the difference between the major tone, c (♮) and the minor tone, c (♯). Practically considered, the comma is the ninth part of a major tone. The object is to be obtained in the interval inappracned by Salinas asserts the contrary. Maxwell (Essay on Tune) agrees with the latter, and gives the following rule for tuning the comma. Obtain a, stopped as the octave to the fourth string (the violin), and the note taken as the greatest sixth below the first open string, must be a comma. We refer those who wish to go deeper into this matter to Smith’s Harmonics. But the clearest and fullest information on this subject is to be found in the Théorie Acoustique-Musical de M. Suresein-Missery.

COMMAGENE, a small district on the west bank of the Euphrates, between the river and the range of Taurus; is included in the modern provinces of Gaziantep and Mardin in the central part of Asia Minor. The chief town was Samosata, a fortified place, which contained a royal residence; it was the birthplace of Lucian. The Zeugma, or one of the great passes of the

Euphrates, was in Commagene; and on the opposite bank, in Mesopotamia, was the town of Seleucia, in which Cleopatra, who had the name of Selene or Moon, was besieged by Tigranes, and being taken prisoner, was put to death. When Pompey the Great conquered Syria, he left the little principality of Commagene to Antiochus of Commagene, who, according to the treaty of Antioch, Eusebios, who died a.c. 58. Antiochus XIV., probably his son, was king of Commagene a.c. 36, at the time of the expedition of Ventidius, the legate of M. Antony, against the Parthians.

COMMANDERY, a species of benefice attached to certain foreign military Orders, usually conferred on knights who had done them some special service. According to a statute, these Commanderies were of different kinds and degrees, as the revenue of the Order of Malta, for instance. The name of Commandery in the order of St. Louis was given to the pension which the king of France formerly assigned to twenty-four commanders of that order, of whom many received as much as sixty thousand crowns each. The Order of Malta had commanderies of justice, which a knight obtained from long standing; and others of favour, of which the grand master had the power of disposal.

In England, Commanderies were the same amongst the Knights Hospitallers as preceptories had been amongst the Knights Templars, viz., societies of those knights placed upon some of their estates in the country under the government of a commander, who were allowed proper main tenance out of the said estates. The Order of St. John of Jerusalem (as the present order is called) has a special establishment for the remaining grand priors and grand officers. The name of Commandery in the order of St. John is given to the pension which the sovereigns of the Order of St. John of Jerusalem, and the Grand Masters of the Knights of Malta, have at different times granted to the preachers who have been elected by the brethren of the Order of Malta, to hold these establishments as the term commandery. (Pureutire, Dictionnaire Universel; Tanner, Notitia Monastica, edit. 1787, pref. p. xv.; Dudgale’s Monasticon Anglicanum, last edit., vol. vi., p. 60.)

COMMANDINE, FREDERIC, born in 1509, at Urbino, of a good family, was at first in the service of Clement VII., after whose death he studied medicine at Padua. Unsatisfied with the state of this science, he applied himself to mathematics, and finally settled at Verona as the instructor of the Duke of Urbino and his son. He died there in September, 1575.

This is all that is generally stated as known of Commandine (though his life is only little known), except the evidence which his writings afford that he is to be placed at the head of all the commentators on the mathematics of the Greeks, whether as respects the care which he took to select and print valuable remains, or the number of works which were devoted to him) or the knowledge which he displayed in the treatment of difficult and corrupt texts. The list of works which we have collected is as follows. The dates stand at the beginning, and separate to the titles.

1558, Venice: the Pammnestes and Statutarie Treatise of Archimedes, in Latin, with notes (from a bad text).
1558, Venice: Ptolemy’s Planisphere, with commentary, in Latin: in the same book is Jordanus, also with a commentary.
1563, Rome: the Alemanea of Ptolemy, with commentary. The original is lost, but a mutilated Latin version was found by Commandine. With this came his own work on Horology, printed at Venice. 1565, Bologna; and 1568, at Florence. Flos Mathematicarum. The first edition, 1570, Bologna (and several other editions): Latin version of the four books (then known) of Apollonius, with the commentaries of Pappus, the commentary of Euclides, and the book of Serenus on the Section of Cones and Cylinders. 1570, Pesaro: the book of Mohammed of Bagdad, on the division of surfaces, which John Dee, who found it, attributed to Euclid, and gave to Commandine. A translation into English, with Commandine’s preface, is appended to the preceding book of José’s Rudolph. 1600, 1572, Pesaro: Euclid in Latin, fifteen books with scholia, in folio. An Italian version of the books most commonly read, under Commandine’s inspection, appeared at Urbino in 1560, and at Paris in 1563. Flos Mathematicarum, with notes. [ARISTARCHUS.] 1575, Urbino; and Amsterdam, 1680: the Pneumatics of Hero, with Latin version and notes. 1588, Pesaro; again in 1602; and
Venice, 1589; last, at Bologna, 1660, edited by Mano-lesius: the mathematical collections of Pappus, books 3-8 inclusive, being all which remain, folio. It is sometimes stated that the edition of Pappus appeared in 1538, which is not correct, as Commandine died before the publication, which was superintended by his son-in-law, Valerio Spaciali, as explained in the preface.

COMMELIN, JEROME, born at Douai, in France, in the sixteenth century, embraced the reformed religion and retired to Geneva, where he carried on the business of a printer. His abilities both as a printer and a scholar, which, in that age, were often united in the same person, attracted the attention of Frederic, Elector Palatine, who invited Commelin to Heidelberg, and made him his librarian. At Heidelberg he published editions of several Greek and Latin authors, which were valued for their correctness; among others of Eunapius, the text of which he corrected by the MSS. in the Palatine library of Heliodorus, Apol-ladorus, &c., to which he added critical notes. He also published a handsome edition of "Rerum Britannicarum Scriptores Vetustiores," fol., under the Ptolemaic date of Lyon, 1587, dedicated to Frederic, Elector Palatine. This collection consists of Geoffrey of Mommoth, Poutius Virunius, Gildas, Bede, Gulielmus Neobregenis, Froissart, and Buchanans "De Jure Regni apud Socios." Commelin died in 1589. He has been praised for his ac-curacy and learning by Scaliger, Casaubon, and De Thou. Another of the same name, and probably of the same family, was a printer at Leyden in the seventeenth century, and published a valuable edition of Virgil, with Servius' Commentaries and numerous notes, 4to., Leyden, 1646.

COMMELINA CEEZ, a very small order of triquetra-oiduous endosperms, consisting of plants with sheathing leaves, white or most frequently blue flowers enclosed in green spathe, and a single three-celled ovary terminated by a single style. They are moreover remarkable for their pulpy-shaped (or trocheal) embryo lying in a particular cavity of the albumen. None of the species are European, nor of any known use. Many of them are common Indian weeds; others are handsome American herbaceous plants. The common Spiderwort is a good type of the order.

among others, 'Hollansch Plaatsch Boek, or Collection of the Acts of the Government of Holland,' 2 vols. fol., Amsterdam, 1664; also a "History of the Enthusiasts," 4to., 1646; the 'Lives of the Stadholders William I and Maurice of Nassau,' fol., 1651; and the 'Life of Frederic Henry of Nassau,' which was translated into French: "Histoire de Frederic Henri de Nassau et Actes Maritimes," by Henri de Nassau, Prince d'Orange," fol., Amsterdam, 1665; which is an interesting historical work. He also collected the materials for a description of Amsterdam, which was published by his son, Caspar Commandy, 1694, 2 vols. fol., according to the "Onder de Univers." Beijer, in "Boek der Oudheid," ii. 290, tot den jaar 1601," fol., 1691, with plates; a second and enlarged edition of which appeared in 1726. It is considered a very good account of that important city.

Isaack Commandy, son of Isaac, who, as a senator of Amsterdam, published, in 1697, a work in folio, with very fine plates, of the new plants then growing in the Medical Garden of that city. Caspar, the nephew of John, gave to the world a second volume in 1702, after which he became the author of the "Acta Plantarum in quatuor volvis." At that time the Dutch held in their hands the commerce of the cast, and the Commandy were among the first who made known in Europe the curious plants of the Cape of Good Hope.

COMMENDAM, from 'commenda,' a term of the canon law, which, according to its original signification, was ap-plicated where the custody of a void ecclesiastical benefice, during the avoidance committed by the bishop or other superior of a person who was to discharge the spiritu-al duties attached to the benefice without meddling with the profits. The person to whose charge these duties were committed was said to hold the benefice in commendam. In process of time this practice of commending the profits gerated into an actual perception of the profits, and the device of holding livings in commendam was found by the ecclesiastics of the middle ages a useful method of eroding the provisions of the canon law against pluralities. [BENEFICE.] By the law of England, no benefice can be held in commendam without a licence from the crown. The instance in which this prerogative has been most frequently exer-cised is where the person of a parish has been made bishop of a see, and the revenues of which were intent to supply the dignity of the station. The only way to prevent the avoidance of a benefice by promotion to a bishopric, is to grant a licence to retain it in commendam. This dispensa-tion is called a commendam capere (Burn's Eccles. Law, tit. Commendam.) It must be obtained, before consecration, in case of a person being raised to the episcopal dignity for the first time, or before confirmation, in case of a translation from one see to another. The effect of it, when so obtained, is to preserve the induction, or other means by which the person obtained the benefice, in full force, notwithstanding his promotion. But if the dispensation is not obtained till after consecration or confirmation, the benefit is lost too late. There is, however, another kind of dispensation, called a commendam capere, which enables a bishop to take a benefice after consecration or confirmation. The consent of the patron of the benefice is essential to the validity of a commendam. Such consent, therefore, must be obtained in due form before a commendam capere will be granted, except where the bishop who seeks the commendam, or the king, is patron of the benefice. In the former case, the acceptance of the benefice, in the latter the grant of the commendam, is sufficient evi-dence of the patron's consent. In the ordinary case where a commendam retirere is required on account of the incumbent being made a bishop, the king or himself patron of the benefice for that time by the promotion, he must therefore no other dispensation but that implied by the grant of the dispensation is necessary. Not only dignities and benefices, but headships of colleges and hospitals, may be granted in commendam. Seve-ral instances of such grants are mentioned by Dr. Burn. A licence to hold a benefice in commendam may be trea-
temporary or perpetual. When it is temporary, the precise time is limited in the dispensation. When perpetual, the dispensation expresses that the incumbent shall hold it so long as he serves suitably and with dignity, office or benefice. He is then to be learned, his benefice to be held in commendam by any bishop, unless he so held the same at the time of passing that act; and that every commendam in future granted, whether to retain or to create, whether temporary or perpetual, shall be absolutely void to all intents and purposes.

COMMENSURABLE. Two magnitudes are commensurable which have a common measure. The peculiar part of this subject belongs to [incommensurables, Theory of, and (Pythagorean), which see.]

COMMERCIO EPISTOLICUM (commerce of letters), a name which was at one time frequently given to published collections of letters, such as were common about the end of the seventeenth century and the beginning of the eighteenth. The first instance occurs in the works of Wallis in the second and third volumes of his works (1693 and 1699), that of Kepler (though his name does not appear in the title-page), published in 1718, and that of John Keill and Abraham Wallis in 1725, and again with a Recensio, &c., prefixed, and notes by Keill and others added, in 1725. It was translated into French, and was also published in a journal at the Hague. Leibnitz only protested in private letters against the infliction of the penalties; but he declared that he would not answer a reasoning so weak: and it appears moreover that he had on his mind an impression that the acrimony excited against him in England was political. He was in the service of the Elector of Hanover, the queen's declining, and many of the men of science were Jacobites.

With regard to the Commercium Epistolicum, and the Report attached, it is obvious that the final conclusion was not to the point. The question was not whether Newton had been the first inventor, but whether Leibnitz had employed the same method. The committee did not attempt to prove that Leibnitz had received the letter which was sent to Paris to be sent to Hanover; nor do they formally venture to assert any belief that Leibnitz was a plagiarist, or that the clergy of Leipzig, wholly unworthy of them, they conclude that because Leibnitz might have seen Newton's letter, &c., which they could not prove, Keill did him no injustice in asserting the priority of Newton's invention—which was not the matter of complaint. Moreover, they published much of their evidence in the form of extract, and their omissions are not always justifiable. It does not appear on the face of the report itself that Leibnitz knew of the appointment of the committee of inquiry, or that his objections or the committee's objections were anything that might enter into the committee's members, or of furnishing any documents relating to the question under consideration. There runs throughout the extracts a desire of proving Leibnitz guilty of more than they meant positively to affirm. The latter acted wisely in appending a postscript: for though partly feeling long adopted the conclusions of the Report in England, it is now nearly, if not quite, the opinion of those who study the matter, that Leibnitz really was an independent inventor.

The part which Newton himself took in the matter at the time is not very well known. In the first edition of the Principia (1687), he stated (book ii., Section to Lemma 11) that ten years before (the scolum must probably have been written in 1676), he had written in cipher a single sentence to Leibnitz as a key to what he informed him was a method of drawing tangents, &c., and that Leibnitz not only wrote in reply, that he had nothing that he could give to the author of the key, and that (he himself) found it to be the same as his own, except in notation and symbols. No doubt it was upon the strength of this scolum that Leibnitz confidently appealed to Newton himself: and we might have imagined that the question of the date of this letter would have formed a part of the inquiry. But we cannot find it alluded to: the publication of the Principia is mentioned in its proper place, without a word as to this scolum; nor is there any mention of it. We were not intended to add, that this scolum was omitted by Newton in the third edition of the Principia (1725), and its place supplied by another, in which the name of Leibnitz is not mentioned, but an account of what Newton had written to Collins in 1676 is given. In the same words. But it must be remembered that between 1687 and 1725 Newton had suffered that illness which perhaps impaired the powers of his mind, and certainly altered his even his manner of expression. The manuscript preserved by Raphson, Feb. 26, 1715-16, he gives an account of the letter of Leibnitz differing in several particulars from the printed scolum.

The Commercium Epistolicum will be found complete in Horsey's 'Edition,' accompanied by additional letters extracted from Raphson's 'History of Fluxions, London, 1715.' The appendix contains the additional letters.
COMMINATION (THE OFFICE OF), a service in the Liturgy of the Church of England. It is called 'A Commimation, or denunciation of God's anger and judgment,' from the Latin comminatio, a threatening or cursing. The Protestants at the Reformation introduced the reading of this comminatory service as a substitute for the antient and still continued Catholic ceremony of sprinkling the head, and making the sign of the cross on the forehead with holy water. This custom of Lent, hence denominated Ash Wednesday; but though it is ordered especially to be read on this day, the rubric adds, — 'and at all other times as the ordinary shall appoint.' From commendation to the service be given in the Collect and Epistle, published in 1576, it appears at that time to have been used on four days in the year, namely, on Ash Wednesday and on the third Sunday before Easter, Whit-Sunday, and Christmas.

The origin and object of the service will be best explained by the following extract from its confutation. 'In the primitive church there was a godly discipline that at the beginning of Lent such persons as stood convicted of notorious sin were put to open penance and punishment in this world, that their souls might be saved from the judgment of the Lord, and that others, being admonished by their example, might be the more afraid to offend. Instead whereof (until the said discipline be restored again, which is much to be desired) it is thought good that at this time of Lent a certain service be read in general which doth discover and exhibit unto the hearers the general threatenings of God's cursing against inimical sinners.' The form of the Commination seems to be derived from Deuteronomy xi: 26-30 and xxvii: 1-16, which was afterwards strictly obeyed, as is evident from Isaiah, xxx: 33-34, in which is a series of twelve curses from Mount Ebal by the Levites, with a response to each by the people. See a sermon on the 27th ch. of Deut., entitled "The Commination Service view'd by the Rev. Benjamin Camfield, 4to., 1690.

COMMINES. [NORTH AMERICAN COLONIES.]

COMMINES (FLANDERS, WEST.)

COMMINES, a district of Gascony, which is described in the Dictionnaire Universel de la France as being bounded on the north by Armagnac, on the south by the Pyrennees which divide France from Spain, on the east by Bas or Lower Languedoc and by the district of Couserans, and on the west by Bigorre and part of Armagnac; but the subdivisions of Gascony are so indistinct or so variously laid down in most maps, as to make it difficult to ascertain or describe their true boundaries.

The country was divided formerly into Haut and Bas, or Upper and Lower Commines, the southern part, towards the Pyrenees, being the Upper.

Commines is now chiefly included in the department of Haute Garonne; some portions are included in those of Gers, Hautes Pyrenees, and Ariège. Among the towns of commines, the most distinguished is St. Bertrand de la Garonne, and Lombez on the St. Gers, a town of St. Giron, on the Salat (population 3634 for the town, 4381 for the whole commune); St. Gaudens on the Garonne, (population 8179); Montaigu, on the river Aveyron, and Louerga (population 2330 for the town, 3787 for the whole commune); and Aspet, (population of the commune 5575).

COMMISSION, in military affairs, is the document by which an officer is authorized to perform duty for the service of the state.

Antiently, in this country, the regular mode of assembling the national army, either to resist an invading enemy, or to accompany the king on a foreign expedition, was by sending a herald to each chief barony or spiritual corporation and that they should meet at a given time and place with their due proportion of men, horses, &c. properly equipped, according to the tenure by which they held their estates; and that the herald should appear to have appointed by their own authority all their subordinate officers. But commissions were also granted by our kings to individuals, authorizing them to raise men for particular services; thus, in 1442, Henry VI. gave one to the governor of Mantes, by which he was appointed to raise 200 men-at-arms on foot, and 210 archers, for the defence of that city. According to Peré Daniel, the commission was written on parchment, and that, it might not be counterfeited, the paper was divided, by cutting it irregularly, into two portions, of which, doubtless, the original was preserved one.

Commissions of array, as they were called, were also issued by the crown, probably from the time of Alfred, for the purpose of mustering and training the inhabitants of the counties in military discipline; and in the reign of Edward III. the parliament enacted that no person trained under these commissions should be compelled to serve out of his county. The first commission of array for the purpose of raising the forces to repel the Spanish invasion of 1588 passed that. The provost marshals and justices of peace were directed to cause the first men to be levied on the confines, and the other men to be levied on the roads. The men levied on the confines were not to exceed the number of the inhabitants of the town, or men of full age; the other men were not to exceed the number of the inhabitants, nor those of full age; but the number of men levied was to be determined by the justices of peace. At the time of the invasion of France in 1642, the commissions of array were renewed. It is reported that at the time of the invasion of France in 1642, the commissions of array were renewed. It is reported that the Westphalians, who were the first to come into the field, were followed by the troops of the other princes of the empire, and that they were joined by the troops of the Swiss. The troops of the Swiss were joined by the troops of the Swiss. The troops of the Swiss. The troops of the Swiss.

COMMITTEE, of either house of parliament, may be either of the whole House, or of a certain number of the members selected from the rest. When the House resolves itself into a committee of the whole House, the Speaker in the House of Commons, or the Speaker of the House of Lords enters into the chair, and the Chairman of Committees, a salaried officer, being one of the members, who is appointed by the House at the commencement of every parliament, takes his place. In the Commons the mace, which usually lies on the table, is placed in the same time placed under it. In a committee members are not restricted to a single speech on the question under consideration, but each may speak as often as he pleases. Another distinction in the Commons is, that the committee divides by the ayes merely going to the one side of the room, and the noes to the other, instead of one of the two parties going out into the lobby, as in divisions of the House. At the beginning of each session, the standing orders or established practice of both Houses are certain to be brought forward in a committee of the whole House. For instance, all measures relating to the church must be so introduced; and in the Commons all propositions for raising the money so granted, by taxes or loans, or otherwise, in another committee of the whole House, called a Committee of Ways and Means. No vote of a committee of ways and means is final, unless it is reported to the House, and the report received. The Committees of Supply, and of Ways and Means, always meet for the first time immediately after the commencement of the session. The business of these committees is most important, and is conducted with great dispatch. Instructions directing, or otherwise to a certain extent controlling, their proceedings, are frequently issued to-
omittery by the House, to which of course they are bound to attend. All public bills in both Houses are also considered in committees of the whole House, after the second, and before the third reading. Private bills cannot be introduced into either House, until the petitions of the parties interested have been referred to select committees, and certificates given by their members of their elections in the House of Commons, are appointed by secret ballot. The investigation of any subject whatever that is brought before parliament may be referred to a Select Committee, and the proceedings of such committees are usually conducted in General Session, to which the Clerk of the Secret, which takes evidence and deliberates with closed doors, is appointed, when the public safety or other reasons are considered to make that precaution expedient. A committee is generally empowered to summon witnesses and to call for papers; but no committee of either House can administer an oath. A witness can only be examined on oath at the bar of the House of Lords.

There are some instances in former times of all the members of the House of Commons voting three of its members, and the request of one of the Houses, and such a meeting is described as a Committee of the Lords and Commons. What is called a Joint Committee of the two Houses, composed of a certain number of members selected from each, was formerly not unusual. Such a committee was appointed for the conference; but it was sometimes resorted to after a free conference had failed to bring the two Houses to an agreement. As in the case of a conference, the time and place of meeting in a Joint Committee were by the House of Commons, and the practice was for that House always to appoint only half the number of members appointed by the Commons, a rule which is also observed in the case of a conference.

A joint committee had no power to report anything more than the report of its own division. If a division might take place on the motion for putting any particular question to a witness, the Lords have latterly considered that they were placed in a disadvantageous position if a Joint Committee reported freely on the last two or the Lords; and the practice was for that House always to appoint only half the number of members appointed by the Commons, a rule which is also observed in the case of a conference.

The forms at a joint committee made none of those distinctions between the Lords and Commons, which are made by rules in the ordinary Committee of the whole House; and it was thought that the committee were on a perfect equality. (Hartell's Proceedings (ed. of 1818), vol. iii., pp. 38-45, 84-86, 169-201, et alibi.)

COMMITTEE OF PUBLIC SAFETY, Comité de Salut Public, the name given to a committee of members of the National Convention, who exercised a dictatorial power in France for about fifteen months, which is known by the name of the Reign of Terror. The National Convention, having abolished the royal authority at the end of 1792, and proclaimed the republic, found themselves invested with the whole sovereign power. They delegated the executive part of it to several committees of government, and placed a committee of public safety paramount over all, to regulate the general military and political affairs of the Convention, appointed for three months, but re-eligible indefinitely; they were commonly called the decrewars. Their business was to watch over the conduct of the public authorities, and to promote the cause of the revolution. By decrees their powers attained a most extensive range; and the constituted authorities and public functionaries, civil and military, were placed under their immediate inspection. This was the successful insurrection of the 31st of May. In the following week, they at once deposed the Girondists, with the Gironde party, who wished to govern the republic according to legal forms, and who the leaders of the Girondins were sent to prison for their alleged support of Robespierre and his friends. With the pikes of the mob and threats of the scaffold, and the decrees of confiscation, forced loans and requisitions, and the maximum upon provisions, by which it disposed of the property of all. This law of the maximum fixed the highest legal price of provisions and other necessaries, both for wholesale and retail dealers, forbidding them to demand more. (Tableau du Maximum de la République française déposé par la Convention nationale le 6 Vendéme, An III.) The net was so widely spread that it caught in all France. The decrees of the Committee of Public Safety were in the name of liberty a tyranny infinitely greater than that of the most arbitrary sovereigns of the old dynasty. In the Convention, from which nominally they derived their power, they were supported by a majority of a thousand votes against Robespierre and his few friends found themselves alone, without any military man to support them. Even in the Committee of Public Safety, Collot d'Herbois and Billau Varennes turned against Robespierre. On the 9th Ther-
mired, July 28, 1794, Robespierre, Couthon, and St. Just were executed. From that time the moderate party gradually, though slowly, acquired the ascendancy in the Convention.

The members of the Committee of Public Safety, besides the three above mentioned, were Collot d'Herbois, the destroyer of Lyon, Billaud Varennes, Cambon, who had under his inspection the department of finance, Barrere, who was secretary and reporter to the Committee, and whose eloquent and dangerous tongue was a bane to the military department, though his signature was affixed to several of the more obnoxious orders and dispatches sent by the Committee. Hébert de Sechelles, who had been a member of the Committee, and afterward the idol of the people, and Robespierre together with Danton, whose friend he was. The public accuser, or attorney-general, was Fouquier-Tinville, a most strange and repulsive character; a political fanatic, gloomy, merciless, and disinterested, who seemed persuaded that massacre was the duty of a republican. After the fall of Robespierre, Fouquier-Tinville was arrested, and tried on the charge of having sent to the scaffold multitudes of men and women of all ages without any legal form. His trial lasted nineteen days; 400 witnesses were examined for and against him; he was convicted, sentenced, and executed in April, 1793. He died poor: his whole furniture was sold for 204 livres sterling. At the same time, Barrere, Collot d'Herbois, and Billaud Varennes, although defended by Courtois, in need of a popular support, was condemned to leave France and was permitted to sail for Cayenne. A reaction had now taken place in the popular opinion, which pursued the agents of the proceedings at the bar of the Convention, when their former acquittal being obliged to give them up, endeavored to throw the weight of their authority upon them. Carrier, commissary at Nantes, who invented the Noyade, or wholesale drownings of the suspected 'in the Loire, and who was himself a member of the Convention, was ordered for trial. He said in his defense that he had only obeyed the orders of the Convention, in conformity with their general spirit; and that the Convention could not condemn him without condemning itself: he concluded by these remarkable words: 'I am to be punished as guilty, every body and every thing in this house, by the president's hand-bell.' He was sent however before the revolutionary tribunal, and condemned for having ordered arbitrary executions with a counter-revolutionary spirit; an absurd piece of jargon, characteristic of the times.

He was beheaded 16th of December, 1794. There is a very curious memoir concerning Carrier and his trial in the 'Memoires historiques et litteraires,' by M. de Barante, in which the government had a small number of war, which was attached for any particular service from the fleet. His rank is immediately below that of a rear-admiral, and he is classed with a brigadier-general in the army. His ship is described as a commandant of the mast-head. The title is sometimes given to the senior captain in a fleet of merchant ships.

In the French service, the commander of a detachment of ships is called 'Chef d'Escadre;' and in the time of Louis XIII. the commander-general of the fleet was so called when he had not the rank of admiral.

COMMODOUR, LUCIUS AELIUS AURELIUS, son of Marcus Aurelius and of his wife Faustina, was born A.D. 16. At the age of 16 he accompanied his father in his journey to Syria, which had been disturbed by the revolt of Avitius Cassius. On his return to Rome Commodus obtained his first consulship. He next accompanied his father in his last expedition against the Quadi and the Marcomanni, during which Aurelius died at Vindobona (Vienna), and Commodus became his successor A.D. 180. Having made peace with the northern tribes he returned to Rome, where he enjoyed a triumph. For a short time he appears to have governed Rome, while several influential officers, Albinus, Pescennius Niger, Severus, Pertinax, and others, made the name of Rome respected on the frontiers of the empire. Commodus, however, having dismissed the counsel and friends of his father, gave himself up to the society of freedmen and gladiators, with whom he spent his time in debauchery. His elder sister Lucilla conspiring against him with Pompeianus, Quadratus, and other senators, they were all seized and executed. Having put a new life himself, Commodus took for his concubine Marcia, a mistress of Quadratus, who seems to have maintained some sort of influence over him till his death. But a succession of unworthy favourites engrossed all political power, and committed every kind of injustice and cruelty. Conspiracy after conspiracy was discovered or invented by them, and a number of the principal senators were put to death, and their property confiscated. The favourites themselves destroyed each other in succession. One of them, Perennis, was put to death with all his family, and was replaced by Cleander, a Phyrgian freedman, who put up to sale all the honours and offices of the empire as well as the lives of the citizens. Meantime the legions in Britain mutinied, and Commodus sent Pertinax, who had been exiled by Perennis, to appease the mutiny. In Gaul also a soldier called Materenius collected a numerous band of deserters, but Pescennius Niger being sent against him, Materenius found means to escape with several of his followers, and came secretly to Rome with the intention of killing the emperor, but he was discovered and put to death. A dreadful pestilence afflicted Rome about the same time, which lasted three years, according to Dion. Commodus, to avoid the contagion, retired for a time to Laurentum, where he continued his usual dissolute mode of life. At last a revolt broke out against his favourite Cleander; the people repulsed the Phyrgian cavalry sent against them, and Commodus, to appease the storm, ordered the favourite to be put to death. In the year 191, under the consulate of Apronianus and Badius, the Temple of Jupiter Capitolinus was burned down to the ground. Commodus, enraged at this transaction, ordered the statues of all the foreign gods to be pulled down. He then proceeded to the imperial palace, and the statues and books of the temple which were deposited in it, were consumed. The fire spread to the Temple of Vesta, from whence the Vestals ran away to the imperial palace, carrying the Palladium with them. The flames extended to the imperial palace also, and consumed part of it. In the following year Commodus was consul, for the seventh time, with Pertinax, whom he had recalled to Rome. Having had repeated information of Severus aspiring to the empire, Commodus wrote to Albinus in Britain offering him the title of Caesar, which was refused. [Claudius Albinus.] At the close of his career, Commodus set no bounds to his extravagancies: he disregarded common decency, exhibited himself before the gladiators, dressed himself as Hercules, whose name he assumed, and on one occasion danced naked before the spectators. (Herodian, i. 15.) Being dissuaded by Marcia and some of his officers from degrading himself in public in the company of gladiators, it is said that he wrote down their names for execution, and that the scroll being found by Marcia led to a plot against his life. However this may be, poison was administered to him, and while suffering under its effects, a powerful athlete was sent in, who strangled him. A.D. 192, in his 32nd year and the 13th of his reign. Pertinax, who succeeded him, had his body buried privately, but it was afterwards transferred to the Mausoleum of Hadrian. (Diod. lib. 12, lamprius, and Herodianus, i. 6—16.) Commodus had the advantages of sound education and the example of a most virtuous father; he found the empire prosperous after a succession of wise reigns for nearly a century, with a number of able officers civil and military. He left it a prey to confusion, sedition, ill-repressed outrages of barbarians, the army demoralized, and rival generals disputing for the supreme power. The visible and rapid decline of the Roman empire may be said to date from his reign. The plea of insanity, which is put forth for Caligula's short career of frenzy, cannot be extended to Commodus; his was decidedly a vicious and depraved disposition, which had a full opportunity of displaying itself in the possession of unlimited power.
COMMON CHORD, in music. [Chord.]

COMMON LAW. In its most general signification the expression common law denotes the ordinary law of any country; when used in this sense it is called common, as prevailing generally, as the Adam of all laws, as analogous to the solar laws, the operation of which is confined to a limited district or to a peculiar class of inhabitants. In this manner the phrase is used in many countries which have adopted the civil law. In English jurisprudence the Common Law is that which is the law of the land, the origin of which is to be traced to the 'lex et consuetudo Anglie,' and at the same time the appeal is always used to denote the 'lex non scripta,' in opposition to the 'leges scripta,' or statutes. In addition to customs and usages, whose particular origin is unknown, many portions of the common law consist of statutes passed before the time of legal memory, viz., the beginning of the reign of Richard I., and which, though known historically to have been acts of parliament, have no authority as laws in that character, but derive their obligation from immemorial usage, recognised by judicial decision. The provisions of the common law are, however, quite as binding upon the subjects of England as acts of the legislature, being, as already said, impressed with the character of law by frequent and general usage. It is also well known that the system of rules which composed the common law was wholly traditional. As civilization advanced, the decisions of the king's ordinary courts of justice were carefully recorded, and became the most authoritative evidence of such customs and maxims as had formed part of the common law, and were in precise analogy to the rule of the civil law, that what the emperor had once judicially determined was to serve as a guide in all like cases for the future. (Cod. I., tit. 14. 12.) In addition to the recorded judgments of courts, technically called precedents, the treatises of learned men, such as Bracton, Fleta, Britton, Staundford's Pleas of the Crown, and Coke's Commentary upon Littleton, are acknowledged as repositories of the common law. Of the whole of these and other jurisprudential authors; they declare the law by applying certain rules and principles to cases which come before them for judgment; but they have no power directly to add to or vary the law. Learned writers have indulged in much speculation respecting the origin of the common law of England, though Sir Matthew Hale says it 'as undiscoverable as the head of the Nile.' It seems however to be well ascertained that the customs which in ancient times were incorporated with the common law, are not the same at all periods in conformity with the political vicissitudes of the country; some being Saxon, others Danish, and others Norman. It is also quite evident, from the adoption of the Roman terms of art and several Roman provisions, that the common law is a combination of the application of the laws which had been adopted from the Roman law and the principles of the common law which had been derived from the civil law. Again, many parts of the common law have gradually arisen from the necessary modification of its ancient doctrines and principles, in order to render them applicable to new states of society produced by enlarged commerce and advancing civilization. From this cause some branches of our system of jurisprudence have wholly sprung into existence in modern times. Thus almost the whole of the system of English equity, an independent part of our practical jurisprudence, has appeared as part of the common law so lately as the time of the Commonwealth. But perhaps the most remarkable instance of the total change in common-law institutions with the progressive improvement of society, is the trial by jury, which may be traced through all its gradations, from a rude kind of trial, in which the jury were merely witnesses called from the neighbourhood in order that they might declare the guilt of the accused, to the present practice where the jury themselves decide upon the truth of facts by the testimony of witnesses examined before them. On the other hand, many rules and provisions of the common law have wholly disappeared, having fallen into forgetfulness, or irregularly adopted by decisions of the judges as they became inapplicable to the altered state of society. So great has been the alteration of the common law which these accessions and abstractions have occasioned, that it can scarcely be termed with propriety the same body of laws that it was 600 years ago, unless it lie upon the principle upon which Sir M. Hale maintains its identity, viz.: that the changes have been only partial and successive, whilst the general system has been always the same. As the ship which, when it returned home as it was when it went out, though in long voyage it had successive amendments, and scarce came back with any of its former materials. (See Hale's History of the Common Law; Blackstone's Commentaries, vol. i., p. 17; and Reservations on the History of English Law, vol. i.; Hallam's Middle Ages, vol. ii., on the origin of the Common Law.)

COMMON MEASURE, any magnitude which is contained an exact number of times in two other magnitudes. In English measure it is a common measure of 56 and 700. The method of finding the greatest common measure is precisely the same both in the science of arithmetic and in that of concrete magnitudes. The proof may be briefly stated as follows: let A and B be two magnitudes, of which B is the less. Let A contain B m times, with remainder R, or A = mB + R. Then it is easy to show that every magnitude which measures (or is contained exactly a number of times in) A and B both, measures mB and A - mB or R; and also that every magnitude which measures B and R measures mB and A - mB or R. That is, all measures common to dividend and divisor are common to divisor and remainder, and all measures common to divisor and remainder are common to dividend and divisor. Therefore, for finding the greatest of either pair, one must investigate the relation of either pair that is of the other. Now carry on the division as follows until there is no remainder, which suppose to happen at the fourth step:—


Then R, measuring itself, and also R or q R, must be the greatest measure common to both, for nothing greater than itself can measure R. But the greatest common measure of R and R has been shown to be that of R and R, which has been shown to be that of R and R, which has been shown to be that of B and R, which must be a whole number, at least, if not higher, for two fractions must be a fraction. But in concrete magnitudes the process may continue without end, which indicates that the magnitudes are (incommensurable), (which see for proof). Hence the necessity, in all correct reasoning, of treating concrete magnitudes in the manner laid down in the fifth book of Euclid.

In Algebra the corresponding process does not ascertain the greatest common measure, which depends upon the specific values of the letters; but only the highest common factor, or that which has the highest dimensions. This part of algebra is frequently rendered singularly obscure by the application of the common law, which uses the algebraic factor of a + b and a - b as a factor in the last common factor and not something greater. This is the last not the greatest common measure in all cases, as the reader may try by supposing a and x to be 8 and 6.

COMMON PLEAS, COURT OF, a superior court of record, having jurisdiction over England and Wales in all common pleas or civil actions commenced by subject against subject. It is at present composed of five judges, one of them being chief justice and the other four puisne justices.

This court has become statutory at Westminster Hall for several centuries. During the existence of the Aula or Curia Regis, established by the Conqueror in the hall of his usual residence, the palace at Westminster, that single tribunal exercised supreme jurisdiction over all temporal causes, which were adjudicated by the principal officers of the royal household, often assisted by persons learned in the law, called the king's justices. In the reign of Richard the Second, many common pleas and actions between man and man, in which neither the king's revenue, nor his character of prosecutor of offences on behalf of the public were concerned, laboured under the necessity of being heard at Westminster, to either prevent frequent and distant progresses of the court, or of losing their remedies altogether. This evil, as well as the jealousy entertained by the crown of the ascendancy of the chief justice, who presided over the whole Aula Regis, occasioned the statute in Magna Charta, that common pleas shall not follow the

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king's court, but be held in some certain place. This court then became gradually detached from the Aula Regia, and assumed its present separate form. It has ever since continued its sittings daily during the four terms of each year, without removal from the palace of Westminster or its immediate vicinity, except on a few occasions, in time of war, or during a disease.

Before the passing of the late statute of 3 & 4 Will. IV., c. 27, this court had an exclusive jurisdiction in all those actions, which, as they concerned the right of freedom or reality, were not governed by the laws of the realm, only on which the common assurances of fines and recoveries passed, as the others which were commenced by the king's original writ out of Chancery. On this account it was styled by Coke the 'lock and key of the common law.' Since the dissolution of the old courts of Common Pleas, the actions by the common injunction, habeas corpus, the exchequer, and the admiralty, are the only forms of action in which this court has exclusive jurisdiction; for in mixed and personal actions the King's Bench and Exchequer of Pleas have long exercised concurrent power.

In the original constitution of this court, and down to the beginning of the present reign, its proceedings in actions between persons not its officers were founded on original writs issued out of the Court of Chancery, though in the time that it became necessary to perfect the record. But now by a statute (2 Will. IV., c. 39) introduced by the late Lord Tenterden, to secure the uniformity of proceedings in the three superior courts of common law, certain forms of process, called writs of summons and capias, are provided as the only means for commencing personal actions in any of those courts, and may be issued from any of them.

In 1838, the appeal from the judgments of this court was by writ of error to the justices of the King's Bench, a vestige of superiority resulting to the latter as constituting the remnant of that Aula Regia from which this court as well as those of Chancery and Exchequer have been gradually carried out. But now by 11 Geo. IV. & 1 Will. IV., c. 70, the judgments of this court can only be reviewed by the judges of the King's Bench and the barons of the Exchequer forming a court of error in the Exchequer Chamber; the further appeal is by writ of error returnable to the Lords of Parliament.

Till recently, the only persons admitted to audience as advocates in this court during its sittings in Term were serjeants-at-law. [SERJEANT-AT-LAW.] But by a royal warrant of his present Majesty, directed to the lord chancellor, in April, 1834, the right of practising, pleading, and audience in his Court of Common Pleas during Term time, was directed to cease to be exercised exclusively by the judges of the court, and other distinguished counsel having equal right with them so to practise there. The same warrant conferred on the existing serjeants, not being of counsel for the king, precedence at the bar (according to their seniority) next to the king's counsel, but being not a serjeant. Those of the serjeants who had been specially retained for the crown, and were on that account styled king's serjeants, retained their old precedence before all other advocates, except the attorney and solicitor-general for the time being.

The rank of serjeant-at-law being no longer imposed by the crown without the consent or application of the individual, it is apprehended that this most antient and honourable office will rarely be some time be some time fall to the lot of a serjeant, but being lower in rank than the king's serjeant and king's counsel, without conferring a right to exercise exclusive advocacy in any court. It seems however that the authority of the rank of judges of any of the three superior courts must still, as heretofore, be called to the degree of the coif.

COMMON, RIGHTS OF, in law, is the right of taking a profit in the land of another in common with him, whereas the right of profit from a right in the land, whereby the owner of the land does not seem to be properly common, though belonging to several persons together.

The profits which may be the subjects of common are the natural produce of land or water, which is included in the legal signification of land; such as the produce of land, herbage, sand, turf, wood, and fish. The commons relating to these subjects are accordingly called common of pasture, turbary, esovers, and piscary. Other things which cannot be called products of land, but rather part of the land itself, as stones and minerals, may also be the subjects of common right. Rights of way and other accommodations in the land of another, though enjoyed in common, do not bear that name, but are called easements.

Of all commons, that of pasture is the most frequent. It is the most general of all, whether in grass and pasture, or in the grazing animals. It differs from that general property, which may exist in the vendure or vegetable produce of the land, without any property in the land itself, and which is a corporeal hereditament; whereas all commons are incorporeal, and are not founded on a very distinct definition, an incorporeal hereditament being a right issuing out of a thing corporate, or concerning or annexed to the same. [2 B. C. C., chap. 3. The same remark applies to the subject of turbary, the subject of wood and wood-mines—may belong as corporeal hereditaments to one, while the land generally belongs to another.]

Common of turbary is the right of taking turf for fuel; and common of esovers is the right of taking wood for fuel, and for the repairs of houses, fences, and implements of husbandry. These supplies of wood are called fire bote, house bote (which includes the former), plough bote, and hedge or hay bote. These esovers or botes may also be taken by every tenant for life or years from the land which he himself occupies, but they are not then the subjects of common rights.

Common of piscary is the right of fishing in rivers not navigable; the right of fishing in the sea and in navigable rivers being annexed to the soil. The extent of rights of common depends very much upon the title to them. There are four titles on which such rights may be founded; common right (which seems to be nearly the same thing as the common law), prescription, custom, and grant.

The title by common right arose with the creation of manors, when land was granted out in fee to be held of the grantor as lord. As such grants were forbidden by the statute 'Carta eworpeis,' 3 Edw. I (1307), it follows that all common appendant now existing must have been created before the date of that statute. The law allowed to every such grantee, of course, and of common right, common of pasture, turbary, esovers, and piscary in the waste of the soil, or that part of his lands which was neither taken by him into his demesnes or actual occupation, nor granted out by him to others. These implied rights of common however were allowed no further than necessity seemed to require, and rights of common were consequently still confined nearly within their ancient limits. Sprunging from grants of land, they were considered as inseparably appertaining to that land, so that they could not be severed from it without extinguishment. The common of pasture was confined to the season of harvest to the length of their herbage, from seed time to harvest, the cattle of the commoner which were used by him in cultivating his land, and which that land would maintain through the winter, or which were, as the law expressed it, 'the commoner's cattle,' the then junior tenant's kine, and sheep, used either for tillage or manuring land, are the commonable cattle. The land to which the common was appendant must have been originally arable, though the subsequent change of arable into meadow, &c. does not extinguish the right. Common of turbary appendant was confined to the purpose of supplying fuel for the domestic use of the tenant; and so strictly must this right be still confined within its ancient limits, that it must be appertaining to that part of the land which no one could under any circumstances be taken under it than will be spent in the house. Common of esovers appendant gives, as it gave originally, only the right of taking wood for the repair of his fences and houses. Common of piscary appendant was only for supplying the tenant's own table with fish, and it must be still limited to this purpose.

Commons claimed by prescription (which supposes a grant) may be as various as grants may be. A right of common is not necessarily annexed to land (when it is said to be appurtenant), or assignable in evidence of any property in land, when it is said to be in gross. If common of pasture, it may be for any kind of animals, whether commonable or not, as swine and geese. The number of animals for which it can be held common is generally unlimited, and they need not be the commoner's own.

Common appurtenant may be severed from the land to which it was originally annexed, and then it becomes common in gross.
The importation by custom is peculiar to copyholders and may also give the commoner various modifications of right.

Right of common: pasture may also be claimed because of vicinage, or neighbourhood. This is where two wastes belonging to different lords of manors, adjoin each other, without being separated by a fence. The cattle lawfully put upon the waste are not, because they have been strayed, or rather are for straying, into the other.

The rights of the owner of the soil over which a right of common exists, are all such rights as flow from ownership, and not inconsistent with the commoner's rights.

Rights of common are of two kinds. An incorporeal hereditament, by deed of grant. When they are annexed to land, they will pass with the land by any assurance adapted to transfer the latter.

The common is said to be extinguished in several ways, and often contrary to the intentions of parties. It is a rule, that if the owner of common appurtenant purchases any part of the land over which the right extends, the right of common is altogether extinguished; it is the same if he release his right over any part of the land. This unreasonable rule however does not extend to common appurtenant, though that will be extinguished if the commoner becomes the owner of all the land in which he has common. In some parts of the country, however, not inconsistent with the common law, the right of common will follow from acquisition of part of the land. The enfranchisement of a copyhold to which a right of common is annexed extinguishes the right.

The most common mode of extinguishing right of common is by the act of parliament under the Act of parliament. (See Enclosure; also generally on this subject Woolrych, on Rights of Common; Comyn's Digest, tit. 'Common'; and Blackstone's Commentaries, book ii., chapter 3.)

When the owners of the thing held in common divide the modes in which property may be held by several persons together. It comes the nearest to separate ownership, from which it differs in little else than that the shares held in common are not actually divided or marked out. As to alienation, transfer of the freehold, and division of incidents of property, the law of undivided and of divided shares is the same. From the blending, however, of the shares, there necessarily arises some peculiarity in the mode of their enjoyment. When the proportion of the thing held in common is parable (as corn growing in a field), they are generally actually divided among the tenants, and then the property of each most closely resembles separate property. It frequently happens, however, that this cannot be done; in which case the thing held in common must either be used alternately by the tenants (as a horse), or they must join in using it, as tenants in common of an advowson are required by law to concur in presenting to the church.

The division is either equal or unequal, and the quantity of their interests may be either equal or unequal. All may be tenants in fee, tenants for a term, &c., or one may be tenant in fee, and another tenant for a term, &c. It is necessary, however, that the possession should be continuous: successive interests are not a tenancy in common.

A tenancy in common may be created in several ways. If a joint-tenant, or coparcener, alienes his share to a stranger, the latter is a tenant in common with the remaining joint tenants or coparceners who still hold sole owner of property. If any one sole owner of property, and retains the rest, the grantee and grantor are tenants in common. As to the words which, in a transfer of property to two or more persons, constitute a tenancy in common, there are many nice distinctions exist in the law. At common law, a conveyance of land to two simply, and without other words, made them joint-tenants, and not tenants in common; except in a few particular cases. (Litt. 262, 264.)

This rule of law was founded on the feudal policy, which favoured the mode of holding property in joint-tenancy rather than in tenancy in common, because the former afforded room for the re-union of the property by subsequent arrangements, whereas the mode of application (tenancy in common) in a single individual, who might more effectively perform the duties belonging to the feudal tenure than several persons among whom the same burden was divided; and it is probable therefore that in some cases of feudal tenure of lands, such shows of fealty given to the granter were fulfilled by imposing joint-tenancy rather than tenancy in common. For a long time past however the courts have endeavoured, whenever they could, to raise by construction tenancies in common rather than joint-tenancies. But a tenancy in common might always be created by express words, and no technical expression being necessary, it has been inferred that if the parties had been enabled to lay hold of any words in a deed or will which appeared to them sufficient expressive of a tenancy in common, in order to establish one. The mistake however is that they have assumed in theiritudes in this respect in the construction of wills and uses and trusts, than in the construction of common-law conveyances; so that the same words, as for instance the words "equally to be divided," often have different effects in different instruments.

The Courts of Equity have decided that in certain cases a simple conveyance to two or more makes them in equity tenants in common, and not joint-tenants, unless there is an express declaration that the contract of the grant is a mortgage is made to two or more, and when an estate purchased by two or more is conveyed to them in unequal shares. This doctrine is sometimes in practice found very inconvenient.

A tenancy in common ceases as a matter of course, when the ownership of the several shares exists in a single individual: it can also be destroyed by partition made by the tenants. Any one of the tenants may compel the others, by suit in the nature of ejectment, to make a partition of that common, except when the subject is in its nature not parible, as in the case of a living animal for instance.

Notwithstanding its many inconveniences, tenancy in common often occurs, being frequently created with wills and settlements in which property is given to several, and is partitioned among classes of persons together, as to children, or to a number of individuals by name.

COMMONS are wastes and pastures which have never been exclusively appropriated to any one, but are held in common by the inhabitants of a parish or district. Where extensive common rights exist, the mode of cultivating the inclosed land is greatly affected by it. All the cattle being maintained on the commons for a great part of the year, less land is laid down to grass, and only so much left in meadow as will produce hay to feed the cattle in winter weather, and when the commons will not sustain them. The consequence is, the arable land is not well cultivated, little manure is made in the yards, and the rent paid by the stock which runs on the commons, and which increases and grows without any expense to the owner. But it is a wasteful disposition of the land. Commons pastures are never improved; no one will drain or clear them of weeds, still less manure them. The stock kept upon them is not by any means so numerous as could be kept on the same surface divided and improved. Hence most of the commons and common fields in Great Britain have been divided and improved by the individual owners. When an inclosure has taken place the public has gained, even when the individuals immediately connected with the land may have suffered some loss, by not receiving an equivalent for the profit they had from the cattle which they contrived to keep on the commons.

The soil of commons within a manor belongs to the lord: if there is no manor, it belongs to the king. The herbage belongs in general to the tenants and other inhabitants of the manor or districts, according to fixed rules. Where common lands are very extensive there is sometimes no restriction on the number of cattle which may be turned out on them. This is called common without stint.

The usual proportion given to the lord for his right in the soil on an inclosure of common is one twelfth. In some instances a reduction is divided among those who have a right of common in proportion to the land they possess, and on which their right depends.

Common fields differ from commons, in that they are divided for the purpose of cultivation; but as soon as the crop is off the ground, the cattle of all the proprietors, or of all the parishioners, as the custom may be, have a right of pasture over the whole common. This system is incompatible with inclosures, for the reason that common fields have been very generally divided and inclosed by particular acts of parliament. A late act greatly facilitates these inclosures, and will no doubt soon convert every remaining common to a private estate.

COMMONS, HOUSE OF. The object of this article is to present a distinct though comprehensive view of the history and actual state of the House of Commons as a part of the Imperial Parliament of Great Britain and Ire-
land. In tracing the history of the English borough system, we have shown the origin of this house in the union of the assemblies of the cities and boroughs of England and Wales. It should be borne in mind that the original basis of the representation, in the time of Edward I., was very different from what we must suppose it would have been made, had the crown and its advisers at that period contemplated in this arrangement any other purpose than the mere incorporation of an assembly of the commonalty. The very large proportion of the whole number of its members that were sent from the towns, at a period when the population and general importance of the towns, as compared with the country districts, were witnessed by less than they are now, was manifestly a circumstance repugnant to all the political notions and tendencies of the government of that day. It will be seen, on inspecting the subjoined table, that under Edward I. the town representative was in the county of Essex represented by 56 members; under Edward II. by 57; under Edward III. as 266, and under Edward IV. as 246 to 74; and under Edward II. as 282 to 74. The reason why, on the first settling of the representative system into regularity and permanency, each constituency was uniformly summoned to elect two members, without regard to its known or presumed proportion of wealth or populousness, seems to have been very simple and very natural. So long as the parliamentary voice of the commonwealth was confined to matters of taxation merely, the only thing that the crown had to do was to have them increased or decreased according to the exigencies of the state. Fixing the number of delegates was the securing such a delegation from each constituency as at the smallest inconvenience and expense to the latter should have full power to deal with all grievous business that might concern them; and that being the smallest number compatible with the important conditions of mutual consultation and joint testimony, was fixed upon as the number that imposed the smallest burden on the constituents, and was also most convenient for avoiding a too crowded assemblage of representatives. And thus it seems to have been that the periodical and frequent shire and borough courts presenting the most natural and convenient modes and occasions of appointing the parliamentary deputies of the several communities, two representatives, and two only, were summoned indifferently from the shire as from the borough, and from the largest shire or borough as from the smallest.

When the power and authority of the commons in parliament had become so firmly consolidated under the first three Edwards as to exercise an efficacious control over all the great measures of government, the composition of the representative body was an object of constant attention and solicitude to the crown. As the number and names of the counties entitled to send members admitted neither of doubt nor of dispute, the right of the boroughs became the first object of attack from that quarter. We have shown elsewhere the means by which the crown had made itself the arbitrary exercise of the presumed power of the sheriff to select or omit boroughs, were defeated by parliamentary enactment of the 4th of Richard II.; as, in like manner, statutes were passed in the three following reigns to restrain the corrupt and irregular proceedings of the sheriffs both in county and in borough elections.

Hitherto, however, the parliamentary determinations of the commons, as regarded the constitution of their own house, had constantly tended to maintain the political rights of their constituents against invasion on the part of the crown. But that firm and lasting establishment of their own power as a distinct legislative body, which may be dated from the great revolution that first brought the house of Lords into existence, and which was the basis of the security which it gave them against royal encroachment, to have tended to embolden the house, not, as formerly, to maintain the elective franchise to the utmost with the same zeal that it used to uphold the high claim to independence as a legislative chamber, but to commence a sort of reaction against the constituent bodies by narrowing the basis of the suffrage itself. The earliest of these distrusts and grievances, one of the most remarkable, is that of the 14th Henry VI., restricting the county franchise to those only who, formerly possessed by all freeholders, to such only whose freeholds were worth four shillings a year, a sum at least equal to twenty pounds of the present day. The next matter in which it was very important that there should be a legislative enactment respecting the constitution of the commons' house, appears in the parliamentary incorporation of Wales and Chester in the reign of Henry VIII. (noticed more particularly in our account of the boroughs of England and Wales), which brought an accession of sixteen county and fifteen borough members.

The desire of the crown in general was still the great object of attention to the crown in vindicating the independence of the House of Commons. Under the appropriate title we have traced at length the development of that part of its policy, as diligently pursued under the later reigns of Edward and Elizabeth, to the triumph which, at the close of the century, 1557, by creating or revising parliamentary boroughs, and at the same time remoulding their municipal constitutions according to the views of the court; 2nd, by proceeding to the thorough disfranchisement of the newly-created and newly-refounded boroughs, and the conversion of many of them to parliamentary boroughs and to the representatives of the new or newly-created classes.

Here again we refer the reader to the subjoined list, and would particularly direct his attention to the fact, that a period by proceeding to the thorough disfranchisement of the newly-created and newly-refounded boroughs, and the conversion of many of them to parliamentary boroughs and to the representatives of the new or newly-created classes.

In the same way we have shown that the last addition to the English representation, previous to the recent changes, was, under Charles II., the disfranchisement of the most ancient boroughs of England and Wales, and the representation of those places already existing: thus introducing an anomaly, as well as novelty, into the representative system, a sort of forced alliance between learning and politics, stemming from the peculiar mental constitution and training of that prince.

Those who conducted the revolution of 1688 made such a new establishment of the return of Roman Catholic ascendancy as they did for the purifications of the temporal constitution, a curious and almost unique instance in the history of England of the power of parliament over the crown. Nor must we forget to mention that James I., by virtue of his royal prerogative, had conferred the right of electing two members upon each of the two universities of Oxford and Cambridge, and had reserved for the crown the representation of those places already existing: thus introducing an anomaly, as well as novelty, into the representative system, a sort of forced alliance between learning and politics, stemming from the peculiar mental constitution and training of that prince.

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British House of Commons respecting its own future constitution, totally different in character from those of William III.'s time just referred to. This is the very important Act (9 Anne, c. 5), which established the qualification of landed property for English members, whether for counties or boroughs. The principle in that bill, by which the enactment disfranchising the smaller county freeholders, was passed an Act, in the same spirit, restricting the choice of those freeholders who still retained the franchise. The very terms of this statute imply, that in the case of the counties it was intended to establish a legal distinction between the qualification of the electors and that of the elector, but that the former were simply called upon to return two of their own number according to their own respective wills. The senatorial expenses uniformly paid under legal obligation by the constituents to each representative while absent on parliamentary duty, may in this place be properly mentioned as a striking evidence of the fact, that the qualification of considerable property, how muchsoever it may be regarded in the judgment of the constituents, was, originally, not at all contemplated by the law. The statute in question (23 Henry VI. c. 14) declares, that, henceforth the county representatives shall be 'notable knights of the same counties, or shall be able to be knights,' that is, shall have freehold to the amount of 40l. per annum, and that no man shall be eligible 'that stands in the degree of a yeoman or under.' On this legal footing the county representation rested until the reign of Queen Anne, when not only was the landed property qualification re-enacted for the counties on a scale nearly proportioned to the decrease in the nominal value of money, but an unprecedented step was taken by inserting in the very same clause of the same Act a proviso that 'no freeholder, knight of the shires, or man of arms should possess a freehold or copyhold estate of clear 600l. per annum, so also every citizen, burgess, or baron of the Cinque Ports should have the like landed qualification to the amount of 300l. per annum. The statute of the 23rd of George I. commonly called the Septennial Act, which extended the legal duration of parliaments from three years to seven, how cogent soever might be the political motives of the chief promoters of the measure, is another memorable instance of the lengths to which the House of Lords has never yet been permitted to venture in dealing in a wholesale manner with the elective rights of its constituents.

After all that royal prerogative and parliamentary enactment had now done to undermine the originally free and independent basis of the national representation in general, little more seemed necessary in order to render the subversion of this part of the legislative constitution complete; and the door was permanently shut against the prosecution for incompetence for reforming the constitution of the Commons' House, originating within that assembly. It would require volumes to describe the operation and effects of this great political machine during the gradual period of its existence, the perversions to ministerial and to party purposes, and at the same time to trace the fearful and fluctuating conflict thus excited and protracted between the vitiated constitution of the house and the growing strength and intelligence of public opinion. It is no matter of conjecture; it is a momentous and significant fact in the history of this great political institution, that it was 'the pressure from without,' and not alone, forcibly stimulated, indeed, by the recent succession of governments contending in the neighbouring country, that drove the House of Commons to compel, first the formation of a ministry pledged to amend the constitution of the representative body in general, and secondly, by adopting and perseveringly supporting the measure of amendment consequently brought forward, to enforce the acquiescence of the hereditary chamber of the legislature in this degree of purification of the representative.

One of the most important operations of the British House of Commons in the period of Mary's reign was the enacting of the statute, passed in 1600 and taking effect from January 1st, 1601, by which it incorporated the parliamentary representation of Ireland with that of Great Britain. For the previous history of the Anglo-Irish representation, and the degree of alienation which, by the Act of Union, we refer to [Parliament of Ireland].

Ireland. Sixty-four members for counties, thirty-five for cities and boroughs, and one for Dublin university, were thus added to the number of the British House of Commons. In this instance, as in that of the Scottish union, the antient proportion between the city and borough representation was reversed, and an additional weight consequently thrown into the scale of the county representation of the United Kingdom at large.

We now proceed to exhibit, in one general view, the state of the representative system of the United Kingdom as now existing, showing at the same time, under each of the appropriate heads, the nature and extent of the several important changes made by the Reform Acts of 1832. The following tables, in each of which reference is made to the subsequent paragraphs, will be found, on comparing it with the historical summary given under Boroughs of England and Wales, to afford, besides the convenience of chronological and alphabetical arrangement, some interesting and useful illustration of the present English borough system. In considering this table we must observe, that in stating the counties and boroughs as sending members continuously from the several reigns in which they respectively began to send, we have been obliged, for the sake of brevity and clearness, to abstain from distinguishing some of the boroughs, and, we believe, two or three of the northern counties, which, for reasons given above, and in our account of the boroughs of England and Wales, we occasionally omitted sending in some of the earlier reigns. Nor could we conveniently specify such boroughs as, having once sent members, discontinued electing a long time ago, and have never since resumed their ancient existence. The most important as well as interesting object in exhibiting such a view, has appeared to us to be the showing the several epochs of English representative history that respectively gave birth to the parliamentarism continuities which subsisted at the introduction of the Reform Bill in 1831.

Parliamentary Representation of the United Kingdom, before the Reform Acts of 1832.

<table>
<thead>
<tr>
<th>Counties</th>
<th>Members</th>
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<tbody>
<tr>
<td>Bedfordshire</td>
<td>F Staffordshire</td>
</tr>
<tr>
<td>Berkshire</td>
<td>F Suffolk</td>
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<tr>
<td>Buckinghamshire</td>
<td>F Surrey</td>
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<tr>
<td>Cambridgeshire</td>
<td>F Sussex</td>
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<tr>
<td>Cornwall</td>
<td>F Warwick</td>
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<tr>
<td>Cumberland</td>
<td>F Westmorland</td>
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<tr>
<td>Derbyshire</td>
<td>F Wilts</td>
</tr>
<tr>
<td>Devonshire</td>
<td>F Worcestershire</td>
</tr>
<tr>
<td>Dorsetshire</td>
<td>F Yorkshire (as added in 1831)</td>
</tr>
<tr>
<td>Essex</td>
<td>F Gloucestershire</td>
</tr>
<tr>
<td>Gloucestershire</td>
<td>F Hampshire</td>
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<tr>
<td>Hertfordshire</td>
<td>F Huntingdonshire</td>
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<tr>
<td>Huntingdonshire</td>
<td>F Bedfordshire</td>
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<tr>
<td>Hull</td>
<td>F Beverley</td>
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<tr>
<td>Lancashire</td>
<td>F Cheshire</td>
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<tr>
<td>Leicester</td>
<td>F Derbyshire</td>
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<tr>
<td>Lincolnshire</td>
<td>F Lincoln</td>
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<tr>
<td>Midlothian</td>
<td>F Linlithgow</td>
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<tr>
<td>Norfolk</td>
<td>F Monmouth</td>
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<tr>
<td>Northamptonshire</td>
<td>F Northumberland</td>
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<tr>
<td>Northumberland</td>
<td>F Nottinghamshire</td>
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<tr>
<td>Nottinghamshire</td>
<td>F Northumberland</td>
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<tr>
<td>Rutlandshire</td>
<td>F Southwell</td>
</tr>
<tr>
<td>Shropshire</td>
<td>F Shrewsbury</td>
</tr>
<tr>
<td>Somerset</td>
<td>F Durham</td>
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</tbody>
</table>

* Transferred from the Cornish borough of Grampound, disfranchised for no fragrant bribery.

Scotsland.

In the British Parliament, from the Union under Anne.

<table>
<thead>
<tr>
<th>Counties</th>
<th>Members</th>
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<tbody>
<tr>
<td>Aberdeen</td>
<td>F Linlithgow</td>
</tr>
<tr>
<td>Argyle</td>
<td>F Orkney and Shetland</td>
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<td>Arran</td>
<td>F Forfar</td>
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<tr>
<td>Argyll</td>
<td>F Fife</td>
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<td>Argyll, Haddington</td>
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<td>Arran</td>
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<tr>
<td>Argyll</td>
<td>F Fife</td>
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</table>
system, carefully indicating the alterations made by the acts of 1832 in those branches of it to which they apply.

1. As regards the number and local limits of constituencies, and the number of representatives.

COUNTRY.

ENGLAND AND WALES. The number of county constituencies before the Reform Act was 52, returning collectively 94 members: viz., 2 for each county of England, except Yorkshire; 4 for the latter county; and one for each county of Wales. The cities and boroughs which are counties corporative were excluded from the limits of the several shires within which they were locally situated: viz., from Carmarthenshire, the town of Carmarthen; from Kent, the county of Canterbury; from Cheshire, that of Chester; from Warwick, that of Coventry; and from Yorkshire, the town of Kingston upon Hull, and the city of York; from Lincolnshire, the city of Lincoln; from Middlesex, London; from Northumberland, the town of Newcastle upon Tyne; from Dorsetshire, Poole; from Worcestershire, the city of Worcester; and from Hampshire, the town of Southampton.

The act has increased the number of constituencies to 82, by dividing into two electoral districts each of the 23 counties (including the town of London and the City of London) and the foregoing table: constituting each of the three ridings of Yorkshire a distinct district for the same purpose; and in like manner sovereigning the Lindsey division of Lincolnshire from the other portion of the county, and the Isle of Wight from Hampshire. The number of county members is raised from 94 to 159, as follows:—Two are assigned to each division of each of the counties in schedule (F) and of Lincolnshire; two to each riding of Yorkshire: one member is added to each of the seven undivided counties, namely, in schedule (F 2) of the act, and marked F 2 in the above table; one to each of the three Welsh counties of Carmarthen, Denbigh, and Glamorgan; and one is assigned to the Isle of Wight, separately from Hampshire.

SCOTLAND. The number (30) of county constituencies and of county members, as existing before the Reform Act, remains unaltered. But for two of the 27 counties mentioned in the foregoing table, as returning one member each, viz., Elgin and Nairn, one member; Ross and Cromarty, one; and Caithness and Kirkwall, one; the electoral district are also annexed three whole parishes, and part of two others, detached from the act by the shire of Perth, and one entire parish from that of Stirlingshire. And, to obviate the inconvenience arising from the great irregularities in the boundaries of some of the Scottish counties, it is enacted that all detached portions of counties shall, for election purposes, be held to be in the several shires within which they are locally included.

IRELAND. The Irish Reform Act of 1832 has made no change in the county representation as to local limits or number of representatives; two members being still returned for each of the 32 counties enumerated in the preceeding table.

CITIES AND BOROUGHS.

ENGLAND AND WALES. The whole number of the cities and boroughs, or districts of boroughs, previously to the act, was 285, including one to each of the towns of from 10,000 to 20,000 inhabitants. For the extinction as parliamentary boroughs, those were selected the population of each of which, according to the parliamentary returns of 1831, was below 2000. Within this description came the 56 English boroughs in the above list to which the letter A is prefixed, returning collectively 111 members. For reduction from the sending of 2 representatives to that of one only, those were selected the population of which, according to the same census, was under 4000. These are included in district No. 3, in which the letter B is prefixed, from whose proportion of the representation 30 members were deducted; to these must be added two members deducted from the four formerly sent by the united boroughs of Weymouth and Melcombe Regis, and one member from the city of Exeter. The total number of members struck out of the old frame of the representation.

Of the distribution of this number among the new constituencies of the United Kingdom (as the total number of members remains unaltered), we have here to speak only of the portion assigned to the parliamentary boroughs now created in England and Wales. To these was transferred the election of 63 members out of the 143 thus taken from the old constituencies. Of the 43 new boroughs, 22, containing each a population of 25,000 and upwards, and including the 23 metropolitan boroughs of London mentioned in the Act, return two members each; and the remaining 21, containing each 12,000 inhabitants or upwards, to send one member.

New Boroughs created by the Reform Act, passed June 7, 1832.

City or Borough (Borough).  City or Borough (Borough).

Aston-under-Lyne (Lancashire) 1  Netherton (Staffordshire) 2
Birmingham (Warwickshire) 8  Oldham (Lancashire) 2
Blackburn (Lancashire) 5  Salford (Lancashire) 1
Bolton  (Lancashire) 1  Salford (Lancashire) 1
Bradford (Yorkshire) 1  South Shields (Durham) 1
Brighton (Sussex) 1  Stockport (Cheshire) 1
Burnley (Lancashire) 1  Stoke-on-Trent (Staffordshire) 2
Chatham (Kent) 1  Stockport (Cheshire) 1
Chester (Cheshire) 1  Streatham (Greater London) 1
Chichester (Sussex) 1  Sudbury (Dorset) 1
Cleveleys (Lancashire) 1  Swavesey, sharing with Abington
Dudley (Worcestershire) 1  with Abington,
Fulham (Middlesex) 2  Kentish, Lee, and Newhall
Frothingham (Somerset) 1  formerly contributory to Car
GloUCESTER (Gloucestershire) 1  rington and Cheltenham
Greenwich (Kent) 3  with Woolwich,
Guisborough (Yorkshire) 1  Woolwich (Kent) 1
Huddersfield (Dorset) 1  Wallsend (South Shields) 1
Kendal (Westmorland) 1  Wallsend (South Shields) 1
Kettering (Northampton) 1  Wallsend (South Shields) 1
Leicester (Leicestershire) 1  Warrington (Lancashire) 1
Lichfield (Staffordshire) 1  Warrington (Lancashire) 1
Lichfield (Staffordshire) 1  Warrington (Lancashire) 1
Manchester (Lancashire) 2  Widnes (Cheshire) 1
Marylebone (Middlesex) 2  Whitley (Yorkshire) 1
St. Asaph 1  Whitley (Yorkshire) 1
Tores 

In the important matter of boundaries, two great objects were to be attained; the fixing of appropriate limits to the boroughs of large population newly created, and the extending the limits of the old boroughs before in each of which a considerable population had, in the lapse of ages, accumulated without the ancient boundary. A large agricultural district was also annexed, for the purposes of parliamentary election to the borough of the city of Lincoln, in the county of Lincoln, Cricklade, East Retford, and New Shoreham. And as regards the Welsh districts of boroughs, it may be observed that the principle laid down in the act of Henry VIII, that all the boroughs in each county should share the representation in principle which the arbitrary interferences of the Crown, and the decisions of election committees, had since rendered in many instances inoperative—was now restored in its full vigour.

SCOTLAND. The number of town representatives is raised from 13 to 23; two instead of one being assigned to the city of Edinburgh; two instead of that of Glasgow, detached from the district of burghs numbered 9 in the foregoing table; one to that of Aberdeen, detached from district No. 4; one to that of Dundee, detached from district No. 5; and one to each of the large modern towns of Greenock and Paisley. As regards the districts of burghs, their number, their general locality, and their proportion of members (one in each district), remain, as before: but as regards the particular places joined in the respective districts, the following alterations are made by the Reform Act:—To district No. 1 is added the town of Cromarty in the shire of that name, not before included in any district.

No. 543. [THE PENNY CYCLOPAEDIA.] VOL. VIII. p 3 G
Port-Glasgow, before unrepresented, are added to it. In district No. 11, Peebles and Selkirk being disfranchised by the act, and merged in the above-mentioned provision, it was decided that the seats of three formerly unrepresented towns of Airdrie, Falkirk, and Hamilton, are joined in their stead with the ancient burghs of Lanark and Linlithgow. In No. 12, in like manner, the burgh of Rothsay is merged in the townships of Leith, Portobello, and Musselburgh, created by the original parliamentary arrangements. To the number of districts, the towns of No. 5, in the old arrangement, being all distributed in the new as above described. New and suitable parliamentary limits are assigned in the schedules of the act, as well to the several ancient boroughs as to those newly created.

IRELAND.—In the list of cities and boroughs sending representatives, no alteration is made by the Irish Reform Act; but two members each, instead of one, are assigned to Belfast, Galway, Limerick, and Waterford, thus raising the whole town representation from 35 members to 39. The limits of the parliamentary boroughs are defined, and to the greater number of them new limits are assigned, by the Boundary Act annexed.

UNIVERSITIES.

One member is added by the Irish Reform Act to the one previously returned by the university of Dublin.

2. Elective Franchise.

COUNTRIES.

ENGLAND AND WALES.—Until the Reform Act, the parliamentary franchise in counties had remained without extension or alteration, as limited full three centuries before by the statutes of the 6th and 10th of Henry VI, the former of which confined the right to such ‘as had freehold land or tenement to the value of 40s. by the year at least above all charges;’ the latter to ‘people dwelling and resident within the county, &c., whereof every man shall have freehold to the value of 40s. by the year.’ In order to render a man a freeholder, and complete his qualification for voting, it was necessary, not only that he should have a freehold interest in his lands and tenements, but that he should hold them by freehold tenure: consequently copyholders, holding by what is technically termed base tenure, as well as termors, having only a chattel interest in their estates, were excluded from voting. Doubts having been raised as to the right of copyholders, it was expressly enacted by the 31 Geo. II, c. 14, that no person holding by copy of court-roll should be thereby entitled to vote. The Reform Act extends the franchise by admitting not only copyholders, but occupiers, under certain limitations; and abridges it in some cases of freeholds not of inheritance, as also in all cases of land situated in a city or borough, and which being occupied by the peculiar right of the corporation, he has a parliamentary right of vote for the city or borough. In establishing the right to the county franchise, questions of tenure and interest have become of comparatively little importance, except as they are connected with value; for now what is commonly, though improperly, called a tenant at will (that is, from year to year) occupying land of the annual rent of 50l. has a right to vote for a county, without reference to the tenure by which the lessor holds the land, or the interest that he may have in it. By 1832, s. 26 it was enacted that it was entitled for a county unless he had been for twelve calendar months in actual possession of the rents and profits to his own use, except in particular cases. But by the statute of 1832, by s. 26 it is enacted, that no person shall be registered as a copyholder unless in the actual possession of the rents and profits for six months previous to the last day of July of the year wherein he claims to be registered. Leaseholders and their assignees, and yearly tenants, must have been so occupied for the same period, except in the cases excepted by the above-mentioned statute of George II. Value, therefore, has now become the criterion upon which, in many cases, the right of voting wholly depends; and in all cases it is a most material subject of inquiry, in order to determine the character, whether as freeholder, copyholder, leaseholder, or occupier, an elector should make his claim to be registered.

1. If lands or tenements are held at a yearly rent of 50l., bare occupation, as tenant from year to year, is sufficient to qualify him for the franchise. Occupiers, i.e., those who are not in reversion or remainder, and it being immaterial by what tenure they are held. 2. So also is the occupation of lands, &c., of 50l. yearly value, as sub-lessee or assignee of any under-lease created originally for a term of not less than 20 years, how small a rent, also, it is not essential to the operation of the legislation. 3. The original lessee of a term created originally for 20 years, of lands of 50l. yearly value, or the assignee of such term, is entitled to vote in like manner, whether or not be the occupier of succeasors. 4. The occupier of lands of 10l. yearly value, as sub-lessee or assignee of any under-lease of a term of not less than 60 years. 5. Likewise the original lessee or the assignee of such a term of the lands of 10l. yearly value, is entitled, whether occupying or not, to the franchise, if six months in the former of the above cases; but twelve months’ possession previous to the last day of July is required in all. 6. The being seized of an estate—whether of inheritance or for a life or lives—whether freehold, copyhold, or of any other tenure, to the like yearly value of 10l., entitles one to vote.

Freehold lands or tenements of 40s. yearly value are still sufficient to give a vote in the four following cases:—

1. If it be an estate of inheritance. 2. If not an estate of inheritance, but only an estate for life, if the lessee was seized previously to the 7th of June, 1832 (the day on which the act received the royal assent), and continues so seized at the time of registration and of voting. 3. If acquired subsequently to that day, if the elector be in actual possession and occupation at the time of registration and of voting. 4. Or if acquired subsequently to that day, if it came to the elector by marriage, marriage settlement, devise, or promotion to any benefice or any office.

Of freehold or copyhold estates six months’ possession, and of leasehold estates twelve months’, is required, previously to the last day of July, in the year of registration, except they come by descent, succession, marriage, marriage settlement, devise, or promotion, &c.

Now, however, the question arises, How, as the law has become more extended, whether the laws of tenure and interest are not coming into general use? Consider how the lands or tenements are locally situated: for if they are freehold within a city or borough, and in the freeholder’s own occupation, so as to confer a right to vote for such city or borough,—or if copyhold or leasehold, and occupied by him or any one else so as to give the right of voting for such city or borough to him or any other person,—they cease to qualify for a county vote.

However, by the 16th section of the act, an express provision is made of all existing rights of suffrage possessed by county freeholders, provided they are duly registered according to the provisions of the act itself.

SCOTLAND.—Under George II. enactments were made by which the voting of the old forty-shilling vote yet more difficult, so that many persons appeared, and at the close of the last century very few remained. Although the Scottish act of 1681 enacted that the right of voting should be in persons publicly informed in property or superiority of lands of 40l. old exchange, or of 400l. Scots valued rent, thus making a distinction, it should seem, between property and superiority, yet it was constantly interpreted to mean that superiors, that is, tenants-in-chief, or persons holding immediately of the crown, were also entitled to vote. Thus proprietors of estates, of whatever value, holding from a subject, were excluded from the franchise. It is computed that in several counties nearly one-half the lands were held in this manner, and very few persons as landlords were so held. The class of landholders thus excluded comprised not only the middling and smaller gentry, and the industrious yeomen and farmers who had inherited or acquired property, but also some men of estates worth from 500l. to 2000l. per annum; while many persons, who had not the smallest actual interest in the land, possessed and exercised the elective franchise.

When a person of good landed property wished to multiply the voters, he chose to surrender his charter to the crown, to appoint a number of his es- cendental friends, to whom the crown parcelled out his estates in lots of 400l. Scots valued rent, and then to take charters from them to possess the real property, thus leaving them apparently the immediate occupants, and consequently all entitled to vote. This operation being open as well to peers as to great commoners, they availed
themselves of it accordingly, thus depreciating or extinguishing the franchises of the smaller proprietors. This legal process began with the 17th century, and was accelerated subsequently to the accession of George III. Among the various modes by which it was performed, the most common were by life-rent charters, by charters on aundent or aundent in aundent, or by charters in fee. A greater or less imaginary representation of the Scottish counties therefore had, according to the expression of a learned lord, 'completely slid from its basis.' The total number of county voters, as compared with the number of persons directly interested in the property and tenure entailed on the land, was considerably increased, the number of real votes scarcely exceeded that of the fictitious ones.

The new basis of county suffrage appears, by the Reform Act of 1830, to have been established, as closely as the difference between the modes of holding land in England and Scotland, or, if in Scotland, will permit, to the system established for England and Wales. While the old class of rights to the suffrage are preserved to the individuals in actual possession of them before March 1st, 1831, provision is made against their perpetuation; while the body of electors newly admitted consists of owners to the value of 10l. a year, -of leaseholders for 57 or years or for life, whose clear yearly interest is not less than 10l.—of leaseholders for 19 years, with a right of purchase, the same interest; -of yearly tenants whose rent is not less than 50l. per annum,—and of all tenants whatsoever who have paid for their interest in their holding an amount not less than 50l. The law of 1831, 18th months previous to the day of the election, the freeholder and the mere occupier, as to the six months' proprietorship required in the former case and the twelve months' occupancy in the latter, and the like exceptions from this condition as to the length of possession in favour of cases where other ownership or lease comes to a person by inheritance, marriage, marriage settlement, "mortis causa disposition," or appointment to any place or office.

IRELAND.—The act of union made no alteration in the parliamentary suffrage of the Irish counties. The qualification of a freeholder remained the same as before, a clear annual forty-shilling interest for life; and as it was customary in Ireland to grant leases on lives, freeholders were thus created whose votes, from their extreme poverty, and consequent inability to discharge their legal obligations to their landlord, were disposable by him as a matter of course. This practice of multiplying freeholds for election purposes merely was carried to an excessive and most mischievous extent, reducing the franchise almost to universal suffrage, among individuals who, by the very instrument by which they were professedly made free, were reduced to the most abject state of political bondage. Thus many of the counties, in choosing their representatives, lay under the absolute inducement of some great territorial proprietor, in those cases where there were few in which a coalition of two or three of the principal landowners would not determine the election according to their own wishes. Under these circumstances, the provision of the Catholic Emancipation Act of 1829, which raised the freehold qualification in the counties of Ireland from 40l. to 10l., can hardly be regarded as a virtual disfranchisement.

The whole civil organization of Ireland having been introduced directly from England, and the system of tenures in particular being the same in both countries, the provisions of the Irish Reform Act which have reference to the territorial franchise are more strictly analogous to those of the act for England than those of the Scottish act could with propriety be made. The existing freehold rights being preserved here, as in the other two divisions of the empire, to their individual possessors, and the 10l. freehold franchise being already established by the above-mentioned provision of the act of 1829, the classes of electors newly created are:—1. the 10l. copyholders; 2. lessees or assignees having a clear yearly interest of 10l. in a leasehold created originally for 60 years or upwards, or of 20l. in a leasehold of not less than 14 years, whether in their assignment or sublease or underlease in either of the two cases just mentioned, actually occupying; 4. the immediate lessees or assignees, and they only, having a 10l. yearly interest in a 20l. lease, and occupying the office or to any other purpose or occupation for a clear yearly value of not less than 10l. It is further provided that in every city or town being a county of itself, in the election for which freeholders or burgage tenants, either
with or without any superadded qualification, now have a
right to vote, every such freeholder or burgage tenant shall
be entitled to vote, if duly registered; but no such person
shall be so registered in respect of any freehold or burgage
tenement, unless he shall have been in actual possession thereof

for twelve calendar months previous to the last day of
July (except where the same shall have come to him,
within such twelve months, by descent, succession, mar-
riage, marriage settlement, devise, or promotion to any be-
 nefice or order of ecclesiastical or other dignity, or unless he shall have resided for six
calendar months previous to the last day of July within
such city or town, or within seven miles of it;—the limits of
such city or town a county of itself, being, for the pur-
purposes of this Act, what is usually known as the several settle-
ments of the Parliamentary Boundary Act for England and Wales.

Similarly provision as to length of occupancy, &c., is made in the case of persons having a previous freehold qualification to vote for any of the boroughs of Aylesbury, Cricklade, East Retford, or New Shoreham.

Such are the provisions which constitute what is popu-
larly called, by reference to their most prominent feature, the 'ten-pound householder qualification'.

But as in the settling of the places which were there-
forward to elect, and in appropriating the members, the new
act made a large compromise with the old system, so also
it made no inconsiderable one, for a season at least, in
spite of the intent of the act, the parliamentary franchise grounded on the old titles to borough freedom.

In all such cases, however, it imposes the very important condition of residence.

It provides that every person who
would have been entitled to vote in the election of members for
such a burgage or freemen, or for a city of London as a freeman and livewoman, shall be en-
titled to vote if duly registered; and that every other person
having, previous to the act, a right to vote in the election for
any city or borough by virtue of any other qualification,
besides those already mentioned, shall retain such right so long
as he shall be qualified as an elector according to the
usages and customs of such city or borough, or any law in
force at the passing of the act, and shall be entitled to vote
if he resided in the same city or town before the passing of the act, and in both of the above cases it
is enacted that no such person shall be so registered unless
he shall, on the last day of July, be qualified in such man-
ner as would entitle him then to vote if such day were the
day of election; nor unless for six calendar months pre-
vioas to that day he shall have resided within such city or
borough, or within seven miles of the place from where the
doll shall heretofore have been taken, or, in the case of a
county borough, within seven miles of such borough.

As regards the class of persons previously mentioned, it
is furthermore enacted that every such person shall for ever cease
to enjoy such right of voting if his name shall have been
omitted for two successive years from the register of par-
liminary freedom in the respective city or town; unless he shall
have been so omitted in consequence of his having received
parochial relief within twelve calendar months previous to the
last day of July in any year, or of his absence on naval or
military service.

The expeditious to which, to serve party purposes during
the agitation of the Reform measure, many of the governing
bodies of corporations had resorted, of admitting unusually
large numbers of freemen, occasioned the following limita-
tions of the above reservation of the elective franchise of
freemen to be introduced into the act, viz.: —That no person
who shall have been elected, made, or admitted a burgess or
freeman since March 1st, 1831, otherwise than in respect of
birth or servitude, or who shall have resided for six
months of the above period in any city or town, shall be entitled
to vote; that no person shall be entitled as a burgess or
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Ireland, this resolution, which was usually treated at the beginning of every session, was resolved into the following form: 'That no peer of this realm, except such peer of that part of the United Kingdom called Ireland as shall for the time being be actually elected, and shall not have declined to serve, for any county, city, or borough of Great Britain, has the right to give his vote in the election of any member to serve in parliament.' The vast increase, since the commencement of the last century, owing to the establishment of so many new branches of revenue, in the number of officials, posts of clerkship, and officers of revenue, occasioned the enactment of several statutes of exclusion from the parliamentary franchise. Thus the 22nd George III., c. 41, excludes every class of officers concerned in the collection or management of the excise, customs, stamps, duties, or in any department of the business of the post-office. By 3 George IV., c. 56, s. 14, it was first enacted that no justice, receiver, surveyor, or constable, appointed by that act at any one of the eight police-offices of the English metropolis, shall be capable of voting for Middlesex, Surrey, Westminster, or Southwark; and by 10 George IV., c. 44, which established the new system of police in certain districts of the metropolis (the operation of which has since been extended to the whole of the English police system), it was enacted that no justice, receiver, or person belonging to the police-force appointed by virtue of that act, shall be capable of voting for Middlesex, Surrey, Hertfordshire, Essex, or Kent, or for any city or borough within the metropolitan district. For perjury or subornation of perjury, or of taking or asking any bribe, are thereby for ever incapacitated from voting. As regards religious grounds of disqualification in general, it shall be observed that no oaths are now required to be taken, nor declarations to be made, as a preliminary either to registration or to voting, all such disabilities as might have arisen from refusal to take or make them are of course removed.

3. Qualifications of Candidates.

Of the close relation so long subsisting between the grounds of the elective franchise and of eligibility, and which had all been observed that as no oaths are now required to be taken, nor declarations to be made, as a preliminary either to registration or to voting, all such disabilities as might have arisen from refusal to take or make them are of course removed.

issuing of Writs for a General Election; Election Precedings and Returns.

An essential and very important part of the representative machinery is that which regards the due transmission from the central to the local authority of the summons to convene, the supervision of the election, and the due return from the local to the central authority of the names of the individuals chosen. When the Lord Chancellor, the highest officer of state, has received the written command of the king in council for the summoning of a new parliament, he thereupon sends his warrant or order to the highest ministerial officer acting under him, the clerk of the crown in chancery, to prepare and issue the writs, or written authorizations for that purpose, to the several shires, cities, and counties, whether of counties at large or of counties corporate.

In the early periods of our history, when the shire-motes, or county courts, were held regularly once a month, and the borough courts once a week or once a fortnight, there was no need to provide against the trouble or inconvenience of a special meeting of the members of those courts, that is, of the freeholders in the former case and the burgesses in the latter, to elect the parliamentary representatives; and accordingly the system of selection of the county members at the next county court, held in the regular course, or at an adjourned meeting of that court, in case such adjournment were necessary in order to allow time for giving due notice of the change from the time when the county courts declined, that a different arrangement became necessary; nor was it until the 25th of George III., when it was enacted that the sheriff, on receipt of the writ, should call a special county court for the purpose of the election.
The writ, thus addressed under the great seal to the sheriff of a county at large, requires him not only to cause the return to be made in accordance with the representation of each city and borough within his jurisdiction. And accordingly, on receiving this command, he issues a precept under his own seal to the head of each municipality enjoying the elective franchise, which precept is to be returned to him within a limited time, together with the name of the person or persons chosen; in like manner as he himself is bound to return, before a certain day previously to that on which the parliament is summoned to assemble, to the clerk of the crown, from whom he received the writ, with the names of the persons chosen, whether as county or as borough members. Such, in brief, as regards the returning-officers and responsible conductors of elections, has been the system from the commencement of the general representation.

In fourteen of the forty-three new and populous parliamentary boroughs created by the Reform Act for England and Wales, which had already a municipal or other chief civil officer or officers in whom this function could be appropriately vested, it is so entrusted by the Act. As regards the others, it is provided, that the sheriff of the respective counties shall, in the month of March in each year, by warrant signed by him, to be delivered to the sheriff for that county within a week from its date, and be by him filed with the records of his office, appoint for each of such boroughs a fit person resident therein to be the returning-officer until the nomination to be made in the March following; such person disqualifying himself by sickness or any other sufficient impediment, the sheriff, on notice thereof, is forthwith to appoint in his stead a fit person, resident as aforesaid, to be the returning-officer for the respective borough. No person so nominated as returning-officer shall, after the expiration of his office, be compellable thereafter to serve again in the same office. Neither shall any person in holy orders, nor any churchwarden or overseer of the poor, be so appointed; nor shall any person so nominated be appointed a churchwarden or overseer during the time he shall be such returning-officer. Any person qualified to serve in parliament is exempted from such nomination as a returning-officer, if within one week after receiving the notice of such appointment he makes oath of his qualification before any justice, and forthwith notify the same to the sheriff. In accordance, however, with all previous usage, it is provided that 'in case his majesty shall be pleased to grant his royal charter of incorporation to any of the said boroughs named in the said schedules (C) and (D), which are not now incorporated, and shall by such charter give power to elect a mayor or other chief municipal officer for any such borough; then and in every such case the returning-officer for such time being shall be the only returning-officer for such borough; and the provisions hereinbefore contained with regard to the nomination and appointment of a returning-officer for such borough shall therefrom cease and determine.'

The division of both counties and boroughs into convenient polling-districts,—the shortening of the time of polling in contested elections, from the old period of fifteen days to two days in England, Wales, and Scotland, and to five in Ireland,—the restriction of inquiry at the poll into the elector's right to the ascertaining the identity of name and qualification with those contained in the register of voters (thus obviating the tedious and litigious practice of election scrutinees), and the limitation of the necessary expenses of election proceedings, borne by the candidates or their proposers,—are among the most important of the recent improvements. For details, as we have already done in the case of the earlier extension of registration, we must refer to the several Reform Acts of 1832.

Having thus given, we believe, a tolerably just though succinct view of the history and present state of the representative system of our British empire, so far as it can be distinctly shown without continuing reference to the other branches of the legislature, we refer for an account of the organization and operations of the Commons, 'in parliament assembled' to a subsequent volume of this work. [Part II.]

There may be the fitting occasion for offering some indications of the future changes in its relative position as a branch of the legislature, to which the revolution recently commenced in its internal constitution must eventually lead. As the progress of this internal revolution itself must conclude the present notice.

We have seen how the popular representation arose, first as a convenient, then as a necessary appendage to the feudal constitution of the crown. We have seen how, early at least as the parliamentary settlement of the crown upon the house of Lancaster, that popular representation, under the title of the House of Commons, had become an effective, integral, independent, and solemnly recognized branch of the executive administrative constitution of that part of the crown, at least as twofold, of the crown in the south, and, at the southward operation of the crown in the murder of the equal and sometimes preponderating independence of the Commons' House, which has in days of its pristine vigour was democratic in the fullest sense of the term, is still, though somewhat popularized by the recent changes, a highly aristocratic body; we do not the least find in these than the successful effort of the national intelligence and will, not so much to replace the legislative representation on the basis on which it stood at the close of the fourteenth century, and which, from the causes we have previously stated, was fixed without any scientific or symmetrical proportioning of the number of representatives to that of constituents, but to mould it into some shape more accordant with the present advanced state of general information in the great body of the people; to render it, in short, a popular representation in fact as well as in name. Towards this point, how much sooner they have fallen short of it, the late alterations by parliamentary enactment distinctly tend The spirit that predominates in them plainly shows from what quarter the impulse came to which they owe their being; and it is a reasonable, at least, if not a necessary inference, that nothing short of a retrogression of the public intelligence can prevent the impulse from being repeated until the great object we have stated shall be completely attained.

COMMUNION, IRISH HOUSE OF. [PARLIAMENT OF IRELAND.]

COMMUNIONS, DOCTORS'. [Doctora Concilia.]

COMMUNION (the Latin communio, the Greek koinonia, κοινωνία) is used to designate the uniformity of belief by which a number of persons are united in one denomination or church, as the Roman Catholic, Anglican, or Lutheran communion. Communion is employed repeatedly in this sense in the canons of the Council of Elvira (Eliuribenorum) A.D. 313. For the examination and comparison of scriptural passages, containing the words κοινωνία and κοινωνία, the Greek Concordances of the New Testament may be consulted.

Communion is used more especially for the common or public act of sharing or participating in the sacrament, eucharist, or Lord's Supper. The origin and use of the Lord's communion in this sense an account is given by Casaubon, Ecles. Ant. 16, c. 20. For the examination of the Holy Communion, it was celebrated every Sunday. (Bingham's Origines Ecclesiasticae, vol. v. c. 9.) It was subsequently administered only three times in the year. Namely, on the day before the major festival of the general council of Lateran, in 1215, it was decreed, in order to check the apparent inclination in many to neglect it entirely, that every one should at least communicate at Easter, that is, once a-year. This injunction was afterwards revived in the council of Cambrai, 1419, as an account of the ancient communion service, Missa Ful-
There was one form for the clergy, a second for the laity (vol. vi. c. 3 and 3), and a third and lowest form for strangers or churchmen. It was used (1) in the Eucharist, the wine being a communicating in one kind, that is, with bread and no wine, appears to have been an antient mode of canonical punishment. (Apod. Can. c. 14.) The bread appears never to have been administered separately between communicating under one or two species or kinds it is in practice being solely in the omission or inclusion of the wine. The communion in two kinds seems to have continued in the Latin church until the end of the 11th century; for in 1099 Pope Paschal II. did not allow the antient kind of two kinds or species, and wine, that the wine alone should be given to those who, from extreme illness, could not swallow the bread. After this period the custom began to prevail of taking the wine by stopping up the liquor hole or instead of drinking it out of the chalice. A letter by Episc. Verona shows that the custom died in 1124, commends this expedient for several reasons, one of the quintess of which is, to avoid the profanation of wasting the consecrated wine by the dipping of bushy beards into the chalices. The communion under one species, that is, with bread alone, was authorized in 1435 by a decree of the council of Constance, and was confirmed by the council of Trent in 1562; but, with the exception of the Latin church, all the various sects of Christians have retained the communion in two kinds. Among heretics the mixing of wine with the water was very generally considered as indispensable to the proper and efficient performance of the eucharistic rite.Justin Martyr, in his dialogue with the Samaritans, testifies that before the opening of the second century, observes that the mode of communicating was with a chalice of wine and water. It is unnecessary to quote passages from the subsequent fathers in confirmation of this fact. They all appear to have believed the water to be an essential ingredient; and several (Cyprian, Epist. 63, and Athenasius, in Psal. 74) assign as the reason of it, that the pure wine of the mystic chalice represents the unmixed nature of God; the pure water represents the nature of faithful Christians; and the composition of the wine and water is a symbol of God and the faithful union of God and the faithful. A decree of the Council of Constantinople, a.d. 691, denounces the Armenians as heretics for celebrating the communion with wine unmixed with water; and the 32nd canon of the council of Trullo decrees the deposition of every bishop or priest who shall omit the water. From the writings of German, patriarch of Constantinople; of Cabasias; of Simon of Thessalonica; of Balsamon, patriarch of Antioc; and of Goar, in his Euchologion; and from the old bishops of Jerusalem, we find the custom of the eucharistic bread and wine. It seems from the last-mentioned custom of the Greek church to dilute the eucharistic wine with hot water, and to administer the mixture hot. To these remarks on the eucharistic rite, we must add the renewal of a custom of the middle ages, (Hers. c. 29) speak of an antient sect of Christians in Phrygia, followers of Montanus, who were called Artotyrtes, (ἀρτοτύρτες,) because, in the communion, they used not bread and wine, but bread and cheese. (Pluquet, Dict. des Héritiers.) Others, the followers of Tatian, in the second century, made use of bread and water without wine, and hence were called Aquarians, and Hydroparastai. (Epiph. Har. 47; Augustin de Harres, c. 23; Cyprian, Epist. 63.) This sect is also spoken of by Clement Alexander, and Chrysostom, and in the fifth century it was revived, with a declaration of motives of sobriety. There appears to have been a custom of communicating with consecrated bread and milk, for it is condemned by the council of Braga, in Spain, and the council of Constance. In the antient church, the Christians celebrated the communion with flour which was kneaded in or with bread which was dipped in the blood of infants, slain or punctured for this purpose, appears to be applicable only to the Christian sects included under the denomination of Gnostics and Manichaeans; at least several of the Catholic fathers, in repelling the accusation from the orthodox, distinctly fix it upon these heretical sects. (Epiph. Har. 26 and 48; Philastrius, Har. Bib. Patr. tom. 4, p. 324.) It was prevalent among the Gnostics and Manichaeans, and the church accepts of its own volition the Eucharist, and the eucharist. Many learned writers have noticed some remarkable points of resemblance in the eucharistic mysteries and the Eucharistic rites, such as their being commemorative, and designed to effect grace in the soul and body. See Abthorp ubi supra; and Casaubon in Baroni. Ann. exercit. xvi. p. 478. On the dif...
forest sorts of communion, see Albaspinius; Du Pin: Anton. Dominicus; and the very elaborate Historie of the
Eucharistie, by Bezae. 
COMENCI FAMILY. [Alexis Comenius.]

COMO, the province of, in the Lombardo-Venetian
kingdom, is bounded to the north by the province of Valtellina, and the
Swiss cantons of Grisonia, of Graubunden, from which it
is separated by offsets of the Rhuten Alps; to the
west by the Lago Maggiore, which divides it from the Sar
dinian territory, south by the province of Milan, and east
by that of Bergamo. The length of the province of Como
north to south, is above seventy miles; north to south, to
the truncated ends of the Grisons, to the borders of the pro
vince of Milan, near Missaglia. Its breadth is very irreg
ular. The east or larger division of the province incloses
the whole length of the lake of Como, the north arm of the Lactor of the
Rhein, the piecè of water, long, narrow, and tortuous, a few of promontories, gulfs, and little bays. Its most nor-
thern extremity forms a sort of distinct lake, called Laghetto,
which is joined to the other part by a narrow channel.
At the junction of the Laghetto with the great lake, the Adda,
coming from Valtellina, enters it on the east side. The
lake then extends nearly due south for fifteen miles; after
which it divides into two branches: one to the south
west, which is about eighteen miles in length, and retains the
name of the lake, and the other of the city being at the extremity of it; the other branch runs south-east for twelve
miles, and is called Lago di Lecco, from the town of that
name. The Adda issues out of the lake at Lecco. The
breath of the lake is very uniform; towards the middle of it is a
two ridges or projections of the Rhethen Alps encompass the basin of the lake: one proceeding from
the group of the Splueng runs parallel to the west bank,
and divides it from the basin of the Lake of Lugano, the
level of which is more than 200 feet above that of the
Lake of Como. The highest summit in this ridge, called Monte
S. Giori, or Lorberg, which rises on the north borders of
the lake of Lecco and between it and the Canton Ticino,
is about 9000 feet above the sea. The other or east ridge
is an offset of the chain which divides Valtellina from
Lombardy, and which forms a high summit to the north-east
of the Lake of Como, called Monte Legnone, about 9000 feet,
and then south, parallel to the east bank of the lake,
dividing the province of Como from the Val Brembana,
in the province of Bergamo. These two ridges sink lower and
lower as they advance to the south, until at last they merge int
the group of Lombardy. They send out many off
sets towards the lake, forming transverse valleys, which are
drained by numerous streams which empty themselves into the
lake. The banks of the lake are one of the most de-
lightful objects on earth, the climate is very mild and gentle,
the soil productive in fruits and vegetables, and the coun
tryside studded with thriving villages, and fine villas or mans
ions of noble and wealthy families. Sailing up the lake from
Como, you see a succession of villas on both banks of the
Villa d’Este, those of Tanzi, Pasto (belonging to the cele-
brated singer of that name), the Villa Belvedere near Ble
vio, and those of Mugiasca and Passalacqua near Meltro.
Opposite Maltro, and on the right or east bank, is the
pretty village of Trona, and the villa called Pinziana, on the
account of the intermittent spring which Pinzy the natu
ralist (ii. 163) describes, and which continues to exhibit the
same phenomena, which are described also, though with some discrepancy, by the traveller in the Pal
demonia of La Pira. This spring was built about 1576, by Anguissola,
one of the four nobles of Piacenza who murdered the Duke
Pier Luigi Farnese, and threw his body out of the window of the
ducal palace of Piacenza. Proceeding north we see on the
left side Pescia, Cerreto, and the fine cascade of Nesso, and
to the left Brienno, with groves of laurel trees, Cologno,
Balbiano, with the island called Comacina opposite to it,
Leno, Cadenabia, and La Trammezina, which last is a small
district full of hamlets and country-houses, in one of the
most delightful situations on the lake. The Villa Som
mariva, a splendid mansion, with a gallery of good paint
ings, is in this neighbourhood. On the opposite side, on
the promontory which divides the two branches of Lecco
and Como, there is an islet called Gnoce, where the
Comedia, is believed by some to have been, on account of
the gay appearance of the landscape. His other villa,
dell' Olmo, belonging to the Odiscalchi family, is the most remarkable. The Lycom, a handsome building, erected in 1824, has a landscape garden attached to it. On a hill south of Como, and near the road to Milan, is the fort of Del Baradello, in which Napoleon delle Torre, the popular chief, and lord of Milan, being defeated by his rival, Ottone Visconti, in 1277, was shut up in an iron cage, in which he died after nineteen years imprisonment. The latter was the native country of the two Pliny, of Paolo Giovio, of Innocente XI. (Odiscalchi), and of Alessandro Volta.

Como is said to have been built by the Orbi, the oldest known inhabitants of the lake, and afterwards occupied by the Gauls with the rest of Insubria. In the year 1196, M. C. Marcellus having defeated the Boii and the Insubres, occupied Como. The place was afterwards ravaged by the Rhettians. C. Pompeius Strabo, father of the great orator, is said to have been the first to call it a free city. Cesar is said to have sent a fresh colony, among whom were 500 Greeks of distinguished families. It then assumed the name of Novum Como. It has been remarked that many names of places in this neighbourhood seem to be of Greek derivation. Greek inscriptions have also been found. After the fall of the empire, Como passed under the Goths, Longobards, and Franks, and became at last an independent municipal community. It was one of the chief possessions of the Count of Aragon, which was relieved repeatedly with the Milanese, who took it after a long siege, and burnt it in 1127. It was afterwards gradually rebuilt where it now stands.

Como has seven manufactories of silks, and also of woolens. Of late years we have seen several new works from the Como press.

COMORIN, CAPS, the southern extremity of the peninsula of India, is the most southern point of Hungary, divided into two parts, one of which, the Danube, is bounded on the north-west by the county of Pressburg. That portion which lies on the left bank of the Danube is perfectly level; but the other, on the right bank, is mountainous, owing to the interposition of the Bakony and Vértes ranges. The Danube is joined by its northern arm close to the town of Comorn, after receiving the Neutra and Waag: the Dotis is another of the numerous streams in this county. Considerable tracts, which were cultivated before the war, are now cultivated by the army. You will find small villages in the time of Mathias Corvinus, king of Hungary. The soil is one of the most fertile in the kingdom, and well adapted for agricultural and grazing pursuits. The climate is salubrious. The surface available for production is estimated at 390,000 acres, of which 209,600 are employed as arable land, 32,100 as pastures, 16,300 as vineyards, and 221,280 are occupied by woods and forests. The whole area is about 1127 square miles. Large herds and flocks are reared, and there is a royal stud at Babolna: there is much game, and an abundant supply of fish. Beautiful marble is got at Tandos and Dotis, and the county also produces limestone, sandstone, and coal. It is divided into fifteen districts, market-towns, 81 villages, and 79 privileged settlements. The population is about 129,000, mostly Magyars, of whom the majority are Calvinists.

COMORN, the chief town, is a royal free town and fortress of the eastern extremity of the island of Schibit, opposite the estuary of the Waag into the Danube. It lies in 47° 45' N. lat. and 18° 5' E. long. The town is irregularly built, and the streets are narrow and narrow; but it is well situated for trade, which is considerable; it has a fine harbour, its commerce is in grain, honey, wine, timber, and fish. It contains four Roman Catholic churches, of which that of St. Andrew is of considerable dimensions, with two places of Protestant worship, a square, a hall, a Roman Catholic and Protestant gymnasium, grammar school for the citizens, and hospital. It is the seat of the entire native association for insuring the vessels which navigate the Danube and other Hungarian rivers, and their cargoes. To the east of the town, and at the point where the Waag
and Danube form a junction, stands the maiden fortress of Comorn, which is defended by extensive works and stee-de-pond on both banks of the Danube; it was built by Mathias Corvinus, and has been rendered one of the strongest places in Europe by the additional fortifications commenced in 1685. The Danube is crossed at this spot by fifteen small boats. Comorn contains about 1160 houses, and 17,500 inhabitants.

COMORO ISLANDS are situated in the channel of Mozambique, between 11° and 13° S. lat., and 42° and 45° E. longitude; they are islands of Africa, somewhat more from the western coast of Madagascar. They are four in number; the largest, Comoro or Angazaye, which extends about thirty miles south and north, is very little known. The principal island is Anzuan or Higaza, which is the sovereign of a kingdom of the same name; it resides: this is the only island visited by European vessels.

[Azian.] The third is Maitot, or rather Mayotte, which is said to have 1500 inhabitants. The smallest is Mohilla or Modelle. These islands have recently been often devastated by the Maratis, or inhabitants of the coast of Socotra in Madagascar, who come over in large boats, besiege the fortified towns for months together, and carry away cattle and men. The population is said to have much decreased, and the smaller islands are nearly abandoned by their inhabitants.

COMPANIES, JOINT STOCK. [Joint Stock Comp-

anies, or Guilds. [Borough, p. 201; Col-

legium.]

COMPANY, in military affairs, is the body of men which constitutes one of the principal divisions of a battalion of infantry, and which corresponds to the troop in a regiment of cavalry's works; and the light companies were so detached from the activity required in the men, which are frequently detached from the line in order to act as skirmishers, according to circumstances, about the battalion or brigade to which they belong. Every company of the line and militia is commanded by a captain, under whom are a lieutenant and an ensign, besides the non-commissioned officers; but in the regiment of artillery, the rifle brigade, and the corps of engineers as marines, each company has, instead of an ensign, a second lieutenant.

In France, the first formation of bodies of men under the denomination of companies, may be said to have taken place in 1573. [Cavalry.] But the institution, in that country, has not always been nearer to the spirit of the word, occurred in 1557, when Henry II. divided a French legion into fifteen bodies of 400 men; each of which, except the two first divisions or companies, was commanded by a captain, a lieutenant, and an ensign, besides two sergeants and eight corporals. Those two com-

panies were considered as being immediately under the command of the colonel himself, and therefore had no officer of higher rank than lieutenant. This regulation seemed to have been followed in the British service, since formerly in each regiment there were two, called the colonel's companies, which were commanded by lieutenants only, who, however, were by courtesy entitled captains.

It is observed that probably from the time of the Conquest the English infantry was divided into corps, consisting of 1000 men, which were subdivided into hundreds and tens. And he remarks that in the list of the army engaged at the siege and battle of St. Quentin in 1557, every man followed in the British service, since formerly in each regiment there were two, called the colonel's companies, which were commanded by lieutenants only, who, however, were by courtesy entitled captains.

COMPASS, A, [M. TITI, is a compass with plain sights, generally vertical wires,] attached to it in such a manner as to be moveable round a vertical axis independently of the compass-card. A pointer shows the angle which the position of the telescope, or sights, marks out on the card, that is, in the bearing of the object towards which the sights are directed. This angle is the azimuth of the object, when the correction for magnetic variation is made. But when the bearings of two objects are measured, the correction need not be applied in merely determining the difference of bearings, since the error affects both equally.

The azimuth compass is a rough instrument, owing to the lightness and slender material of the compass-card, &c. When more exactness is required, a Theodolite, or some instrument of the kind, must be used.

COMPASS, THE MARINER'S. A magnetic needle balanced on a pivot, will, subject to a correction for the variation of the magnet, point out the true direction of north and south. A card bearing the points of the compass, and unalterably attached to any apparatus, such as a globe, will therefore afford the means of adjusting it north and south, if the centre of the card be made the pivot of a magnetic needle. In the mariner's compass, however, it is usual to affix the needle to the card, pointing towards its north and south point, so that the card travels with the needle; and if a pointer (fixed with respect to the ship) mark out the point on the edge of the card which lies in the line drawn through the pivot parallel to the plane which symmetrically bisects the ship, the bearing of the ship's head is shown by the part of the card to which the pointer directs itself. To insure the horizontality of the compass-card, the cylindrical box in which it is enclosed is supported in a loop at opposite points, by pins projecting from it, so as to allow the box to revolve in the loop. This loop is supported in the same manner on pivots, the line of which is at right angles to the first pivots; so that between the rotation of the compass-box in the loop, and the loop itself, the former can always find its position of equilibrium, which is the horizontal position. The small oscillations of the apparatus are immediately destroyed by the friction. The apparatus is then said to be supported on gimbals, or gimbals.

The notation of the mariner's compass is as follows: any point on the card being taken, north (marked N.), the opposite point is the south (marked S.), and the intermediate points are the east and west (E. and W.). The juxta-position of any two letters denotes the point which is half way between the points marked by these letters (N.E., N.W., S.E., S.W., north-east, north-west, &c., half way between north and east, &c.). The repetition of any of the preceding with any of the cardinal points (cardo, a hinge or pivot, points on which all the rest depend), has a similar meaning: thus E.N.E., or east-south-east, means the point which is half way between east and south-east. The intermediate points lie half way between the sixteen points hitherto explained: but instead of continuing the same notation, it is usual to express each by that one of the preceding points to which it is nearest, followed by the cardinal point towards which its departure from its nearest point leads it, the two being separated by the word 'by.' Thus the point half way between east and south-east, is east by south (nearest to east looking towards south). This admirable notation gives thirty-two points, as follows, which are sufficient for all purposes of description.
The distance between any two consecutive points subtends an angle of thirty degrees, or 11° 15' This angle is called a point: and two objects whose bearings differ by such an angle, are said to bear one point from each other. Thus a ship is said to sail within three points of the wind when the angle which her track makes with the line of the wind comes to be less than three times 11° 15', or 33° 45'. The convenience of the preceding notation is combined with greater accuracy (the edge of the card being divided into degrees as well as points) by noting the number of degrees between the direction in question and the nearest together with the direction of departure. Thus E.N.E. 7° 21' E., would imply a direction which makes an angle 7° 21' with E.N.E., towards the east. If fractions be used, they mean fractions of a point, and when less than a quarter of a point from north-east towards the east.

COMPASS, HISTORY OF THE. The knowledge of the directive power of the magnet was unknown to the Greeks, the Romans, and to European nations generally, till late in the twelfth century; and does not appear even then to have been brought into common use for nautical purposes. It has however been so known and so used in China, Japan, India, and Arabia from periods of high antiquity. It has been employed in all those countries, not on account of the validity of the claims of the Chinese, and of the authenticity of the dates attributed to the notices of it in the grand annals of their empire: but the most careful examination of the Chinese claims does not warrant our scepticism. The Chinese, however, who went to China in the beginning of the 17th century, were of course little likely to admit the high antiquity claimed by those annals without rigorous inquiry; nor were they likely to receive a basse for, with which they have left, even implicitly, the chronological authority of the Vulgate Scriptures: yet this was not only the case, but upon their return they unanimously agreed in the conviction that those records were authentic, and several of them published the account of their voyage in the West in the course of the same year. When the learned scholar Klaproth published his 'Lettre à M. A. Humboldt sur l'Invention de la Boussole,' at Paris; and a translation of the passage in question has been again given in English by Mr. Davies in his 'Early History of the Mariner's Compass,' just published in the 'British Annual for 1837.'

The circumstance, from its incidental mention, seems to give greater authority to the passage. It relates to the date 2634 years before our era.

'The Wai-kai said: Tchi-yew bore the name of Nian-kih; he was related to the Emperor Yan-ti. He delighted in war and turmoil. He made swords, lances, and large cross-bows to oppress and devastate the empire. He called and had an army. He took little time to get to the scene of action. He was so enterprising, and his disposition and avarice exceeded all bounds. Yan-ti-yu-wang, unable any longer to keep him in check, ordered him to withdraw himself to Chao-hao, in order that he might remain in the west. Tchi-yew nevertheless persisted more and more in his perverse conduct. He crossed the river Yang-chou, ascended the Keou-nao, and gave battle to the Emperor Yan-ti at Khong-sang. Yan-ti was obliged to retire and seek an asylum in the plain of Tchou-yao. A passage runs: 'A passage runs from Hsuan-ti; then collected the forces of the vassals of the empire, and attacked Tchi-yew in the plains of Tchou-lou. The latter raised a thick fog, in order that by means of the darkness light might be made invisible, and the enemy might lie in ambush. But Hsuan-yu-sang constructed a chariot for indicating the south, in order to distinguish the four cardinal points; by means of which he pursued Tchi-yew and took him prisoner. He caused him to be ignominiously put to death at Tcheou-hou. Tchi-yew was then banished to the south, in the province of Chao-hao. The name of the plain of the broken curb.

Other Chinese accounts vary as to language and as to circumstances relating to the personal character of Chichi-yew: but the account above given is the usual one.

The mariner's compass is however minutely described by Gu-de Provins, who wrote his satire entitled 'Le Bible,' about the year 1190. This has usually been assumed to contain no indication that the mariner's compass was a recent discovery, or only little known in France at the time of the earhest period of their history down to the present times.

Though numerous other passages of various dates speak equally explicitly of the use of the compass for land purposes, yet no mention of the use of the magnet for navigation occurs in any of their books that have come to our knowledge of European authors, till the time of St. Thomas Aquinas, which lasted from the year 265 to 419 of Christ. It is in the great dictionary Poi-wen-yeu-fo; and it is there stated that 'there were then ships directed to the south by the needle.' Mr. Davies contends that this passage rather refers to the marsh-like ships and the interminable voyages which they performed, than to the introduction of the needle into marine affairs. In the nineteenth century, two Mohammedan travellers travelled into Arabia, an account of whose journey was published. In that MS. (which bears internal marks of being written as early as the close of the eleventh century) by Eusebius Renaudot, at Paris, in 1718. In it is stated that the Chinese at that period (the ninth century) traded in ships to the Persian Gulf and the Red Sea; and though the compass was not mentioned, it is utterly improbable that the Chinese should have known the directive property of the magnet, and have used it on land for thirty centuries, yet not have used it at sea. It was announced that, before the Chinese coast had it come into general use in Europe, as is obvious from the following passage from a MS. written in 1442, by Blaik Kibdijak, which is very explicit in its description of the magnetic compass: 'The more the notice, amongst other passages of the magnet, that the one who navigate the Syrian sea, when the night is so dark as to conceal from view the stars which might direct their course according to the position of the four cardinal points, takes a needle which is wet, and places it over the palm of the hand, or even smaller; bring it to the surface of the water, give to their hands a rotary motion towards the right, so that the needle turns on the water's surface; they then suddenly and quietly withdraw their hands, the two points of the needle face north and south. They have given me ocular demonstration of this process during our sea voyage from Syria to Alexandria in the year 640' (of the Hegira). An older passage than this might have been quoted, did the limits of our article allow of amplification; but this has been chosen on account of the distinctness of the description. When we consider the jealousy with which all knowledge was guarded by its possessors, especially of commodities which add to the wealth and prestige of a nation, it is probable that those who knew the use of the compass, at least for marine purposes, were in a state of privilege, and that the use of the compass must have been very common at a period when a passenger was initiated into the complete knowledge of the mode of magnetsing the steel needle, as well as the mode of using it.

In 1260, when Li-Boo returned from his travels in Cathay, he is believed to have brought a knowledge of the compass, as well as other Chinese inventions, back to Europe with him; but there is no known authority for this opinion that can lay claim to authenticity. It is certain, however, that before the close of the fifteenth century, when Vasco da Gama found his way round the Cape of Good Hope, the pilots of the Indian Seas were expert in the use of seacharts, the astrolabe, and the compass; and the compass was taken to the Landnamabok of Are Frode, who lived about the close of the eleventh century, has been brought forward by Professor Hansteen to prove the use of the magnetic needle for purposes of navigation at least as early as the tenth century for those times sunmen had no lodastone in the northern countries.' But this passage is most probably an interpolation by the continuator of the chronicle: which view is supported both by the remark of the editor, Finserus, of the manuscript of the chronicle in boxes, as well as by the fact that the whole passage not being found in three different MSS. Its authentic origin cannot reach higher than the fourteenth century. (Brit. Ann., p. 296.)
of the composition of the satire; but Mr. Davies considers that the minuteness of the description itself, as well as of the values, proves that it was an instrument at that time not only not much known, but a total novelty. Guayot, a minstrel by profession, had probably seen it in use during the crusades, to one of which he most likely had previously attached himself. At the example of Caravel de l'Estirry and Vincent de Beaune, both Frenchmen, and both crusaders, writing at a later period by a quarter or half a century after Guayot, speak of it as a great curiosity which they saw in the east, and as a thing peculiar to the Great Khan of the Mongols. There is hence the slightest foundation for the belief that it was used by European seamen so early as the thirteenth century, though there can be but little doubt that by the middle of the thirteenth century it had come into partial use and into general currency, in one of the adventures of Gauchoir d'Epinos, is an allusion, which no one would have had not his auditors been familiar with the magnetic needle.

Considerable doubts rest upon the character to be given to a MS. known as the Leyden MS. of Adiger. This (which has been published by Cavallo in the supplement to his 'Treatise on Magnetism,' pp. 37-62), makes the compass appear, for a long time, as a 2269, and, what is more remarkable, it does not appear to have been known to the writer, Petrus Peregrinus, as capable of use at sea, whilst its declination from the true meridian is distinctly expressed. Klaproth does not even mention this; Libri touches upon it in the authority under the name of the MS. of Windeleske has very recently published a commentary upon it, which we have not seen; and Davies waives the discussion of it till a future period. Under the circumstances there is no inappropriateness in leaving it as an open question; and we feel the more disposed to do this, as there is very clear proof that the needle was at least partially known in Europe before the period when that letter, ad Sigerium, was written; and moreover that it throws no especial light upon the progress of the improvement of the instrument.

It was long contended that the inventor of the compass as a navigational instrument was Flavio Gioja, a native of Amalfi; but the date given by the Italian is from 1300 to 1330. It will be obvious from what we have already said, that there is no foundation for this opinion; and independently of this, the authority of the statements themselves are invalidated by an appeal to the facts which are affirmed in proof of it, as may be seen either in Klaproth's letter or in the 'British Annual.' Before this assigned period, even the Trésor of Brunetto Latini (the master of the Divine Dante) bears evidence that the compass was known. It is, however, of great importance that Gioja greatly improved the compass, either by its mode of suspension, or by the attachment of the card to the needle itself, or in some other important particular.

The French have laid claim to the discovery of the compass, and the date given by the Italian is from the circumference of the north point being marked with the fleur-de-lis; but in the absence of all distinct evidence on this point, it is much more probable that the view taken by Mr. Davies is correct—that the figure is an ornamented cross, and originating in the devotion of the ignorant and superstitious age to the mere symbol. Or, again, he observes, as the compass undoubtedly came into Europe from the Arabs, the fleur-de-lis might possibly be a mistake for the jilak or dart, the name by which the Arabs called the needle.

The discovery of the variation of the needle was, generally, before the appearance of Cavallo's 'Treatise on Magnetism,' attached to Columbus, and since that time it has been assumed as being very early known. [DECLINATION OF THE COMPASS.]

By whom the suspension, now generally used, was invented, is altogether unknown from any document, or other evidence. There is something in the machine itself which involves two circles, whose suspending diameters are at right angles to each other, technically called gimbals (or jimbals), is however, on all hands, admitted to have been English, though we are still ignorant both of the person who invented it or the period of the invention. It appears to be tradition, evidence on which the opinion rests; but a tradition in which rival nations agree, bearing on an invention which would be honourable to any one to have a power to claim, can hardly be supposed an erroneous one. Still, even in England, in the time of Queen Elizabeth, the construction of a needle was a very difficult art.

The dip of the needle, or its inclination, was also the undoubted discovery of an Englishman, Robert Norman, a naval-instrument maker at Wapping, who published a book on his experiments in 1594, under the title of the 'New Attractive.' [DIPPER NEEDLE AND MAGNETIC INTENSITY.]

The Variation of Declination is also an English discovery, being made, as is well authenticated, by Stephen Gray, in 1704. The improvement of this is due, to a great extent, to the instrument itself, to a great extent to the instrument itself, and in particular, by one of the essays of Gauchoir d'Epinos, is an allusion, which no one would have had not his auditors been familiar with the magnetic needle.

The iron employed so extensively in modern vessels has created great but generally unsuspected deflections of the magnetic needle from the position which under the influence of terrestrial magnetism only it would take in any given point. At any given time numerous vessels have been wrecked in consequence of this alone. Mr. Barlow invented a simple apparatus, which considerably diminishes the danger from this source, and this is the last improvement which navigation has received. Numerous vessels connected with navigation, has received. It is designed under the head [CORRECTING PLATES].

The employment of so many mallein iron as is usual in vessels (especially steamers) does however threaten to render the compass, as generally a matter of nautical, as is shown in the place just referred to.

COMPASSES. This term we suppose to be synonymous with compasses, instruments by which we compasses two legs, and by which we can go to a very great distance. We shall here only give such a general notion of different kinds of compasses as will perhaps suggest the most convenient for any particular purpose.

1. Common Compasses, or Dividers. There are simply two pointed legs on a common pivot for measuring distances. For drawing a circle the lower end of one of the legs is removed, and its place supplied by a holder for a pencil, or by a steel pen. The two pointed legs of the compass have a part attached to the upper part by a spring, so that by means of a screw a very small motion may be given to the lower end. It is convenient for very accurate dividing, but must be used with care.

2. True or Marine Compasses. These have three legs and two pivots, so that the three points of a triangle can be once transferred. This is useful only in rough work, as the instrument is difficult to handle.
4. Proportional Compasses.—These consist of two dividing compasses with a common pivot, which, when open, present two different legs; the intervals between the points of one and the other are in the same proportion as the legs of one to the legs of the other. The pivot is a clamping screw, which can be transferred along the line of the second compass; a small adjustment of its length points out how to adjust the instrument to alter any line, or surface, or solid, in a given proportion. These compasses sometimes have an apparatus for slight adjustment; but on the whole we consider it as an instrument for rough work.

The instrument is a cylindrical bar, perpendicular to which, with clamping screws, slide a point and a pencil. The use of it is to describe large circles, or measure large distances, the common compasses being very liable to slip if opened very wide. It is a very safe and sure construction.

5. There is a method of describing a small arc of a very large circle, as follows. An elastic rod of metal is furnished with a rigid bar, on which it can be drawn up by screws, so that the rod shall form an arc, the chord of which is a part of the bar. This may be adjusted so as to pass through three given points nearly in the same straight line, and though the curve thus described by guiding the point of a pencil on it, or capitation, as it is called, would be, for all small flexures, it will come sufficiently near for practical purposes.

Other many compasses of various kinds have been constructed, but these are all we have ever seen in use. [Calibre, etc.]

COMPIEGNE, a town in France, in the department of Oise, on the left bank of the river Oise, just below the junction of the Aisne, and on the road from Paris to St. Quentin. It is 43 miles N.N.W. of Paris in a straight line, or 46 miles by the road through Senlis: in 49° 25' N. lat. and 2° 49' E. long.

Compiégne was originally a hunting residence of the kings of France, of the Merovingian and Carolingian races. Charles Le Chauve founded here an abbey, and built two castles: the abbey with its church was rebuilt by Charles Le Simple. Several of the Carolingian princes resided here, and some of them are buried here; but, under the third race, that of Capet, the town fell into some degree of neglect. In the contests of the Bourguignon and Armagnac factions, and in the wars of France and England, Compiégne changed hands frequently. It was in a sally from this place that Jeanne d'Arc was taken prisoner.

The town is agreeably situated, partly on the summit, and partly on the slope, of an eminence. The streets are badly laid out and the houses ill built, except in the neighbour-hood of the château, where there are some good houses; there is a bridge over the river of three spans. The parish churches, of which only one and a chapel of ease remain in use. The town-hall is a remarkable Gothic building, with a lofty tower rising from the roof.

The splendid and magnificent royal château was gradually built under Louis XV., according to the designs of the architect Gabriel. The gardens are more extensive than those of the Tuileries. This castle was the residence of Charles IV. of Spain, his queen and their suite, during the first part of their captivity in France, A.D. 1808. Here Napoleon and Maria Louisa, archduchess of Austria, first met on occasion of their marriage in 1810.

The population of Compiégne in 1831 was 8879. There are considerable works for the sawing of timber, and a fine rope-walk; a number of boats, suited for the navigation of the Oise, are built here. There is a considerable trade carried on in corn and wood; the latter is sent to Paris by water carriage. There are a college or high school and a public library.

In the immediate neighbourhood of the town is a forest of considerable extent, used for the chase; this forest is attached to the château. A great quantity of wooden wares is manufactured here, much more, in fact, than can be supplied to the French departments. The arrondissement of Compiégne contained, in 1832, 97,812 inhabitants.

COMPLEMENT, that magnitude which, with another, makes up a given magnitude. This is the general name of a peculiar species (applying it to the case of parallelograms), are as follows:—Complements of the parallelograms about the diagonal of a parallelogram: through a point in the diagonal draw parallels to the sides; the whole is then divided into two parallelograms on the diagonal, and two which only touch the diagonal at one angle. The latter pair are called by Euclid complements to the former pair.

The complement of an arc or angle by which it falls short of a quadrant or a right angle.

The arithmetic complement of a number is the number by which it falls short of the next higher decimal denomination. Thus, ar. co. 936 is 900—936, or 64; arith. comp. of 10 is 10—10, or 0.

COMPLEXION. [Race.]

COMPLEUTENSIAN POLYGLOTT. [Polyglotts.]

COMPOSITAE, the largest known natural order of plants; if, indeed, it is really an order, and not a group of a higher designation, consists of monopetalous exogens by syngenesous stamens, and an erect solitary ovary in a simple one-celled inferior ovary, the style of which is divided into two arms; the flowers are always arranged in dense terminal heads, or capitula, on a leafy peduncle, and in the internal rows of bracts forming an involucre. Professor Lindley regards it as an alliance of several natural orders. It consists of herbs, shrubs, or trees, found in all parts of the world, but assuming an arboreous character only in the tropics. Under this nominative the plants in this situation, are often exceedingly similar to each other in appearance, and have always been, from the birth of botany as a systematic science, the puzzle and reproach of systematists. Every system, therefore, that has considered the subject more complicated and difficult, till Cassini, a Frenchman, of good powers of observation, much patience in investigation, and a clear head, with the command of the rich materials included in the Paris herbaria, set steadily about a re-formation and re-examination of the whole order; he pointed out for the first time, that differences in the stigma are of primary importance in arranging these plants; he purged common genera of species wrongly referred to them; he boldly proposed the adoption of a host of new genera for the reception of those species, and he led the way to a logical and natural disposition of the previously unwieldy mass. Unfortunately, however, he was more skilful in separating than in combining; he stated the result of his investigations in a manner unanswerable to prolix and wearisome, and he altogether failed in effecting any general reformation of the order; he was a mere man of detail. Improving upon the discoveries of Cassini, with far greater skill and judgment combined, was the French botanist Lessing, who gave the world, in 1832, a synopsis of the genera of Compositae, in which for the first time, a clear, compendious, intelligible view of the order was systematically taken; and his work was found to have a long time to a great extent a profounder of his subject in all its bearings, with immense materials at his disposal, with a particularly clear systematic mind, and of a sound and solid judgment, he has reduced the whole subject to as simple a state as it is possible to the vegetable kingdom. One five volume of 706 pages, and containing about 4500 species, has appeared under the name of 'Prodomus Systematis Naturalis Regni Vegetabilis,' and the remainder, containing as it does, is a book of reference. But the arrangement of his matter was not favourable for comparative examination; the characters of his genera were too strictly differential for so difficult a group of plants; and moreover his style was diversified by numerous unnecessary instances of troublesome neology.

It is only within a few weeks before the appearance of this article that Dr. Candolle, the celebrated botanist of Geneva, has achieved the difficult task of systemating Compositae, and he has given the subject a form which is much more systematic and evident in the printing. It is probable that the changes in genera are too numerous in this work, as indeed is almost always the case when old erroneous errors are suddenly and violently corrected; but such blunders are hardly perceptible to the critical eye, and are of no real importance to the general question.

The old and generally adopted plan of breaking up Compositae into primary divisions, is that of Jussieu, which may
be explained thus:—Every head of flowers, or florets, as they are technically named, has a central part, or disk, and a circumference, or ray: if these florets some are regularly tubular, with their limb cut into four or five segments; others are slit up on one side, opened flat, and turned towards the circumference of the head; the latter are named ligulate florets. When in a head of flowers all the florets are alike and ligulate, it belonged to the division Cichoraceae. (Fig. 1), as in the dandelion; if the florets of the disk were tubular, and of the circumference only ligulate, it was referable to Compositae (Fig. 2), as in the marguerite; and when all the florets are alike tubular, both in the disk and ray (Fig. 3), it belonged to Cynaraceae. The latter character was necessary in order to distinguish Cynaraceae from those Compositae in which the ray is not developed, as common groundsel. To these three divisions a fourth has in later times being added under the name of Labiatiflorae, in consequence of the florets having distinctly two lips of unequal size (Figs. 4 and 5.)

These divisions have however been thought objectionable on several accounts, and De Candolle, following Cassini and Lessing, has trusted more to modifications of the style; the result of which is the following arrangement of the order in eight tribes.

* Tubuliflorae; namely, with the hermaphrodite florets regularly tubular, and five (seldom four)-toothed.

Tribe 1. Veroniaceae. Style of the hermaphrodite flowers cylindrical, its arms usually lengthened and subulate, rarely short and obtuse, always equally hirsut in about all the length. The true stigma ending short of the middle of the arms of the style. A part of the rayless Corymbiferae. (Fig. 1.)

Tribe 2. Eupatoriae. Style of the hermaphrodite flowers cylindrical, with long somewhat club-shaped arms, which are covered externally near the end with papillose down. The true stigma but little prominent, and usually ending short of the middle of the arms of the style. A part of the rayless Corymbiferae. (Fig. 2.)

Tribe 3. Asteroideae. Style of the hermaphrodite flowers cylindrical, with linear arms, rather flat externally, and towards the end equally and finely downy. The true stigma produced about as far as the origin of the external down. A part of Corymbiferae. (Fig. 3.)

Tribe 4. Senecioideae. Style of the hermaphrodite flowers cylindrical, with linear arms having a pencil of hairs at the point; either truncated, or produced beyond the pencil into a short cone, or a long narrow hirsut appendage. The true stigma broad and prominent as far as the pencil. A part of Corymbiferae. (Fig. 4.)

Tribe 5. Cynaraceae. Style of the hermaphrodite flowers thickened and knobby towards the upper end, and often
pencilled at the knob, the arms either distinct or grown to-
gether, and downy externally. The true stigma not pro-
minent, reaching the apex of the arms, and then becoming
convex and directed toward the Calyx. (Fig. 6.)

** Labiatiforme, namely, with the hermaphrodite florets
usually two-tipped.**

*Tribe 6. Mutisiacae.* Style of the hermaphrodite
stigma cylinard at the upper end, or rather knobly, the
arms usually obtuse or tubed, very short on the
side, and at the upper part covered with minute down
or, naked. (Fig. 6.)

*Tribe 7. Nasauciae.* Style of the hermaphrodite
florets internal to the petals in both, the arms
rather long, truncated and pencilled at the point only. (Fig. 7.)

** Liguliforme, namely with all the flowers hermaph-
drdoite and ligulate.**

*Tribe 8. Cicinoraceae.* Style cylindrical at the upper
e part, the arms, which are somewhat obscure and
easily hairy; the true stigma terminating short of the
middle of the arms. (Fig. 8.)

De Candolle estimates Composite at one tenth of the
whole vegetable kingdom. They are in some cases sopo-
rific, as lettuce and succory; in others, they are diuretic,
as various connias; some are tonic and stomachic, as worm-
wood and chamomile; but they are not of great medicinal
importance to man, the last plants being the most valuable
among them. (Fig. 9.)

All composite are said to be

**COMPOSITE ORDER. [CIVIL ARCHITECTURE; CO-
LUMN.]**

**COMPOSITION.** In the gradual progress of mathe-
matical language, this word has acquired a general meaning,
as follows. Any one magnitude is said to be compounded
of two others, when it produces the same effect as the
other two put together. For instance, if we increase a
length in the proportion of 3 to 7, and then increase the
result in the proportion of 2 to 5, the original line is
compounded of the effect of P X Y, and the effect of P Y Z.
Hence the proportion of 6 to 35 is said to be the proportion
assembled of the proportions of 3 to 7 and 2 to 5.

The effects of which it is in our power to form a distinct
conception are of two kinds. 1. Those in which there are
only two kinds imaginable, and those two diametrically op-
posite, with one neutral intermediate state. 2. Those in
which the diametrically opposites have an infinite num-
ber of intermediate gradations. Loss or gain of money is
typical of one or other. (Fig. 10.)

If, at the rate of an inch to a shilling, gains were
measured northward from a given point, and losses south-
ward, we could immediately make it a necessary conse-
quence that the balance, if any, is represented by a line
northward, and according as it is for or against. But draw a
line eastward, and it will readily be admitted that such a
line will not present itself in any necessary con-
exion with a sum lost or gained, or neither lost nor
 gained. For if the larger, why should a line eastward be
preferred to a line westward, or in any other direction?

An immense number of modes of composition will readily
suggest themselves, in which addition and subtraction are
the processes by which composition takes place. If I go
three miles northward, and then two miles farther. I go in
all 3+2, or 5 miles northward. Other modes, as in the
instance first given, will suggest themselves, in which multi-
plification and division are the compounding processes, and
so on ad infinitum. The preceding cases are but to illustrate
only is concerned; but whenever we have both magnitude
and direction, it is plain that we have both magnitude
and direction to consider in the effect. If I go a mile
northward and then a mile eastward, the whole effect, as
to direction, will be, that I go north-east; as to mag-
itude, that I go not two miles, but only \(\sqrt{2}\) miles, or 1:414
miles very nearly. Here is an instance in which the com-
ponents are represented in magnitude and direction by two
sides of a triangle, while the total effect is similarly repre-
sented by the third side. But we could find various instances in which the meaning of that term implies the point at which a single action must take place,
which will produce the same effect as a number of differ-
ent actions produced in other ways.

If, in mechanics, we have to consider the combined effects
of different velocities, pressures, moments, rotations, &c.,

**COMPOSITION OF MOTION, of VELOCITY, of FORCE, &c. [COMPOSITION.]**
COM.

COMPOSTELA. [Man.] COMPOSTELLA, SANTIAGO DE, the capital of the principal province of Spain, and an archbishop's see, is situated on a hill near the river Tambró, in 42° 52' N. lat., and 8° 17' W. long. It has two collegiate churches and a number of other churches and convents. Besides the great hospital, which is one of the finest in Spain, there are hospitals for orphans and insane persons, and other almshouses for beggars of both sexes. The number of beggars in the streets is very great. The cathedral, dedicated to the apostle St. James, is above 300 feet in length, forming a cross, with seven gates, and twenty-nine chapels and some of which are ornamented with marbles, jasper, and other valuable stones. The church was once very rich in silver lamps and other ornaments, but the French carried off most of the plate in 1809. The chapter is numerous and wealthy, and the archiepiscopal see is one of the richest in Spain. Among the convents, those of San Francisco and St. Martin of the Benedictines are the handsomest. The principal square, called Plaza Real, and one or two streets, are good; but the rest are steep, narrow, and ill-paved. The situation of the town itself, surrounded by mountains, which leave it a very confined horizon, is gloomy, and the climate damp and cold in winter. The university has a good library, four colleges, and the faculties of theology, philosophy, law, and medicine. The city is besieged by numerable walls for defense and comforts. Compostela has a population of 25,000 inhabitants, among whom are many wealthy landed proprietors. It carries on a considerable trade, and has manufactures of paper, hats, leather, wool, stone, and lace. [Miñana, Diccionario Geográfico de España.]

The Moors took Compostela A.D. 997, and set fire to it. They carried away the ornaments of the cathedral and its bells, which they took to Cordova, but they were restored by the king St. Ferdinand, after he took Cordova in the middle ages, and even down to the last century, Compostela was a place of great resort for pilgrims from all parts of Europe, who repaired to the shrine of the apostle St. James, from whose name it is often called simply Santiago, or Santiago of Galicia. It is 40 miles S. by W. of Coruña, 300 N.W. of Madrid, and 24 miles E. of the nearest point of the sea, which is at the mouth of the Tambró, S. of Cape Fisterra.

COMPOUND, that which results from composition.

COMPOUND ADDITION, &c. [Addition, &c.] COMPOUND FLOWERS are the flower heads of Composite; they are masses of small flowers collected upon a depressed axis, or receptacle, and surrounded by an involucrum of floral leaves or bracts.

COMPOUND INTEREST. [Interest.] COMPOUND QUANTITY is a geometrical quantity, such as in which more than one unit is employed, as in 2 pounds, 3 shillings, and 6 pence; 2 miles, 3 yards, and 4 inches.

COMPOUND RATIO. [Composition, Ratio.] COMPRESSION. [Expansion.]

COMPURGATOR. In the middle ages a practice prevailed, derived from the canon law, of permitting persons accused of certain crimes to clear themselves by purgation. In these cases the accused party formally swore to his innocence, and, in corroboration of his oath, twelve other persons, who knew him, swore that they believed in his consciousness that he stated the truth. These twelve persons were called compurgators. [Ducange ad vocem Juramentum, Jure sancto quedam prorsus ad hanc institutam.]

The ceremony of canonical purgation of clerks-convent, when more than the formal oath of the party accused, and the oaths of his twelve compurgators, continued in England until it was abolished by the statute 8 Eliz. c. 7. [Benefit of Clergy.]

COMPTAT D'AVIGNON, LE, and LE COMTAT VE- NAIS, former provinces of France, which, up to the period of the French revolution, were subject to the pope, and are in most maps represented as one district, under the general designation of Le Comtat. The Comtat was situated between Provence, Dauphiné, and Languedoc. It was bounded on the north and northwest by Dauphiné, on the east and south by Provence, from which, on the south, it was separated by the Durance, and on the west by Languedoc, from which it was parted by the Rhône. Within these limits however was included also the principality of Orange, which was enclosed on three sides by the Comtat, but formed apart of it. Le Comtat is watered by various streams, the Ouvèze, the Arc, the Nesque, the Sorgue, and others, which, uniting their waters, flow into the Rhône. The surface is not uniform; in the north and south, it is hilly and mountainous, with an undulating part of Provence; in the mountains it is colder; the banks of the Rhône and Durance are rendered less agreeable by the prevalence of north winds. The soil produces abundance of grain (especially excellent wheat), olives, and olive-wood, chestnut, little timber, but mulberry, olive, and almond trees are common.

The district includes some considerable towns, as Avignon, an archiepiscopal (population 25,000), Bollène (population 3849 for the whole commune); Carpentras (pop. 6294 for the town, 9817 for the whole commune); Cavallion (pop. 3845 for the town, 6911 for the commune); and Vaison—all these formerly were of episcopal rank. L'Isle (pop. 4717 for the town, 6852 for the whole commune); Pertes (pop. 3264 for the town, 4593 for the whole commune); Valfrès (pop. 2858 for the town, 4348 for the whole commune); Bollène (pop. 3779 for the town, 4672 for the whole commune); Mazan (pop. 2209 for the town, 3069 for the commune); Mau- tran (pop. 2209 for the town, 3069 for the whole commune); Montbrun (pop. 2106 for the town, 4760 for the whole commune). Perhaps the population of the commune, which is greater in this district than in the rest of the province of Vaucluse (in which Le Comtat is now included), and the proportion which the rural population of each commune bears to that of their respective towns may be taken as indications of the prosperity which the district enjoyed under the sway of its ecclesiastical rulers. Avignon was the capital of Le Comtat d'Avignon, and Carpentras of Le Comtat Venaissin.

During the sovereignty of the popes the government was in the hands of his vice-legate, who resided at Avignon; under him Le Comtat Venaissin was governed by a magnate, called recteur. The dominion of the popes over Le Comtat Venaissin originated in 1277, when it was bestowed on Pope Gregory X. by Philippe III. de Bardi, king of France. Avignon was not acquired by the pontiffs till several years after. The whole is now comprehended in the department of Vaucluse. [Avignon; Vaucluse, Department of.]

COMTE. [Count.] CONCANT, NORTH AND SOUTH, a district of Beja- pore, comprising the entire sea-coast of that province, and extending from the sea to the Western Ghaut mountains, which form its eastern boundary. Its length from north to south is about 220 miles; its breadth in no part exceeds 50 miles; and the average is 4 miles. The district includes many fertile places, which yield abundant harvests of rice; but the surface is in general very rough, and much intersected by steep and rocky hills. Towards the ghaut there are extensive plains, most places are divided by hills, intersected by ravines, and covered with thick forest. The range itself is from 2000 to 4000 feet high, and exceedingly abrupt on the west: the passes are numerous but steep, and very seldom practicable for carriages. The table-land of the coast is nearly as high as many parts of the ghaut, but in general the hills rise above it to the height of from 1000 to 1500 feet.

The northern part of the chain of ghauts and that part of this table-land which is intersected among them by the ghauts, is chiefly inhabited by Bheels. More to the south the country is inhabited by Coolies, who are less predatory in their habits and altogether more civilised than the Bheels: these latter, although they live quietly when in the open country, resume all their wildness in places amongst the hills or jungle. The Bheels are small in stature and black; they wear few clothes and are always armed with bows and arrows. In the hills both Bheels and Coolies live under rude huts, which they build for themselves or their own, and in general have been little interfered with by the Maharratts or Marathan men.

The northern Concan, which extends from the district of Surat on the north, or about 20° 20' to about 18° 50' N. lat., ceded to the British by the Peishwa in 1817; and the southern Concan, which extends from the line of demarcation to about 16° N. lat., was obtained partly by cession, and partly by conquest from the same ruler in 1817 and 1818. A great part of the Northern Concan was once a tree.
by the Portuguese, who divided the lands into large estates, which were given to Europeans, whose opulence is proved by the remains of many splendid public buildings and private dwellings which they erected, and some of which are still in use at present.

The district is traversed by numerous mountain streams, but has no river of magnitude: it contains along the coast a great number of small bays and harbours, which, although they offer but little facility to commerce, serve to shelter piratical vessels and for the entrance of ships is in many numbers. The land and sea breezes blow alternately during the twenty-four hours; the former are not felt at a greater distance than forty miles from the shore.

The Northern Convex consists of 4756 villages and 2291 villages; and according to a census taken by the Bombay government to the directions of the East India Company in 1822, its native population amounted to 640,865 persons, of whom 575,100 were Hindus, 42,035 Mohammedians, and 1680 Portuguese and Jews, the descendents of former settlers. This population was composed of males under 12 years of age 131,333. Above ditto 203,238

<table>
<thead>
<tr>
<th>Females under 12 years</th>
<th>79,784</th>
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<tr>
<td>Above 12 years</td>
<td>226,889</td>
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Total 640,857

The number of houses in this southern division was 131,324; the number of ploughs, 58,335; and of oxen and bullocks, 129,855. The amount of land revenue in 1829-30 was, in

| Northern Concén | 18,65,925 rupees |
| Southern        | 10,65,421 |

Together 21,21,244

or 212,124.

The roads throughout the district are for the most part very indifferent, being little more than paths, excepting roads between towns; a time when the more difficult and precipitous places, steps of an easy ascent have been constructed, mostly at the expense of private individuals.

From reports made by the government collectors in 1828, it appears that there were in the Northern Convex 137 schools, in which instruction was given to 2679 scholars; and in Southern Convex, 282 schools, with 6721 scholars, being in the proportion of one scholar to 113 inhabitants.

| Report of Committees of House of Commons on the Affairs of India, 1849-50, &c. | Revenue Sections from Collections in the House of Commons 1851-7 |

CONCEAVER and CONVEX—CONCAVITY and CONVEY

A cone is a surface lying on the side of which straight lines drawn from point to point in fall between the curve or surface and the spectator; that side is convex on which the curve or surface falls between such lines and the spectator. A surface may be either entirely convex, as the inside of a sphere, or entirely convex, as the outside; or concave in some directions and convex in others, as the surface of a dice box, or that made by the revolution of an hyperbola about its minor axis.

For the mathematical tests of convexity or concavity, see CURVE FORMS. [L.]

CONCAVE LENSES. [Lens.]

CONCAVE MIRRORS. [Mirror.]

One of the principal forms of a convex mirror is the concave mirror, having the same centre; thus concentric circles are those described about the same point.

It is pointed out in the Affair of India, 1849-50, &c. that was of the order of a first-class instrument.

CONCEPION. [Chile, p. 64.]

CONCEPION, a town of Chile, about seven miles from the shores of an extensive bay of the same name. It is situated on the shores of the bay, surrounded by a quarter of a mile from it; but during the floods the river washes the houses of the town. It occupies nearly a square mile, and is quite open, without any defences. Being built after the mode of a European town, without any high walls, and the river Rollos runs between without a mark. It has fine open square, in which are the cathedral and the public buildings. The present site was chosen after the old city of Penco was destroyed by an earthquake in 1763, and Concepcion itself has frequently suffered from the same cause. In February, 1835, almost every house was thrown down; even the cathedral and a convent became a mass of ruins. At Talcahuano the sea is said to have risen 30 feet, and driven the vessels from their anchorages; in retiring it swept away the whole village. The population of Concepcion is estimated at about 7000. It has no manufactures and little commerce.

The bay, which is deep and commodious, is well sheltered by the fertile island of Quiriquina, which lies across the safe channel, their extinction on each side. At the head of the bay is the Puerto de Talcahuano, a small innable town containing altogether about 1000 inhabitants, off which place ships generally lie. Along the shores of the bay are several villages, though the country is little cultivated. A considerable amount of coal is exported at Talcahuano. Refreshments of all kinds are plentiful; this district is indeed famous for its vines, grain, fruits, and estuarine roots. Wine is made of an inferior quality, and arrow-root is raised. The bay abounds in fish, wood and water may also be had.

Talcahuano is about 240 miles to the south of Valparaiso, in 36° 42' S. lat. and 72° 57' W. long. The tide rises about six feet. (Becher's Voyage to the Pacific, &c.)

CONCERT, in music, a performance of several pieces of either vocal or instrumental music, but commonly of both, by different voices, and on various instruments. The earliest concert of which we have any record is that of the Philharmonic, at Signum, which was founded previously to 1655; for in that year another society, the Incantati, was founded. It was to London. It is due to the credit of having instituted the first regular series of concerts, under the title of The Academy of Antient Music, in 1691, which had its first performance on 21 Feb., and 80 members. The society of 1680 altered its name to The Royal Concert of Antient Music, in 1715, which has continued to the present day, and has ever since proved a school of music of inestimable value, by keeping alive a taste for the finest productions of the old masters. In 1791, Salomon, the celebrated violinist, commenced a series of subscription concerts at the Hanover-square Rooms, for which he engaged Haydn not only to write those twelve grand symphonies which are among the glories of the art, but to come to London to conduct their performance. These concerts went on till 1796; then ceased for a time, but were revived for the relief for grand instrumental compositions. But in 1815, a party of eminent professors, with a view to rescue orchestral music of the highest class from the neglect into which it had fallen, formed a body under the title of the Philharmonic Society, and these concert for the purpose of subscription concerts, the success of which, both as regards the main design and the support they received, was without any parallel. They constitute an era in the art, and by their continuance act powerfully in promoting the advance of music.

Our space will only allow us to name a few other concerts which have risen up in the British metropolis, flourished for a time, and then fallen into decay. Bach (John-Christians) and Abel in 1763 established subscription concerts, which have flourished for twenty years. These were succeeded by The Professional Concert, which, after a struggle, yielded to the enterprise and ability of Salomon. The Vocal Concerts of Harrison and Khoyett, in 1792 at Willis's Rooms, and were discontinued at the end of the season of 1794. They were revived in 1801 by Messrs. Bartleman, Harrison, Knyvett, and Gatrex, and conducted on a much larger scale, first at Moorfields, and finally fell off, and in 1821 were totally abandoned. In 1809 and two following years, Mrs. Billington, Mr. Bratham, and Signor Naldi had subscription concerts at Willis's Rooms, and were opposed by Madame Catalani at the Hanover-square Rooms, and the first fruit of this attempt was made to establish British Concerts, for the performance of music by native composers. Upon the same principle—aburd because exclusive—a concert was founded in 1834 under the name of the Society of British Musicians, the continuance of which has this year
(1836) been announced; but it has hitherto failed entirely in accomplishing its object. In 1833, a Vocal Society of thirty professional muses was formed at the Hanover Square Rooms, and gave six concerts, consisting almost entirely of vocal music, antient and modern, of every school. They are continued, and conducted on a principle so laudable that every lover of the art must feel an interest in the success.

CONCERT-PITCH, in Music, is the pitch—the degree of acuteness or gravity—generally adopted for some one given note, and by which every other note, of course, governed. Concert-pitch has frequently much varied, and may have been made little if any effort to obtain a fixed standard, though so desirable, and so easily established.

CONCERTO, in Music (an Italian word adopted in our language), a composition in which many performers play in concert, i.e. in unison, but in which a solo or two instruments are more prominent than the others. Such are the concertos of Corelli, Handel, Geminiani, Avison, &c. But from the latter part of last century the term has been applied to the species of composition written for one principal instrument, with accompagnaments for a full orchestra. Of this description are the piano-forte concertos of Mozart, Dussek, Cramer, Beethoven, &c.; and the violin concertos of Viotti, Rote, &c. It must be observed, however, that in the orchestra of Mozart and Beethoven the orchestral parts are so full, so essential, that those compositions may, if the expression is allowable, be designated as symphonies with a piano-forte part obligato.

CONCHA, M. de Blainville’s eighth family—M. Rang makes it the ninth, and places it in the second division, Dimyrares, containing those families which have two muscular impressions in each valve—of his third order (Lamellibranchiata) of his third class (Acrophalina) of Mollusca, or mollusks. The following is De Blainville’s definition of the family. Mantle closed before (en avant), above, and behind, where it is prolonged by two tubes more or less long, extensive, and either separated or united; abdomen constantly provided with a foot of slightly variable form, smaller. Shell nearly always regular, entirely closed, equifalcate; umbones curved forward; hinge dorsal, complete, that is to say, with teeth and ligament; this latter either external or internal, short, and swollen (bombé); two distinct muscular impressions united below by a ligula more or less large, and very often inflected or returning backwards (rentée en arrière).

‘All the animals of this family live plunged more or less deep in the sand or in the mud, but they are still able to come to the surface occasionally.’

M. Rang thus modifies De Blainville’s definition, principally for the introduction of Iridina (which according to the observations of M. Deshayes could no longer be retained among the Scapheliidae and Gastroidea, a fossil species). Mantle closed, furnished with a considerable anteroinferior opening, for the passage of a foot, and presenting the posterior tubules more or less elongated, extensive, united or separated longitudinally, the lower one serving for respiration, and the upper one for dejections. Shell equifalcate, generally regular, rarely gaping; umbones more or less curved forward, hinge almost always with teeth; ligament short and swollen, internal or external; muscular impressions very distinct; united, by a pallial impression more or less excavated posteriorly.

‘Animals marine, rarely fresh-water.’

Cuvier (last edition of Règne Animal), at the foot of his definition of the Cardiacea, the fourth family of his Testaceen, the following note: ‘On a fait la famille des Conchacées.’ The following is Cuvier’s definition of his Conchacées. ‘Mantle open in front (par devant), and, moreover, with two separate openings, one for respiration and the other for the excrements, which are prolonged into tube sometimes distinct, sometimes united into a single mass. There is always a transverse muscle at each extremity, and a foot which, most frequently, serves for creeping. It may be regarded as a sufficiently general rule, that those animals have long tubes live plunged in the mud or sand. One may recognize on the shell this condition of organization by the more or less developed contour (contour plus ou moins reentrant) which the impression of the attachment of the borders of the mantle describes before along with the impression of the posterior transverse muscle.’

These definitions appear contradictory, but in reality they are meant to convey the same ideas. The mouth is placed anteriorly, the foot is exerted inferiorly, and the tubes open posteroily.

* Hinge linear and toothless—fresh-water. (Rang.)

Genera. Iridina.

Animal elongated, straight, rather thick on the back, thinner towards its inferior border; mantle delicate, terminated anteriorly by a thick border, open from the anterior muscle to two-thirds of the lower border for the passage of the foot; borders of the mantle united throughout the whole posterior part, whence spring two short and unequal tubes, with no retractor muscle to the siphons; foot concealed and sharp-edged. Shell, with an epidermis, convex or iridescent internally, tolerably thick, oval oblong, elongated, incrustated, equifalcate, inequilateral, the anterior end shorter than the posterior, a little gaping at either end; umbones small and projecting but little, slightly incurved; hinge very long, linear, attenuated towards the middle, often crenulated, as it were, throughout its length; ligament very long, marginal, external; muscular impressions very distinct. Example. Iridina elongata, Lam. Irid. elongata, Bow.

[Iridina elongata, one-third of natural size.] (Bow. Gen. Mem. 2.)

Lamarck gives the rivers of warm climates as the locality. The specimens were supposed to come from China. M. Caulliaud found them in considerable abundance in the Nile; and from his specimens preserved in spirit M. Deshayes, who made his examination. Mr. G. B. Sowerby figures another which he considers to be a new species (Zool. Journ., vol. I., tab. 2), and describes it (p. 53) under the name of Iridina Nitida, obtained from Sennar by M. Caulliaud, and sent to England by M. D’Aubleard. It very much resembles the species given here as an example, but its hinge margin is not crenulated or dentated. M. Deshayes, in his last edition of Lamarck, makes it identical with Iridina elongata. Lemp. and Desh., Analc. exotica, Blainv. Le Maitre, Addison.

** Hinge with teeth.

a Regulæ; hinge-teeth lateral and wide apart (marine).

Cardium (Cockle).

Animal very much rounded, having a very large cylindrical foot with a subcomical termination, bent, elbow-like, about the middle, and directed forwards. The lobes of the mantle, which is bordered inferiorly by tentacular papillae, are united posteriorly; but in the commissure, instead of elongated siphons, there are only very short ones; sometimes more perforations in lieu of them; these are ciliated on their edge like the siphons at their free extremity. These parts are so short that they are without proper retractor muscles; whence it happens that the pallial impression in the shells of this animal is so shallow. M. de Blainville, brought home by Captain Perry (Supplement to Voyage of 1819-20); and the sea of almost every warm and temperate climate abound with them. Hab. The genus is generally found buried in sand near the shore. It has been observed in mud and gravel at depth varying from the surface of the sea to thirteen fathoms. By means of its large and long elbow-like foot it can leap well.
The species are numerous, and some grow to a very large size. M. Deshayes in his edition of Lamarck gives forty-eight, including Hemicardium; a form which Cuvier proposes to separate from the others, comprehending the species with compressed valves strongly carinate in the middle; observing that it is difficult to suppose that the animal is not modified in unison with this singular conformation. M. Rang corroborates Cuvier's observation, from the examination of many living individuals of Cardium Cardiis, the type; but M. Deshayes considers that the form can only be admitted as a section.

De Blainville divides the genus into the following sections.

1. Species more or less gaping posteriorly, and with the ribs of the shell as large as the channelings. Example. Cardium exoicum.

2. Species not gaping, and with the ribs as large as the channelings. Example. C. tendalia (but see below).

3. Species not gaping, with the ribs larger than the channelings. Example. C. edule.


5. Species whose anterior side is very short, and nearly flat. Example. C. Hemicardium.

Mr. G. B. Sowerby has added fourteen new species, and Mr. Broderip one, brought home by Mr. Cuming. (Zool. Proc.)

Fossil Cardiids.

M. Deshayes in his tables gives fifty-three living species and thirty-nine fossil (tertiary), and C. ringens, citare, echinatum, sulcatum, edule, tuberculatum, and planatum, as both living and fossil species (tertiary). Of the recent species M. Deshayes, in his edition of Lamarck, where they are given as forty-eight, considers Cardium indicum, C. ringens, C. echinatum (of which last he makes C. tuberculatum to be only a variety), C. sulcatum, and C. edule (common cockle) as identical with fossil species described by Brocchi and others under different names. The fossil species he makes amount to thirty. Of these he refers C. echinatum to its living analogue, C. Burdigalimum to the recent C. indicum, C. rhomboides to the recent C. edule, and considers C. diurnatum, Lam., as identical with C. hians, Brocchi. The fossils occur in nearly all the fossiliferous strata from the Supermucaceous to the Grandvaisse group, and appear to be most abundant in the crab, London clay and green sand, and the contemporaneous beds. Cardiota, Brod., was found by Mr. Marchion in the Lower Ludlow rock, i.e., the lowest part of his first or uppermost Silurian formation.

Capha.

Animal with the mantle considerably open at its anterior border for the passage of a compressed and very large foot: tubes separated and of considerable length, with tentacular papillae at their orifices. Shell transverse, equi-valve, inequilateral, not gaping; cardinal teeth diverging from a point close to the umbo, no lateral teeth in one valve, in the other, one distinct bident cardinal tooth, and two distant very oblique lateral ones; ligament external on the anterior side of the umbones; a large sinus in the pallial impressions.

Geographical Distribution.—Temperate and warm seas.

Habits.—Buried at a small depth in the sand, where they are said to lie with the posterior part upwards to facilitate the influx of the water for respiration. The genus has been found in sandy mud and soft mud, at depths varying from five to twelve fathoms from the surface of the sea.

Mr. G. B. Sowerby considers, that of the two species C. tergitata (Donax tergitata), and C. Bransilatata, now remaining in the genus which he says appears to have been instituted by Lamarck in his Systeme, adopted by Bruguiere in the 'Encyclopédie Méthodique,' by de Blainville in the 'Dictionnaire des Sciences Naturelles,,' and other authors, the second is figured among the Donaces by Bruguiere: they are, he adds, very nearly related to Donax, but the characters of the hinge, and the absence of crenulation round the edge of the valves, will serve to distinguish them. M. Rang observes, that they approach Donax so closely, that the example of M. de Blainville in unifying the two may be followed. Mr. G. B. Sowerby says, that Donax complanata, Mont., is the only English Capha with which he is acquainted; and that the genus differs from Sangui- nolatata in not gaping, but resembles it very much in the hinge teeth. M. Deshayes remarks, that Bruguiere was the founder of the genus Capha, and that he assembled under it the shells to which Lamarck has since given the name of Sangunolatata, and some others belonging to the Tellinidae. When he adds, Lamarck dismembered the genus, he should not have retained the name of Capha, on account of the confusion consequent on the application of it to shells which Bruguiere placed among the Donaces. M. Deshayes only records two species, C. tergitata (Lam.) and C. Bransilatata (Lam.), in his edition of Lamarck, and is of opinion that the genus should be altogether suppressed and referred to Donax. Mr. G. B. Sowerby has added a new species, C. altior, brought home by Mr. Cuming. (Zool. Proc.)
Animal rather compressed, more or less triangular, having the mantle bordered with tentacular appendages; visceral appendages large; mouth small; branches very unequal, on the same side; foot compressed, trenchant, angular; tubes separate and elongated, returning into a sinus of the mantle.

Shell more or less triangular and compressed, always longer than it is high, regular, equivale, very inequilateral, posterior side shorter than the anterior; umbones but little prominent, and nearly vertical; hinge composed of two cardinal teeth, sometimes upon both valves, sometimes upon one only, and one or two lateral teeth more or less distant; ligament external, short and swollen; muscular impressions rounded, united by a pallial impression, which is straight and very much excavated posteriorly.

Mr. G. B. Sowerby observes, that Lamark is at issue with himself, when he calls the ligament posterior in Donax; for the sake of consistency, we must continue to call the side on which the ligament is placed, as well as the sinus in the muscular impression of the mantle, whether it be the shorter or the longer, the anterior side. We are aware that Cuvier has pointed out the improbability of this; but the term anterior is generally adopted for the side which bears the ligament, and posterior for the opposite side.

M. Deshayes, in his edition of Lamark, well observes, that the terms anterior and posterior, as used by that zoologist, are badly applied, and that it must not be concluded, as some have done, that the Donaxes and Tellinae have the ligament on the anterior side. Adamson, he remarks, has doubtless assisted in confirming the error, that the former have the ligament placed on the anterior side; for, probably through inadvertence, in representing the animal of a Donax which he names Fumet, he makes the foot protrude from the short side which bears the ligament, and the siphon from the long side; but, argues Deshayes, all the Donaxes examined have the siphons coming out of the shorter side of the shell. The presence of the siphons in a great number of the conchiferous mollusks, is indicated on the shell by a more or less deep sinusity of the pallial impression, and this sinusity directed posteriorly shows the position and the direction of the siphons; and in Adamson's figure this sinusity is seen on the short side, showing that the siphon there comes out, and not the foot, as the neighbouring figure would indicate. The consequence, concludes M. Deshayes, is that the Donaxes come within the rule common to the Conchifera; the ligament is on the posterior side where the siphons are protruded.

**Geographical Distribution.**—Widely extended. De Blainville says that the species occur in all parts of the world.

**Habitat.**—Plunged in sand and sandy mull, where the animal lies with the short side of the shell uppermost, at a depth ranging from the surface of the sea to ten fathoms.

The species are numerous. M. Deshayes, in his tables, enumerates twenty-nine living, and in his edition of Lamark thirty of these. He considers Donax scuerrus, Linn., as having been established on a young individual of D.

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**Fossil Donaxes.**

Mr. G. B. Sowerby in his Genera of Shells (No. 10, published some time since), says, 'Of fossil species there are very few; Brocchi mentions two, and we possess a small one from Bordeaux, but I believe they are very scarce.' De Blainville quotes Defrance for seventeen, three of which are analogues, one at Loignan, near Bordeaux, one in Italy, and a third in the environs of Paris. Deshayes in his tables gives fifteen fossil (tertiary), and one only (D. stultus) as becoming and fossil, as belonging to the genus of Lamark, the last-mentioned species is passed without any notice of its occurring in a fossil state; but D. trusculus is noted as fossil, and Brocchi, Conch., t. ii., p. 537, No. 1, is quoted: inasmuch is not notified posteriorly, a fossils are said to have occurred principally in the blue marls of the south of France, &c., the beds at Bordeaux and Dax, and in the oolite group.

**Gastropoda (fossil only).**

Shell subtrigonal, equivale, regular, nearly equilatera, a little attenuated at its posterior part, and presenting at the posterior-inferior border a slight sinusity; umbones very small, not projecting, hardly inclined forwards; hinge with three cardinal diverging teeth in each valve, and from three to six cardini-serial teeth, lamellate with finely demarcated edges, converging towards the summit, and situated a little below them, under the ligament; a single lateral tooth, anterior, beneath the lunule, in the left valve, corresponding with a hollow similarly situated in the right valve; ligament externa, bug, swollen, passing beyond the serial teeth; muscular impressions nearly equal, oval, united by a pallial impression largely and very deeply excavated posteriorly.

This genus, founded by M. Charles des Moulins, was soon founded with the Donaxes by M. de Basterot. M. Ramez, who agrees with M. des Moulins on the propriety of this separation, says that there is but one species, G. donax-formis.

**Locality.**—The marine beds of Mérignac (tertiary). Mr. Lea, in his interesting 'Contributions to Geology,' describes and figures another species, G. Moulinsii, from Claiborne, Alabama (Americas), here copied.

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[Gratulia Moellani.]

Tellina and Tellinidae.

**Animal** generally very much compressed, considerably elongated; mantle moderately open at its antero-inferior

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* The term 'blue marls of the south of France,' &c., is here used in the same sense as it is by M. Marcel de Serres and in De la Bèche's Manuel.

† Philadelphia, 1853. Mr. Lea considers the species of Claiborne as tertiary, and refers them to the same period as the London clay of England, and the Coal-measure of Paris.—Excursus period of Lyell.
part, and bordered with tentacular appendages; branchial musculae, on both sides; foot very much compressed, transversely, and pointed below; tubes very much elongated, separated, and capable of being returned into a fold of the mantle.

**Shell** generally elongated, and very much compressed, equivaleval, regular, sometimes slightly inequilateral; the anterior side not longer than the posterior one, which is often angular, with a flouccous and irregular bend or fold at its lower border; umbones very small; ligament posterior, crenulated and elongated, carried by a second ligament near the umbo; muscular impressions rounded; pallial impression straight, and very deeply excavated.

Lamarck makes the forms of *Tellina* and *Tellinidae* distinctly generic. Mr. G. B. Sowerby follows Lamarck's arrangement, observing that of the *Tellinae* there are many species, some of a form very much elongated in a transverse direction, as *T. rostrata*, *Spongleri*, &c. and others of an oval shape, some of which are rough on the outside, *T. linguifilis*, for example; others again, nearly orbicular, *T. scobinata*, *T. carinata*, &c.; a very few have one valve more flat than the other, *T. opercularis*, for instance; while both valves are remarkable for the play of open and closed *Tellinidae*. Of *Tellinidae*, he says that the number of shells that may be ranged under it is rather considerable, although Lamarck has mentioned only one.

Mr. M. de Blainville and M. Rang think that these two forms belong to one genus, and M. Deshayes is of the same opinion. In his edition of Lamarck, he observes that the *Tellinidae* are allied by almost insensible gradations to the *Praamnidae* (Praamnidae and Praamnidae, Lam. Pnamnidae, De Blainv.) on one side, and to the *Donacaes* on the other, not only in the characters of the shells, but in that of the animals. Under *Praamnidae*, however, it would appear that his observations on the animal are founded on the figure in Poli, for he says that in a species made known to him by MM. Quoy and Gaimard from the voyages of the Astrolabe, characters were observed which, up to that time, the *Tellina* had not offered. The lobes of the mantle of this animal were very thick, dentilated, and reaching beyond the shell, which thus became semi-intrameral. (Praamnidae).

**Geographical Distribution and Habits.**—In almost all seas, but more particularly in those of warm climates, where, like the *Donacaes*, they live plunged in the sands and sandy mud; *Tellina* having been found in the former at depths varying from the surface of the sea to seventeen fathoms, and *Tellinidae* in sandy mud at depths ranging from five to sixteen fathoms. Mr. G. B. Sowerby observes that the genera areGo by the prey of *Donacaes*, *Eucanianes*, and other carnivorous *Trachelipodes*, which pierce the shell to devour the inhabitant.

The species are very numerous. M. Deshayes, in his tables, makes the number of living species sixty-eight, and that of *Tellinidae* being still one. Of these, he considers some as repetitions or varieties (Tellina unimacula, *Tellina sulphurea*, for example, the first of which he considers a white variety of *T. radiata*, and the second as identical with *T. latirostris*, the only difference being that of colour), and others as founded merely on the difference of age (*T. chloroleucus*, for example).

Lamarck divided the species into the following categories:

1. Those with the shell transversely oblong. (Ex. *T. radiata*).
   - (Ex. *T. scobinata*).
   - De Blainville divides the genus thus:—
     1. Subtriquetral species. (Ex. *T. binaculata*).
     2. Elongated species, but with a notch on the posterior side shorter and narrower (plus étroit) than the anterior. (Ex. *T. radiata*).
2. Oval, or suborbicular, and nearly equilateral. (Ex. *T. scobinata*).
   - Equilateral species, sufficiently elongated, almost without a flexuous fold; two divergent cardinal teeth, and two distant lateral ones, of which the anterior is but a little distant from the umbo. (*Tellinidae*, Lam.)

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**Fossil Tellinidae.**

Mr. G. B. Sowerby, in his 'Genus,' says that the fossil species are not numerous, and only found in the newer tertiary beds. De Blainville gives the number (1825) at twenty-three, of which there are four analogous in the Plaissiat, according to Brocchi, and three identical at Lyons, according to M. Defrance. M. Deshayes, in his tables, makes the number of fossil (tertiary) species fifty-four, and he records twelve species as both living and fossil (tertiary). In his edition of Lamarck (who, at the end of the notice of his fourth and last fossil species, printed in both editions, refers to the seventh volume of his 'Amphidae du Musée,' for other fossil Tellins), he gives sixteen.

Among the fossil shells collected from the western borders of the Red Sea, by Mr. James Burton, communicated to Mr. Lycett by Mr. Greenough, then President of the Geological Society, are the following species not noticed in the tables: *Tellina Linguifilis*, rugosa, virga, rostrata.

The fossil species are recorded as occurring in the Supracretaceous group, in the Cretaceous group, and in the Oolitic group (Coralline Oolite, York.; Kimberidge clay; Bernese Jura). Mr. Murchison mentions two species (probably) in the Salopian group of Lias.

**Amphidinella.**

Lamarck, after having founded the genus *Donacilla*, thought it necessary to unite it to *Amphidinella*. But, observes M. Deshayes in his edition, he did not perceive that many other shells which he placed among the *Mastix* and *Crassatella*, had absolutely the same characters with *Donacilla*, and differed, generally, from the greater part of the *Amphidinella*, *Mastix* and *Crassatella*. In consequence of these observations, and from examinations both of shells and of the animal communicated to him by MM. Quoy and Gaimard, M. Deshayes formed his genus *Mestesina*. We return to *Amphidinella*, reminding the reader that M. Deshayes remarks that it should be studied with attention, that it is 'peu naturel,' and ought not to be retained till it has undergone the necessary reforms. M. Rang, who observes that M. de Blainville had confounded the last named genus with *Lucina*, gives the following characters.

**Shell** suboval or rounded, of little thickness, longer than it is high, inequilateral, sometimes a little gaping; hinge with one or two cardinal teeth, and sometimes lateral teeth more or less projecting; ligament double; one ligament external and short, the other internal and fixed in a narrow (étroite) groove of the hinge.

**Geographical Distribution, Habits, &c.**—As the genus was left by Lamarck, it would appear to be widely spread, for it is recorded as occurring in the European seas (Northern, English channel, Mediterranean); those of New Holland and the south; and on the coasts of Brazil. But it should be remembered that *Amphidinella corallidea* Lam., *Mya Nervigera*, Chemn., is the example given by Deshayes for his genus *Osteodesma*, while *A. globella* (seas of New Holland and Kangaroo isles) is one of his *Mestesina*. The
species, which are tolerably numerous in their undisturbed state (Amphidrasta, Lam.), are said to have been found in sands and mud at depths varying from the surface of the sea to forty fathoms. Lamarck gives sixteen species; Mr. G. B. Sowerby has added twelve, brought home by Mr. Cuming.

Example, Amphidrasta variegata. Locality, coast of Brazil.

[Amphidrasta variegata.]

Fossils Amphidrastina.

Mr. G. B. Sowerby (Genera) says he does not recollect to have seen Amphidrasta in a fossil state. Deshayes, in his tables, notes three living species and one fossil (tertiary), probably the new species without a name, recorded by Mr. Lyell, as having been found by the latter at Caltagirone.

Five species are recorded by Phillips in the oolite group. In Dr. Fitch's paper, one species from the green-sand is figured, and described as doubtful.

Mesodesma (Deshayes).

Animal inclining to oval or subtrigonal, flattened; lobes of the mantle united for two-thirds of the posterior length, and provided, at their posterior extremity, with two short siphons prolonged within by a very delicate membrane; foot very much flattened, quadrangular, hidden in part by the branchia, which are short, truncated, and fixed (soufles) posteriorly, the external pair smallest and subarticulated. Shell oval, transverse or triangular, thick and ordinarily closed. Hinge with a spoon-shaped hollow, straight and mesial for the ligament, and, on each side, an oblong and simple tooth. (Deshayes.)

M. Deshayes remarks that the shells of this genus are easily recognized. The shell is always thicker than that of the Mactra: they are more compressed, more completely closed (mieux fermées) and in this respect approach the Crassatella. The hinge is particularly remarkable; in the middle of the border and immediately below the umbo, is placed a spoon-shaped, triangular, deep hollow, the border of which projects within the valves as in the greater part of the Lutrariae. On each side of this spoon-like process, in which the ligament is inserted, is seen in each valve a large thick tooth, and behind, a hollow to receive the tooth of the opposite valve. Muscular impressions unequal; the anterior largest, elongated; the posterior somewhat rounded. The pallial impression in the species which approach the Mactra has a moderate posterior sinusity which diminishes more and more in proportion as the species have more resemblance to the Crassatella. The sinuosity exists, however, in all the species of the genus.

M. Deshayes concludes, from these and other observations, that the Mesodesma constitute a distinct genus, differing more from the Amphidrastina than the Mactra and Crassatella; and he purposes to place it in the method between those two, but definitely intermediate, or being the point of junction, serving to confirm the relations established by Lamarck between the Mactra and Crassatella, relations which, he observes, many zoologists have wished to destroy without sufficient reasons. M. Deshayes then gives a list of ten species which are either Mactra, Crassatella, Amphidrasta, or Ergyninae of authors. In his tables only seven species, and those living, are recorded. The genus is here placed between Mactra and Ergynina. No fossils mentioned.

Cuming (G. B. Sowerby).

"A genus which should be placed near to Amphidrasta. It is remarkable for the dissimilarity of the hinge of the two valves, one having a strong lateral tooth on each side of the ligament, and the other being entirely destitute of lateral tooth. Having only met with a small West Indian species, we could not venture to consider this genus as existant, until Mr. Cuming showed us several species in his rich collection of South American and Pacific shells, one of which is sufficiently large to show the characters distinctly. (Genera of Recent and Fossil Shells, No. 46.) Mr. Sowerby characterizes the shell as inequilateral, with the anterior side rounded and the posterior rather acuminated. A single small anterior cardinal tooth observable in each valve: one strong lateral tooth on each side of the hinge in one valve, but no lateral tooth in the other valve: ligament internal, and affixed to a somewhat flattened pit in each valve. Muscular impressions two in each valve, lateral and distant, the anterior irregular and oblong, the posterior rounded. A very large sinus in the muscular impression of the mantle.

Geographical Distribution and Habits. — Tropical seas as far as is yet known, in clay, mud and sand, in the fissures of rocks, at a depth varying from the surface of the sea to six fathoms. No fossil species known. Example, Cymatina mustica (Sow.)

Macra.

Animal oval, somewhat thick, with the borders of the mantle thick and solid, furnished posteriorly with two tubes but little elongated, and united; branchial lamellae small and nearly equal; foot oval, trenchant, very long, angular. Shell transverse, inequilaterally, subtrigonal, sometimes a little gaping at the sides; umbones protuberant; hinge with one cardinal tooth, folded into the shape of the letter Y, the point being nearest the umbo, and the branches diverging from it; posterior to this and very close to it is a very thin sharp tooth; sometimes the branches of the folding tooth are separated at the base, forming two diverging teeth; ligamental pit immediately behind the angular tooth and projecting within the shell. Lateral teeth, two on each side in one valve, one on each side in the other, diverging from the umbones, and very near the margin, thin, mostly elongated, and the inner ones more prominent than the outer, but in some species very short, in the thicker species perpendicularly striated. Muscular impressions two, lateral, distant; pallial impression with a small sinus. Ligament consisting of two portions (as usual), one, by far the larger, internal; the other external. In some species the umbones are separated, and the ligament forms a deep pit extending both within and without to the point of the beaks: of this M. Spenglirrii is an example. (G. B. Sowerby, principally, for the shell.)

'This genus,' says Mr. G. B. Sowerby, "contains a great number of species, some of which are handsome and others very singular shells; upon examining a number of species, we think it might be desirable to divide it into several genera, because we find several distinct forms in it. (Genera.)


Habits. —Buried generally in sandy mud and sands, at a depth varying from the surface of the sea to 12 fathoms.

The species are numerous; Deshayes, in his table, gives 32 living: in his edition of Lamarck 33; but, in his opinion, one of these, M. donacia, is not a Macra but a Mesodesma, and others are repetitions or varieties.

De Blainville thus divides the genus:—

1. Species whose cardinal tooth becomes nearly non-existent in consequence of the enlargement of the ligamental hollow. (Ex. M. giganteus.)

2. Species all of whose teeth are very large, lanceolate, and not striated. (Ex. M. sternula.)

3. Thick and solid species without an epidermis; the lateral teeth finely striated; mantle pierced with two openings, but almost without tubes. (Ex. M. trigonella.)

4. Very thick solid species striated longitudinally; cardinal teeth more or less to none; lateral teeth very
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thick, approximated, raised; an external ligament be-
sides the internal one. (Ex. M. crassa.)

[Mactra Brasiliana.]

FOSSIL MACTRA.

Mr. G. B. Sowerby says, 'The fossil species are not nu-
merous; they are only found in the tertiary beds, unless, in-
deed, some very singular fossils found in the secondary
strata, particularly oolite, be truly referable to this genus;
of this, however, we cannot be certain, because we know not
their hinges; they will be found represented in Sowerby's
Mineral Conchology.' De Blainville quotes M. Defrance for
18 fossil species, one identical, one analogue in the Plaisantin,
and another analogue 'dans la Caroline du Nord.' Deshayes,
in his tables, gives 14 fossil (tertiary), and four as both living
and fossil (tertiary); in his edition of Lamarck, but three
species are given as fossil only. Among the fossil shells
from the borders of the Red Sea, collected by Mr. J. Ban-
ton and communicated by Mr. Greenwood to Mr. Lyell, we
find M. stullorum with a (?) Mr. Lea gives three species,
M. dentata, Gravii, and pygmaea, from the Claiborne beds.

Crassatella.

Shell evolute, transverse, inequilateral, not attached nor
forming a valve; two strong, coniciform, rugose, some-
times perpendicularly-grooved cardinal teeth: in the other
only one; ligament internal, attached to a concave space
placed on the anterior side of the hinge; the pit divided by
a carina into two portions, and that part of the ligament
attached to the outer portion visible externally when the
valves are closed: two strong oblong depressions may then be
observed, one on the anterior side of the umbo, rather
dilated, and not so distinct as the other on the posterior
side. Muscular impressions two, distant, lateral, rather
oblong; lateral teeth none, or nearly obsolete. Shell very
thick, particularly in old specimens: the recent ones with
a brownish somewhat horny epidermis; all more or less
transversely grooved near the umbones.

Geographical Distribution.—Seas of New Holland.

M. Deshayes, in his tables, gives the number of living
species at nine. In his edition of Lamarck, he makes them
eleven, the fifth and the fourth last of which, he says, belong
to his genus Mesodesma, and he observes that, by reducing
the genus Crassatella to those species only which have two
cardinal teeth, and, at their sides, the ligamental hollow large
d and superficial, it will be rendered much more natural than
Lamarck left it. Thus the number of known living species
would be reduced to seven or eight, and the others, which
have the ligamentum hollow, mesial and deep, and a cardinal
tooth on each side, would, he says, be placed in his genus
Mesodesma; but these numbers do not agree. The shells
of the two genera, he adds, will be distinguished, moreover,
by means of the pellitum impression, which is always simple
in the Crassatellae, and always sinuous posteriorly in Me-
desdema. Mr. G. B. Sowerby (Zool. Proc.) has described
two new species brought home by Mr. Cuming.

Fossil CRASSATELLAE.

Mr. G. B. Sowerby, in his 'Genera,' mentions C. tumida
and C. compressa from the calcaire gisant of the environs
of Paris, and C. sulcata as very common at Hordwell, and
as appearing to be characteristic of the London clay. M.
Deshayes remarks that he has observed that shell, that Lamerck
regarded the fossils at Beauvais and those living at New Holland as
analogues; but that he has satisfied himself that those fos-
sils and C. sulcata are different species. Crassatella tumida,
he observes, approaches C. kingiana nearer than any other.
Dr. Blainville states that he has seen that species at
Nice in France, and that M. Defrance mentions twenty from the
lower chalk, with some doubt. In his tables, M. Deshayes
gives 24 fossil species (tertiary); in his edition of Lamarck
he records 14 only. It appears in the catalogues, in the
supracretaceous and cretaceous groups.

Of the other genera belonging to the Conchacea, Venerupta,
Petricola, Coralliophaga, and Clathro, will be found under
order LITOPHRAGMATA, and the genera separated from Venus,
or allied to that family, under VENERIDAE.

CONCHIFERAE. Larmarck's name for that large class of
molluscan animals which are protected by shells consist-
ing of two principal pieces; shells commonly known under
the denomination of Bivalves. It comprises the whole of the
acephalous mollusks of Cuvier, including the
Brachiopoda.

Lamarck divided the class into two great orders, the
Dimyaria (Dinmyaria), or cockshells, furnished with two
adductor muscles, and the Monomyaria (Monomyaria),
or cockshells furnished with one adductor muscle only.
M. Deshayes would separate the class into three subclasses.
1. The Polymyaria, or Brachiopoda. 2. The Dimyaria.
3. The Monomyaria. As the latter are based on the principle
that the organization of the Brachiopoda is more simple than
that of the other conchifers, while that of the Dimyaria is
somewhat less complex than that of the
Monomyaria.

ORGANIZATION.

Digestive System.—Mouth, without any hard parts,
situated anteriorly; in the Dimyarias concealed between
the foot and the tentacular system, in the Monomyarias
under a sort of hood made by the mantle. Labial
palps or lips flattened, sometimes truncated, sometimes
laminated internally, more or less elongated, extending on
either side. No salivary gland. Egefagmus varying in
length and capacity, often the same length as the
Dimyarias and Monomyarias. Stomach sometimes, not
often, lengthened and narrow, sometimes subcircular,
generally pear-shaped; interior surface with irregular depres-
sions, or biliary canals, or five or six transverse grooves,
involved within the liver and ovary, and so brought towards
the back and mesial line of the animal, and continued pos-
teriorly to the tent, nearly of the same diameter all through.
Rectum, which commences with the dorsal part of the in-
testine, shorter in the Monomyarias than in the Dimy-
rias; in the former it is convoluted behind the single
central adductor, and terminates in a floating vent between
the edges of the mantle; in the latter the vent is situated
above the superior adductor. Liver very large, suspensor,
by muscular fibres, which traverse it, pouring the bile into
the stomach by the biliary crypts.

Respiratory System.—Generally agreed to be non-exitent,
the veins performing the office of absorbing vessels.

Circulatory and Respiratory System.—Circulation, a
simple circuit, of two vascular systems, viz., a ventricle and
an arterial system, a venous system and two auricles, the
ventricle firmly and closely embracing the rectum, so that
it appears to pass through it. The arterial system not con-
voluted, the venous system upon a considerable scale of
development. (Pou, Testacea utriscule Sicilitas.) Circu-
lating fluid nearly colourless, or white, scarcely tinged with
blush, slightly viscid, and with very little transamnemismus.
[Bloos, vol. 2, p. 43.] Circulation then is an extremely
simple function in the connivous mollusks: an aortic

* Perhaps, cited, Ungulina; M. Bang instance of late unde observatio
confirmaoty of its penetrating habitat.
ventricle gives the blood impulse enough to carry it through the two systems of vessels, to expel it from the heart, and to bring it back again to the auricle. In other branchiogenous animals, the auricle is sometimes adapted to give the blood a new impulse when it is about to pass through the branchia; but, on the contrary, the auricles do not receive the blood until it has been exposed to the revivifying influence of the organs of respiration. (Deshayes.) Respiration.—By means of branchies variously disposed, as will be noticed in the different families.

Siphons.—Simply an ovary enveloped in the visceral mass. Taking the common oyster for example, it rests, a whitish mass of considerable size, upon the adductor, and may be seen through the mantle. It occupies the whole upper part of the mantle and extends along the sides and lower parts, being filled at the time of reproduction with a milky fluid, containing multitudes of small granules of a whitish colour. These are the eggs; and, in many of the family, they are not, at the time of their exclusion, abraded at once, but are deposited between the two membranous branches of the branchial laminae, where they undergo a kind of incubation. In some the shell is developed in the ovum before it quits this receptacle. This fostering of the eggs seems to be analogous to the gestation of the eggs in the crustacea and the fish-apes. Sir Anthony Carlisle (Huntarian Oration, 1826) says, 'Oysters are viviparous, and their young are found within the tracheal passages, and between the folds of the overcoat (mantle) during the months of April and May.' In its first state the oyster exhibits two semicircular films of transparent shell, which are continually opening and closing at regular intervals. The whole brood are associated together, by beautiful mucilaginous slime, and of the first state in which it is found, and it is common among viviparous animals of this kind to have their spawn posited in contact with the lungs; the involving slime serves as the first nutriment: and, we may infer, that the foetal food so influenced by the gills, is at the same time a respiratory supply to the perfectly formed young.' In the siphoniferous branch of the family, the longer the siphons the larger, as a general rule, is the mass of the ovary: in some forms which have the siphon, &c., in some it is of very small size, and the ovary is comparatively small. As far as anatomy has hitherto detected this part of the organization, here we have hermaphroditism in the true sense of the word. The whole business of reproduction is apparently carried on within the two valves of the shell without the aid of a second individual, as it is in a hermaphrodit flower. But it will occur to most observers that the conchifers are regurgidant; the fixed conchifers (oysters, spondylus, clam, &c.) are thus, and by no means necessarily so; but it is not clear that this congregation may not be a necessary condition for the fecundation of the ova; and that there may not be a mutual diffusion of some influence analogous to that of the gametes. M. Prevost has made his experiments on the Unioes, would make it easier to understand that though there may be no coitus, still no propagation takes place without an assemblage of these animals upon the same spot.

Muscular System, as it regards motion.—Twofold; valuation and contraction. The valves are attached to opposite points in each valve, and their office is to close the valves by the contraction, or suffer them to expand by their relaxation. In the greater number (Dinymia) there are two: one anterior near the oral aperture, the other posterior. The Muscles of locomotion are perpetually in action; Poli has shown that this muscle is in reality an approximation of two, and thence most probably arose the slight regard manifested by Cuvier for the division of Lamarck. The locomotor or siphonic organ is called the foot, and is composed of various layers of fibres, united by their muscular interaction, bestow on it great power of motion, when the organ is well developed. Though in some species merely rudimentary, it is found in all the Dinymia—not so in the Mollusca by which it is confined to a transverse filament crossing the phragma. From these siphon clubs filaments are given off to the mouth, anterior adductor, &c.; and, from their posterior edges, two nervous branches go to the stomach, liver and heart, ovaries and branchiae. A branch of some volume goes down to the heart. The muscular action of the oral and external surface of the posterior adductor, are conjointly two ganglia larger than the anterior ones. These posterior ganglia give off the nerves to all the posterior parts of the structures filaments are given off to the mouth, anterior adductor, &c.; and, from their posterior edges, two nervous branches go to the stomach, liver and heart, ovaries and branchiae. A branch of some volume goes down to the heart. The muscular action of the oral and external surface of the posterior adductor, are conjointly two ganglia larger than the anterior ones.

The sense organs of these animals suffer, reasoning from this
part of their organization, be very confused; and indeed there is no good ground for attributing to the generality of them anything beyond a sense of touch and taste. That most of them may be conscious of the presence or absence of light is possible. Not having any especial organs for seeing, hearing, or smelling,” says Sir Anthony Carlisle, speaking of the common oyster in his Hunterian Oration (1828), “the creature is limited to perceive no other impressions but those of immediate contact; and yet every part of its exterior seems to be sensitive to light, sounds, odours, and liquid stimulants. It is asserted by fishermen, that oysters, in confined beds, may be seen, if the water is clear, to close their shells whenever the shadow of a boat passes over them.

M. Deshayes goes so far as to say that no especial organ of sense can be detected among them, unless, perhaps, those of touch and taste; but we must not forget what have been called the eye-specks in the Pecten, to the animal of which Poli gave the name of Argus, from the supposed number of its visual organs. The pectens are free swimmers, and, from their rapid and desultory motions, we have heard them termed the butterflies of the ocean. The manner in which these motions are executed, especially on the approach of danger, indicates the possession of a sense analogous, at least, to that of ordinary vision. These eye-specks may be seen in the pecten placed at short intervals round the thickened edge of the mantle, on the outworks, as it were, of the internal part of the animal fabric. “As locomotion so vision” is a general aphorism, not without its particular exception; for there is good reason for believing that Spondylus, which is a fixture in its adult state, is furnished with these visual specks.

Shell.—The lobes of the mantle, the thick edges of which form the principal secreting organ, determine, apparently, the form of the shell. The general structure of this substance will be given elsewhere. [SHELL, PEARL.] At present it will only be necessary to state that the shell of the Conchifera is bivalve, or composed of two pieces, often covered with an epidermis, joined at their upper edge (corresponding to the dorsal part of the animal) by a hinge.

The hinge is entirely formed by the inner layer of shell, and consists of either a simple cardinal process, or a serrated edge, or of projections, or teeth as they are called, and corresponding cavities into which they are inserted. To this hinge is superadded a ligament, which binds the two parts together and keeps the parts composing the hinge in their places. The ligament is either internal or external, internal when it is hidden by the outside of the cardinal edge, external when it appears beyond it, and is highly elastic, being composed of a number of fibres parallel to each other and perpendicular to the valves which they connect. This is a beautiful contrivance for the necessities of the animal. When undisturbed, the elastic ligament keeps the valves open, and the animal functions are carried on without any effort; when danger is apprehended, or circumstances require it, the adductor muscle or muscles contract, overcome the resistance of the hinge, and shut the valves close till they may be opened in safety. One of the earliest signs of the loss of vitality in the conchifers is the more than ordinary wide gaping of the shell. This arises from the

The student should more especially consult the works of Poli, Cuvier, Lamarck, De Blainville, Rang, and Deshayes.

The last-named author has lately proposed an amended arrangement, which will be found at the end of his article "Conchifers," in the Encyclopaedia of Anatomy and Physiology.

CONCHOID, (conchoid), resembling a shell.) This name was given by Nicomedes (in the second century) to a curve, by which he proposed the finding of two mean proportions, and the duplication of the cube. It is found in the commentary of Eutocius on the sphere and cylinder of Archimedes, and in the fourth book of Pappus.

This curve is described by a revolving line, which passes through a fixed point, and is always produced to meet a certain fixed line. On the revolving line, from the point in which it meets the fixed line, set off a given line both
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WAYS. The two points thus laid down make out the upper and lower two different branches of the hyperbola. The lower conchoid has two points of contrary flexure, a cusp, or a loop, according as the given line is less than equal to, or greater than the perpendicular from the pivot of revolution to the fixed line. Taking the pivot of revolution as the origin of coordinates, the point on the curve just named as the axis of $x$, the equation of the conchoid is:

$$(x^2 + y^2)(x - b) = a^2 x^2,$$

where $a$ is the given line, and $b$ the distance of the pivot from the fixed line. [DUPPLICATION OF THE CUBE: TURIBIO, ON p. 134.]

CONCHO’LEPAS. [ENTOMOSTOMATA.]

CONCHOLOGY, Conchylieology of the French. The science which teaches the arrangement of the shells of the terrestrial class of molluscs, sub-classes, families, genera, and species. Formerly the great bulk of conchologists, as they were by courtesy called, consisted of mere collectors, who looked upon these beautiful and in many instances richly-coloured forms, as mere luxuries for the eye, mere toys to decorate a cabinet, much after the fashion of old china. But of late years this science has assumed its proper rank, and is justly considered as holding a high place, whether considered zoologically or geologically. The conchologist is one of the most powerful of the branch of the natural sciences, and is one of the most useful. It is, in our opinion, necessary in the existing state of our knowledge, that the student should consider shells as what they really are, skeletons of animals, and that he form a correct idea of the organization of these shells, which are intimately blended, and not mere insolated bodies, mere stones as we have heard them termed, connected with the soft parts of the animals. For these reasons the reader will find the general view of the subject, as given in the following paragraphs, a correct one.

CONCINNUS INTERVALS, in Music, are the various concords. [Concords.]

CONCLA VE (a Latin word, which signifies a private room), is the name given to the assembly of cardinals when they meet for the purpose of electing a pope. [CARDINAL.] The day following the last of the funeral of the late pope, the cardinals, after hearing a solemn mass do Spiritu Sancto, proceed to one of the pontifical palaces, generally the Vatican, where rooms have been prepared for each of them, and where they remain shut up till the election has taken place. The keys of the palace are left in the care of a prelate, chosen previously by the cardinals, and who is in the possession of the conclave. Each cardinal has with him a secretary, called conclavista, and two domestics. They meet once a day in the chapel of the palace, where a scrutiny is made of their votes, which are written and placed on an altar, and are repeated every day till two-thirds of the votes are given to the candidate of the pontifical chair, who is then considered as duly elected. Each cardinal in giving his written vote accompanies it by his name, written in a separate sealed paper, which is not opened till the pope is elected, when the names of the voters are made known. When the election is strongly contested, and the cardinals grow weary of being shut up in conclave, negotiations in writing are carried on between the leaders, and a compromise is entered into by which two or more cardinals are able simultaneously to be elected; the electors of the respective candidates, join in favour of a third person, who is acceptable to them all, or at least not obnoxious to any of them. This often gives an unexpected turn to the election. It is because of the importance of the office of Austria, France, and Spain, have a right to put their veto each upon one particular cardinal, whose election would not be acceptable to their respective courts. The new pope being elected, and his asent being given, he proceeds to dress himself in his pontifical garments, and goes to visit all the halls of the city of Rome and receive the encomiums of his people (CICERO, De Legibus, lib. i. c. 10. 11). The reparation of the place where the conclave was held is ordered, and the conclave is closed with pontifical blessing, to the cardinals, who give him the osculum pacis (kiss of peace).

After this the name of the new pontiff is proclaimed to the people from the great balcony of the palace, and the cardinals make as a salute to the pope, all the bells of the city of Rome ring a merry peel for our new emperor. (Care, Saggio Geografico Storico dello Stato Pontificio, 1832.)

Regulations for the conclave, and the mode of election, have been issued by several popes, beginning from Nicholas II, in the council of Latran, A.D. 1059, down to Gregory XIV., by his bull of 1632. In 1513, at the time of war or civil disturbance the conclave has been held in other places besides Rome; that in which Pius VII. was elected was held at Venice. Accounts of particular conclaves have been given by numerous writers who have edited the histories of the popes. (Meuschen, Conciliale Electionis et Coronationis Pontificum Romaneorum, Frankfurt, 1732.)

CONCORD, in Music, two combined sounds which are universally agreeable to the ear. Their ratio are: 2:1, 3:2, 4:3. The two first are called perfect, because, as concords, not liable to any alteration by sharps or flats. The two last are called imperfect, because alterable.

The 4th has always proved a stumbling-block to writers on harmonics, and has been above alluded to; but as a composer may do anything short of an inversion of the perfect chord, some has come to be admitted among the concords. A great and reconsituted, or so-called modern French school, says, that it is to be treated as a discord in relation to the usual concord in relation to the middle and upper parts. M. Cotel, however, has not in this instance proved as correct as usual, except in the chords of $\frac{3}{2}$ and $\frac{4}{3}$, the 4th, as an inner part, is, and can only be treated as a discord.

CONCORD, a book which shows in how many texts of Scripture any word occurs. (Dr. Johnson.) More particularly, it is a dictionary or index of all the important words in the Bible, alphabetically arranged for the purpose of finding passages and of comparing the various significations of words. To critical interpreters this class of books is justly considered of the greatest utility, as furnishing an instrument by which the determination of the meaning of obscure expressions may be greatly facilitated by reference to the parallel passages. (A good concordance, says Dr. Geddes (Prospectus, p. 71), is undoubtedly the best means of understanding the Hebrew Scriptures. While the Bible remained in manuscript, and was not divided into chapters and verses, indices of the words and phrases could neither be compiled nor used; but when the books began to be made, the great importance of concordances, or alphabetical indices, was at once perceived, and several learned men employed much time and labour in constructing them. The first concordance in any language was Hugo de St. Coro, or Cardinal Hugo, who died in 1262. The earliest concordance of the Hebrew text is by Rabbi Mordecai Nathan, printed at Venice in 1533. Its Hebrew title is, 'The Light of the Way.' It contains all the Hebrew roots, broken into their various significations, and is said to be the produce of ten years of incessant labour. A more correct edition was published at Basel in 1551, and a Latin translation by Reuchlin in 1558: these both of them are in the Hebrew editions are extremely inaccurate. The errors are, for the most part, in the work by Calasius, which combines the labours of Nathan and Reuchlin. It is entitled 'Concordantiae Sacri Bibliorum Hebr. et Lat.,' 4 tom. fol. 1611. The addition of Calasius consist of very long and etymological remarks. The reprint of this ponderous work in London in 1747-9 contains among its subscribers all the crown heads of Europe, including the Pope. The work by the English Bishops was in 1672. 2 vol. fol. 1672. Dr. John Taylor, under the patronage of the English Irish bishops, published, in 2 vol. fol. 1754, 'A Hebrew Concordance, after the manner of Baxter, adapted to the
English Bible. It is a complete and useful book for the English scholar. The "Concordantia Particularum Ebrou-[Childarius]", fol. 1673, and 4to. 1679, by Nodusius, Theologian, has given valuable for the exposition of passages dependent on the Hebrew particles, a comparison of which is made with the Greek. The best edition is that of Jena, in 4to. 1734, with a Lexicon of the particles, by Michaelis, extremely useful to the Hebrew erudite.

With respect to concordances of the Greek Septuagint, we may notice especially, Kircheri "Concord. Vet. Test. Graec.-Ebraic vocibus respondentibus," 2 tom. 4to. 1607; but the Hebrew parts are more useful in considering the Hebrew than the Greek text. The most complete and accurate work of this description is Trommii "Concord. Graecis Versionis dictis LXX," 2 tom. fol. 1718.

"I wish," says Michaelis, "this Concordance were in the hands of every theologian." It contains Heb. et Chal. Idices; but the book of Daniel is omitted, the Septuagint version of it being at that time unknown.

The most important concordances of the Greek New Testament are, Beloteli "Concord. Graece Nov. Test." fol. 1548. This is the first which appeared; it is now extremely scarce. "Concord. Greco-Latino Nov. Test." ab Hen. Stephano Conciniis, fol. 1594, 2nd ed. 1624, is a work unworthy of so distinguished a man, on account of its great inaccuracy. The revised ed. 1717 at Gotua, was beautifully reprinted in 2 vols. 8vo. at Glasgow, 1819. It is much more correct and valuable than that by Stephens. The "Lexicon Anglo-Greco-Lat. Nov. Test.," by Andrew Symson, fol. 1636, is a work prepared concordance of the Greek, and its best arrangement. The "Concordance to the Greek New Testament," with the English to each word, by Dr. Williams, 4to. 1767, is sufficiently complete for ordinary purposes. The first concordance to the Latin Vulgate is that by Cardinal Hugo, entitled, "Concord. Bibliae et Canonum," fol. 1749. After the revision of the Vulgate by Pope Sixtus V., a new and amended edition of Hugo's work appeared at Antwerp in 1617, and subsequently at Geneva in 1648. This concordance has been the subject of a great number of reprints. The best is that of Avignon, 2 vols. 8vo. 1786. In compiling the original MS. it is said that the cardinal engaged the services of 300 Dominican monks.

The first Concordance to the English New Testament was imprinted by Thomas Gybson, previous to the year 1540. The first to the entire Bible is by "John Marbeck," London, in folio, 1550. Subsequent to these there have been several, the principal of which are, Knight's "Concordialbascae," fol. 1618; Newman's "Large and Complete Concordance," fol. 1643; Bernard's "Thesaurus Biblicus," fol. 1644; Wilkins's "Concordance," 4to. 1647, Powell's, 8vo. 1671; the "Cambridge Concordance," fol. 1669; Butterworth's, 8vo. 1591; the "Cambridge Concordance," 8vo. 1601; and many others, but the one by Alexander Cruden, the merits of which are too well known to require any remark. The first edition was in 4to. 1737; but the most correct is that of 1810. An 8vo. edition, beautifully printed, appeared in 1824. We must notice finally the "Concordance of Parallels," by the Rev. C. Crutwell, 4to. 1790. It is a work of great value, compiled with immeasurable labour from a multitude of Bibles and Commentaries in the Hebrew, Latin, French, Spanish, and other languages. For further details respecting the Concordances here mentioned, and several others, see Watt's "Biblia Sacra," ed. 1755, and "Curtius's Bibliotheca Biblica." CONCORDAT is the name given to a formal agreement between the see of Rome and any foreign government, by which the ecclesiastical revenues of the Roman Catholic clergy and the management of the churches and benefices within the territory of the government are regulated. It is, in fact, a diplomatic negotiation and treaty concerning ecclesiastical affairs, in which the pope is disposed to afford the support of the Catholic Church, and which involves the right of appointing to vacant sees and benefices [BISHOPS], and also about the claims of the see of Rome to part, or in some cases, the whole of the temporalities of a state. It is of the same form as the papal bull, and of the first fruits and tithes of those which it had filled, as well as the impositions claimed in various times and countries by the clergy supported by Rome, such as exemption from taxation, and from the jurisdiction of the secular courts, the right of asylum for criminals in the churches, and other similar claims, the particulars of which are found in the history of every country of Europe;—all of which are now disposed to confer upon the pope and particular states, in order to define the rights of each party, to draw a line between the secular and ecclesiastical jurisdictions, and thus put an end to controversy and scandal. By the concordat of 1516 between Leo X. and Francis I., the latter promised the pope to subordinate the chapters of electing the respective bishops, a right assured to them by St. Louis and by the states of the kingdom under Charles VII. in 1438. The parliament refused for 30 years to register this concordat, as contrary to the spirit of the Council of Constance. The see of the Gallican church; it registered it at last March 19, 1518, by express and repeated commands of the king. (Gregoire, Histoire de la Liberte de l'eglise Gallicane.) Concordats have become most frequent since the middle of the eighteenth century, an epoch from which the European governments have made themselves more independent of the ecclesiastical power, and the pope has been for the most part men of an enlightened and conciliatory spirit. Benedict XIV., by a concordat with the king of Sardinia, in 1741, gave up to the latter the right of nomination to benefices in various provinces of the Sardinian monarchy, which the see of Rome had claimed till then, as well as the right of suffragan bishops were confined. A concordat was made between the pope and Charles, king of Naples, about the same time, by which the property of the clergy became subject to taxation, and the episcopal jurisdiction in temporal matters was greatly limited. By another concordat, the pope and king of Sardinia, the right of asylum to criminals in the churches was much restricted, and full power was given to the respective bishops to expel and give up to the secular power those guilty of heinous offences. But the most celebrated concordat is that agreed upon between Cardinal Cajetan, in the name of Pius VII., and the first consul Bonaparte, in July, 1801. By it he the head of the state had the nomination to the vacant sees, but the pope was to confer the bishopric on the minister nominating them; and the pope was not to interfere with the parishes and their respective dioceses, subject however to the approbation of the government. The clergy became subject, in temporal matters, to the civil power, just like laitymen. All immunities, ecclesiastical courts, and jurisdictions, were abolished, and even the regulations of the public worship and religious ceremonies, and the pastoral addresses of the clergy, were placed under the control of the secular authorities. Most of these provisions were rescinded by Bonaparte, but concordatorts nearly similar exist in Austria and other German states. Other concordats have been made with some of the Italian states. By that of 1818 with Naples, the king proposes the bishops, subject to the pope's scrutiny, and the pope, the consecration. The bishops are subject to censure over the press, and the ecclesiastical courts are re-established for matters of discipline and for ecclesiastical causes as defined by the council of Trent. Appeals to Rome are allowed. It appears from the above facts, that the ecclesiastical authority and influence in Roman Catholic countries vary considerably according to the concordats, if there be any, entered into with Rome, or according to the civil regulations adopted and enforced by the respective governments towards the clergy as towards other citizens.

CONCRETE, concretum, in philology and metaphysics; is an epithet applied to the conception or expression of a quality which refers to or implies some particular subject in which the quality exists. It is used to denote a term or expression of a naturally implied union with a subject; in other words, it signifies a quality accompanied with its particular subject, without any mental separation or abstraction, as learned, long, wise, round. It is therefore directly and generally understood. "Concrete adjectives are made from abstracts," says Dr. Johnson's Dictionary of the English Language (Dr. Johnson's English Grammar.) Concrete numbers are subject to the same explanation, being such as indicate or directly imply a subject; as two men, five shillings; in contradistinction to abstract numbers, which denote a concep-
tion simply of the aggregate of two or five units. Concrete terms, in the scholastic phraseology, are called paronymia. The following is from R. L. B. (3, Lond. c. 8, sec. 1765) — This distinction of names shows us the difference of our ideas; for if we observe them, we shall find that our simple ideas have all abstract as well as concrete names, the one substantive, the other an adjective, as whiteness, which is a name of the idea of whiteness.

CONCUBINAGE is the cohabitation of a man with a woman, to whom he is not united by marriage. Among the Romans, concubinage was in use before the time of the Emperor Augustus, but without being formally permitted by law. Augustus, with the view of preventing celibacy and encouraging marriage, A.D. 10, caused the famous law called Lex Julia and Papia Poppea to be passed, which may be considered as much an ordinance of moral police as a measure in favour of population. This law contained several conditions advantageous for those who had the greatest number of children. By the same law, concubinage was legally allowed to unmarried men, with the restriction that not more than one concubine could be taken, and she must be a woman with whom marriage was not permitted, as women of mean descent, freedwomen, &c. The concubine did not enjoy the same rights as a wife, and the children begotten in concubinage were not considered as legitimate, but bastard (natural), which provision was of importance as to the right of succession.

Concubinage being inconsistent with the principles of Christianity, the Emperor Constantine the Great enacted laws against its continuance, and it was prohibited in all Christian countries as unlawful. Yet in Germany, among the reigning families, a left-handed marriage (Trauung an die linke hand oder morganatisch.ehe) still sometimes occurs. This kind of marriage resembles the Roman concubinage, as well as its conditions as its consequences.

CONCUSSION OF THE BRAIN, SPINE, &c. [HEAD INJURIES OF THE.] CONDAMINE. [LA CONDAMINE.] THOMAS, in France in the department of Nord, at the junction of the little river Haine with the Scheldt or Escaut, 124 miles in a direct line N.N.E. of Paris, or 192 miles by the road through Senlis, Peronne, Cambrai, and Valenciennes: in 50° 39' N. lat., and 3° 53' E. long.

Conde, after passing through other hands, came, about the close of the fifteenth century, into the possession of one of the branches of the house of Bourbon, which took from it the title of Prince of Conde. It was taken from the French by Charles V.; it was besieged and taken three times by the French, the last time, in 1676, by Louis XIV., to whom it was ceded at the peace of Nimeguen, A.D. 1678. In 1713 it was taken by the Austrians, and a few weeks after re-taken by the French. It is now a place of war of the first class, and a region of hills and bulwarks of the southern frontiers. During the French revolution it bore the name of Nord Libre. The streets are irregular: there are only two or three places or open spaces, and those small.

In 1792 a movement was made for the town, or 5350 for the whole commune. There are some coal-pits in the neighbourhood, and the situation of the place on the Escaut enables the townsmen to carry on considerable trade.

CONDE-SUR-NOIREAU, a town in the department of Calvados in France, on the little river Noireau, a feed of the Orne, and on a cross road leading from Mayenne by Domfront to Caen. It is 126 miles west of Paris in a straight line; in 48° 51' N. lat., and 0° 34' W. long.

Conde, situated in a valley, the soil of which is far from productive, is noted for its wines. He died at Fontainebleau in 1699, according to Expiary, two parish churches and an hospital in the middle of the last century. The population in 1825 was 4940 for the town, or 5563 for the whole commune. The town is noted for the manufacture of lasey-woolsey, drugget, and cotton goods. Nails also of various sizes and qualities are made, especially for the ship-builders of St. Malo and Granville.

COLONEL LOUIS II. DE BOURBON, PRINCE DE. Born at Paris in 1621, was the son of Henri II. de Bourbon, and grandson of Henri I. of the same name, who, with his cousin Henri of Navarre (hereafter Henri IV.), figured in the civil and religious wars of France, under the reigns of Henri IV. and Henri III. [Harley Notes.] The house of Conde, in Hainaut, from which it took its title, came to the house of Bourbon in 1467 by the marriage of Françoise of Bourbon, Count of Vendôme, with Mary of Luxembourg. The house of Conde, in the person of Francis I. of France (b. 3, Lond. c. 8, sec. 1765), was created a prince of the blood in 1539. The son of Francis, the elder, was called the prince of Conde.

Lionel II., prince of Condé, the subject of the present article, has been styled the Great on account of his military abilities and great success. At the age of 22 he won the battle of Rocroi in Flanders, 1643, against a superior Spanish force, and was placed at the head of the imperial army by the Empress Maria Francisca and the Emperor Ferdinand III., under the command of the great general Condé, however, put a high value on his services: he was haughty and warm-tempered, and the cardinal was jealous and suspicious. The result was, that after several sieges, he was arrested by order of the queen mother, and banished to prison for about one year, when the Parliament of Paris at last obtained his deliverance. Being appointed governor of Guienne, he treated with Spain, and soon after raised the standard of revolt, ostensibly against the cardinal, who continued to exercise the whole political power of the state in spite of the general dissatisfaction. Condé marched upon Paris; engaged Turenne in the faubourg St. Antoine, and entered Paris, where he had the parliament in his favour. The cardinal was at last compelled to declare war against the king published an amnesty, and re-entered Paris, 1652; but the prince of Condé retired to Flanders, where he served for several years in the Spanish armies. He fought, in 1654, at Arras against Turenne, who obliged him to retire, but the retreat was effected with great skill. In 1656 Condé, with Don Juan of Austria, defeated the Marshal de la Ferté, and obliged Turenne to retire from before Valenciennes. In 1658 Condé was defeated by Turenne near Montmirail, and the town was given up to the English, according to an agreement with Cromwell. By the peace of Breda, 1659, Condé was reinstated in all his honours with a full amnesty. In 1668 he served with success in the conquest of Franche Conî, and was created a prince of the blood in 1679 by Louis XIV., having taken a part against the English. In 1669 he had Conde, who commanded one of the corps d'armée which invaded that country; he took Wesel, and was wounded at the passage of the Rhine. In 1674 he gained the bloody battle of Senenf, in Flanders, against the Prince de Condé (William III. of England), and relieved Oudenarde. In 1675, after Turenne was killed near Stabach, Condé took the command of his army, and obliged Marshal Montecuccoli, who commanded the imperial troops, to retire. This was Condé's last campaign. Being tormented by the great heat, he left the service and retired to his estate of Chantilly, where he spent his latter years in the society of men of letters. Racine, Boileau, Bossuet, and Bourdaloue were often his guests, and the genius and kindliness of the former was one of the chief characteristics of his mind. His personal character has been variously represented. Bossuet is too panegyric. The memoirs of Count Jean de Coligny, who knew him intimately, and which were published in Le Maitre de Loménie, tome 5. Like most of the men high in office at the court of Louis XIV., their master included, Condé seems to have had but imperfect notions of moral principle. Desnoeux has written the Life of Condé, 4 vols. 12mo. The nature of his campaigns is interesting in a military point of view.

The line of Conde became extinct in 1836 by the death of the duke of Bourbon, son of the last prince of Conde. No, in the wars of the revolution, commanded a corps of French veterans from the Rhine, and was captain of the Duke of Bourbon, who never assumed the title of prince of Condé. His only son,
the young duke d'Enguene, was put to death by Bonaparte in 1804. The Duke de Bourbon himself died at Chaillot soon after the revolution of July, 1830, in a mysterious manner, which was much commented upon in the newspapers of the time.

CONDILLAC. [Expansion.]

CONDILLAC (KTERINE BONNOT DE), was born at Grenoble in the year 1715, and was distinguished at an early age for his taste for metaphysical inquiries. His works of Locke chiefly attracted his attention, and were the cause of his introducing into France the term **sensation**. To make clear the **origine des connaissances humaines,** a work intended to propound principles founded on those of the English philosopher. The tendency which Locke's works had naturally productive of results, was evident in his endeavours to publish in 1749, his grand work, the 'Traité des Systèmes,' which was designed to oppose the theories of Leibnitz, Spinoza, and others, as based upon abstract principles, rather than what he conceived the more solid foundation of experience. His third work, 'Traité des Sensations,' is his master-piece. The author supposes a statue, which he has the power of endowing with one sense at a time. He first gives it smell alone, and then traces what may be the pleasures, pains, abstract ideas, desires, &c. of a being so fitted with regard to its faculties: the other senses are then added, and the statue gradually becomes a complete human being. His works seem to have made but little impression on the mass in his time, but he was much esteemed by many learned and thoughtful men. Diderot, J.J. Rousseau, and Duclos were among the number of his most intimate friends, and his celebrity spread so far, that he was appointed preceptor to the Prince of Parma. In this capacity he published his 'Cours d'Études,' divided into eight parts. Part I. describes the nature of the human mind and body, and Histoire générale des hommes et des empereurs, a series of works calculated to promote his own philosophical views. Having completed the education of his pupil, he retired to philosophical meditation. In 1776 he was admitted a member of the academy in the room of Abbé Yolivet, though, strange to relate, he never afterwards attended the meetings of this learned body. His labours only terminated with his life, as he published his 'Logique' but a few pages before his death.**

The knowledge and comment of Locke according to Condillac, commences with the sensation of touch. He gives his statue that sensation, and makes it strike itself with its hand, states that while this band as it were, is on the consciousness of a sensation, 'C'est moi' (It is I), the part touched echoes the declaration: thus the statue concludes that both parts belong to its individual self, in other words, that it has a corporeal body. On the other hand, if the statue touch an extraneous body, though the hand says 'C'est moi,' it perceives there is no echo of sensation, and therefore concludes there is another body besides its own.

Condillac is much lauded by M. La Harpe for his ingenuous views of the progress of language. He begins with the language of animals and traces the progress and refinement among some American tribes, who have scarcely any language but that of cries and gestures, he finds a support for his hypothesis that these ideas depend on words. The language of action, he says, preceded that of words, and this latter language has preserved much of the character of its predecessor. Thus the elevation and depression of the voice succeeded the various movements of the body. Variation of accent was so much the more necessary as the rude people, who were beginning to lay aside their language of gesture, found it easier to express their meaning by changing emphasis than by inventing words. This emphatic style of speaking is in itself a sort of prosody, which in some degree leads to music, and the accompanying of these sounds by gestures leads to dancing, all of which the Greeks called **μουσική,** music. He then proceeds to trace the drama, rhetoric, and even the peculiarity of the Greek language by regular steps, the language of action having formed the basis of all.

On the whole, the philosophy of Condillac is a system of ultra-sensualism; by omitting reflection (in Locke's sense of the term), he makes the mind perceive nothing but sensations, itself being to itself nothing but a combination of sensations, in which way we will, there is no escape from the world of sense.

The fullest account of Condillac's philosophy for those who do not wish to peruse his voluminous works, will be found in La Harpe's 'Examen sur la philosophie de Condillac.' An abstract account of the influence of Locke on France through his medium is given in Professor Stewart's 'Philosophical Essays'; but those who wish to hear Condillac himself without much trouble, will find his system most fully and pleasantly developed in the 'Traité des Sensations.'

CONDIMENTS. [Aromatics.]

CONDITION. Two possible events, A and B, may be so related, that (1) when A becomes event or effect, B also or that; or so that B becoming event or effect, when A becomes event or effect, may be either cease to be event or effect, or may be diminished as to event or effect, or enlarged as to event or effect. This kind of relationship may be expressed by the term, condition, and the words by which this condition is made, may be any that are free from ambiguity. In case (1) where A must happen before B can, this may be called a condition precedent. In case (2) where B, already being event or effect, is enlarged as event effect, A, this may be called a condition subsequent. The events may be more than two, and the condition which the relation may be more or less complicated, but the general nature of the relation will still subsist. The appearance of conditions precedent are conditions annexed to any gift of

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*We insert this parenthetical, because the word 'reflection' may be found in the works of Condillac, but signifying nothing more than the looking back on past impressions.*
an estate or interest which at law must be strictly performed, before such estate or interest can vest in the person designated by the gift. Conditions subsequent are when the estate or interest is already vested, but its continuance in the person to whom it is vested, depends on the breach or performance of the conditions.

Cases may arise, and in construction of agreements and particularly of wills often do arise, in which it is not easy to say whether the condition is precedent or subsequent; but in general, the difficulty arises rather from certain technical rules of law applicable to the construction of instruments, than from the bare terms in which conditions are expressed.

Littleton's description of an estate upon condition is this: (350) 'Estates which men have in lands or tenements upon condition, are of two sorts, viz., either they have estate upon condition in deed, or upon condition in law, &c. Upon condition in deed is, as if a man by deed indented, confesseth another in fee simple, and appointment to him and his heirs yearly a certain rent payable at one feast, or divers feasts per annum, on condition that if the rent be behind, &c., that it shall be lawful for the foessor and his heirs into the same lands or tenements to enter, &c. And if it happen the rent to be behind by a week after any day of payment of it, or by a month after any day of payment of it, or by half a yeare, &c., that then it shall be lawful to the foessor and his heirs to enter, &c. In these cases, if the rent be not paid, the grantor before such a limited and such a specified within the condition comprised in the indenture, then may the foessor and his heirs enter into such lands and tenements, and them in his former estate to have and hold, and the foessor quite to ouste thereof. And it is called a conditional grant. But if the estate be of a certain fee, the foessor is defeasible if the condition be not performed,' &c.

An estate thus given is liable to be defeated, that is, the grant upon non-performance of the condition may be resumed by the giver, or his heirs: this is a condition subsequent, that is, subsequent to the vesting of the estate in the foessor or grantee.

The following example from Littleton will show the difference which has been introduced into the construction of conditions by the peculiar character of the laws of England (Litt. 350): 'If land be granted to a man for term of five yeares, upon condition, that if he pay to the grantor within the two first yeares, forty marks, that then he shall have fee, or otherwise but for term of the five yeares, and livery of seisin is made him by force of the grant, now he hath a fee simple conditionall, &c. And if in this case the grantee do not pay to the grantor the fortie marks within this first yeare, then immediately after the first two yeares past, the fee and the freehold is and shall be adjudged in the grantor, because that the grantor cannot after the said two yeares presently enter upon the grantee, for the seisin and the fee and the freehold with yet title may three yeares to have and occupy the land by force of the above condition. From this it appears because that the condition of the part of the grantee is broken, and the grantor cannot enter, the law will put the fee and the freehold in the grantor.

On this Coke remarks, that many are of a different opinion from Littleton, because the fee simple is to commence upon a condition precedent (of which class the condition in the case put by Littleton clearly is, and yet 'here Littleton, of a condition precedent doth (before the performance thereof) make the estate void'). Any other, for the legal effect of the livery of seisin is to pass a present estate of freehold.

It is a rule of law that none but the grantor and his heirs have the benefit of a condition; and that any conditions are good which are not unlawful, or contrary to public morals, or absolutely inconsistent with the nature of the estate given. An instance of the last kind of condition (Litt. 369) was when a feu farm, or a devise in fee, upon condition that the feu forfeit to the lord of whom he held his lands. Expressed conditions, or conditions in deed, were subsequently introduced, but as we have already shown, they savoured of their origin in this, that the donor's remedy for breach of conditions was limited to him and his heirs. But the case of the feu simple has long ago been extended to all such cases as the complicated relations of a rich and populous country require, and, as in the Roman law, so now in the law of England, conditions may form a part of every written instrument by which man requires their mutual dealings, or dispose of their property. Those conditions and the construction of them, vary with the nature of the instrument of which they form a part; and the construction of such conditions is further subject to some variations, owing to the different aspects under which they are regarded by courts of law and equity.

Those conditions which are of most practical importance, are the conditions of BONDS, LEASES, MORTGAGES, and WILLS. The last head includes conditions annexed to proportions and LACRACIES, which have given rise to a great number of disputes, and to numerous and not always consistent judicial decisions.

As to conditional limitations of real property, and the difference between conditions precedent and subsequent, and the distinction between conditions in deed and in law (this being a matter purely technical), the reader is referred to Furne's Essay on Contingent Remainders; and Butler's note on Co. Litt., note 94.

CONDITION (Mathematics) is used in nearly the same sense as in law. Thus the proposition, to describe an equilateral triangle upon a given straight line, is not to describe any triangle, but a triangle under the following conditions; that it must be equilateral, and that it must have a given line for its base.

An equation of condition means an equation which will not always be true, but requires certain conditions to be satisfied; and is distinguished from an identical equation, or one which is true independently of all conditions. Thus, $x + z = 2$ is an equation of condition, but $x + z = 2$ and $2x + 3 = 2$ are equations of condition: the first cannot be true unless $x = 1$, nor the second unless $x = 1$, or $x = 3$.

But the term equation of condition has a more technical meaning in the application of mathematics to the sciences of observation. Suppose, for example, that $x$, $y$, and $z$ are certain quantities to be found, but which cannot be observed directly. Then, conditions of observation, say $a + b + c = 0$, $a$, $b$, $c$, and $d$ are different at different times, or for different circumstances of observation, but still are so connected that the preceding equation must be true; and where $a$, $b$, $c$, and $d$ either are absent or are observed, and $A$ and $B$ be the results of a first observation; $a$, $b$, $c$, $d$, of a second; then for $n$ different observations, we have the following equations:

$$a + x + b + y + c + z = x = h_1$$
$$a + x + b + y + c + z = x = h_2$$
$$a + x + b + y + c + z = x = h_3$$

If the observations be all correct, any three of these will give the same values of $x$, $y$, and $z$; but if, as must happen, there be errors, the results obtained by other methods of solving the whole set, so as to produce the most probable result, see PROBABILITIES, THEORY OF, and LEAST SQUARES, METHOD OF. This is what is called the formation of equations of condition.

CONDON, a town in the department of Gers in France, situated on the river Baise, a tributary of the Garonne, about 350 miles in a direct line south by west of Paris, in 43° 54' N. and 0° 47' W. The town is poor.

Before the Revolution, this town contained several religious houses, and a college directed by the Fathers of the Oratory. There are at present two hospitals for sick children and for soldiers. The population in 1831 amounted to 3876 for the town, or 7144 for the whole of the surrounding country. The town is quite surrounded with vineyards, and considerable trade is carried on in the wine and brandy that these produce; but the chief trade is in wheat and flour. The river on which Condum stands gives motion to a great number of
corn-mills. A considerable quantity of leather, esteemed for erecting the best in this part of the country, is made and sent to Bordeaux. Leather is prepared for writing; cork-cutting is also an important branch of the trade of the place, and paper, tiles, and pottery are made. Several roads meet at Condom; and it has been proposed to open a further line of communication by rendering the Bainais characteristic of the Gens du Perche and Néher, where the navigation now commences. Condom was pillaged by the Huguenots in the religious wars of the sixteenth century.

Condom was formerly an episcopal town. The bishopric was established in 1317 by a division of that of Agen. The revenue of a Benedictine abbey formed the revenue of the see, the abbot being the first bishop, and the monks who were afterwards secularized formed the chapter. Bourges proved for some time the capital of the bishopric. Condom is the chief town of an arrondissement containing, in 1832, 71,487 inhabitants. The district of Condomois, of which it was formerly the capital, was bounded on the north by the Aunis and Baradosis, on the east by La Lomagne (a part of Armagnac), on the south by Armagnac Proper, and on the west by the district of Marans. [Chalosse.]

Some of our authorities comprehend the district of Marans in the Condomois. In it were the towns of Nérac (pop. 3192 in 1841), a town of men of war and of 12,716 in 1842, and Bezné (pop. 1870 for the whole commune).

CONDOR, or CUNTHU (Zoology), one of the largest of the known Vulturides, of whose size and strength such exaggerated accounts were formerly current, and whose true habits and appearance are not within the reach of any writer within these few years. The bird was compared to the Roc of the Arabian romance writers; yet, by some, it was considered identical with that monstrous oriental conception. In the "Magazine," under title "Claws," we find "the claw of the bird Rock, who, as authors report, is able to truss an elephant." This may have been the claw of a condor, exaggerated by some of the artists who wrought extraordinary zoological forms for the collectors of the day. Next, the eyes of the bird Crecque, or the A'res (Araneus) bill, and other parts of birds from Brazil and the "West Indies." In the old French Encyclopédie, after noticing Condamine's statement, the writer adds that it is believed that these birds exist also in the region of Sophal of the Caffres, and of Momotopatas, as far as the kingdom of Angola, and that it is supposed that they do not differ from those which the Brazilians call roup.

Ray, in his Synopsis, confesses that, such was the monstrous appearance of these birds, it appeared to be impossible to it, that it be at one time considered the Condor the mere offspring of fiction, that he dared not insert the bird in Willughby's Ornithology, and that it was to Sir Hans Sloane, who possessed a feather plucked from the wing of one shot on the coast of Chile, and Captain White had brought him at the same time the measurement of the bird, that he first owed his belief of its existence.

Joseph Acosta, Garcilaso de la Vega, and John de Lest, all speak of this vulture. Acosta says that the birds called condors are of great magnitude, and of such strength that they are not only able to evacuate and devour a sheep, but even an entire calf. Garcilaso enumerates among the rapacious birds those called Cunthu, and corruptly by the Spaniards Condom, and states that some of those killed by the Spaniards measured fifteen or sixteen feet from top to tip of the extended wings. He further observes that nature, in order to temper their ferocity and strength, has denied them the crooked talons which she has bestowed upon the eagle, and given them claws more like those of the gallinaceous birds; but that she has, however, endowed them with a beak sufficiently strong to perforate and tear off a bull's hide, and to rip out its entrails. Two of them, he adds, will dare to attack a herd of cattle, and never do they obtain from the human race; but will set upon and slay, single-handed, boys of ten or twelve years, and it is by a providence of nature, for the protection of the flocks and the natives, that many are not hatched; for, if they were to cause great harm among the herdsmen, and the greatest damage to the inhabitants. The account given by John de Lest, who speaks of the "vastas males" of the bird, is much the same with that of Garcilasso.

In relation to the condor's alleged attack upon children, Condamine notices a story of the Indians setting up a figure of a child made of very viscous clay; on this the condors were said to pounce, and to entangle their claws that they were held fast, and to tear it to pieces. Feuillée and Molina speak more modestly of the condor; and the former gives the extent of the wings as eleven feet four inches only. The latter can hardly have seen the bird, though he was a native of Chile; for he lays down the characteristic of its sitting and alighting, and the physiognomy of the singular comb, and observes that the condor does not differ from the lammegery (Gypaetus barbatus, Vultur barbatus).

Abbeville assures his readers that it is twice the size of the most colossal eagle. Desmarchais gives eighteen feet as the extent of the wings, which, he says, are so enormous that the bird can never enter the forest; and he adds that it will attack a man, and carry off a stag. Linnaeus seems to have drawn from its account of this imaginary bird, of which he gives no authentic habits. He quotes: "It preys, says Linnaeus, 'on calves, sheep, nay, on boys of ten years; a pair will tear up and devour a cow;' and he adds that the rushing of its wings, as it nears the earth, renders men planet-struck, as it were, and almost deafens them in terram devolans, susurro attonitos et surdos fere reddit homines: he makes the alar extent from thirteen to sixteen feet. These marvellous stories were left to work upon the minds of men for hundreds of years, and to assist in making the bird venerable and wonderful; for, till within the last twenty-five years, one or two specimens, and those not perfect, were the only evidences of the condor in the cabinets of Europe. The Great Vulture of the Andes was a striking instance of the way in which the most marvellous things are known are exaggerated; it was with the Condor, observes Vieillot, as it was with the Patagonians,—both shrunk before examination. To the scrutiny of Baron von Humboldt and of M. Bonpland, who, in describing its descent into the deep and narrow valley of Magdalena, says, whilst descending, several condors hovered round us, and about the rocks on which they build their nests; but so vast was the scale of the rocks and mountains, that even these immense birds appeared insignificant, and I doubted for a time that they were condors."

Under the name of zapotila, a word derived from the Mexican word tzopilótl, which is said to signify 'king of the vultures,' there are placed in the same genus with the bird usually termed 'the king of the vultures' ('Vultur pope of Linnaeus and others), and the Californian vulture ('Vultur californianus, Lath. and others). His Latin name for this genus is gyppagus. Mr. Bennett adopts this arrangement, and, as his description of the bird is accurate, and evidently made from personal observation, we give it the preference. 'The condor,' writes Mr. Bennett, whose loss is deeply felt by zoologists in general, and by the Zoological Society in particular, 'forms the type of a genus, a second species of which is the Vultur pope of Linnaeus, the king of the vultures of British writers. They are both peculiar to the New World, but approach in their most essential characteristics very closely to the vultures of the Old Continent, and have the same strong head, large, long, and hooked beak, large, fleshy, or rather cartilaginous, caruncle which surmounts their beaks; in the large size of their oval and longitudinal nostrils, placed almost at the very extremity of the cere; and in the comparative length of their quill feathers, the third being the longest of the series. The most important of these differences, the size and position of their nostrils, appears to be well calculated to add to the already highly powerful sense of smell possessed by the typical vulture, and for which the bird has probably been proverbially celebrated from the earliest ages. There is also a third species, the Californian vulture, two noble specimens of which, the only pair in Europe, are preserved in the Society's museum, rivaling the condor in bulk, and agreeing in every respect with the generic characters of the species."

* * *
group, except in the existence of the caruncle, of which they are entirely destitute.

In size, the condor is little, if at all, superior to the bearded griffin, the lämmereyger of the Alps, with which Humboldt could not compare the power of flight; but it bears about the same proportion to it, but less, of course, than that which it bears at most but a distant relation. The greatest authentic measurement scarcely carries the extent of its wings beyond fourteen feet; and it appears rarely to attain so gigantic a size. M. Humboldt met with none of these magnificent and powerful inhabitants of the province of Quito that they had never shot any that measured more than eleven. The length of a male specimen somewhat less than nine feet in expanse was taken from the outstretched wing, in the presence of the incredulous observer; and he would have been much astonished at the intelligence of the natives of Quito that they had never shot any that measured more than eleven.

The head and neck are bare of feathers, and covered with a hard, wrinkled, dusky reddish skin, on which are scattered some short brown or blackish hairs. On the top of the head, which is much flattened above, and extending some distance along the beak, is attached a large caruncle or comb of a yellowish brown color, a continuation of the skin which invests the head. This organ is peculiar to the male. It is connected to the beak only in its anterior part, and is separated from it at the base in such a manner as to form a free trachea, the air passing through the large oval nostrils, which are situated beneath it at that part. Behind the eyes, which are somewhat elongated, and not sunk beneath the general surface of the head, the skin of the neck is, as it were, gathered into a series of descending folds, extending obliquely from the back of the head over the temples, to the under side of the neck, and there connected anteriorly with a lax membrane or wattle, capable of being dilated at pleasure, like that of the common turkey. The neck is marked by numerous deep parallel folds, produced by retracting the head, in which the bird indulges when at rest. In this position scarcely any part of the neck is visible.

Round the lower part of the neck, both sexes, the female as well as the male, are furnished with a broad white line of downy feathers, which forms the line of separation between the naked skin above and the true feathers covering the body below it. All the other feathers, with the exception of the wing-coverts and the secondary quill feathers, are of a blackish brown, generally tinged with a greyish tinge of greater or less intensity. In the female, the wing-coverts are blackish grey; but the males have their points, and frequently as much as half their length, white. The wings of the female are consequently broader than those of the male by their large white patches. The secondary quill feathers of both sexes are white on the outer side. The tail is short and wedge-shaped. The legs are excessively thick and powerful, and are coloured a bluish grey, intermingled with whitish streaks. Their elongated toes are united at the base by a loose but very apparent membrane, and are terminated by long black talons of considerable thickness, but very little curved. The hinder toe is much shorter than the rest, and its talon, although more distinctly curved, is equally wanting in strength; a deficiency which renders the foot much less powerful as an organ of prehension than that of any other of the large birds of the raptorial order.

Geographical Distribution.—The Andes, and the greater part of the vast mountain-chain which runs up South America, to lat. 7° N., but most common in Peru and Chile.

Habitat, Nest, &c.—The condor is found most frequently at an elevation of from 10,000 to 15,000 feet above the level of the sea, and there they are to be seen in groups of three or four, but never in large companies, like the true vultures. The females of the elevated plateaux are named after them: Cuncur Kahura, Cuncur Pultu, and Cuncur Huacuna, for example—names which, in the language of the Incas, are said to signify, the Condor’s Look-out, the Condor’s Roost, and the Condor’s Nest. In the Andes, the birds breathe freely, and resort to the plains only when impelled by hunger. Then two of them will attack the vicuna, the guanaco, the bison, and even the puma, the lion of South America, persecuting the tormented quadraped till, overpowered, it falls beneath the wounds inflicted by their claws and beaks, grinding, butchering, and dressing the carcass as they go. Then the favourite morsels, the condors instantly seize, and the bloody banquet is continued till they are quite gorged. Humboldt saw them after such repasts sitting sullen and listless on the branch of a large tree, or on some elevated precipice; speaking of the condor, ‘qui s’êtes le plus haut.’ With regard to the stories of their carrying off children, Humboldt never heard of an instance, although the infants of the Indians who gather snow for sale are frequently left sleeping in the open air in the midst of the haunts of these birds. He often approached within a few feet of three or four of them as they sat on the rocks, but they never manifested any disposition to attack him; and the Indians of Quito assured him that men having nothing to fear from condors: he admits indeed that two of these vultures would be dangerous antagonists for a single man to cope with; and Sir Francis Hedd describes a severe struggle between one of them and a Cornish miner, with an outsize pencil of graceful power. When this bird descends to the plains, he often perches on trees, preferring the ground for standing and walking on which its toes and straight claws are better adapted.

Humboldt was assured that the eggs, which are white, and three or four inches in length, are deposited on the bare rock without any border of straw or other defence. The young ones are said to remain with the female during one year. The nestlings have no feathers; their bodies for five months are covered with a very fine fibrinous down, or hair, something like that of young owls; and they are so protected by this envelope, that they look almost larger than adults. At the age of two years, the condor is remarkably larger yet both its body and its feathers. The female has no appearance of the white ruff (goltila of the Spaniards), and it is owing to want of observation on this change of plumage that many naturalists and travelers, say, the inhabitants of Peru themselves, talk of two species of condor, one black, the other white (Condor negro y Condor pardo). Thus Lieutenant Mauw, in the sequel to the passage above quoted, says, ‘There were two kinds of condors; one dark brown, the other white on the back, with a white ring round the neck, the wings next the back, and a white ring round the neck.’

Chace.—At Peru, Quito, and in the province of Pwayne, condors are taken alive with the lasso. To this end a cow or a horse is killed. Down come the condors, and are peremptorily admitted to the table. The lasso, which has been concealed under the wings of the bird, catches him by the neck, and the lasso appears on the scene, and soon capture them. When one of the birds finds itself harnessed, it makes incredible efforts to raise itself in the air, and soon succeeds, after vomiting freely. The Spaniards call this sport correp bayares, and it is, next to the bull-feasts, the great amusement of the country people. In other countries it is said that poisonous herbs are placed in the belly of the quadraped that serves as a bait, and then the condors appear as if intoxicated after their meal.

The tenacity of life exhibited by the condor almost rival the account which we have given of the endurance of the grizzly bear. (Brau, vol. iv. p. 88.) Humboldt relates that at Riobamba he saw some Indians first scrape one with a lasso and hang it on a tree, pulling it forcibly by the feet for some minutes. The lasso was hardly removed when the condor arose, and walked about as if nothing extraordinary had happened. At less than four paces, three balls were then discharged from a pistol at it, all of which entered the body, wounding it in the neck, chest, and abdomen: the bird still kept its legs. Another ball broke its thigh, and brought it to the ground; but the wreathed creature did not die till after an interval of half an hour. Ulloa asserts that in the province of Pwayne, Peru, the birds are so closely covered with feathers, that eight or ten balls may be heard to strike it without penetrating its body.

This celebrated vulture, Pulfur Gryphus of Linnæus, Gymnogryphus of Viallot, Scopus corphus of Dunfert, is said to possess a most exquisite sense of smell.
It may be doubted, however, whether, as in other vultures, the eye is not at least as great an assistant to the bird in discovering its prey as the nostrils are. (Birks, vol. iv. p. 429). Lieutenant Maw saw the condor's quill used as a pen in the Corridora (Toula).

The Zoological Society of London have now made this form, of which such romantic tales were told and credited, familiar to the whole population of the metropolis. It is a striking contrast, to rise from the perilous of one of these marvellous stories, and look at the living bird in the Regent's Park.

Deepest sympathy for his fellow men, and the most unwearied activity in promoting all such reforms as he thought useful. Of his magnanimity and elevation of soul he gave ample proof in the heroic conduct which he pursued in the hour of difficulty and danger. Proscribed by the Convention as a Girondin, he voluntarily quitted the house of his friend Madame Verney, which had afforded him an asylum during eight months of the first revolution, rather than expose himself to the consequences which might have made it a capital crime to harbour or conceal an outlawed deputy.

Houseless, and wandering about the country round Paris, he endeavoured to conceal himself in the numerous abodes with which its neighbourhoods abound. At last the pressure of hunger drove him into a small inn in the village of Clumart, where he incursively betrayed himself by exhibiting a pocket-book obviously too elegant for one in so destitute a situation. He was, however, haunted by want and fatigue, and with a sore foot occasioned by excessive walking, he was conveyed to Bourg-la-Reine, and thrown into a dungeon. On the morrow (25th March, 1794), he was found dead in his cell, having put an end to his existence by swallowing poison, which he always carried about him in order to avoid the ignominy of the scaffold.

His mathematical works are numerous, consisting in great part of memoirs in the Transactions of the academy. In pure mathematics he devoted himself mostly to the development of the differential and integral calculus: he lived during the time when the higher parts of that science began to assume their present powerful form; and his labours on the subject of differential equations must serve his name in connection with their history. His applications of mathematics are,—1. the problem of three bodies, in which he had no particular success; 2. the application of the mathematical theory of probabilities to judicial decisions, at that time new and ingenious speculation; 3. the grounds of which are generally misunderstood, but which was treated by Condorcet with a degree of power which entitles his work to no mean rank among those which have led the way to a perception of the extensive bearings of the integral calculus. Condorcet is not in the very first rank of mathematicians, but very high in the second. As a literary author, his "Eloges des Académiciens morts depuis 1669," procured for him the perpetual secretarialship of the Academy of Sciences, and furthered his election to the French Academy. Though decidedly inferior to Fontenelle's "Eloges Académiques," both in point and simplicity, they nevertheless show Condorcet to be a pure and elegant writer, as well as a just judge and disinterested critic.

His life of Voltaire and Diderot, in which these qualities are most apparent, are moreover distinguished by the enlightened philanthropy, the philosophical zeal, and that desire for improvement, which was always the strongest feeling in the author's heart. The style in which they appeared is clear, and if somewhat monotonous, is not altogether devoid of force and spirit. Besides his numerous works (of which he had not time to undertake a regular and careful revision), he contributed several and made up the papers entitled the "Feuille Villageoise," and the "Chronique de Paris." But the grand work of Condorcet was his Esquisse du Progrès de l'Esprit humain, which he wrote while he was seeking refuge from proscription, and for which he had no other materials except as he had treasured up in his own vast and capacious memory; it is a work more remarkable for depth of thought than brilliancy of style.

Another of his most remarkable productions was his Plan for a Constitution, which he presented to the Convention, at whose request he had undertaken to draw up a report on public instruction. His treatise on this subject abounds in enlarged and lofty views, and contains the most forcible arguments in the art of expanding the faculties and forming the character.

Good-nature and kindness were the foundation of his dispositions. If he was deficient in any thing, it was in imagination. His ideas were not remarkable for the voluble expressiveness which is characterized by a certain degree of awkwardness and timidity. Nevertheless he possessed more real warmth of feeling and greatness of soul than those unequipped with him would have suspected. D'Alembert used to characterize him as "un volcan de raison." His character was regular and firm; his conduct was firm, disinterested, and straightforward; and being fully satisfied that a system of equality was the only

[Seicarambusph Gryphus, man.]
one compatible with the happiness and real interests of mankind, he made no account of his own rank, title, or fortune, but was willing to sacrifice them all to promote the darling object of his hopes and wishes.

Upon the refusal of the request of the Academy in 1777 to pronounce an éloge on the Due de la Vrillière, minister of Louis XV. He subsequently resigned the place which he held under the administration of M. Necker, with the expectation of havingagiit against his friend Tartgott. In the earlier period of the Revolution, Condorcet used every effort to bring about those changes which he had so often desired to see accomplished for the good of his country. He became an active member of the Comité des Subsistances.

It was on the occasion of being summoned, in 1789, by Louis XVI., to deliberate upon the best mode of providing for the wants of Paris, that he was forcibly struck with the intelligence displayed by the king in the discussion of this difficult and important question. 'After listening to him,' says Condorcet, 'we all looked at each other with astonishment, and felt at once that the course which he advised was in fact the only real one.'

Being called to the Convention, after the fall of the monarchy, he rallied round the Girondins in order to oppose that portion of the Assembly known by the name of Montagnards, from their occupying the highest seats in the Convention.

In his efforts to found a republic in France upon a philosophical basis, Condorcet sacrificed his life to his opinions. The purity and benevolence of his intentions, and his magnanimity to himself and others, which lie unembarked, are the imperishable records of his fame. His wife, who was of the family of Grouchy, and one of the most beautiful women of her day, distinguished herself by a correct and elegant translation of Adam Smith's 'Theory of Moral Sentiments.'

Condorcet's works have been collected and published in 21 volumes.

CONDOTTIERI, a word in the Italian language signifying chief, or leader, but most usually employed to designate soldiers of fortune, who raised corps of cavalry and infantry at their own expense, and engaged with princes and governments for their services as mercenaries. The practice of employing these mercenaries, which commenced in the early part of the fourteenth century, originated in the Italian princes and republics commuting the personal services of their subjects in war for pecuniary payments, with which they were enabled to hire mercenaries. In 1327, Genseric, king of the Vandals, engaged into pay with 200 horse. Florence retained 500 French lancers in 1292. After the expedition of the Emperor Henry VII. in 1310, many soldiers of fortune remained in the different states, where they continued to be employed. After this, in 1343, to have disbanded a corps of German mercenaries, whose leader, Guancini, refusing to lay down his arms, levied contributions throughout the Italian states. In 1373, a band under the command of Fra Morabile, afterwards Conrad Land, called the Great Company, appeared in Italy, and extorted money from many of the Italian states. During the long and bloody wars between our Edward III. and France, foreigners from different parts of Europe, attracted by his liberality, and allured by the hope of plunder, flocked to his standard. They were for the most part men of desperate fortunes, or unable to live at home according to their wishes. At the conclusion of the treaty in 1354, the country in 1354 was restored peace to England and France, these soldiers, unable to relinquish a course of life to which they were accustomed, and being without other means of subsistence, were dispersed into the several provinces of France, where they possessed themselves of castles and villages, and associating themselves with the banditti of their vicinities, levied contributions on all within their power, and under the names of companies or companions*, they became the terror of the peaceable inhabitants. They were called by the通俗 body of 40,000 men, and were headed in most instances by some of the most experienced leaders of the time. They fought pitched battles with the troops of princes, and won their gains victories. The misery which they occasionally occasioned seemed to increase their numbers; for they were sometimes called cotelli, probably a corruption of cottoi, from their bearing knives, or large daggers. They sometimes called cotelli, probably a corruption of cottoi, from their bearing knives, or large daggers. They were sometimes called cotelli, probably a corruption of cottoi, from their bearing knives, or large daggers. They were sometimes called cotelli, probably a corruption of cottoi, from their bearing knives, or large daggers.

* They were sometimes called cotelli, probably a corruption of cottoi, from their bearing knives, or large daggers.
ham, Essex, where he was born. (Froissart, Villani, Michavill, Arethim).

CINDYLA (Zoology). Iliger’s name for a genus of insectivorous mammals, founded on the vore cristata of Linnæus. Cuvier observes that Desmarest was the first who made the dentition of the genus known.

Generic character.—Body thick, furry; muzzle much elongated, bordered with membranous, disposed teeth like round the opening of the nostrils; no external auricles; eyes extremely small; anterior feet short, large, with five toes, furnished with robust claws proper for digging; posterior feet slender, with five toes; length of tail moderate.

Dental formula: incisors 4, canines 1-1, molars 5-5, 7-7 = 40.

[Teeth of Cindyla cristata. F. Cav.]

Lesson observes that the generic name rests on an error made by La Faille, who had represented the radiated mole with knotty swellings on the tail; but it is generally received by zoologists, and will be retained. The genus is analogous to the Molen and to Scolopax.

Geographical distribution.—Entirely confined to North America, as far as is known at present. Speaking of some specimens of Cindyla longicudata in the Museum of the Zoological Society, obtained from Mouse Factory, Hudson’s Bay, Dr. Richardson says, ‘They were not accompanied by any account of their habits, or notice of the exact locality where they were killed; but, as the most southern fur posts depending upon Mouse Factory are situated upon the border of Lake Superior, it is probable that they came from that quarter. Pennant’s specimen was received from New York.’

The known species are not numerous. Example:—Cindyla macroura (Harlan). Thick-tailed, star-nose. The following is Dr. Richardson’s description of a specimen presented to him by the unfortunate Mr. David Douglas, and which the latter had procured on the banks of the Columbia River.

‘The head is remarkably large; the body is thick and short, and becomes narrower towards the tail, and the hind legs are consequently nearer to each other than the foreones. The nose is rather thick, and projects beyond the mouth; it is naked towards its end, is marked with a furrow above, and terminates in a flat surface, which is surrounded by 17 cartilaginous processes, with two more anterior ones situated above the nostrils, and a pair of forked ones immediately below the nostrils. The surfaces of these processes are minutely granulated. Some white hair springs from the side of the nose, and reach about half the length of the head. There are others not so long on the upper and under lips. The fur on the body is very soft and fine, and has considerable lustre. It is longer than the fur of the other two known species. Its colour, on the dorsal aspect is dark amber brown, approaching to blackish-brown. On the belly it is pale liver-brown. When the fur is blown aside, it exhibits a shining black, nearly black; towards its root it is longer on the hind-head and neck than on the belly. The tail is narrow at its origin, but it suddenly swells to an inch and a half in circumference; it then tapers gradually until it ends in a fine point, formed by a pencil of hairs, about half an inch long. It is round, or very slightly compressed, and is covered with scales about as large as those on the feet, and with short, tapering, acute hairs, which do not conceal the scales. The hairs covering the upper surface of the tail are nearly black; those beneath are of a brownish hue. The extremities are shaped almost precisely like those of the Cindyla longicudata. Only the palms and toes of the fore-feet project beyond the body. The palms are nearly circular, and are protected by a granular, dark, finger-like sheath. The tips of the toes are furnished with long, white hairs, which curve in over the palms. The five toes are very short, equal to each other in length, and, together with the back of the hands, are covered with hexagonal scales. The fore-claws are white, nearly straight, broadly linear, and acute, convex above and flat beneath. The palms turn obliquely outwards, which causes the fourth claw to project rather farther; but the third one measures as much, the second is shorter, and the first and fifth are equal to each other, and a little shorter than the rest. The hind-feet are also turned obliquely outwards, and are nearly, with a few interspersed hairs above, and granulated underneath. The sides are narrow, and present a conspicuous ciliated tubercle, posterior to the origin of the inner toe. The hind legs are very short, and are clothed with soft brown hair, a tuft of which curves over the heel. They show a natural groove towards their points underneath. Length of the head and body, 4 inches 3 lines; of the tail, 2 inches 6 lines, including the pencil of hairs at its extremity, 3 inches 3 lines; naked part of the nose, exclusive of the awl-shaped processes, 24 lines. &c. (Bocourt Borealis-Americana, vol. 1, p. 284.)

Dr. Godman observes, that though the external ear in Cindyla cristata is destitute of auricle, it is very extensile, and is expanded at a short distance from the shoulder, in the broad triangular fold of integument connecting the fore-arm and head.

[N.B.—M. Latreille has employed the term Cindyla to designate a genus of Branchipoda. [BRANCHIPODA, vol. v. p. 340.]

CON (Mathematics). In the most general sense, a cone is a surface formed by the motion of a straight line indefinitely extended in both directions, and which always passes through one given point (called the vertex). Any curve in space may be a guiding line (or directrix) through which the moving straight line may be made to pass.

But in common language the term cone is only applied to those general cones in which the directrix is a circle. Of these there are two kinds: the oblique cone, when the vertex is not in the axis of the directing circle (the axis being the perpendicular drawn to the plane of the circle through its centre); the right cone, in which the vertex is in the axis. The most prominent distinction between these two kinds of cones is this: that the oblique cone has two distinct sets of circular sections, whose planes are not parallel to each other [Strogonoff], while the right cone has only one set of circular sections, all parallel to the directing circle.

The right cone is an infinitely extended surface, or consists of two cones (according to the most common notion) joined together by the vertex; but out of mathematics a portion of such cone is called a cone contained between the vertex and the directing circle, then called the base. In the rest of this article we shall use this meaning of the word.

The surface of a cone is one half the circumference of its base multiplied by the distance from the vertex to the circumference of the base (called the slant side). Thus the

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preposition erat, penitentia') by whose advice the revelation was taken place. (Sozomen, Hist., lib. vii.) Some passages of Chrysostom, προτεστατικόν, or 375, or 373, or 19.3649 inches. The area of the base is 3,1416 x 25.58.54 square inches; and this multiplied by the thickness 1.3465 or 6.65 inches, gives the number of cubic inches in the cone. The centre of gravity of a cone is in the axis at a distance from the centre of the base equal to one fourth the distance of the vertex.

CONFESSION means a solemn acknowledgment of some principle or fact. Hence the early Christians, who suffered imprisonment and other penalties from the Roman magistrates for having publicly declared their belief in the gospel, were called confessors. Others, in later times, acquired the same title from having embraced a life of austerity, or retired to some solitude or convent to do penance for their sins. Confession thus became synonymous with penitence, in which sense both words are understood by the Roman Catholics. The practice of confessing one's sins either in public before the congregation of the faithful, or privately to a priest, dates undoubtedly from the earliest ages of the church. In those times the Christians, scattered about the Roman world, and exposed to persecution, formed many small communities, or what they called the flock of the presbyters, who knew every individual of their respective flocks, the members of which watched carefully over each other's conduct. Any gross irreverence or impurity was immediately noticed; if a member of the flock was sure to be known to the rest, and the offender was thereby subject to interdiction from Christian worship and communion. If he wished to be re-admitted to the communion of the church, he must publicly acknowledge and repent of his guilt, and submit to the penance imposed by the presbyter. This appears to have been the original mode of confession. It does not seem to be clearly determined when the practice of private, or 'auricular,' was started. Some New Testament writers, who lived towards the middle of the third century (Euseb. Hist. Rom. 12), defines several kinds of sins for which penance ought to be done before the transgressor could be admitted to the communion. In De Licentia in Persecutionibus, he exhorts those who have fallen into heathen practices to confess their sins to the ministers of God, and thus unburthen their souls of their weight, 'because this satisfaction and the remission of their sins are acceptable to God.' Tertullian, who lived at the beginning of the fourth century, says (De Penitentia, ch. xi.) that penitence consists of three parts, confession, contradiction, and satisfaction. In the eastern churches the custom of confessing sins before the assembled congregation was prevalent down to the fourth century, but the practice having led to scandal, especially on the occasion of a lady revealing that she had been seduced by a deacon, Nectarius, patriarch of Constantinople, abolished the custom, and removed the penitentiaries or priest ('qui

CONFERENCE at Hampton Court, was held on the 14th, 16th, and 18th January, 1604, in the presence of King James I., who took a leading part in the discussion, between the bishops and the puritan preachers of the Church of England, and four Presbyterian or Puritan divines, to argue certain objections to the doctrine and discipline of the Church, respecting which the Puritans had previously written to the King. It was followed by no result.

CONFERENCE means a discussion for the solution of some principle or fact. Hence the early Christians, who suffered imprisonment and other penalties from the Roman magistrates for having publicly declared their belief in the gospel, were called confessors. Others, in later times, acquired the same title from having embraced a life of austerity, or retired to some solitude or convent to do penance for their sins. Confession thus became synonymous with penitence, in which sense both words are understood by the Roman Catholics. The practice of confessing one's sins either in public before the congregation of the faithful, or privately to a priest, dates undoubtedly from the earliest ages of the church. In those times the Christians, scattered about the Roman world, and exposed to persecution, formed many small communities, or what they called the flock of the presbyters, who knew every individual of their respective flocks, the members of which watched carefully over each other's conduct. Any gross irreverence or impurity was immediately noticed; if a member of the flock was sure to be known to the rest, and the offender was thereby subject to interdiction from Christian worship and communion. If he wished to be re-admitted to the communion of the church, he must publicly acknowledge and repent of his guilt, and submit to the penance imposed by the presbyter. This appears to have been the original mode of confession. It does not seem to be clearly determined when the practice of private, or 'auricular,' was started. Some New Testament writers, who lived towards the middle of the third century (Euseb. Hist. Rom. 12), defines several kinds of sins for which penance ought to be done before the transgressor could be admitted to the communion. In De Licentia in Persecutionibus, he exhorts those who have fallen into heathen practices to confess their sins to the ministers of God, and thus unburthen their souls of their weight, 'because this satisfaction and the remission of their sins are acceptable to God.' Tertullian, who lived at the beginning of the fourth century, says (De Penitentia, ch. xi.) that penitence consists of three parts, confession, contradiction, and satisfaction. In the eastern churches the custom of confessing sins before the assembled congregation was prevalent down to the fourth century, but the practice having led to scandal, especially on the occasion of a lady revealing that she had been seduced by a deacon, Nectarius, patriarch of Constantinople, abolished the custom, and removed the penitentiaries or priest ('qui
the bishop, may be seen in the professional works of disciplinarians of the church of Rome, and, among others, in the Disciplina Regularum Richard and Giraud. Paris 1525, art. 'Confession' and 'Confesseur'.

The box in which the priest sits in the church to hear the penitent is called a confession. But the act of confession may be performed out of church, in private houses, in public houses, in any place where the priest is consulted, so long as the hearing of any person except the priest and the penitent.

The Greek church retains the practice of auricular confession, but differs from that of Rome in the form of the absolution. In the Greek church, including those of England and Scotland, do not admit of this practice, but recommend every one to confess his sins to God, and to repent in order to obtain forgiveness.

Confession is also the name given to the solemn profession of true faith, by the members of the church, from that of Rome, such as the Lutheran [Augustus, Confession Off]; that of the reformed churches of France, in 40 articles, signed by Henry, king of Navarre, the prince of Condé, Coligny, and others, and presented to Charles IX. in 1561; that of the Lutheran reformed church proclaimed in 1566 [Zwingli]; that of the churches of the Netherlands, consisting of 37 articles, and published in 1565, afterwards approved and signed by the members of the church. The church then gives the absolution, and finally pronounced in 1619 by the synod of Dordrecht [Arminius]; and also that of the Protestant churches of Poland, printed in 1576 at Dobzin, and afterwards approved at the synod of Zamoyski.

Some sepulchres of martyrs have been styled by antiquaries questions; for instance, the subterranean chapel, in which are the sepulchres of St. Peter and St. Paul, under St. Peter's at Rome, is called 'the Confession of St. Peter'.

CONFESSION OF AUGSBURG. [Augsburg.]

CONFIRMATION is, according to the Church of England, 'the rite of laying on of hands upon those who have been baptized, and come to years of discretion.' Such only are qualified to confer it, as can say the Lord's Prayer, the Ten Commandments, and the Church Catechism; to the end that children having learned what their godfathers and godmothers promised for them in baptism, they may themselves ratify and confirm the same; acknowledging themselves 'bound to believe and to do' all which those persons undertook for them. It is affirmed in the sixtieth canon of the Anglican church, that confirmation is 'a solemn, ancient, and laudable custom in the church of England, and is not to be omitted, if it be within the power of any person to administer it.' The same custom is observed among the Protestant Dissenters. It is regarded, as a matter of practice, and the assertion, that there is no more authority for that which is contained in the Prayer Book, than in the words of Scripture which are always adduced in support of this episcopal imposition of hands are the following; namely, Acts xvi. 14-17, Acts xvi. 5, and especially Heb. v. 1, where συμβουλιόν, 'the imposition of hands,' appears to be mentioned as an important rite of the Christian religion. But Dissenters disallow this mode of proving the propriety of the imposition of episcopal hands. They deny it to be a legitimate inference from the miraculous act of inspired Apostles to the act of modern bishops. What warrant, they ask, has a bishop to declare that God has given unto an assembly of several hundreds of individuals 'the forgiveness of all their sins,' because they can say the Church Catechism? (See on this question, Townshend's 'Letters on Confirmation, practically to the bishop of London. Dr. Whitby observes that, unless the Apostles laid hands on all who were baptized, it makes nothing for confirmation; and that if they did, then Simon Magus received the Holy Ghost. The early church certainly practiced this rite, and the Holy Ghost to be indeed conveyed by the imposition of hands. 'When we come out of the water,' says Tertullian (De Baptismo, c. 7, 8), 'we are anointed with the holy chrism (perunguimur beneficta unctio), that we have the Holy Ghost.' The same apostolical custom has been repeated in all succeeding ages of the Church, as is proved by the Church of Rome, and even by the Reformed Churches, which have the most strict episcopal system. The imposition of hands is a sign of baptism, of which it formed the concluding rite or complement, and was called βαφύλακας; that is, confirmation; nor was there any exception to this time of adminis-
tering it in the case of baptism in infancy. In the Greek church, and in Asia, it still accompanies baptism. The renunciation of the Protestants at the Reformation caused the rite to disappear from infancy; it is still confined only to adults; and afterwards the Council of Trent altered the time for confirmation to the seventh year.

The earliest mention, by the Fathers, of the use of chrism or sacred oil in the ceremony of confirmation is to be found in the passage of Tertullian de Baptismo, already quoted (Bingham, h. xii. c. 3); but the church of Rome authorizes the authority of the Epistle of James, ch. v. v. 14. The anointing the forehead with this holy unction, which was composed of oil and balsam, confirmed the first act of the ceremony of confirmation. The consignation, or signing with the sign of the cross, was the second; and the third and last was the imposition of the bishop's hands with the invocation of the Holy Ghost. The bishop, after pronouncing the words of the eucharist. Confirmation in the Greek church is named μαρτυρία, 'ointment'; χιμωκα, 'unction'; μαρτυρία του χριστίου; εφαγις, 'the seal'; and εισβολογεμα. In the Roman church this rite is one of their seven sacraments, and it consists in the bishop's anointing the head of the person, saying, 'A. B., I sign thee with the sign of the cross, and confirm thee with the chrism of salvation, in the name of the Father, and of the Son, and of the Holy Ghost.' The bishop then anoints the forehead of the person, and concludes with pronouncing the words Pax tueum, 'Peace be with thee.'

Lord King, in his History of the Primitive Church, p. 91, has shown that confirmation was originally the same thing as baptism, and that it was not until the fourth century that it was restricted to the same individual. On the reiteration of the rite, see also Morinus de Pumentali et Ordinatione, l. 9.

The Puritan contempt for the hierarchy occasioned confirmation to become greatly neglected after the Protestant Reformation in England (Hooker, i. 56; Bishop Hall's Histopodia); but subsequent to that period the church of England has observed the rite with much more strictness than the Lutheran or any other church.

De Puin (Storia della Chiesa, p. 216) gives a numerous list of writers on the subject. (Bingham's 'Origines Ecclesiasticæ, vol. iii. p. 286, et seq.; Hammond de Confirmationibus; Bishop Parker on Confirmation; Goats's Ecclesiologia, p. 369; Gratian, Concordantia Discordantium, part. iii.)

CONFIRMATION (in law). [Decr.]

CONFUCIUS. The real name of Confucius was K'ung-foo-tse: the Jesuit missionaries gave it the Latinized form in which we use it of Tung-tse, to some authorities, he lived five centuries and a half, and, according to others, only four centuries and a half, before the Christian era. There is a difference of opinion as to the place of his birth, but that he lived a great part of his life in the district now called Kwei-fen Hien, a little to the eastward of the great canal in Shan-tung province, where he was educated, and where he married in the nineteenth year of his age. He was the only son of a woman of illustrious birth. His father, who had several other sons by another wife, held a high government office, but dying some three years after his birth, seems to have left the future philosopher very indifferently provided for. Marvellous stories are told of his love of study when a child, and of his early proficiency in learning and philosophy. The Chinese also record a little fact that may interest phrenologists, namely, that Confucius's head was remarkable for the elevation of its crown. His object in acquiring knowledge was to turn himself into a moral and political teacher. He divested his wife after she bore him a son, in 'order,' says the Jesuits, who excuse this part of his conduct, 'to confine his mind to the studious exercises of the Church, with greater application.' When he thought himself sufficiently qualified to instruct the barbarous age in which he lived, he quitted his solitude for the courts of princes. China was not then united under one emperor; his visit to each of the states was probably as large as all England put together. The Chinese were not then more pacific than the rest of mankind: the neighbouring states made war upon each
other, and every part of the Celestial Empire was in its turn deluged with blood. Not long before the birth of Confucius, the horrors of internal warfare had been augmented by some of the belligerents calling in the foreign aid of the Tartars; but when the philosopher commenced, he had but to trace the track of the invasion to learn that a new era had been formed, under which the whole of China was comparatively tranquil. He journeyed through these various states in a condition of simplicity and poverty, devoting himself to the instruction of those with whom he came in contact, to the development of their virtue and the perpetuation of their order. His proselytes gradually increased, and he at length reckoned as many as 3000 disciples, of whom 72 were more particularly distinguished by their devotion to their master, and 10 were so well grounded in all sorts of knowledge that they came to be considered as his pupils. In the course of his visits to the different princes he endeavoured to prevail upon them to establish a wise and peaceful administration. His wisdom, his birth, his popularity, recommended him to the patronage of the kings, but his laudable designs were frequently thwarted by envy and interest. After many wanderings and disappointments, he became prime minister, with a recognized authority to carry his theories into practice in his native country Loo. At this time he was 55 years old. In three years he is said to have effected a thorough change in the moral condition of the kingdom. The happiness and prosperity created by the philosophic prime minister excited the jealousy of the neighbouring kings; the sovereign of Loo was soon induced to abandon his benefactor, and Confucius was obliged to fly to the wilds of the mountains. He was subsequently repulsed at three different courts, to which he applied for office in order that he might render the people happy; and, after sustaining many other sorrows, he returned to the kingdom, where he died in great poverty. His doctrines, however, had taken root, and it was at this time of adversity that his disciples were most numerous. He went again to Loo, his native country, but vainly solicited to be re-employed in the government. According to some authorities he enjoyed a few glimpses of royal favour in his latter days, being sought after by the rulers of several states, and employed in high offices, which natured his knowledge and experience: but it seems more consistent with the principles of his system to suppose him uncompe- promising in manner in which he carried them into practice, always making him many enemies. His real endagnered his life more than once, but he regarded death with a stoical eye. At length, full of years, if not of honours, he retired from the world, in company with a few of his chosen disci- ples, to write or complete those works which became the sacred books of the Chinese, and which have survived twenty-two centuries. He died in his seventy-third year. He is reported to have died on the banks of the Soo river, and many of his disciples, repairing to the spot, deplored the loss of their great master. The envy and hatred of his contemporaries soon passed away. When peace was re- stored, and the empire amalgamated, his writings, which had been neglected at the time of his death, became as paramount in all matters; and to mutilate, or in any way to alter their sense, was held to be a crime deserving of condign punishment. Unfortunately, however, the obscurity of the language, and the difficult involved nature of the written character of the Chinese, rendered involuntary alterations and mistakes of the sense numerous and inevitable.

Confucius was left to end his life in obscurity, the rights and privileges were heaped upon his descendants, who have existed through the centuries, and of the eight generations, and may be called the only hereditary nobility in China. They flourish in the very district where their great ancestor was born; and in all the revolutions that have occurred their privileges have been respected. In the earlier part of the eighteenth century, under the great emperor Kang-hy, the total number of descendants amounted to eleven thousand males. In every city, down to the lowest third, Confucius, in a temple, dedicated to Confucius. The main entrance of the temple is all the learned of the land, the emperor himself, bound to do him service. This service consists in burning scented gums, frankincense, tapers of sandal-wood, &c., and in placing fruit, wine, flowers, and incense on a suitable object, a tablet, on which is inscribed—"O Confucius, our revered master, let thy spiritual part descend and be pleased with this our respect, which we now humbly offer to thee." The ceremony is precisely the same as that which every man is enjoined to observe in the hall of ancestors to his parents, &c.

"It was the great object of Confucius," says a recent writer, "to regulate the manners of the people. He thought that the rewards and punishments of the laws were too crude and untempered to regulate properly the actions of men. He therefore digested all the various ceremonies into one general code of rites, which was called Le-ke, or Ly-king. &c. In this work every ritual in all the relations of human life is strictly regulated, so that a true Chinese is a perfect person. It is composed of duties and virtue, and the order. Some of the rites are most excellent: the duties towards parents, the respect due to superiors, the decorum in the behaviour of common life, &c., speak highly in favour of Confucius: but his substituting ceremony for simplicity gives a true idea of the Chinese. His wisdom may be seen in the many excellent maxims, and inculcates morality, but it has come to use in a mutilated state, with many interpolations." (Gutzlaff, Sketch of Chinese History, ancient and modern.)

In the winter of Confucius the Chinese coolly married towards their wives were slightly dwelt upon. On the other hand, the duties and implicit submission of children to their parents were extended to the utmost, and most rigidly inculcated. Upon this principle of filial obedience the whole of his system, moral and political, is founded. A family is the prototype of his nation; and, instead of the notions of independence and equality among men, he enforces the principles of dependence and subordination—as of children to parents, the younger to the elder. (Dr. Morrison.) By each of these principles, the Chinese, towards all the parts of the community, and is thus entitled to their passive obedience: and, as Dr. Morrison observes, it is probably (he might say certainly) this feature of his doctrines which has made Confucianism the religion of China, where the great majority are Confucians, whether of native or Tartar origin, for so many centuries. At the same time it should be observed that this fundamental doctrine has rendered the Chinese people slavish, deceitful, and pusillanimous, and has fostered the development of a national character the wife to be predominated by gentleness of deportment and orderliness of conduct.

Confucius was a teacher of morals, but not the founder of a religion. His doctrines constitute rather a system of philosophy in the department of morals and politics than of a particular religious faith. (Cl. Davis.) Other writers have broadly asserted that he did not reog- nize the existence of a God. (Bayle, Philos. Dict., in art. "Maldonat"). In his physics Confucius maintains, that nothing there is which is not to be explained by gentleness of deportment and orderliness of conduct.

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appear however that either Confucius or any of his followers attached the idea of a personal being or form to the Deity; nor did he specifically teach the First Cause under any image or personification whatsoever. The images and idols of China belong to other faiths. It was soon found that the notions of Confucius were too abstract and ideal for the mass of his countrymen; who, like the Jewish folk, required something material to fix their attention and excite their devotion.

The moral doctrines of Confucius include that capital one, which, however neglected in practice, has obtained, in theory, the universal asent of mankind: he taught his disciples 'to treat others according to the treatment which they themselves would desire at their hands.' In his doctrines there is an evident leaning to predestination or to a Deity, the power of which is not directly open to human knowledge, but inferred by the mystical lines of Fo-shoe. With all his defects and omissions, Confucius was, however, a most wonderful man. His system, without making any pretension to a divine origin, still continues to prevail throughout the most extensive empire in the world. Some religions may have lasted as long, or longer, but we believe no philosophic code can claim anything like such a lengthened period of active practical existence. The Tibetan, the Bud- dhist, and the Mohammedan religions and philosophies have all subsided in consequence of this Chinese system of faith, and all the rest have been swept away in the vast inundation of the mystic lines of Fo-shoe. The superstition and the vulgar of all classes, from the emperor on the throne to the poor sailor on board the junk, may burn gilt paper and offer sacrifices to wooden idols, practice a chronic want of faith in human nature, worship the mother of heaven, but at the same time they all revere the name of Confucius, and the more enlightened pretend to be wholly guided by his merely philosophic code. The body of his laws and instructions is still followed, not only by the Chinese, but by Coreans, Cochín-Chinese, and other people who, taken collectively, are estimated at 400,000,000 of souls.

The classical or sacred works written and compiled by Confucius and his disciples, are nine in number; that is to say, the Four Books and the Five Canonical Books. The first of the Four Books is the Ta-ho; or the School of Adults, the second the Choo-lang, or Infallible Medium; the third the Loo-yu, consisting of the conversa-
tions and sayings of Confucius, recorded by his disciples, and which, according to Mr. Davis, is "in all respects a complete Chinese Boswell;" and the fourth the Meng-tse, which contains the additions and commentary of Meng-tse, one of his disciples. The five canonical books, all said to be written or compiled by Confucius himself, are, the Shu-hsing, or Book of Sacred Songs; the Shoo-kang, which contains the laws and instructions of the several sovereigns of China; the Ly-kyung, or Book of Rites and Ceremonies, which is considered as the foundation of the present state of Chinese manners, and one of the causes of their uniform unreliability; and lastly, the Choo-tin, which is a history of the philosopher's own times, and of those which immediately preceded him. (J. F. Davis—The Chinese; a General Description of China and its Inhabitants, London, 1836; Gutzlaff—Sketch of Chinese History, art. and modern; Treatise on the Jesuits' Missions, etc.)

CONGRE'S E'ELIRE, a term in Norman French, literally signifying 'leave to elect,' which is appropriated to the king's writ or license to a dean or chapter to elect a bishop, at the time of the vacancy of such see. This privilege of nominating to bishoprics was in most countries of Europe enjoyed by the temporal sovereigns, with little opposition from the ecclesiastical authorities, until the eleventh century, when a contest began between the popes and the monarchs of Europe, which, in the next century, ended in the latter being compelled to surrender this important privilege to the clergy. Father Paul (Treatise of Benefices, c. 24), says that between A.D. 1122 and A.D. 1145, it became a law, every vacancy of a bishopship should be chosen by the chapter. In England, by the constitutions of Clarendon, A.D. 1164, the election was vested in the chapters, subject to the king's approbation of the object of their choice. The right of election was afterwards formally confirmed by the king, which however he reserved to himself, among other things, the right of granting a congé d'eslire, and of confirming the choice of the chapter. This grant of freedom of election was expressly reserved in Magna Charta; and also by a subsequent statute, 25 Ed. III, st. 6, which was employed for the purpose of preventing the popes from interfering with the elections to dignities and benefices in England.

So the law stood until the passing of 25 Henry VIII., c. 6, which, though it only granted to Edward the VI. the reign was afterwards revived, and by which episcopal elections are regulated at the present day. By this Act it is provided that upon every avoidance of an archbishopric or bishopric the king may grant to the dean and chapter a license under the great seal to proceed to the election of a successor, and with this license a letter missive containing the name of the person whom they are to elect. If the dean and chapter delay their election above twelve days after receiving such license, they are to be fined by the bishop, or by the person he pleases to the vacant see; if they delay the election beyond twenty days, or elect any other person than the candidate recommended by the king, or do anything else in contravention of the Act, they incur the penalties of a preannum. Bishops are to be fill'd by letters patent, without a congé d'eslire. (Irish Stat., 2 Eliz., c. 4.)

CONGER (MURENIDE).—CONGESTION, or excessive accumulation of blood in the capillary vessels of the sanguineous system, attended with disorderly functions of the organs in which such an accumulation takes place. It has been shown that the main function of the sanguineous system is to convey the vital blood to the various divisions of the blood-vessels, called, from their hair-like minuteness, capillaries; the office of the main trunks and the larger branches of the blood-vessels being merely to convey to the capillaries the material acted upon by them in the various processes which they perform. In the natural and healthy state of an organ, the arterial capillaries in which the arterial trunks that supply it with arterial blood terminate, receive a certain quantity of blood; retain that blood a given time; and then transmit it with a given impetus into the venous capillaries, which in their turn convey it into the larger venous branches, and these to the heart with a given degree of velocity. Upon this transmission of the blood to and from the organs in a given quantity and a given time, depends the balance of the circulation; upon the due balance of the circulation depends the healthy condition of the organic processes; and upon the healthy condition of the organic processes depends the good performance of the animal functions.

Of the mode in which the balance of the circulation is disturbed by the preternatural accumulation of blood in the capillary vessels, some conception may be formed by the following considerations: if a local or chemical irritant is applied to a transparent part of the animal body; and when such a part is brought under the field of the microscope, so that the circulation in the minute vessels can be distinctly seen. In this case, the first phenomenon observable is a quickened circulation in that part, and the consequent determination to it of a greater quantity of blood; next, after a time, the blood-vessels are seen to dilate and to become turgid with blood; and in the third place, the flow of blood through these dilated vessels is manifestly retarded; and ultimately, if the irritating cause continue to operate with a certain degree of intensity, the circulation is wholly stopped. The quickened circu-
lation, the first phenomenon that takes place, is occasioned by the action of the irritant, and it is subsequent to the costs of the capillary vessels, excited in an inordinate degree by the application of the unusual stimulus. The dilatation of the capillary vessels, the subsequent event, arises from a diminution of the vital power of the vessels, from the over-excitement produced by the irritating cause.

The blood-vessels in this state are commonly said to have lost their tone; to be debilitated or weakened. The consequence of this loss of vital power is the inability of those vessels that form the walls of the blood-vessels, are the engorge-
ment of the vessels, the impeded, retarded, or abolished circulation of blood through them, and the disordered or suspended function of the part affected. From the preceding statement, a distinct conception may be formed of that morbid condition of the blood-vessels, to
the designation of which the term congestion is commonly applied. Hence, such a condition of the blood-vessels must disturb their natural functions, and consequently how powerful an agent it must be in the production of disease, it is also easy to conceive. But pathologists have hitherto made but slight progress in determining what causes congestion, though many consider it as the morbid change which takes place, either in the blood-vessels themselves, or in the tissues in which, as a consequence of this affection, an alteration of structure is sometimes ultimately superinduced. In consequence of the phenomena connected with the state of congestion, it is usually distinguished into passive and active. When there is merely an accumulation of blood in the distended and debilitated capillaries, without any other manifest morbid phenomenon, the state is called passive congestion. And this state is commonly said to be passive. But when to this accumulation of blood there are superadded certain phenomena which accompany and which characterize another morbid state, namely, inflammation, the congestion is termed active. In active congestion, the blood-vessels themselves are in a state of excitement; the preternatural quantity of blood they contain is determined to them by their own inordinate activity; they are in a condition not of diminished but of excited vital energy. In passive congestion, on the contrary, the coats of the vessels are destitute of their natural tonic, vital resistance; yield readily to the current of blood which is determined to them, or unable to pass on the current of blood accumulated on them, and tends them. Active congestion, according to this account, however, can be distinguished by no certain and even no appreciable character from inflammation, a state which is always supposed to be different from congestion. It is certain that the state of congestion has a peculiar tendency to pass into the different state of inflammation, and it is this very tendency that renders congestion so dangerous and fatal a malady. But in what the two states differ, we are at present wholly ignorant. When the link that connects these two states with each other shall be supplied, a clear and bright light will be shed over the nature of some of the most important diseases at present involved in profound darkness. The labours of pathologists, conducted as they now are, with a precision and skill never before exemplified, should be sustained and animated by the prospect of the inscrutable practical advantages which must result from the success of their investigations. The tissue of the body in which the state of congestion is most apt to occur, is the cellular, and more especially in the lax and little cohesive condition in which this tissue forms the parenchyma of the different internal organs, as the brain, the liver, the spleen, the kidneys, and so on. A congested state of their blood-vessels is also particularly apt to occur in the mucous membranes, and more especially in the mucous membranes of the bronchi and air vesicles of the stomach and the alimentary canal, and of the lower extremities. But besides these, yielding structures, as the serous and fibrous membranes, the skin, and even the muscles, may be affected with congestion, after the operation of causes which have exhausted the vital energies of the system in general, or which have diminished the vital cohesion of these structures in particular.

Congestion, when present to any considerable extent, and when continuing for any length of time, disorders the function of the organ in which it takes place. This disordered function are signs from which it is inferred that congestion is present. If, for example, the blood-vessels of the brain be in a state of congestion, the activity and energy of the cerebral functions are diminished, indicated by dulness, heaviness, forgetfulness, inaptitude for mental labour, giddiness, lethargy, and so on: and if the congestion be in great intensity, it may produce all the symptoms of coma and even of sleepiness. (Coma and Apoplexy.) When the blood-vessels be in a state of congestion, the secretion of bile will be disordered; altered in quality, diminished in quantity, or entirely suppressed. If the blood-vessels of the mucous membrane of the stomach be in a state of congestion, the uneasiness in the chest, difficulty of breathing, cough, &c. Congested states of these and other organs are exceedingly apt to occur in the progress of other diseases, more especially in the different types of fever, the character of which they modify, and the severity and danger of which they always greatly increase. There are fevers indeed, and those of the very worst kind, that is, the most intense and the least under the control of any known remedies, in which a high degree of congestion of the blood-vessels of the internal organs, and which is called the morbid condition of the intestines, is among the very first appreciable morbid conditions of the system; but in general such a congested state of the blood-vessels is consequent upon preceding morbid conditions of the organs; conditions by which the vital energies of the blood-vessels have been exhausted.

The appearances presented by congested parts after death, vary with their structure and with the degree and duration of the state of congestion. The parts are turgid with blood; the blood they contain is of a darker colour than natural; hence the colour of the organ, the seat of the congestion, is darker in proportion to the intensity of the affection; it is also commonly more or less swollen, and the cohesion of its tissues is diminished, so that they are more readily torn than when in a health condition. In some organs, indeed, as in the liver and the spleen, when the congestion is in an extreme degree, the cohesion of the component tissues is so much lessened that the organs are broken down on the slightest pressure.

Anything may be the cause of congestion which diminishes the vital energy of the capillary vessels; or which gives rise to morbid affections of the organs, or which diminishes the blood they contain. If the vital energy of the capillaries be diminished, they cannot maintain the tension necessary to prevent distension of their parietes, and a consequent preternatural accumulation of blood. If the quantity and quality of the blood they contain be altered, their natural stimulus may be so deficient as not to excite, or so excessive as to exhaust them.

There is no morbid state of the system over which an individual has so little power, and death is, on the whole, the affection is extensive and severe. When, however, it is seated only in a single organ, and is not very intense, there are remedies which have a powerful tendency to relieve it; but there is scarcely any disease of the body the treatment of which they can be altered with so much caution and discrimination. The adoption of a wrong course, or the too vigorous application of a well-chosen remedy, is, in this case, a more than ordinary tendency to turn the balance between life and death or the side of death. If the congestion be what is termed active, general blood-letting is sometimes indispensable; on the other hand, there are many cases of passive congestion, in which the abstraction of blood from the system in the smallest degree will excite unnatural hypension, which general depletion would be pregnant with danger, local blood-letting is often safe, and when employed with cautious decision, is the most efficient of all remedies. Its employment, however, must be regulated by other and more important symptoms, as debility, as blisters, as blisters, and by internal remedies which tend at once to stimulate the heart's action and to equalize the circulation, such as what are termed the diffusable stimulants, and diaphoretics. Enemias and purgatives are also auxiliary remedies, in general safe, and often remarkably efficient.

CONGLETON, a market town and borough in the county of Cheshire. It is in the parish of Astbury, in the eastern extremity of the hundred of Northwich, on the eastern deforative border; 43 miles nearly due North of Chester, in a straight line, and 162 N. W. from London. It appears to be a place of great antiquity, and is supposed to have been a military station of the Romans. The present town is a mile in length, and contains many of the ancient houses of Cheshire, which are constructed entirely of timber frame-work and plaster. It is beautifully situated in a deep and picturesque valley on the banks of the river Dane. At the west end are numerous commodious brick buildings, with a piazza for those who attend the market. The general appearance of the town is neat and orderly, and the inhabitants appear to be in circumstances of prosperity. The Macclesfield canal, and the great road from Leichfield and Stafford to Manchester, pass through it. The population in 1831 was 9352, of whom 4474 were males.
and 4878 females. At this time there were 37 families employed in agriculture, and 1644 families employed in the silk manufacture, which of late years has greatly increased. The silk-mills erected on the banks of the river are very extensive. Ormond, in his history of Cheshire, speaks of twenty-eight in the year 1810, for rhombas and other kinds of silk fabric (vol. iii. p. 20). The manufacture of Congleton is almost wholly confined to black silks. In thrown silks it excels the manufacture of Macclesfield, though in fancy silks, and in the whole range of business, it is much inferior. It is observed in the "Repository of Arts" (1835), that no new works have been erected since 1825, and that the state of the manufacture is not such as to offer encouragement to any additional speculation. The silk-mills are in a process of expiration to depredations; detection being difficult in consequence of the smallness of the bulk in proportion to the value. There is no cotton manufacture within the boundary of the borough; but there are several immediately beyond it. There are some tanneries and manufacture of leather in the town. The living is a perpetual curacy subordinate to the rectory of Astbury; but though the chapel lies over an area of 250 acres, the stipend is only about 140£ a year. The distinguishing churches are the ancient collegiate church of St. Mary, and the parsonage of St. Peter, including one of Catholics. The Methodists and Independents have schools each, with several hundred scholars. There is a free grammar-school, with sixty-eight scholars, which was founded in 1629; a free school for Sunday-schools, an infant-school, and several endowed charities. The licensed public-houses are very numerous—there are 30, and 32 beer-shops within the space of 300 yards. (Municipal Corp. Rep. p. 2657, part 4.) The market-day is on Saturday, and fairs are held on Thursdays, before Shoreshide, May 12, July 5, and November 22, for cattle and pedlars' wares. ( Boundary Report; Municipal Corp. Report; Population Report; Report on Charities; Lysons's 'Ancient History of Cheshire."

CONGLOMERATE, the generic term for coarse sand or rounded fragments of stone, of various kinds, cemented into a mass. It is sometimes called pudding-stone. Conglomerates differ in their nature, and vary in the size of their component parts according to the process by which they have been brought into the form of conglomerate. The mechanical convulsions of the earth, great floods, and other agents, more or less powerful, having carried the primary materials up and thrown them down in some process or other, and rubbed off their sharp and angular parts, they are united into solid masses by a posterior formation. Along the base of the Maritimes Alpes the rivers, with few exceptions, are now forming conglomerate sand. (Lyell's 'Geology,' vol. i. p. 244) Some of the rivers in these parts are brought down by the torrents form beds of sibngle; but the greater part are swept into the deep sea, where they form strata of inclined conglomerate, about 1000 feet in thickness and seven or eight miles in length. Volcanic eruptions also tend to the formation of conglomerate by uniting masses of rock together. Conglomerates, as already observed, to whatever causes owing, are characterized by being manifestly a congeries of fragments of rock, either of the same or of different kinds, and by the process of attrition, and consequently have been formed by fragments of various rocks that have been carried considerable distances. [BRECCIAL.] Many of these conglomerates are somewhat resembling the country is almost entirely composed of conglomerate, belonging to the same class, as the Pleistocene rocks of the British Museum, the faces of which are tolerably smoothed by Egyptian art, while the broken parts exhibit a conglomerate composed of rounded gravelly masses, and masses of quartz and other rocks. CONGO. This name, in its most extensive application, as explained under the word Angola, comprehends the whole of the territory of the present republic of Africa, which is more correctly divided into the four kingdoms or districts of Loango, Congo Proper, Angola, and Benguela. In this large and loose sense it extends from Cape Lopez Gonsalvo, in lat. 0° 44' S., to Cape Negro, in lat. 15° 46' S., properly so called, however, at least according to its modern limits, (for it is said to have been more extensive formerly,) does not stretch to the river Zaire (otherwise called the Congo), in about lat. 6° 20', which separates it from Loango, nor to the south beyond the river Dando, in lat. 8° 20', which separates it from Angola. It is believed to be of considerable distance into the interior; but we have no distinct inference of any of the limits in that direction, and they are probably not very definitely marked. The country immediately to the east of Congo appears to be that of the Gisaga, a race of bushmen subject to that which dwelt upon in the old accounts, and seems to be still the terror of their more peaceful neighbours.

The first European who reached Congo was the Portuguese navigator, Tomé Pires, who made his way thither from Elmina, in 1484. Disappointed in his expectations of making his voyage on that occasion from Portugal. The following year another armament arrived from Portugal, under the command of Ruy de Souza. After this the king of Congo, in company with his subjects, made his submission to the Portuguese, and the Portuguese formed considerable establishments in the country. It was in the course of the seventeenth century, however, that the most strenuous endeavours were made in the work of converting the natives. Ample accounts of the proceedings of the Portuguese missionaries in the opposition and difficulties of various kinds they had to contend with, and of the wonderful success which, notwithstanding, is asserted to have crowned their persevering labours, are given in the "History of Missions in the Horn of Africa," by the Rev. J. Pioseneco, two Capuchin friars, who set out to join the mission in Congo in 1666; and in that of Geronimo Merola di Sorrento, another Capuchin father, who joined the same mission in 1670. There are French and English translations of both these voyages, which were published in Italian; and they are incorporated in Labat's "Relation Historique de l'Ethiopie Occidentale," 5 vols., 12mo. Paris, 1732; along with a translation, also from the Latin, of Father Cavazzi de Montecuccoli's "Relazione," in the kingdoms of Congo, Angola, and Matamba. A relation of the earlier attempts to christianize the people of Congo, beginning with the first introduction of Christianity into the country, may be found in an account of Congo and the neighbouring countries, first drawn up in Latin in 1590, by Filippo Pigafetta, from the journals and verbal information of Duarte Lopez, a Portuguese captain, who had spent about ten years in Congo, and was eventually sent to Madrid and Rome, on a sort of embassy from the king, for priests, missionaries, and warlike assistance against his enemies. Pigafetta's book was early translated into English and Latin.

The earliest English account of Congo is that published by Purchas under the title of 'The Strange Adventures of Andrew Batell, of Leigh, in Essex, sent by the Portuguese prisoner to Angola, in which kingdom and the adjacent regions he lived eighteen years.' Batell, whose relation is extremely curious, was taken in this voyage in 1597, and kept in prison till 1607. An English navigator, of French descent, James Barbot the younger (so called to distinguish him from his father of the same name, also a writer of voyages), made a voyage to Congo in 1688, the journal of which was published along with the voyages of his uncle, John Barbot. There are translations or abridgments of all these early voyages in the 4th and 5th volumes of Prevost's 'Histoire Générale des Voyages.' Some of them are also in Hackländer's 'History of Portugal,' and Purchas's 'Pilgrimage,' of Osborne, Pinkerton, and the other English collections. In Labat's book, already mentioned, the accounts of several Portuguese voyagers are added to those of the missionaries. A new voyage, from the researches of the Revs. James Whyte, in Offert Dapper's 'Description of Africa,' first published in Dutch, at Amsterdam, in 1670, but of which there is a French translation, vol. Amst., 1686. The Abbé Proyart has collected the most important particulars concerning the kingdom of Congo, Cabinda, et autres Royaumes d'Afric,' 1776, of which there is an English translation in the 16th vol. of Pinkerton's collection, pp. 546—598.

According to the old accounts, the native division of Congo is into six provinces of Bamba, Sogno (or Sonio), Sondi, Pango, Batta, and Penda. The Portuguese however appear to have divided the country into what they called the metropolitan province of San Salvador, the province of Bamba, the duchy of Sondi, the marquisate of Penda, and no. 459.

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the county (or earldom) of Sogno, thus omitting altogether Pango and Batta, or comprehending them under some of the other names. The Portuguese province of San Salvador is a part of the native province of Pomba, the marquisate of Pomba, a large area of land placated along the whole of the left bank of the river Congo, immediately to the north-east of Sogno, which occupies the angle formed by the river and the sea-coast. In this province is the capital, said to have been antiently called Banza, which appears to have been merely a castle or town, the residence of a king, or even of a subordinate ruler. The Portuguese having established a settlement here, gave the place the name of San Salvador. It is described as situated about 150 miles up the river; it is a town of moderate size, situated by the river, in a hollow on the south-east side of a lofty mountain, having on the summit a plain of about ten miles in circuit, which is covered with towns and villages. The palace of the native sovereign and the Portuguese part of the town are each surrounded by an inclosure of about a mile in circumference; but the suburbs of the Portuguese town are described as of considerable extent. The principal ornaments of San Salvador were, a cathedral and nine or ten other churches, all built of stone, although, with the exception of that of the Jesuits, roofed only with thatch. The religious establishment consisted of a bishop and chapter, a Jesuit college, a convent of capuchins, &c. It appears however that during the first part of the present century the ravages of war had almost ruined San Salvador, and the native sovereign had transferred his residence to another place, called Lemba, in the province of Bambes, and nearer the sea-coast.

The state of the nation, as to the history, the religion, the customs, the arts, and the former general condition of the people of Congo, we must refer the reader to the missionary accounts, in which these matters are treated at great length. There is probably however a good deal of fiction in these accounts, the prevailing aim of which evidently is to exaggerate the importance of the country and its inhabitants. At all events, now that both the show of Christianity and the very thin sprinkling of civilization, of which this region of the world has any at all, have nearly disappeared, these old descriptions would certainly be found very inapplicable to the present state of Congo.

The most authentic information we possess respecting the modern state of Congo, is derived from the Narrative of an Expedition (sent out by the English government) to explore the river Zaire, usually called the Congo, in 1816, under the direction of Captain J. K. Tuckey, R. N., 4th. London, 1818. Captain Tuckey and his companions, of whom but very few were experienced in this disastrous expedition, including Tuckey himself, and all the scientific persons whom he took along with him, made their way up the river to a point about 280 miles above the mouth, and in the course of it they both saw and conversed with many of the natives, and made some excursions a short way into the interior of Congo. Their actual inspection of the country however was of course confined to the portion along the bank of the river; and the only record we have of the information they obtained, consists of the journals of Captain Tuckey and Professor Smith, the botanist attached to the expedition, hastily drawn up at the time, and which the writers had no opportunity of revising and condensing at leisure. Their account therefore can scarcely be safely assumed to be applicable to more than a very small part of the whole region comprehended under the name of Congo. It is, in fact, principally an account of the lower part of the great river up which the expedition sailed. The Congo, even till of late years, was supposed by some persons to be the embouchure of the Niger; but long before this point was settled, the soundest geographers were of opinion that although Captain Tuckey's expedition was undertaken with the view of ascertaining the mouth of the river and in the official account of the voyage, the identity of the two rivers is elaborately contended for by a writer, who declares that 'the hypothesis which makes the Niger to pour its flow into the Gulf of Benin is entitled to very little attention.' The Congo is not properly called the Zaire, it seems, as Diogo Cam was led to suppose, that being merely a word signifying any great river, but the Moienzi Enzadi, which means the river that swallows up all other rivers. The old accounts represent the velocity with which it rushes into the sea to be so great, that it preserves its stream unaffected by the salt water for twenty leagues or more. This description Captain Tuckey found reason to believe considerably exaggerated. It had been usually supposed that the mouth of the river was placed along the coast of the northern part of the mouth of the river was found nowhere to exceed 45 or 5 knots an hour, and in many places it was not more than 24. The accounts of some preceding navigators make it flow at the rate of six or seven miles an hour; and Tuckey states that the water also may do, when the channel is more full of water. The depth however in the middle of the stream here was very great, no bottom having been found with a line of 160 fathoms; so that when the river is at high flood the mass of water which it pours forth must be immense. It flows for some distance from the sea is not less than five or six miles; it is then divided by a number of islands into several streams: at the distance of 140 miles from the mouth the Narrows commence, and continue for about 40 miles, during which it forces its way between two opposite barriers of steep rocks, not more than from 300 to 500 yards asunder. Many ledges of rock stretch across this part of the river, the most formidable of which however, called the Great Narrows, are more than 200 yards wide, and would be more appropriately designated by the term Rapid. Above the Narrows, which terminate at a place called Ingia, the river expands to the breadth of two, three, and even four miles. Tuckey ascended it for about 120 miles. He found this point of the river stretching the natives that after this there was no impediment to its continued navigation for a great distance. Its direction, according to their account, continued to be nearly in a straight line towards the north-east; and Tuckey appears to have felt convinced that it must have its source in some vast lake or chain of lakes several degrees to the north of the equator. Much surprise was experienced at finding that it did not receive the water of any other stream in the whole distance they extended it; and Captain Tuckey and Professor Smith were inclined to believe that it must receive accessions of water by some underground communication. The old delineations of the river, it is to be observed, also represent it as without any tributaries in this part of its course; but they make three or four rivers to flow into it higher up. The torrents that pour down in the rainy season however through the ravines between the hills on both sides of it, probably bring it a considerable quantity of water. The river Congo spreads out into extensive swamps, which are covered with mangrove and palm trees, as are also the islets by which it is here interrupted; above the swampy region, and as late as that of which much exceed 2500 feet, rise all the way to the east by which it extends along the channel, or the rocks between which it is confined. Up to the great cataract of Yellala these hills are stony and nearly barren, and the rocks at the Narrows are composed of masses of micaceous slate; but beyond this point the rocks are of limestone, and the country is described as fertile and beautiful. Even below this however, between the hills and the water, vegetation is in many parts very luxuriant, and numerous villages are to be seen both in the hollows and even on the tops of the hills, and the most unattractive maps make five or six smaller rivers fall into the sea between the Congo and the Dando.

With regard to the products of Congo, the information acquired by this expedition agrees sufficiently well with the accounts of the Portuguese missionaries. Although so many of the members of the expedition were cut off by a fever, which appears to have been brought on by fatigues and exposure to the night air, and to have been of a contagious character, it is impossible to form any adequate idea of the many agreeable and even wholesome; the rice, Manihot esculenta, which makes the river as well as the river, and the manioc cultivated here; with the cultivation and the use of the vegetable products (for many of which the natives are several of the products which have been cultivated and have been introduced to the Portuguese are manioc or cassava, yams, manioc, sweet potatoes, pumpkins, millet, edamades, cabbages, spinach, pepper, cardamon, the sugar-cane,
and tobacco. Of fruits they have the banana, the papaw, the orange, the lime, and the pine-apple, which last Captain Tuckey says growing in open places at the extremity of the pier he perceived. It, as he says, swarmed with bees, was honeotted, the pine-apple being indigenous only in the New World, the plants must have been carried thither by the natives, for certainly no European settlers had ever been formed so far as he knew. The so-called "fruits proper," or those that were a wine made out of the juice of the palm-tree, which was found by the members of the expedition to be both an agreeable and a wholesome drink. Of domestic animals there were goats, hogs, fowls, ducks, and pigeons, as well as a few hairy things that went around on four feet; and leg-leggings are described as abundant, large, and fine, and wild pigeons, of three or four species, as very plentiful. Bees are in great numbers; the flies and the bug were the only insects that were found troublesome. The lower part of the river abounds in different species of fish, which form an important part of the subsistence of the people; it also, especially above the Narrows, swarms with hippopotami and crocodiles.

The sovereignty of Congo, Captain Tuckey was informed, was called Landy, or Blindy N' Congo, and resided at a place called Banga Zoono, six days' journey southward from the river. This is, in all probability, the San Salvador of the Portuguese, who were informed of the natives to have a chief named Emanuel. In the islands there are the Chenooons, "the Chenoons," says Captain Tuckey, "improperly named kingdoms by Europeans, are hereditary fiefs, passing in the female line, that is, on the decease of the Chenoon, succession, instead of passing to his son, goes to his brother, or uterine uncle or cousin." In other words, to secure the certainty of the blood royal, the successor must descend from the same female ancestor with the deceased chief, and must be the nearest male descendant, whether he be still living or dead, a line of females from that common female ancestor. Of the inferior officers, the chief is the Mabool, or collector of the customs, who is generally qualified to act as an interpreter to the European visitors of the coast. These functionaries are often amassed considerable wealth by giving their services as agents to the slave traders, Portuguese and piratical, who still resort to Congo. A place called Embommo, on the north bank of the river, and about fifty miles from its mouth, appears to be the principal town. Many marks were observed that Captain Tuckey represents the dominions of Congo as comprehending a small territory to the north of the river included within a line drawn from below Malembou, on the east coast about fifty miles north from the mouth of the river, to Banga N'Inga at the termination of the Narrows.

The natives of Congo, although they have thus an established government, and have arrived at the agricultural state, cultivating regularly two crops of Indian corn in the year, must be considered as sunk in the same barbarism with the other nations of the west coast of Africa. Rights of property are well understood among them, and are carried so far that a fowl or a pig will sometimes have three or four proprietors. But their houses are mere huts constructed of a few posts stuck in the ground and interwoven with reeds, and they go naked, with the exception of a small apron, generally of grass-matting, tied round their loins. They have several churches in English Cape Verde, though they do not understand the language of the priests, and they cannot abide hearing a black man preach. Their art is to make trinkets to white men of any grade. Their sense of the whites being a race of beings altogether distinct from themselves seems to be complete. They scarcely appear to have gained a step towards civilization by their intercourse with Europeans, and it would appear that very considerable benefits were among them by their European conquerors, has, as in such circumstances might be expected, retained very little resemblance to what is commonly understood by that name. Captain John Calhoun, Chesaapi chief, who had been taught to write his own name and that of Saint Antonio, and could even read the Romish Litany in Latin, but who boasted that he had a wife and five

conenibes, and stoutly maintained that this kind of polygamy was not at all prohibited in the New Testament. At one point Captain Tuckey was called, and gave himself the proper sequel, all over like the rest of the natives, and had the two upper front teeth filed away, in deference to the prevalent notion of beauty in Congo.

It is a curious circumstance that the language of Congo, which is merely a dialect of that of Angola, Benguelas, and the other neighbouring districts, appears to be also radically the same with that spoken by the natives of the east coast of Africa, which is separated by three days' journey from the coast of Congo. This fact seems to be confirmed by the late Mr. Marson (the author of the History of Sumatra), and which result is confirmed by the lists of Congo words collected by Captain Tuckey.

Since the publication of Captain Tuckey's Voyage, an account of a visit to Congo and the neighbouring countries, by M. Douvillé, has appeared in the transactions of the French Geographical Society. This voyage, unfortunately for those who profess to be geographers and have given credit to it, turns out to be the first of that class, and an unadventured wanderer. Douvillé afterwards published a separate book, with plates. The plates on the face of them are good for nothing.

CONGRESSIONAL most commonly signifies an assembly of persons for the purpose of public worship and religious edification. It denotes more particularly a number of ecclesiasties constituting a legislative and executive body; and in this acceptance it is applied chiefly to certain Boards of government or administrative councils among the aspirants to the cardinalship in Rome. These congregations serve as a check on the papal authority: for though their proceedings are usually sanctioned by the pope, he cannot, without alleging the weightiest reasons, put a stop to them. The whole number of these congregations is twenty-one that is, fifteen for spiritual and six for temporal purposes. Congregation is also used to designate a company, society, or fraternity of monks forming a subdivision of an order, as the congregations of the Cenobites and Benedictines. The congregation of the Lord was an apellation assumed by the Scotch Presbyterian Reformers, who called the church of England the congregation of Satan. They appeared first in 1655, under the earl of Argyle, and were subsequently led by John Knox.

Congregationalists are those who compose the congregations which assume an independence not only of the ecclesiastical control of the established hierarchy, but of all authority to the state. They stand upon a common origin as the Brownists, who appeared in 1600. [BROWNISTS] The real founding of the sect is ascribed to Mr. Robinson, in 1640, and the following passage from his 'Apology,' c. v, p. 22, is ascribed as their leading maxim. 'Cetum quemlibet particularissime esse totum, integrum perfectum ecclesiam, ex suis partibus constantem immediatam et independenter sub ipso Christo.' It is said that they adopted the name of congregational brethren, and congregational churches, to avoid the odium of sedition and anarchy which was charged upon them as the Puritan rejoicings of Charles I. Cromwell made use of them as a political check on the Presbyterian party. (See 'Declaration of the Faith and Order owned and practised by the Congregational Church of England and North America,' being the New England States of North America, which were colonized by the English Puritans, the Congregationalists are very numerous; and in several other parts of the union their numbers are much larger than those of the sect. Their situation and the rule of their democratic government are given fully in their [Platforms of Discipline]. They believe in 'The Trinity; Predestination; total Depravity; particular Redemption; effectual Grace; and Final Perseverance,' and maintain that no other man is greater than their own pastor, is under no other ecclesiastical jurisdiction whatever.' (Moore, vol. v, p. 394; Neal's Hist. Puritans, vol. ii, p. 107; vol. iii, p. 544; ib. vol. iv, p. 167; Burnet's Hist. Orig. Times, vol. i, p. 86; Calhoun, p. 580; Reasons against the Indepen. Govt. Congregations.)

CONGRESS, AMERICAN. UNITED STATES OF N. AMERICA.
CONGREVE, WILLIAM, was the second son of Rich-
ard Congreve of Congreve in Staffordshire, and born at
Bardas, near Leeds, in Yorkshire. His father, who held a
commission in the army, took him over to Ireland at an
early age, and placed him at the first at the Great School at
Kilkenny, and afterwards under the direction of Dr. St. George
Ashe, in the University of Dublin. After the revolution in
1688 he returned to England, and was entered as a stu-
dent at Christ Church, Oxford, in his first year. His first
play, entitled ‘Enter the Old Bachelor,’ which was produced
in 1693, and Dryden is said to have remarked that he had never
ever seen such a first play. The next year followed another,
‘The Valiant Truth,’ and in the year after, Dryden joined
with Betterton, they commenced their camp-
aign at the new house in Lincoln’s Inn Fields with a new
comedy written by Congreve, called ‘Love for Love.’ In
1697 he produced his tragedy of ‘The Mourning Bride,’
years afterwards the comedy of ‘The Way of the World.’
The indifferent success of this last play disgusts
him with the theatre, and he determined to write no
more for the stage. Through the friendship of his patron
the Earl of Halifax he was first made one of the commis-
sioners for licensing hackney-coaches, then presented with
a place in the Pipe Office, and after that with one in the
Customs, worth 600£. per annum. On the 14th of Novem-
ber, 1714, he was appointed commissioner of wine licences,
and on the 17th of December, in the same year, named as
secretary of Jamaica. The last twenty years of his life
were spent in retirement, and towards its close he was much
afflicted with the gout and with blindness. Being over-
turned in health in the spring of 1735, he recovered; but
as is supposed, some internal injury, and, gradually declining
in health, died on the 19th of January, 1729, at his house in
Surrey Street in the Strand, London, aged 57, and was
buried on the 26th of January, in Westminster Abbey.
Mr. Congreve was also the author of a romance called
‘The Incognita, or Love and Duty reconciled,’ written at the age of
seventeen; ‘The Judgement of Paris,’ a masque; ‘Se-
mele,’ an opera, and several poems. His merit as an or-
inator and writer John Dryden pronounced the highest la-
ure as he ‘borrowed neither the models of plot, nor the manner
of his dialogue.’ Of his plays, he remarks, that his char-
acters are commonly fictitious and artificial, with very
little of nature, and not much of life. His scenes exhibit
not much of humour or passion; his personages are a kind of
intellectual gladiators—every sentence is to ward or
strike; the contest of smartness is never intermitted; his
wit is a meteor, playing to and fro with alternate corusca-
sations. His comedies, therefore, observes the critic, ‘are
in some degree the operation of tragedies—they surprise
rather than divert, and raise admiration oftener than mer-
riment.’ His only tragedy, ‘The Mourning Bride,’ although
very successful, is a piece of unrelished bombast. ‘Love
for Love’ is produced by the National Parliament of Congreves
session of the stage, and even that is rarely acted, as its wit
cannot stone for the exceeding grossness of much of the
dialogue.

CONIC SECTIONS, the curves formed by the inter-
section of a circular cone and a plane, the former being
either oblique or right.

Though the names of conic sections still remains, yet the
interest which attaches to these curves, and the method
of treating them, has no longer any reference to the acciden-
t from which they derive their name. The Greek geometers,
the purely speculative, occupied themselves with the different
methods in which a cone may be cut, simply because the
conical surface (with the cylindrical and spherical) came
within the restrictive definitions under which they had
played geometry. [Geometry.]
The works of Apollonius,
Ancimedes are the first in which these sections were
found; Eratosthenes, Archimedes, is the history of the dis-
bation of a few remarkable properties, till the discovery that
the path of a projected body in an unresisting space is a
parabola, and that of a planet round the sun, an ellipse.
The investigations of Isaac Newton (1643-1727) has still
in consequence of the study of geometry, an attempt to
write the history of mathematics and physics as that of
conic sections, in its results and consequences.

Some sections of a cone are considered in elementary
geometry, for a plane may meet a cone in a point, or in a
straight line, or in two intersecting straight lines, or in a
circle. But the curves which are peculiar conic sec-
sections, are the oval made by a plane which cuts the cone
entirely on one side of the vertex, called the Ellipse:
the indefinitely extended modification of this when the plane
becomes parallel to any one slant side of the cone, called
the Hyperboloid. The curves which are partly on one side, and
partly on the other of the vertex, formed by a plane which
cuts both surfaces of the cone, called the Hyperbol.

To these names we refer for the specific properties of the
sections.

Algebraically considered, the conic sections are the curves
of the second degree, meaning the curves belonging to such
equations between co-ordinates are of the second degree.

Thus x and y being co-ordinates, oblique or rectangular,
the general equation
\[ ax^2 + bxy + cy^2 + dx + ey + f = 0, \]
may, by properly assuming a, b, c, &c. be made the equation
of every possible section of a cone by the plane in which the
co-ordinates of the points measured. As these
works do not fully discuss the conditions under which
the preceding equation represents the different sections, we
subjoin the following from the 'Camb. Phil. Trans.', vol. v. p. 89.' In the following list \( \theta \) means the angle made by the co-ordinates. [The notation has reference to the table in 'Surfaces of the Second Degree'.]

Let \( V_1 = a + e - b \cos \theta \), \( V_2 = 4ac - b^2 \);

\[
W = \frac{cd + a e - bde}{b^2 - 4ac} + f.
\]

and in the case where \( V_2 \) and \( cd^2 + a e^2 - bde \), are both \( = 0 \), let

\[
W'' = \frac{4a}{4a} \frac{a}{4e} = \frac{4e - d}{c}.
\]

In the following table, \( p \) means either sign, + or -, but in the same line, \( n \) means the other sign; a dotted line means that the sign of the expression at the head of the column need not be considered. The word line by itself means straight line.

<table>
<thead>
<tr>
<th>( W' )</th>
<th>( V_2 )</th>
<th>( W'' )</th>
<th>( V_1 )</th>
<th>Name of the Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>( p )</td>
<td>( + )</td>
<td>( p )</td>
<td>( + )</td>
<td>Impossiible.</td>
</tr>
<tr>
<td>( n )</td>
<td>( n )</td>
<td>Hyperbola.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>( 0 )</td>
<td>( 0 )</td>
<td>Parabola.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>( 0 )</td>
<td>( + )</td>
<td>Point.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>( 0 )</td>
<td>( - )</td>
<td>Intersecting lines.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>( 0 )</td>
<td>( 0 )</td>
<td>( p )</td>
<td>( n )</td>
<td>Impossible.</td>
</tr>
<tr>
<td>( 0 )</td>
<td>( + )</td>
<td>( p )</td>
<td>( n )</td>
<td>Line.</td>
</tr>
<tr>
<td>( 0 )</td>
<td>( - )</td>
<td>( p )</td>
<td>( n )</td>
<td>Parallel lines.</td>
</tr>
</tbody>
</table>

Thus if \( W' \) and \( V_2 \) both have the same sign, and \( V_1 \) is positive, the equation cannot be satisfied at all; but if \( W' \) and \( V_2 \) be of different signs, and \( V_1 \) be positive, the equation is that of an ellipse. We may add that \( V_1 = 0 \), indicates an equilateral hyperbola. [Hyperbola.]

The general properties of the sections are numerous and interesting, but we shall only mention one, because it is the most convenient as a general definition of the curves, combining them at once with each other, in a manner in which algebra is easily applied. If a point move in such a way that its distance from a given point (called the focus) always is the same fraction of its perpendicular distance from a given right line (called the directrix), then the curve traced out is an ellipse, parabola, or hyperbola, according as the given fraction is less than, equal to, or greater than, unity. We are convinced that no method of deducing the properties of these curves can be very successfully applied in the case of beginners, unless it involve the foci in the definition. The properties of these points do not readily show themselves either in the deduction from the cone, or from the general algebraic equation.

CONICAL PROJECTION. A method of describing a representation of a part of sphere upon a plane. A sphere cannot be unrolled into a plane, as can every cone or portion of a cone. If a cone be described which touches a sphere in a small circle, and if the several points of the sphere be then projected upon the cone by lines drawn through the centre, the parts adjacent to the small circle of contact will be projected into figures very nearly similar to the originals. If the degrees of latitude, which are very nearly equal, be made actually equal, no injurious effect will be produced on the map. Suppose, for instance, it is required to draw the map of a country contained between two given longitude circles, and two given parallels of latitude. Take any radius for the sphere, and let \( S \) be the radius \( \times \) cotangent of the middle latitude of the map. From \( A \) set off \( AB, AC, &c. \), equal to the arc of one degree (or whatever the distance may be between the parallels which it is desired to draw) on the great circle of the sphere chosen. Let \( L \), \( L' \) be half the total longitude contained between the extremities of the map, and take the angles \( ASP \) and \( ASQ \), equal to \( L \times \) the sine of the middle latitude. Divide the angle \( QSP \) into as many parts as there are degrees (or other required intervals of longitude lines) in \( L \); then \( QRTP \) is the map required, and \( VXYZ \) such a portion as is usually exhibited on a sheet of paper.

If instead of the tangent cone, it be required to project upon the cone formed by the revolution of the chord which joins the two extreme points of the map on the sphere, let \( l \) and \( l' \) be the least and greatest latitudes, and let

\[
S = \text{radius} \times \cos l' \div \sin \frac{1}{2} (l + l')
\]

\[
S = \text{radius} \times \cos l' \div \sin \frac{1}{2} (l + l')
\]

the rest is as before.

There are two modifications of this principle which will be convenient here to notice: the projection used by Flamsteed, and that adopted by the French government in their recent maps. In Flamsteed's projection the degrees of latitude are equal, and the parallels of latitude are perpendicular to the middle longitude circle, which is a vertical right line. But the degrees of longitude are made in every parallel to bear the same proportion to the degree of latitude as on the globe: so that the meridians are, in fact, curves, the ordinates of which are as the cosines of the abscissae.

In the French government maps, the same plan is adopted, with this exception, that the parallels of latitude are the circles of the conical projection, and the degrees of latitude are all equal (the oblateness of the earth may be allowed for, if necessary), so that the meridians are then set off on the parallels of latitude in the same proportion as in Flamsteed's projection.

CONFERTER, a natural order of Gymnospermus exogens, consisting of species, mostly evergreen, hard leaved trees or shrubs, inhabiting all those parts of the world in which arboreal plants can exist. Under this name are collected the various races of fir trees, pines, cedars, jupipers, cypress, and the like, which, however dissimilar they may at first sight appear, correspond not only in their universally terebintaceous sap, but in the following points of organization:—They all branch from numerous buds, proceeding from the side of a main stem. Their wood consists of tubes of nearly equal diameter, among which are here and there flatular cavities which receive the resin that exudes from the wood. The sides of the woody tubes are marked by circular disks, which, when highly magnified, appear as if consisting of a smaller internal and a large external circle; the nature and use of these disks is unknown. The following cut represents highly-magnified sections of a piece of deal; A shows the nearly equal size of the woody tubes when viewed transversely. B is a perpendicular section with the disks seen on the sides of the tubes.

The leaves are articulated with the stem, and very often are linear, veinless, and sharp-pointed; but in some cases, as Salisauria adiantifolial, fig. 1, and Podocarpus arvensefolia, fig. 2, the leaves become broad, and then they are filled with veins, which are all of the same size, and branch by repeatedly forking; a mode of veining known only in
CONIFER MACULATUM, or HEMLOCK, is a wild umbelliferous plant, possessing highly narcotic and dangerous qualities, but used medicinally as a remedy against nervous infections. It has a white fusiform biennial root; an erect, branched, bright green, spotted stem, from five to ten feet high, on which are planted so many smooth, finely cut, large, fern-like leaves. When very healthy and growing in a spot where it is neither injured by storms nor disfigured by dust, the hemlock is one of the most noble of all wild plants. Its little greenish white flowers, arranged in umbels after the manner of its order, have a minute involucre of several leaves at the base and the partial umbels have also three or four short oval leaflets on one side. The fruit is globular, each half having five projecting angles which are slightly crenelled, without either vittae or appendages or projections between them. It grows in wild places, sometimes by the sides of ditches, sometimes in meadows, but more frequently in light upland pastures, flowering in June and July. It is almost the only wild umbelliferous plant whose fruit is destitute of vitae, and consequently not aromatic.

It is necessary to pay the greatest attention to the botanical characters of Conium maculatum, in order that the genuine one may be collected. Sometimes plants resembling it are collected, which are almost or entirely inert when employed as a medicine, or plant-possessed of greater potency are used in its stead, from which fatal results have followed. It is a well-known circumstance that the greatest discrepancy prevails among medical men as to the activity of hemlock, not merely as a remedy but also as a poison. This discrepancy admits of satisfactory explanation on several grounds. The activity of the plant—even supposing the proper one to be collected—depends greatly upon its place of growth, the kind of season, the time when collected, and the means employed to dry it or form it into an extract, on the temperature and dryness of the place where it is preserved, and on the length of time it has been kept. In the south of Europe it is much more energetic than in the north, owing to the greater intensity of light; even in the southern provinces of France it is more powerful than in the northern. The wild plant, growing in well-exposed situations, is always to be preferred to a cultivated one; the kind of season markedly influences its power, which is greatest in a dry sunny season, and least in a wet gloomy one. The leaves, also, during the first year of growth possess little potency; nor do they possess much during the early period of the second, till the flower-stem is developed, and the flowers are about to expand. If this period, which is the fittest time for collecting the leaves, is allowed to pass, it is better to wait two months longer and collect the fruits instead, as they become the recipient of the active principle. The leaves should be dried quickly, but not by the application of a high temperature; they should never be powdered till the time when it is intended to use them, but preserved meanwhile in a cool dry place. If an extract be formed which requires much care in the preparation, it can rarely be kept beyond twelve months. A fresh supply of leaves, fruits, or extract, should consequently be procured every year, and the former thrown away, as the action of time or heat volatilizes the active principle (Cona), and renders the residue nearly inert. When these precau-
tions are attended to, hemlock is a medicine of great power, and unquestionable value. The fresh leaves are dark green, shining; odour strong, stupefying, unpleasant, resembling that of mice, or the aromatic odour of fresh Spanish flies, when dried the colour is lighter, a greyish green; the taste is disagreeably saline, nauseously bitter, and at last somewhat acid. The expressed juice is green.

The active principle of hemlock appears to be an alkaloid termed conine, which, unlike most vegetable alkaloids previously known, is not fixed and crystalline, but volatile and oleaginous. It has been obtained both from the leaves, and finally developed still green fruits. Its activity is increased by union with moisture and vegetable; a circumstance which shows the impurity of giving vinegar as an antidote in cases of poisoning by hemlock, when any of the substances is yet present in the stomach. Conine is sparingly soluble in water, to which it imparts its odour and taste. It also combines with about a fourth of its weight of water to form a hydride of conine. When exposed to the air it quickly contracts a dark brown colour, and is slowly resolved into a resinous matter, with the disengagement of ammonia. This stage takes place more promptly under the co-operation of heat; but even at common temperatures it is so apt to ensue, that unless the alkaloid be kept very carefully excluded from the air, discoloration will take place in a few hours. Though conine exists in the plant in a free state, it is almost entirely unalterable, yet its proneness to decomposition is so great, that either by time or the application of a considerable degree of heat, it may be entirely dissipated; which accounts for the inertness of old leaves, and of most extracts which have been made from the raw plant. In one of the last papers, it was stated that the dried leaves do not contain conine; a statement which, if correct, leads to the conclusion that conine, though the most powerful, is not the only efficient agent in hemlock.

Conine appears, from the experiments of Geiger and Christison, to be a deadly poison to all animals. It acts with the most extraordinary rapidity; but if it fail to kill, its injurious action passes quickly away, and perfect recovery is the rule. Yet tetanus, or denervation, where absorption is readily carried on. It acts as a local irritant; but its ultimate and fatal energy is chiefly exerted on the spinal chord, to which its influence is conveyed by entering the blood and producing on the inner membrane of the blood-vessels a peculiar nervous impression, which is instantly conveyed by sympathetic nerves to the organ remotely and ultimately affected. It exhausts the nervous energy of the spinal chord, producing general paralytic symptoms from the head to the feet, and from the heart however is exempt from this general paralyzation, contracting vigorously for a long time after all motion and respiration and other signs of life are extinct. It is therefore extremely probable, as suggested by Dr. Christison, that where a paralytic condition is apparent, the patient depending on artificial respiration and administering vital stimulants, might save the life of the patient, especially as the action of the poison is so transient, and incapable of producing a permanently injurious impression.

In what way hemlock is useful as a remedial agent in many diseases is by no means clear, unless it be by altering irritability in the diseased parts, and giving an opportunity to the vital powers to recover their healthful action. That it lessens irritability in many diseased organs is certain, from the effects of the administration of even a few doses, especially in many cases of scrophulous affections, and above all from altering the irritation of the lungs during the formation of tubercles, and indeed during all the subsequent stages of consumption. Even when inhaled along with the vapour of warm water the same good effect is said to follow, but this is rather doubtful. Its beneficial influence over external ulcers is however open to assent; and from Hunter remarked, that under the combined action of conine and iodine many indurate, ulcerate, and sti- nulate buboes, which resisted every other mode of treatment, soon took on a healing process. Many irritable or painful ulcers are soothed and improved by a hemlock poultice. Pustules from acne. From the very decided sedative action of conine on the spinal chord, Dr. Gordon has suggested that it will prove a useful remedy in tetanus, and other spasmodic diseases. The catalogue of diseases in which it has been found useful might be greatly extended, but enough has been advanced to prove its value, and consequently the propriety and necessity of attending to the above-mentioned rules to obtain it in an efficient state. When the fresh leaves cannot be obtained, owing to the season of the year, the new leaves of the plant, or the fresh plant itself, as Dr. Christison states, that from an alcoholic extract he obtained the greatest quantity of conine: he was therefore disposed to consider this the most powerful form of preparation.

But a chloroform extract which has subsequently been submitted to trial by him, was found to be, in equal doses, as powerful as the alcoholic.

Dr. Christison is of opinion that the Conium maculatum of the present day is not the plant which furnished the poison employed by the ancient physicians.

For many important particulars in this article we are indebted to Dr. Christison's 'Memoir on the Poisonous Properties of Hemlock and its Alkaloid, Conine.' (Trans. Royal Society of Edinburgh, vol. xii.)

CONJEVERAM, so called from a highly venerated pagoda built there, and dedicated to Vishnu Conjee, is a populous and flourishing town, in the district of Chingleput, in the Carnatic, in 12° 49' N. lat., and 79° 41' E. long. The town, which stands in a valley, is built in a straggling manner, being more than five miles long: the houses, many of which are handsome, are separated by extensive gardens and plantations of cocoa-nut trees. The town is surrounded by a hedge of the Agave Americana, a plant formerly much used in India as a defender against the attacks of bands of horsemen, who were accustomed to commit depredations upon defenceless places. The valley in which the town is placed is waterned by the small river Wegawatty. Besides the pagoda, there is a large and lofty temple, dedicated to Siva, the view from which is very magnificent. Considerable manufactures of cotton goods, chiefly red handkerchiefs and turbans, are carried on in the town, where the weavers set up their looms under the shade of the trees. Conjeeveram is a cypress, or the history of the country, and is well known to Europeans as having been the frequent seat of military operations during the Carnatic wars: the town is forty-eight miles S.W. from Madura.

(Heiney's Historical and Statistical Tracts on India.)

CONJUGATE. This word is used in several branches of mathematics in a sense which (with one exception, and that might easily be abolished) may be described as follows:—two points, lines, &c., are called conjugate, when they are considered together in any property in such a manner that they may be interchanged without altering the way of enun-

ciating the property. Thus if A BC to CD = as D to DB, C and D are conjugate points with regard to this property.

If we write D where C now is, and C for D, the property is still expressed in exactly the same way. We have other instances in conjugate diameters, conjugate hyperbolas [Ellipses, Hyperbolas], conjugate foci. [Lenses, Mirror.]

The instance of exception is the conjugate point of a curve, meaning a single point lying by itself, whose co-ordinates satisfy the equation of the curve, without its actually being on any continuous branch of the curve. [Curves, Theory of.] It would be better to call this point conjugate than use a term which destroys the generality of language. The best term that would be evanescent oval. [See the article already cited.]

CONJUGATION of a verb is a term in Grammar denoting the addition of suffixes or prefixes to the crude, or elementary form of a verb, for the purpose of denoting respectively, person, number, time, state, mood, and what is generally understood by voice. In the English language, prefixes are commonly used for these purposes, and these prefixes are not printed in connexion with the verb, though the verb presents them in its stem. The verb shall have heard, is a verb, and consists of the stem and one less one word than the Latins audit, v-er-o. In this example therefore, I shall, have, are virtually prefixes, and the letter d, a contraction, from ed, is a suffix attached to the simple verb or crude infinitive. Items in our language, such as Latin, and Sanscrit, suffixes are commonly but not exclusively preferred.

The suffixes which denote the persons are the personal pronouns more or less corrupted. Thus in Latin, ego, est is
The full form of the pronoun which signifies I but as three syllables would be too long for a text in such a fragmentary use, this convenience in the present instance would be aggravated by an appearance of egotism, the word was shorn of its exterior letters, and at the utmost the three middle letters, ome, were attached to the verb. We see the form in ETL. Its second person, Lat., scrib-i-o, 'I write,' 

In the Latin, the vowels were corrupted, so that instead of ome, either um or ina occur, as in ume-so, 'we are,' posa-ume-so, 'we are able,' scrib-ima-so, 'we write.' The old German nearly has the same suffix as in broma-so, 'we went.' Again the three letters, ome, derived from the last vowel, became om, as Greek tupont-oiai, 'I strike myself,' as Latin, s-ume, 'I am,' passa-um, 'I am able,' or on, as Greek, e-tupton-o, 'I was striking.' But the final suffix of the verb appears more convenient for last.

The final suffix of the verb, is the form which appears in the Greek es-me-so, or e-me-so, 'we are,' mi is used in es-mi, e-mi, e-mi, 'I am,' di-do-mi, 'I give,' &c. Sometimes the m is all that appears, as scrib-i-om, 'I was.' In Greek, this final n, by a principle constantly observed in that language, becomes an n, as en, 'I was,' etuptuno-i, 'I had struck.' Another form of the suffix is s, instead of om, which is common both in the Greek, as Greek, tupl-o, 'I strike,' Latin, scrib-o, 'I write.' Finally, all trace of the pronoun at times disappears, and the defect ceases to mislead because the other persons have their characteristic terminations. Thus the Greek tenses, etupta, 'I struck,' etupta, 'I have struck,' etupta, 'I strike' differ only in the terminations of the present tense as in e-tupta, e-tupta, e-tupta, 'I strike.'

In the English language there are some slight traces of the personal suffixes, which existed in full perfection in some of the older forms of the Teutonic languages. The word am has a remnant of it, appearing in its final n.

The second person in the Greek and Latin languages, was su or tu, in German, du, and in English, 'thou.' Accordingly we find a suffix attached to the verb to denote the second person, as in the Greek, es-so, 'thou art,' on-the, 'thou knowest.' The same suffix as in e-so, 'thou art,' or e-me-so, 'we are,' in the Latin, scrib-i, 'thou writest,' and in the English termination est in knowest, strikest. But as the Latin form has a suffix instead of an s, ut not su, so the termination appears as in Greek, tupl-ate, 'you strike,' scripto-i, 'you write,' and in the English, art, 'thou art.'

The third person is an indefinite term; and the suffix which it denotes is derived from is, signifying this, which is the full form of the Greek article, and again appears, on the one hand in Latin, in the derivatives, tam, talis, tantus, tot, tum, and on the other in the English, the, this, to day. It is therefore as general as the English article the, and may denote indifferently, the man, the woman, the thing, in the latter case it appears as a suffix to Greek, es-ti, 'he is' (Sanscrit, as ti); e-tupte-i, 'he strikes himself,' in the Latin, es-t, 'he is,' scrib-i, 'he writes,' and in the obsolete form of the English language, eath-eath, now corrupted to with.

The sign be it observed which denotes plurality, the absence of that sign will be a sufficient indication of the singular. Now the suffixes of plurality in English are s and en, as do in dogs, omen. The same are employed in Greek and Latin, as first person, Gr., tupl-one-i or tupl-one-m, Lat., scrib-i-om, 's, second person, Lat., scrib-i-t, the Greek has dropped the s, as in tupsite, a corruption probably of tuptel-i, just as the Latin imperative scribite, must be looked upon as reduced from scribile. In the third person, the suffix is quite different. It appears as a prefix to the pronoun suffix, as in the Greek, pha-ni, 'they say,' tupont-i, 'they strike,' Lat., scrib-i-un-i, 'they write.'

Time or tense (Gr. tempa) divides itself into past, present, and future, and the idea of present time will not require any peculiar distinction, if the ideas of past and future have their proper symbols. The past time appears to have had for its characteristic, either the prefix, e, or the suffix, sa, ha, or a. The former appears in the Greek, es-si, 'he is,' e-tupte-i, 'he had struck.' The second appears in two of the Greek forms just enumerated, and in the Latin, scrib-i-am, 'I was writing,' er-am, 'I was.' A very distinct example of a future in the Greek form tupte-o, or tups-o, which are derived from the Latin. Thus in the French er-eut, we have really two distinct words, the infinitive, écrire, and ait, the present tense of avoir, forming altogether, écrire-ait, 'I have to write,' i.e., 'I shall write.' This origin of the

French future is placed beyond a doubt by a comparison with the Spanish and Italian.

By the term state, which stands fourth in the series of suffixes which have been included in the definition of conjugation, it was intended to denote the notions of perfect and imperfect action. Here again one suffix is sufficient, and the notion conveyed by each is that of being or of being in a state of being, or at any rate as an independent verb. By a doubling of the verb upon itself. The purest example of this is presented in the Gothic, as lat, 'I laugh,' late, 'I laughed,' staute, 'I strike,' stauteatt, 'I struck.' The Greek have perfects formed upon this principle in -ge-grapha, the Latin in te-lui, de-de, apo-pond-i, (for the less easily pronounced apo-pond-i.) And in our own language there is strong reason for believing that such is the origin of did, the perfect of do. Out of the same roots, and in the Latin, was prob-tem-i, being probably a contraction from et-ten-i. 2nd. By affixing the letter s, which is probably a corruption of the verb es, to be, is a supposition strengthened by the fact, that the past perfect scrpsi-erat, and the future perfect scrpsi-erat, are undoubtedly formed by the addition of ertam and erto from that verb. The same would also be found on investigation to be the case in the Greek etetaph-eta, 'I had struck,' and lastly, in our own language the same verb is used for this purpose in such phrases as 'I am recovered.' 3rd. By the letter r, which may possibly be a remnant of the auxiliary verb habe, have, in accordance with the practice of nearly all the languages of modern Europe. Examples of the suffixes in this series which we have had already occurred in the glosses.

The suffixes of the moods could not be placed in a distinct point of view without a detailed investigation. It may be sufficient to point out that to is distinctly observable as a suffix in those parts of the so-called Latin imperative, which are generally known as the deponent title; full and complete the syllable in question, are at the same time devoid of the notion to command. That the suffixes of the potential, subjunctive, and optative moods, in the Greek and Latin, were originally distinct words, and perhaps, like our own shall be, is a matter of general principles, and is confirmed by the appearance of the separate particles ken, ke, an, in the Greek language, which are used in connexion both with the indicative and optative moods.

The last suffix for consideration is that which denotes the voice. The Greek grammarians acknowledge a middle or reflective voice; but the Latin language in fact possesses the same, as for instance in assero-r, 'I gird myself for the contest,' mulo-r, 'I support myself,' nemo-ri, 'I wash myself from general principles, and is confirmed by the appearance of the separate particles ken, ke, an, in the Greek language, which are used in connexion both with the indicative and optative moods.

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CONJUNCTION and OPPOSITION (Astronomy).

Two heavenly bodies are said to be in conjunction with re-
spect to each other when they form a straight line with the sun (measured on the ecliptic of the third) or the same right ascension (measured on its equator). But as it is the second position which is usually meant by conjunction, the first is called the ecliptic conjunction. Thus in every eclipse of the sun the sun is at the center of a circle and moon, both equatorial and ecliptic, not however at the same moment, unless the eclipse be perfectly central. There is also a con-
junction at every new moon.

The sign, (ecliptic), is when the bodies are exactly of opposite right ascensions or opposite longitudes, that is, when their longitudes or right ascensions differ by 180°. Thus there is always an opposition of sun and moon at every full moon, and both oppositions are at the same moment in the middle of a central eclipse.

The conjunction of a planet with the sun prevents its being observed, as it is then always in the brightest part of the heavens: it is nevertheless an important element in the theory of the planetas. But at the opposition (an equally important point in theory) the planet is always in the darkest part of the heavens. Both therefore in theory and practice, comparisons of observations and theory near the opposition are desirable: and accordingly astronomical epigrams usually give very close computations for these

Apparent conjunction and opposition take place when the right ascensions are the same, or opposite, to the spec-
tator at the earth's surface: true conjunction, etc., refers to a spectator supposed to be at the earth's center. [Apra-
rent.]

CONJUNCTIONS. Under this term grammarians commonly include several classes of words which have little similarity of meaning; and, in their etymological origin, may be verbs, substantives, adjectives, or prepositions. The old definition of a conjunction, that it was a word which connected sentences together, will cer-
tainly not apply in all cases; if at least the word 'and' is to be included. It is true, as Horne Tooke observes, that 'the sentence 'You and I and Peter rode to London' may be resolved into three: 'you rode,' 'I rode,' 'Peter rode.' But try some other instances: 'two and two are four,' AB, BC, and CA form a triangle; 'John and Jane are a hand-
some couple.' Does AB form a triangle?—Is John a couple?—Are two four? (Diversions of Parley, Taylor's edition, i. p. 210.)

On the etymological origin of conjunctions, which is a direct derivation from their use, some remarks will pre-

ably be made; in reference to their employment in the construction of a simple or compound sentence they may perhaps be divided into the following classes: 1. Conjunctions which connect two simple sentences, without, in the last case, implying any subordi-
nation of one sentence to the other. Such are the words: and, or, nor; or the double forms: both—nor, and—
or, or—which, or—andor, or which, or. With respect to this class: it may be useful to point out the great advantage which the Greek and more particularly the Latin lan-
guage possessed in the variety of their forms for and: as καὶ, τί in the former, et, que, atque or ete in the latter. This superiority is generally given in the English, and gives to the longest Latin sentence a perspicuity of arrangement, which in a great measure superseded the necessity for a cumbersome punctuation. (Journal of Education, vol. iv., p. 132.) 2. Conjunctions, which in themselves simply mean something thus, being prefixed to a secondary sen-
tence or phrase, direct the attention to that secondary phraso as a unit, and thus prepare it for subjection to some prece-
ding word. This usage of the pronoun is as nearly as possible the same as the usage of the Latin demonstra-

[THE PENNY CYCLOPEDIA.]

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But the verb to be,' the English while and the Latin dum of the same meaning are substantive signifying 'time.' Either and 'whether' are of course pronominal adjectives, and 'or' is a corruption from 'other;' as is evident from the German equivalent oder. And a similar analogy seems to lead to the deriva-
tion of our word and. The various conjunctions of a participial and prepositional character have occurred in the examples already quoted; but the relative form appears to be specially fertile in the production of this class of words, as, in the Latin, quodcumque; ubi, ubi cum; and the English when, how, us, where. In fact the relative itself has the power of a conjunction, as explained under the second head. [Ar-

ticle]

Many of the conjunctions defy all attempts at analysis,
and certainly Horne Tucke, notwithstanding the acuteness and truth of his general views, has occasionally erred in the details of derivation.

CONN, LOCH, a large lake, 3½ miles from Ballina, in the county of Mayo in Ireland; it is 11 miles in length, with a coast of 53 miles and a surface of 14,000 acres. It is situated 27 feet above the level of the sea at Killala Bay, in which it discharges its water through the river Moy. The water power which could be procured from Loch Conn is estimated at equal to half the power of all the steam-engines in Glasgow. Loch Conn is a double lake; its southern half is called Loch Cullin.

CONNAMARA. [GALWAY.]
CONNARACEE, tropical trees or shrubs, with pinnated alternate leaves having no stipules, polypetalous flowers having ten unequal hypogynous stamens, and a fruit consisting of one or more one-seeded follicles. Their seeds are remarkable for having the embryo at the end most distant from the hilum. The species are much alike in habit, not numerous, and possess no known properties that deserve to be mentioned.

The mountain-ranges are distributed round the coast. From their inland declivities the province has a comparatively level surface to the Shannon. This river thus becomes the main drain of the intermediate country. Its chief feeders in Connaught are the Buck and the Garra; the latter discharges the waters of Loch Gar and Loch Curr; and the former, a large river, is navigable from its confluence with the Shannon to Balliferron, a distance of about 20 miles. The streams which flow to the ocean are much more numerous, but the body of water brought down by them is not so large. They rise in lakes, which are distributed through the mountain districts of Galway and Mayo. Of these, Lochs Corrib, Mask, and Carra discharge their united waters southward by Galway; and Loch Conn, Loch Anow, and Loch Gilly, northward by Ballina, Ballisadsa, and Shro, respectively. The respective courses of these rivers, from the lakes of Connamara and Erris are short and rapid in their course, and comparatively inconsiderable in the quantity of water; so that, with reference to its rivers, the province may be divided generally into three districts: that of the Shannon, that of the basin of Loch Corrib, and that of the basin of Loch Conn. The neighbourhood of Ballinannas in Mayo, about the centre of the province, forms the summit level from which these principal slopes diverge; and lines drawn from this point to Scariff on the south, Sligo on the north-east, and Westport on the west, will be found to mark pretty nearly the boundaries of each.

The limestone field of Connaught is very nearly co-extensive with the low district between the Shannon and the western counties. The mountain-groups that inclose this plain present towards the inland field successive elevations of sandstone, clay-slate, granite, and quartz, corresponding nearly with the development of the same strata on the opposite side of the island. The limestone field is very much encumbered with bog, which in Ireland is almost always found to rest on limestone gravel. An immense tract of ground in Galway, Roscommon, and Mayo, is thus rendered of little or no value; for the borders only of these bogs (some of them of twice the extent of that of Allan) are available for purposes of turbary. The remainder of the province is more mountainous than any other district of equal extent in Ireland; so that Connaught, in producing food and population, is far behind the other provinces. An estimate may be formed of the condition of Connaught, as to religious and other instruction, by referring to Tuam. Its history, antiquities, and local description will be found under the heads of its separate counties.

Connaught was formerly a kingdom of the Irish Pentarchy. Its kings were of the race of O'Connor. It enjoyed a comparative independence until the year 1590, when it was made shire-ground under the 11th Eliz. c. 39, and divided into six counties, viz., those above enumerated and Clare, which had formerly been part of Munster. In 1594, Clare was re-annexed to the latter province, yet so late as 1792 remained on the Connaught circuit. In the various rebellions down to the end of the seventeenth century, Connaught was the refuge of the fugitive and dispossessed Irish. The Irish language is still very prevalent; and the condition of the poorer classes to this day attests the miserable circumstances which brought the population together. Employment is here more difficult to be obtained than in any of the other provinces. The average of wages is 7d. per day, and the average of employment for labourers is only 125 days in the year. Multitudes of the peasantry, especially from the counties of Mayo, Leitrim, and Sligo, annually emigrate in search of employment; a great part of every harvest of England and Lowland Scotland is reaped by these wanderers.

Numerous projects have been formed for the improvement of this province and the development of its great resources. It has been proposed to connect Sligo, Dublin, and Blackboy Bay on the western coast through the county of Mayo; and to Roundstone Bay in Connemara through the county of Galway; also to Sligo through the county of Roscommon in a direct line of Athlone. Canals have also been proposed, as an extension of the Royal Canal to Loch Lough and Killala, and an extension of the Grand Canal from Ballinasloe to Loughrea. It is at present in contemplation to connect the lakes of Galway and Mayo, so as to form a line of water of 100 miles from Galway to Kinvara, Corrib, Mask, Carra, Castlebar, Cullin, Conn, and the river Moy to Ballina, a distance of eighty miles, through a district susceptible of immense improvement. To con
nnect these lakes it would require a series of cuts only seventeen miles in length, the remainder of the naviga-
tion and canals to be supplied by the rivers. The line of navigation would pass through a country abounding in limestone, marble, compact granite, sandstone flags, marl, and brick and potters' clay, with an inexhaustible stock of turf fuel, all which are at present valueless from not being accessible.

The produce of Connaught which comes to market con-
sists chiefly in black cattle, which are sold in immense quantities at the fair of Balinnske. There is a pretty brisk trade in corn and Balinnske flour. The greater part of the farming, the resources of the province remain quite undeveloped.

The progress of population has been rapid, as will be seen from the annexed table. Still it falls far short of that of the island at large. In the number of houses and inhab-

<table>
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<th>Date</th>
<th>How ascertained</th>
<th>No. of Houses</th>
<th>No. of Farms</th>
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<tr>
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<td>Estimated by Dr. Beaufort</td>
<td>95,821</td>
<td></td>
</tr>
<tr>
<td>1873</td>
<td>Under Act 25 Geo. III. c. 120</td>
<td>197,498</td>
<td>211,637</td>
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<tr>
<td>1831</td>
<td>Under Act 1 Will. IV. c. 39</td>
<td>224,638</td>
<td>239,368</td>
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<table>
<thead>
<tr>
<th>Date</th>
<th>No. of Families chiefly engaged in agriculture and manufactures, and all other families and their occupations</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
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</thead>
<tbody>
<tr>
<td>1871</td>
<td>3,478,986</td>
<td>553,248</td>
<td>555,281</td>
<td>1,110,229</td>
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<tr>
<td>1831</td>
<td>2,144,120</td>
<td>666,498</td>
<td>683,416</td>
<td>1,340,914</td>
</tr>
</tbody>
</table>

**CONNECTION.** One of the United States of North America, is bounded on the south by Long Island Sound, which separates it from Long Island; by Rhode Island on the east; by Massachusetts on the north, and by the State of New York on the west. It has a sea coast of about ninety miles along the Sound, which is indented by several good harbours, of which New London, New Haven, Bridgeport, and Norwich, are the chief. The form of Connecticut is nearly that of a parallelogram, which is about eighty-five miles long from east to west, with a mean width of sixty miles from north to south, and about 500 square miles, or about one-eighth less than that of Yorkshire.

Hartford, the capital, near the centre of the state, on the left bank of the Connecticut river, in 41° 49' N. lat., and 72° 45' W. long. The surface of the country is generally uneven, but there are no lofty mountains. The principal ranges of high ground run from north to south in the direction of the Housatonic and the Connecticut, the two principal rivers of the state. The Lymne range on the east side of Connecticut river separates the lower basin of the Connecticut from the Thames. A range of high land of moderate elevation, called the Middlesex Mountains, runs from Hartford on the Connecticut, past Middletown, to New Haven. The Housatonic mountains run along the western margin of the state, on the west side of the Housatonic river.

The Housatonic rises in Berkshire county, Massachusetts, in a fine plain 1000 feet above the sea, and running a general southern course through a picturesque vale, enters the Sound at Milford Point, after a course of about 120 miles.

The **Connecticut**, which is a considerable river, rises in **Lower Canada**, about 45° 20' N. lat., and its sources are supposed to interlock with those of the Audioggin, Kennobbee, Chaudiere, and St. Francis. Its general course is S. by W. and then S.W. to the point where it breaks through one of the Appalachian ranges, and receiving the Passamack, descends the Barnet falls from the high valley in which it hitherto flows, into a lower basin. From the junction of the Passamack it continues, as it did before, to form the boundary between New Hampshire and Vermont, and after a course of about 140 miles, it is crossed for a short distance to the S.E. by some high land. Resuming its general southern course, it enters Massachusetts. Below the confluence of Miller's river (which joins it on the right bank in Massachusetts about twelve miles south of the boundary between New Hamp-
shire and Massachusetts), the river again abruptly bends to the west a few miles above Greenfield. It makes se-
veral other bends in Massachusetts, which state it leaves about five miles below Springfield. Its general southern course continues to Middletown in Connecticut, where it is deflected to the S.E. by some high land, and continuing this direction it enters the Sound. The whole course of the river is probably not less than 400 miles. The Con-
necticut is in many respects a very remarkable river. Its general course, as already described, is nearly due S.: though it receives numerous streams, they are compera-
tively of small importance. The river basin above the

The junction of the Passamack is, about thirty miles wide: below this point it widens to about forty; the whole surface of the basin is calculated at about 9300 square miles. The river generally flows in a deep and often narrow valley, bordered by high lands, which, where they recede from the river, form the base of hills or the edge of hills. The river stretches uninterrupted for forty miles from a little above Middletown, in Connecticut, to South Hadley, in Massa-

The sources of the Connecticut lie in a region with a mean elevation of at least 1200 feet above the sea, and four degrees north of the outlet of the river in Long Island Sound. These circumstances cause a considerable contrast in the climate of the different parts of the Connecticut basin, and, combined with the circumstance of the narrowness of the river valley, help to account for the dreadful inundations to which the alluvial tracts on the river are exposed. In September, 1828, the river rose at Hartford twenty-four feet above low-water mark, and did immense damage. The river is navigable for vessels drawing ten feet water to Middletown, which is at the head of tide-
water, and thirty-six miles from the Sound; vessels draw-
ing seven feet and a half ascend to Hartford, fifteen miles above Middletown. Though this river is much obstructed by rapids, falls, and shoals, it has been made navigable for boats of considerable size to the Fifteen Mile Falls in New Hampshire, a total distance of 230 miles.

The only canal in the state that is yet completed, is the Enfield canal, five miles and a half long, which was made to avoid the rapids at that point. The Farmington canal, which is to connect Northampton in Massachusetts, with New Haven in Connecticut, will be seventy-eight miles long, when completed.

The soil of Connecticut is only of a medium quality, ex-
cept in the river valleys, some of which contain rich alluvia.

The state is divided into eight counties, subdivided into 120 townships: the population is 297,675. Hartford, on the Connecticut, near the centre of the state, has a population of near 10,000. New Haven, which stand on a bay on Long Island Sound, has a considerable trade, and a pop-
ulation of about 6,000. The legislature meet alternately at Hartford and New Haven. Middletown, on the Connecti-
ticut, has manufactures of cotton, woollen, and arms, and a population of about 6300. New London, at the mouth of the Thames, has a population of about 4400, has some vessels engaged in the whale fishery. Norwich, with a pop-
ulation of about 5200, is a manufacturing town.

Yale college, in Connecticut, which is an old foundation, has a president and fourteen professors and masters, with a library and a considerable collection of minerals. There is also a law and medical school connected with the college. Wash-

* Exclusive of the town of Galway, not calculated.

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which amounts to 2,000,000 dollars, is appropriated to the support of elementary schools.

The legislative body is composed of a senate, consisting of twelve members, and a house of representatives, consisting of 208 members. The present constitution was adopted in 1875, which time the state was governed by the colonial charter granted by Charles II. in 1662. Connecticut sends six members to the House of Representatives at Washington, and two senators to the Senate.

One John, CONNOR, was an advocate of the College of Justice in the year 1788, and soon afterwards married the daughter of President Campbell. In March, 1796, he was made sheriff of Renfrewshire, and on Mr. Robertson's elevation to the dignity of Lord High Commissioner, he was elected curator to the church of Scotland, May, 1806. In the end of the year 1815 he published the first edition of his 'Treatise on Tithes,' and in July following was advanced to be judge of the admiralty in Scotland. In May, 1818, he published his 'Treatise on Parishes,' and had afterwards the honour of knighthood. In July, 1830, the high court of admiralty and his office of judge-admiral were abolished by act of parliament. He died suddenly the following year.

CONNOX, a bishop's see in the archdiocese of Armagh, in Ireland; the chapter consists of dean, chanter, chancellor, treasurer, archdeacon, and four prebendaries. This diocese is very nearly co-extensive with the county of Antrim. It extends in length from N. to S. 57 miles, and in breadth from E. to W. 36 miles; it contains 72 parishes, 19 chapels, and 720爆 reading benefices: of these parishes, three and a part of a fourth are in the county of Derry, and a part of one is in Down. In 1792 the numbers were—76 parishes, 40 benefices, and 43 churches of the Established Church. In 1834 the numbers were—52 parishes, 25 Roman Catholic, 45 Presbyterian, 46; and other houses of Protestant and Dissenting worship, 41. In the latter year the gross population of the diocese was 361,658; of whom there were 66,898 members of the Established Church; 95,545 Roman Catholics; 193,261 Presbyterians; and 9294 other Protestant Dissenters; being the proportion of one member of the Established Church, and three Presbyterians, or four Protestants of whatever denomination, to 1 Roman Catholic; or as 21 to 1 nearly, from which it appears that Connor is the most Protestant diocese in Ireland. There were at the same time in this diocese, 662 schools, educating 32,938 young persons, being in the proportion of 540 per cent. of the entire population under daily instruction, in which respect Connor stands tenth among the 32 dioceses of Ireland. Of these schools, 86 were in connexion with the Board of National Education, and cost about a half a crown per annum per child.

Connor, from which the diocese takes its name, is an inaccessible village situated on the Glenwhiddy river, in the barony and county of Antrim. It was a place of some note in 1514, at the time of the invasion of Edward Bruce, by whom it was fortified after the defeat of the English under Richard, Earl of Ulster, before its walls. It is supposed to have gone to decay after the interruption of the expelled Irish in 1333. There are now no traces of an episcopal seat; a large Presbyterian meeting-house is the chief object in the village.

The bishopric of Connor was founded by Aengus, the son of Nissa, usually known as Saint Mainech, who died A.D. 514. He was the disciple of Olan, who was the disciple of Patrick. Of his successors little is known until the time of Mucach O'Morgair, who was advanced to this see A.D. 1124. Prior to this time the diocese had fallen into a very barbarous state.

The leaders of this are represented by Bernard of Clarevalle, who has written the life of Malachy in Latin, as being 'Christians in name, but Pagans in practice; careering neither for the rites of marriage nor of baptism; paying neither tithe nor fruit; in fine, little better than beasts of the field.' Yet, Malachy's success in reclaiming them, upon his translation to the see of Armagh, in 1134, he is said to have left this diocese, which he had found sunk in iniquity, engaged in the practice of all the virtues. At this time the diocese was said indifferently as Connor and Dalarnagh, or Dalardain. Shortly after we find Reginald, bishop of Connor, subscribing witness to a charter of John De Courcy, the conqueror of Ulster. In the beginning of the 13th century the diocese appears to have reigned into a barbarous state, and the people were without baptism; and one family, the clan Gillimore, of which Hugh Mac Adam Mac Gillimore was the chief, being in a state of civil and ecclesiastical outlawry, committed many atrocious sacrileges. Mac Gillimor himself is said to have destroyed no less than forty religious houses. He was at length put to death, 1407, by a party of the clan Savage, in the Franciscan Church at Carcumbergus, where he had taken sanctuary. Soon after, in 1442, one John, being bishop of this diocese, prevailed on Pope Eugene IV., contrary to the wishes both of the Irish primates and the court of England, to unite the sees of Down and Connor, which have so continued ever since. By the 3rd and 4th William IV., c. 37, sec. 121, the united bishopric of Down and Connor becomes augmented by the diocese of Dromore.

(Ware's 'Bishops': Beau fort's Memoir of a Map of Ireland: Reports of Commissioners.)

CONODYCIUM. [POLYPHARIA MEMBRANACEA.]

CONOLEXIS, CONCELIX, or CONOHELEIX, a genus of turritellid shells, established by Mr. Swainson for a group which, in his opinion, 'form a beautifully defined link connecting the Conus with the Volutes, strictly so termed'—with the following generic character. 'Shell coniform. Spire very short. Outer lip simple. Columella or pillar plaited. Aperture linear, narrow, longer than the spire. Generic type, Conelix lineatus.' (Swainson.)

The animal, which is doubtless a gastropod, is not known.

Geographical Distribution.—Mr. Swainson (Zoological Illustrations, 363) states that Conolesis (as Conolexis) is found on the coasts of the Pacific islands, and alludes to the collection of Conolexis in the British Museum. The species are in the Banksian collection from the Pelew islands. To one of these species in that collection, Taheite, usually called Tahiti, is given as a locality. Mr. Cuming brought home another species, C. Virgo, which Mr. Swainson considers as representing Conolexis Fusus, the reef conch of the reds of the island of Rietas. It was in shallow water. Mr. Swainson says, in the work above quoted, that Mr. Humphry informed him that he had at different times seen five or six other species besides those figured by Mr. Swainson, all of small size. Example. Conolexis lineatus. 'Shell smooth, whistal, with transverse capillary fulvous lines. Spire depressed, the apex prominent. Pillar six-plaited. Inhabits four to five fathoms. South Sea.' (Swainson.) The figures, which are of the natural size, are copied from Swainson in the Zoological Illustrations. All the other known species are comparatively small.

[Conolexis lineatas.]

De Blainville divides the genus Mitrula into five sections, and makes his fifth consist of 'Imbricaria, Schuh., and Macquarrie, Sow,' meaning Sowerby; but the genus is Swainson's, and is generally adopted.

CONOID (like a cone), a term sometimes applied, but in this country only, to the surface generated by the revolution of a conic section about its axis. [SPHEROID, HYPERBOLOID, PARABOLOID.]

CONON (Kovaw), an Athenian general, was the son of Timotheus. The first time he is mentioned in history is B.C. 413, in the eighteenth year of the Peloponnesian war. When the Athenian fleet was defeated at Aegospotami, and its admiral lost, the Athenians elected Conon as their admiral, and he was chosen with the title of Strategus, the highest military office in Athens, the sacred ship Paralus with the news of the defeat, Conon himself fled to Salamis in Cyprus, where the friendship of the king, Tyrannus, sheltered him from the obloquy or punishment which he would have encountered at home. He was also accused of having kept a number of Athenians on board which subsisted between the Athenian general and the
Prince of Salamis during Conon's residence in Cyprus. Here for a time he kept aloof from action, watching attentively the progress of affairs: the negotiations, which he soon commenced with the Persian satrap Pharnabazus, terminated in a speedy union of the Persian and Athenian forces. It was the title of Conon, the victor of Salamis, the view of stopping the progress of the Lacedaemonians. Evagoras, Conon, and Pharnabazus together, raised a powerful fleet, in the command of which Pharnabazus was materially as well as in name the commander-in-chief of the enemy's fleet. Indeed they gained a complete victory, n.c. 394: the galley of the Spartan general, Peisander, being driven on shore, most of his crew escaped; but Peisander disdained to save himself by flight, and was killed on board his ship, which was destroyed by the Athenian fleet. This was important to the interests of Athens; and Isocrates (Philop. §§ 94, 95) represents Conon as having completely destroyed the Lacedaemonian empire. Of the Greek islands, some surrendered at once, and others showed a readiness to renew their old alliance. This was a juncture too favourable to be lost sight of, and accordingly Conon and Pharnabazus hastened to follow up their success by an invasion of the Thracian Chersonese. Town after town submitted to them, and the people abandoned their lands. Sestos and Abdylus still held out, but the approach of winter at last put an end to the attempt at reducing them, and the satrap and Athenian admiral began to prepare for the operations of the ensuing spring, at the commencement of which they proceeded to ravage the country in various parts, n.c. 393. Conon seized the opportunity, which the flush of their present success afforded, for obtaining from Pharnabazus many important promises. But he was to have the use of his fleet for recovering the payment of tribute from the islands, and not only gave a large sum of money towards the rebuilding of the long walls at Athens, which had been demolished by the Spartans at the close of the Peloponnesian war, but offered to assist in the work. At this time Conon appears to have returned to Athens, amidst the joy and congratulations of his countrymen: his portrait, which with that of Evagoras was placed beside the statue of the latter, was a slight memorial of their gratitude.

At the time when Antaleidas was sent on an embassy from Sparta to conclude a peace with the Persian king, Conon, the Athenian ambassador, was one of those who refused to give their assent to such terms as were proposed for their acceptance. The result was that he was imprisoned by the Persian minister Teribazus, on pretence of his adopting measures detrimental to the great king. What became of him afterwards we have no certain information. Nepos says, that according to a common story, he died of hunger and cold; others affirm that he escaped from confinement. Xenophon, who relates his imprisonment, says nothing of his death. Lysias (On the Property of Aristophanes, §§ 635-640) gives an account of Conon's imprisonment, and the manner in which the importance of the event states that it was disposed of after his death; and Milford (chap. xxv. § 6) has conjectured with good reason, that he escaped to Cyprus out of the hands of Teribazus, and died there. The words of Lysias (§ 640) certainly prove that he died a natural death, and was not murdered. He appears to have died about n.c. 388. (Clinton, Fast. Hel.) He had a wife in Cyprus at the time of his death. (Isocrates and Lysias, as cited above: Xenophon, Helictites, i. 4-7; iv. 3-8; Dositheus, ii. 8-9.) In the midst of his triumph, he was cut off. He is commemorated by the people of Cyprus in various ways, under the name of Conon. (Plutarch, Life of Lycurgus, and of Arizarex.)

CONON, of Alexandria, a friend of Archidemes, mentioned in his writings as having a great knowledge of astronomy. He was the proposer of the spiral which bears the name of Archidemes. [SPIRAL OF ARCHIDEMES.]

CONOULA. [MELampus.]

CONRAD I, count of Franconia, was elected king of Germany in 1024. His sons were Ludovic IV., the son of Arnulf, and the last of the Carowingian dynasty in Germany. He was chiefly engaged during his reign in making his authority respected by the turbulent dukes or great vasals, his electors; among the most powerful and most troublesome. The Huns too attacked Germany, and pushed their depredations as far as Bavaria. Conrad went to oppose them, and received a mortal wound in battle, a.d. 919. In his last moments he exhibited a wise policy, knowing the ambition and power of Duke Henry, to remedy his brother Eberhard and his other relatives the propriety of renouncing their own views, and of electing the Saxon duke; a measure which he looked upon as necessary to the salvation of Germany. His advice prevailed, and Henry, called the Fowler, was elected after his death king of Germany on the 11th of January, 919. Conrad never crowned emperor or king of Italy, the Italians having chosen a separate king, Berengarius, marquis of Friuli.

CONRAD II, called the Salic, duke of Franconia, was elected king of Germany after the death of Henry II., a.d. 1034. He afterward ascended the vacant ducal throne of Franconia, and with the German confederation, forced the king of Poland to do homage for Silesia, and ceded the duchy of Schleswig to Canute, king of Denmark, as a feoff, on the same condition. In 1039 Henry II. of Italy was murdered by his own hands, and Conrad himself took possession of the kingdom. The pope had acknowledged the princes of the House of Saxony for their kings, and Conrad their successor crossed the Alps to enforce a like submission. He was crowned king of Italy at Monza by Heribert, archbishop of Milan, in 1039, after which he convoked a general diet of Lombardy in the plain of Ronaglia, near the Po, not far from Piacenza. In this diet he regulated the feudal legislation of Italy, the jurisdiction of the great feudatories, the successions, &c. He then proceeded to Rome, where he was crowned by Pope John XIX. as emperor and king of the Romans, with the titles of Caesar and Augustus, a.d. 1027. Gisela, Conrad's wife, was crowned empress at the same time. Two kings, Rudolf III. of Burgundy and Canute of Denmark were also crowned in the same ceremony. On Conrad's return to Germany, he was obliged to repress the insubordination of the great vassals. Rudolf of Burgundy having died in 1033, the crown of Burgundy was disputed by Conrad and Henry IV., a, nephew of Henry's by his mother; but it was not without a war that Conrad secured his son's inheritance. About 1035 there was a general rising in Lombardy of the vassals, or sub-feudatories, against the great lords, secular and clerical, and especially against the archbishop of Milan. A battle was fought between Milan and Lod, in which the archbishop was defeated, and the bishop of Asti was killed. In 1036 Conrad came down into Italy with an army to quell the discontents; he defeated and captured the archbishop and his followers, and delivered to the people of Milan rose in favour of their archbishop, and resisted all the forces of the emperor. During the two years that Conrad passed in Italy he visited Rome and Monte Cassino, deposed Pandolfo, prince of Capua, and granted the monastery of Sant'Omero to the Benedictine monks. A battle was fought between Conrad and the people of the imperial troops in 1038, Conrad returned into Germany, and in the following year died at Utrecht. He was succeeded by his son, Henry III.

CONRAD III, count of Hohenstaufen, duke of Franconia, and nephew of Henry V., was elected king of Germany in 1138, after the death of Lotharius II., who had succeeded Henry. Conrad had already been proclaimed king of Italy by the pope, Henry the Proud, the House of Welf, Duke of Saxony and of Bavaria, who had married Lotharius's daughter, and who was degraded from the Baltic to the Alps, had also pre tended to the imperial crown. Conrad, assembling a diet at Wurzburg, stripped Henry both of Bavaria, which he bestowed on Leopold V., margrave of Austria, and of Saxony, which he bestowed on Albert the Boar, who was descended from the ancient dukes of that province. A civil war was the result: Henry the Proud preserved his possessions by a strong army, and his rights descended to his infant son Henry, afterwards styled the Lion. Welf, brother of Henry the Proud, expelled Leopold from Bavaria. A battle was fought at Winsberg in Suabia, between Welf and Conrad, which was lost by the former. In the same year, having given rise to the distinctive names of Guelfs and Guibelines, which became the rallying words of two opposite parties that disputed Germany and Italy for centuries. At the battle of Ebrach, the war of the house of Welf was that of their leader 'Welf,' and that of the imperial troops was 'Wailingen,' a town of Wurttemberg, the patrimonial seat of the Hohenstaufen family. The two names were originally applied to the successful parties at the close of the contest. But that of Welf soon became extended to all the rebels or disaffected to the imperial authority. The Italians, adopting the distinction long after, named Guelfa all the opponents, and Guibella, those of the imperial court, now in Italy. Owing to the constant jealousy between the church and the empire, the popes and their adherents were gene-
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rally found on the side of the Guelphs. For the moment however peace was made in Germany: Henry the Lion was acknowledged Duke of Saxony, and gave up Bavaria to the margrave of Austria. Albert the Boar was indemnified for the loss of Saxony by the erection of Brandenburg into an independent principality, which he gave to his son, while the Selavonic tribes bordering on the Baltic soon raised to an equal rank with Saxony, Bavaria, Swabia, and the other great provinces of the empire. Having thus given peace to Germany, Conrad was invited to the presence of St. Ber- naard, who was absent on a mission to the East, to receive a generous host for the East, by the way of Constantinople. In conjunction with Louis VII. of France, he penetrated into Syria, and besieged Damascenus and Ascalon, but without success. Conrad summoned most of his followers, returned dis- appointed to Germany, which he found again distracted by the intrigues of Welf. He defeated Welf, and died in 1192, as he was preparing to set out for Italy to receive the imperial crown from the hands of the pope. He was suc- ceeded by his nephew, Frederic of Hohenstaufen, Duke of Swabia, surnamed by the Italians 'Barbarossa.'

CONRAD IV., son of Frederic II. emperor of Germany, and king of Italy and of Sicily, was elected king of the Ro- mans in his father's life-time; but at the death of Frederic, A.D. 1250, he found a competitor for the crown of Germany in the person of William of Holland, who was supported by all the influence of Innocent III. The pope excommunic- ated Conrad, as the son of the excommunicated Frederic, and excommunicated the subjects of Germany and Italy for their allegiance. This was an epoch of the greatest ani- mosity in Italy between the Guelphs and the Guibelines. The popes were bent on the destruction of the house of Hohenstaufen, and at last led to the expulsion of the Guibelines, who had stoutly resisted the universal temporal sovereignty which was assumed by the see of Rome. Naples, Capua, and other towns of Apulia and Sicily, revolted against Con- rad, but Manfred, the natural son of Frederic, who had been left regent of the kingdom of Sicily and of Apulia, brought back most of them to their allegiance, and laid siege to Naples.

In 1251, on arriving in Italy, he was well received by the Guelphs, which party he espoused, especially at Verona, Padua, Cremona, Piacenza, Tortona, Pistoia, and Pisa. In 1252 Conrad passed into Apulia, and on receiving the oath of allegiance from many of the barons, he asked the pope for the investiture of the kingdom of Sicily and Apulia; but the pope maintained that all Con- rad's rights were forfeited through the rebellion of his father against the authority of the church. Conrad, strengthening his army with the Saracen colonists who had been removed from Calabria by the king of Aragon and settled in Apulia, at Lucera, and in the neighbourhood, took Naples after a desperate assault of three days, and razed the walls of that town. Meantime the pope was offering the crown of Sicily, first to Richard of Cornwall, after- wards to Edmund III., son of Henry Crossback, of England, and lastly to the archbishop of Cologne. In 1254, while Conrad was preparing to return to Germany to oppose William of Holland, he was taken ill at Lavello, in Apulia, and died soon after. The Guelphs spread a report that Manfred had poisoned him in order to possess himself of the crown of Sicily and Apulia, as they had already accused him of having hastened the death of his father Frederic; but these reports are deserving of little notice. [MANFRED.] Conrad left one only son, called also Conrad, of whom was styled by the Italians Conradino, or little Conrad. Berthold of Hohen- burg was left tutor of the young prince, who was brought up in Germany, and Manfred remained regent of the king- dom of Sicily and Apulia in the name of his nephew. For the Guibeline party of all those transactions, see Baumer's Geschichte der Hohenstaufen, and for the Guelf part, the numerous Italian writers, and Sismondi's Histoire des Ré- publiques Italiennes.

[CONRADINO, son of Conrad IV., and of Elizabeth of Bavaria, was an infant when his father died in 1254. He was acknowledged as duke of Swabia, but his father's splendid inheritance of Sicily and Apulia passed into the hands of Manfred and afterwards of Charles of Anjou, by the hands of La Grandella, A.D. 1265, in which Manfred was killed.

In the autumn of 1267 Conrad, when only 16 years of age, set out for Italy at the head of a few thousand men. At Verona he was well received by the great Guibilele leaders of N. Italy. He entered Rome without opposition, the pope being then at Viterbo, and thence took the road of the Abruzzi. He met his opponent, Charles, at Tagliacozzo, near the lake of Celano, on the 23rd of August, 1268. The battle was long contested; the Germans had at first the advantage, and, elated with success, were pursuing the enemy. But the remainder of the French, who had been kept up with his reserve and completely routed them. Conrad escaped from the field of battle with his cousin Frederic Duke of Austria and others, and descending from the moun- tains reached the plains of the Pontine marshes, expecting to find some means of reaching the fleet of his allies the Pisans, which was in the neighbourhood. But John Frangipani, Lord of Astura, seized upon him and delivered him up to Charles for a sum of money. Later on, the King of France took a hand in the protest of a celebrated jurist, Guido di Luzzano, and others, he was condemned and beheaded in the market- place on the 29th October, 1286, together with Frederic of Austria and the rest of his followers. The story of the glove, said to have been thrown down by Conradin from the scaffold, to be delivered to Peter of Arragon, the hus- band of Constance, daughter of Manfred, does not seem suf- ficiently authenticated. A chapel was raised on the place of the execution. The chapel no longer exists; but in the vestry of the new church of Santa Croce al Mercato, built opposite to it, is a small column of porphyry, which once stood on the very spot of the scaffold, with a Latin distich commemorative of the event. (Valery, Fougues en Italie.) In the church of San Giorgio di Castello, a fresco by Con- radino shows a scene from the life of this unfortunate son. Coming too late, she used the money in founding the great convent Del Carmine, where the remains of Conrado and Frederic of Austria were deposited behind the great altar. [CONRADINO.] The Guibelines of N. Italy, on the death of June, 1257, studied for the church, but applied himself likewise to belles lettres, music, and the arts. He became a monsignor, or prelate attached to the papal court, and was, by Pius VI., Utitor di Rotto, or member of the highest civil court of Rome. In 1795, the illustrious Count Chiaramonti became pope; he made Consalvi, whom he knew and appreciated, a cardinal deacon, with the title of Santa Maria ad Martyres, in August 1800, and appointed him at the head of his second and last, or third, Congregation. In 1801 Consalvi retired to Paris, and wrote an account of the concordat with the first consul, Bonaparte. His pleasing manners and liberal opinions procured him marked atten- tion during his stay in the French capital. In 1806, when Bonaparte began to quarrel with the pope, he interceded upon Consalvi being removed from his office, under the pretence that he was ill affected towards him, which meant in rea- lity that he defended the interests and rights of his own sovereign. Consalvi himself urged the pope to accept his resignation, which was accepted, but before he received it, and appointed Cardinal Cacsoni his successor. Consalvi remained at Rome during the following years until the abdication of the pope in 1809. After that event he withdrew to France. Consalvi was again appointed to a cardinal's hat, and at a later time afterwards he was allowed to join the Pope at Fontaine- bleau. On the release of the pope, and his return to Rome in 1814, Cardinal Consalvi was reinstated in his office of secretary of state, and continued the preceding mi- nister of the court of Rome till the death of Pius, 20th August, 1823. Consalvi did not long survive his master and friend, to whom he had been faithfully attached through all the vicissitudes of a long and stormy pontificate, and whose state of society had exercised upon his mind and a mutual confidence. [PIUS VII.] Cardinal Consalvi died at Rome in 1824. He was buried in the church of S. Marcoelio, where a monument was raised to him by the sculptor Kintz. An excellent full-length likeness of him by Sir Thomas Lawrence is in the gallery at Paris.
bince or genderines, instead of the old worthless shirles, and the establishment of workhouses for the poor in the principal towns; all these are the results of Consalvi's administration. He also took strong measures to extirpate the banditti from the Campagna, and in one instance, July 1819, he ordered the two thousand five hundred of their notorious haunts, to be razed to the ground. New concordats were entered into with France, Naples, Bavaria, and other German states. (Compendio Istorico ai Pio VII, Milano, 1824; Beitrage der Italienischenitten, art. 'Consalvi,' and Tourname der Bistuemer uber seine Sterbeorte).

CONSANGUINITY, or KINDRED, in law, is the relationship subsisting between persons who are of the same blood, or, in other terms, who are descended from the same stock or common ancestor. Consanguinity, in this sense, is distinguished from collateral consanguinity. The latter is the relationship subsisting between persons who are related to each other in the direct ascending line, as from son to father, grandfather, great-grandfather, &c.; or in the descending line from great-grandfather to grandfather, father, and son. Collateral kindred are those who, though they have the same blood, derived from a common ancestor, and are therefore consanguinei, do not descend one from the other. Thus brothers have the same blood and are descended from a common ancestor, but they are not related to each other; collaterals, if they descend from the same common ancestor, descend in different collateral lines, and are not related to each other. The Canon Law and the Civil Law have adopted different methods of computing the degree of collateral consanguinity. According to the former, which has been followed by the law of England, we begin at the common ancestor and reckon downwards to the persons whose degree of consanguinity we desire to ascertain, counting each generation as a degree; and the degree of consanguinity in which they stand to each other is the degree in which both of them stand to the common ancestor. Thus (to use the example given by Sir William Blackstone), Titus and his brother are related in the first degree; for from the father to each of them is related only one; but Titus and his nephew are related in the second degree, for the nephew is two degrees removed from the common ancestor; viz., his own grandfather, the father of Titus. On the other hand, in this supposed case, the civilians would place Titus and his nephew in the third degree of consanguinity, for they count all the degrees from one given person upwards to the common ancestor, and downwards from that common ancestor, whose degree of relationship to the first person it is the object to establish. Thus they would count from Titus's nephew to his grandfather two degrees, and one more from the grandfather to Titus. By the law of England, all persons related to each other by consanguinity or affinity, nearer than the fourth degree of the civil law, are prohibited from marry ing, excepting in the ascending or descending line (in which case the case is hardly possible by the course of nature); and by stat. 5 and 6 William IV., c. 54, sec. 2, it is enacted, 'that all marriages celebrated after the day of that Act between persons within the prohibited degrees of affinity or consanguinity, shall be absolutely null and void to all intents and purposes whatsoever.' Under the statute of distributions, 22 and 23 Car. II., c. 19, in making the distribution of an intestate's personal estate among the next of kin, the computation of degrees of kindred is according to the Civil Law. (Novell. 118, and Intestacy: Blackstone's Essay on Collateral Consanguinity, and Blackstone's Commentaries, vol. ii. p. 292.)

The question of consanguinity is the question of the relation between two given persons, as explained above. If one of these persons is called A, all his kindred will be found in the ascending line above him, and all his kindred in the descending line below him. His collateral relations will be found in the parallel lines (b), (c), (d), &c. The Roman numerals denote the respective degrees of consanguinity in the Latin and the Arabic numeral 4, placed under III., by the civil or Roman law.

The following are the names for consanguinity in the Roman law. In line (a) ascending from A: 1, pater, mater; 2, avus, avia; 3, pro avus, pro avia; 4, ab avus, ab avia; 5, avus, avia; 6, trivius, trivitria; all above 6 are included in the general name 'majores.' In line (a) descending from A: 1, filius, filia; 2, nepos, nepos; 3, descendit, pro nes pe; 4, ab nepos, ab nepos; 5, stepos, stepos; 6, trinomine, trinomine; all below 6 are included in the general name 'minores' or 'posteriores.'

In line (b), beginning with 2 and ascending to 2, frater, soror; 3, patruus, unita (uncle and aunt on the father's side); avunculus, materteria (do. on the mother's side); 4, patruus, magna, avunculus, magnus, materteria magna, 5, patruus, pro avus, pro avia, pro avus, pro avia, promaterteria; 6, abpatruus, abamatruus, ababmatruus.

In line (b), beginning with 3 and descending the names are, 3, frater, avia, filius et filia, and so on. In (c), beginning with 4 and ascending to 4, consobrius, consobrina, which are the general terms, and are properly only those born of two sisters (quasi consororina); sons born of two brothers are properly called fraters patres, daughters, sorores patres. 3, propior or prior sororino, in proprior soror, the sons and daughters of the patruus magna, magnus, china, &c. (See Tacit. Annal., xii., 64.)

Some of the Latian writers used 'nepos' to express a brother's or sister's son.

It is unnecessary to go farther. (Inst. tit. ii. 6, De Grad. Cognationum.)

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it is unnecessary to go farther. (inst. iii. tit. ii. 6, de grad. cognationum.)
forced, by which every district was bound to furnish a certain number of men for the regular army. But even this proved insufficient, and the Executive Directory found itself in want of soldiers to supply the numerous armies on the frontier. In 1796 General Jourdan presented Jourdan and Council of Five Hundred a project of a law for a new mode of recruiting, under the name of conscription. This project was approved by the legislature, and passed into a law 5th of September, 1798. After ceremonial work done as a preface, in which every Frenchman is bound to defend his country, every Frenchman from the age of twenty to twenty-five is liable to be called out to serve in the army every year lists are made in every department of the young men of the age above stated, divided into five classes, the first being those between twenty and twenty-one years; the second from twenty-one to twenty-two; and so forth. The number of men required for that year being made known by the government, and voted by the legislature, a distribution was made among the departments and districts of the quota which each was to furnish. The number required was then taken by lot from the first or junior class, and when that was exhausted, from the second, and so on. This operation was repeated every year. The first levy by conscription in 1799 was 200,000 men. Bonaparte, when First Consul, found the system already established, and he applied himself strenuously to render it more perfect, to speed it up, and carry it on without any delay.

At the beginning of 1802 a levy was made of 120,000 conscripts, 60,000 of whom were to fill up vacancies in the army on the peace establishment, and the other 60,000 to form a reserve. In April, 1803, 40,000 more conscripts were levied out of the conscription lists for the years 1811 and 1812. In October of the same year, 60,000 more were levied out of the lists of the year 1813. By an arrêt 19 Vendémiaire, year xii. (12 October, 1803), severe penalties were enacted against refractory conscripts, that is, those who had not joined their regiments. Eleven déportés in various citadels were marked out for them, where they were to be kept under arrest, and work at the fortifications. They were to be fined five thousand livres by their relations.

In January, 1804, 60,000 men of the lists of the year xiv. were levied. On this occasion, Bonaparte said to the Council of State that the law of the conscription was the third and desolation of families, but that it formed the security of the state. (Thibaudeau, tome v. p. 318.) In 1805, just before the war of Austerlitz, a Senatus Consultum ordered a levy of 80,000 men. Till then the levies had been voted by the legislative body, but henceforth a Senatus Consultum was deemed sufficient.

In December, 1806, a levy was ordered of 80,000 men; in 1808, 90,000, besides 80,000 more of the conscription lists of 1810, to be called out in 1809. This was on account of the Spanish war, which the senate said was 'politic, just, and necessary.' In 1808 and 1809, the young men were called for one year only; according to the original law, the young men now take were not nineteen. In 1809, a new Senatus Consultum, 18th April, ordered a levy of 40,000; and on the 3th October, another of 35,000. In 1810 there was a levy of 120,000 of the lists of 1811, besides 40,000 conscripts of the maritime departments for the service of the navy. In 1811 the levy was 120,000 conscripts, besides those levied in Tuscany, the Roman states, Holland, and the Hanseatic towns recent recently at the request of the Empire. The repugnance of young men to the service became greater, and the severity of the government against refractory conscripts increased in proportion. A reward of twenty-five francs was given to anyone who furnished one a considerable number of refractory conscripts to a department, a movable column was formed to hunt after them, and the soldiers were quartered in the houses of the relations of the deficient, who were obliged to bring them.

The disasters of the Russian campaign caused the admission of new expedients for raising men besides the regular conscription. Half a million of men was voted by the senate towards the end of 1812, consisting of 150,000 conscripts of 1813, 1814, 1815, and 1816, out of the list of 1810, 1811, 1812, who had not been included in the former lists, and 100,000 men of the first ban of the National Guard, who were formed into regiments of the line.

In November, 1813, another Senatus Consultum placed at the disposal of the Emperor 35,000 conscripts of the lists of 1813-14, who had not been included in the previous levies; and by a decree, 17th December of the same year, 180,000 men, taken chiefly from the National Guard, were ordered for the defence of the towns, as the allies threatened the French territory. And yet, notwithstanding this, 1805, 1806, 1808, 12,000; 1810, 11,000; January, 1811, 15,000; November, 1811, 15,000; 1812, 15,000; February, 1813, 15,000; October, 1813, 15,000.

Few soldiers, unless disabled by infirmities, wounds, or the general fatigue of the war, were received under Napoleon. The supply of service was unlimited. By the present law of France, the harshness of the conscription, the principle of which, though not the name, is retained, has been greatly mitigated, and the soldier is entitled to his discharge after five years' service. Greater facility is allowed for procuring substitutes, which Napoleon admitted in principle, and even defended in the Council of State, as necessary 'in the present state of society, which was very different from that of Sparta or Rome,' but he afterwards surrounded it with so many difficulties, that substitutes became extremely scarce and expensive. Exemptions are also granted to the single sons of poor parents, and upon other humane considerations, as well as in cases of delicate health of young men. All other alternative defences were entirely overlooked in the sweeping conscriptions of the empire. A system somewhat similar to the conscription exists in Prussia and other German states. (Curtius xii. 13.)

CONSECRATION (consacration), the act of sanctifying or making holy, consists in the solemn approbation or dedication of anything to the service of the Deity. In modern times the consecration of men is usually called consecration, except of kings and bishops, when the performance of the rites of sanctification is still named consecration. When applied to temples, churches, and altars, it is generally termed dedication. It is sufficient to direct the look of the reader to the religious antiquities of India, Egypt, Judea, Chaldea, and Greece, and of Rome and Britain in Europe in general, to show the antiquity of consecration. At the commencement of the Mosaic dispensation all the first-born of man and beast were consecrated to the Lord. (Exodus xiii., 2, 12, 15.) Subsequently the whole tribe of Levi was thus consecrated instead of the first-born (Numbers iii., 12, 45; viii., 16, 18); and Aaron and his sons, who were Levites, were more especially consecrated to the priest's office. (Exodus xvi., 13.) The dedication or consecration of the tabernacle and altar is described in the book of Numbers ch. vii. Of the dedication of the first or Solomon's Temple, a description is given in 1 Kings viii., 3; and of the second temple in Ezra vi., 16. Under the New Testament, the covenant was consecrated by the blood of Christ brought to the Lord, but houses, fields, and the walls of Jerusalem (Leviticus xxvii.; Nehemiah xii., 27). At the commencement of the fourth century, when Christianity, under Constantine, became the established religion of the Roman state, and Christian temples began to vie in magnificence with those of the Pagan deities, they were consecrated with great pomp; for instance, the church of Jerusalem, built by Constantine over the supposed site of the Temple in the valley of Jehoshaphat, the court of the now famous church of the Holy Sepulchre. The consecration was performed by a full synod of all the bishops of the West. (Russell's Hist. i. 10, c. 45. Gratian, Concordat Antiquitatum, part 3.)

The following are the principal parts of the ritual of consecrating a church according to the Roman Catholic pontifical. Previous to the ceremony three crosses are painted on each wall of the church, and over each cross is placed a lighted candle. The bishop, in his pontifical vestments, enters the Holy of the church, bowing to his clergy reciting the seven penitential psalms; he then advances to the high altar,戟 that is, the altar of the transverse wall, and the bishop consecrates the altar, Psalms, Antlottae portis, et intruit Rex Glorior, to which a deacon, who is within the church, replies, 'Quis est iste Rex Glorior?' The bishop responds, 'Dominus fortis et potens, Dominus potens in præsto, &c.;' then signing the door with the figure of the cross, he exclaims, 'Ere crux.
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signum! fugiat phantasmata cuncta." On the admission of the bishop and clergy the Feni Creator is chanted, and ashes are thrown upon the floor in the form of a cross, in which the bishop, with his rich vestments, sits, also followed by characters. After several prayers the altar is consecrated by sprinkling it with a mixture of water, wine, salt, and ashes, in the name of Jesus Christ; the solemnity concludes with the singing of hymns and incense, with a parchment inscribed with the name of the bishop and the date of the consecration. The church, on this occasion, is richly decorated, and the altar is illumined with a profusion of large tapers. (Broughton's Hist. Doc., vol. i. p. 455.)

The form used by the Church of England is given at length in Bishop Gibson's 'Codex juris Ecclesiæ Anglicanae,' London, 1755, and in Wilkins's 'Concilii Magni Britanniae,' vol. iv. p. 668, and Burn's 'Eccles. Law, Churches,' sec. 2. The present form has been used since 1712; and in 1759 it was adopted, with some slight modification, by the episcopal church in America. One of the principal charges on which Archbishop Laud was arraigned before the Commons was, that he endeavoured to revive the Roman Catholic ceremonies in the consecration of churches and altars, with all their ecclesiastical furniture. Processions, withflags, as well as the Catholic, is in imposturing ceremony; and the 21st. Henry VIII., c. 13, states as the reason for allowing a bishop six chaplains, that this number is requisite for the consecrating of churches. The village feasts which are still commonly held under the ecclesiastical law; also the 21st. of the 17th. century, the anniversary day of the consecration of the parish church, and are said to have been substituted by Pope Gregory the Great for similar festivities appertaining to the Druidical religion. (Bingham, b. 8, c. 5.)

Consecration is generally understood of the manner in which a bishop may consecrate a church, by the imposition of his hands upon the holy table, and in the presence of the congregation; but merely the use of it; and in this opinion the Catholics appear to acquiesce, with regard to numerous objects which they usually consecrate; as church bells, candles, water, oil, consecrated wine, and the holders of the Host. By consecration, the eucharistic bread and wine, they maintain that a complete change is effected in the thing consecrated,—the body and the blood of Jesus Christ, by the change of the bread into his body, and of the wine into his blood, being believed to be really present by virtue of the words of consecration. This is what is termed transubstantiation. (Brunet, Parâil des Religions, 4to., 1792, tome iii., p. 310; Exposition de la doctrine de l'Eglise Catholique, par Bossuet.)

The consecration of animals was very common in ancient Egypt, where birds, beasts, and reptiles were privileged, as in modern India, to live unmolested, and even to receive adoration. Athenæus and Ælian speak of sacred fishes, adorned with necklaces; so the sacred crocodile in Egypt was worshipped as a god, and in some places, in the eucharist, and the consecration is given to the apotheosis of the Roman emperors, and coins and medals commemorating these events have the inscription CONSECRATIO. See an account of these funeral honors in the article ANIMALIS, and the record with the legend CONSECRATIO in the article ATELIERUS.

CONSERVATOR OF THE STABLE, in the law of Scotland, an officer in the nature of a foreign consul, resident at Campvere, in the Netherlands. By the Act 1653, c. 81, passed, as the preamble states, for the welfare of merchandize, and to provide remedy for the extortionate expense of fees in foreign courts, the conservator of Scotland was vested with a jurisdiction to do justice between merchant and merchant, to avert a suit before another judge by laying the matter before a judge, and by bringing the suit before another judge to be settled according to the laws of the country; and that jurisdiction is extended by act of the 4th of July, 1660, to take suits out of the Court of Session, and for good behaviour, were of several kinds. In the first place, certain high functionaries were general conservators by virtue of their office: the king, the lord chancellor or lord keeper, the judges of the court of Kings' Bench, and the master of the rolls, were intrusted by the common law with the general conservancy of the peace throughout the realm, as incidental to their several offices. Other officers again were conservators only in special places; thus the judges of the common pleas and barons of the exchequer were conservators of the peace only within the precincts of their several courts. In like manner, judges of assize and gaol delivery, as they were charged with the keeping of the peace, were intrusted by their commissions; coroners and sheriffs within their respective counties. The steward of the Marshalsea within the verge of the king's household; and constables and tithingmen within their hundreds or tithings, were all conservators of the peace at the particular officer's instance, and retained their authority at the present day. But besides these official conservators there were others who were expressly intrusted with the charge of the peace, either by prescription, election, or tenure. Thus it is said that the owner of a certain manor might control the peace within the county where the lands lie, whose estate he had, were entitled to be conservators of the peace within such manor. So also as sheriffs were formerly elected, and as coroners still are elected, by the actual citizens of certain parts, who were invested by the reign of Edward III., elected conservators of the peace in different counties. There were also instances in which lands were granted by the king to hold of him by knight's service, and also by discharging the duties of conservation of the peace, upon the condition that the landholder should preserve the peace. Besides these, there were conservators of the peace appointed by letters patent from the crown, in cases of emergency, to defend particular districts, where breaches of the peace were apprehended in consequence of foreign invasion or intestine tumult. All the different kinds of conservators of the peace above noticed, excepting those who have the duty cast upon them as incidental to other offices, were entirely superceded upon the establishment of the system of justices of the peace, in the reign of George I. (Jenrick's Pract. of the Peace.) (See also full details upon this subject in Lambard's Eirenarchs, book i., cap. 3.)

CONSERVATORY. The names given to the garden buildings employed for preserving plants in an artificial climate, are applied with so little precision, that it is almost a matter of indifference which to select for the purpose of explaining the principles that ought to be observed in the construction and management of such houses. We shall therefore reserve for the article GREEN-HOUSE what we have to say upon that head, and briefly dismiss the others as their names occur. In illustration of this remark we may observe that the term conservatory, which, as its meaning shows, was originally intended for buildings in which plants were preserved during winter, has come to be used, firstly for glass-houses in which plants are cultivated by growing them in the open border, and subsequently for all such glassed buildings whatsoever. A conservatory, properly so called, is a brick building with a glass roof, having its whole southern part closed by large glazed sashes, which may be opened or shut at pleasure. Its floor is generally of stone, and a part of it is occupied by a stage on which plants in pots are placed. If the house be placed in a garden, it may be seen in the rhs garden at Chelsea; others are not uncommon in gardens that were laid out forty or fifty years ago, but they are fast falling into neglect and disuse—in our opinion undeservedly. In the conservatory the plants are preserved during the winter orange-trees, myrtles. American aloes, and similar plants, which during the summer will flourish

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CON in the open air, but which require in winter to be protected against the inclemency, or, to speak more exactly, against the cold and wet of the English climate. Such plants are torpid during winter; their rest begins with that of our trees, and it is easy to prevent a renewal of the growth at too early a time by protecting them from too much wet and from severe cold, especially in the spring, is all that is requisite for them, and these objects the old conservatory answered perfectly well. It had moreover the advantages of being speedy without being excessive; of being easily supervised, and of requiring the smallest possible amount of labour for the plants preserved in it. Persons however, gradually forgetting the original object of a conservatory, added to it numerous species requiring a very different treatment from those it was intended for; and what was far worse, they attempted by humidity and high temperature to keep the plants in a growing state all the winter. The necessary consequence of this was, that those plants which formerly succeeded in the conservatory became unhealthy, the new comers disappointed the expectations of their cultivators, and the building itself fell into disrecket. The reason of this is sufficiently obvious. Plants when in a growing state require an abundant supply of light: a conservatory is particularly ill calculated, on account of its solid roof and sides, for the admission of light, and consequently a conservatory is not suitable for plants in a growing state; but plants when torpid, as in their winter season, require a very moderate supply of light, and this a conservatory is admirably fitted to admit.

A house of this kind is best suited for gardens of considerab]e extent, where a large number of plants is required during the summer for the ornament of the flower garden and greenhouse, and where such circumstances recommend the erection of conservatories as the cheapest, the most efficient, and the most ornamental mode of preserving in a healthy state during winter not only oranges, myrtles, and similar plants, but in general all the species which are natives of countries that, without experiencing severe frost, are cold enough during winter to suspend the vital energies of vegetation. It will be perfectly within the gardener’s power to keep the earth in which conservatory plants are kept dry during the winter to accumulate by the return of spring an abundant supply of new sap; and this is all that he need be particularly reminded of; if he understands his business scientifically; if he does not, advice to him would be only a waste of words.

[GREEN-HOUSE]

CONSISTENCY is the churchian, or spiritual court, formerly held in the nave of the cathedral, or in some chapel aile or portico belonging to it, in which the bishop or his chancery had some of his officials and assistants. But this court is now held by the bishop’s chancellor or commissary, and by archdeacons or their officials, either in the cathedral church or other convenient place in the diocese, for the hearing and determining of matters of ecclesiastical cognizance and discipline. (Burn’s Ecclesiastical Law, tit. Consistory.)

By stat. 24 Henry VIII., c. 12, an appeal lies from this court to the court of the archbishop of the province.

CONSUME, a term familiarly used to denote a considerable portion of the public debt of this kingdom, more correctly known as the three per cent. consolidated annuities. This portion of the debt originated under an Act 25 Geo. II., whereby various perpetual and lottery annuities were to be raised; and which were not at the time of their creation had respectively borne an interest of 3 per cent., were brought under one head in the public accounts. Various additions have from time to time been made to the scale of these annuities; and on the other hand, some diminution has been effected by the operation of the sinking-fund and the application of surplus revenue. The capital outstanding and unredeemed under this head, on the 4th of January, 1836, amounted to £3,595,758. 4r. 6d., and the interest of one year amounted to £199,247 14s. 11d. 3. 8. 25.

CONSONANCE, in Music, a term which has, we think, often been explained with too strict a regard to its etymological meaning. That it signifies some sound heard with pleasure is undoubtedly true, but the two words must, in our opinion, be considered as synonyms of concord and discord.

CONSONANT: [Alphabet, p. 379.]

CONSPIRACY. Every conspiracy to do an unlawful act which is injurious to individuals or the public, is a misdemeanor at the common law of England. Many frauds affecting individuals, which cannot be made the subject of prosecution as such, become indictable when they are effected by the combination of two or more persons. Thus where several persons agree by indirect means to impose upon a person a certain injustice, the offence is punishable as a conspiracy, though the concerted acts alone, when committed separately, would not be so punishable; for any improvement of the law by confederates for the purpose of committing a civil action by the injured party. Another instance of this is, the case of a conspiracy among journeymen or servants to raise the price of wages, by refusing to work under the old rates, and breaking up a trade so completely as to prejudice their employer. Any pernicious combination of workmen to interfere with their employer, and to prevent him from discharging faulty workmen, would thus be a conspiracy at common law.

In former times, persons convicted of conspiracy at the suit of the king (the nature of which is not very doubtful), were liable to receive what was called villainous judgment, by which they were rendered incapable of acting as jurors or witnesses, their lands and goods were forfeited for life, and their bodies committed to prison. This judgment was never however inflicted upon persons convicted of conspiracies of a less aggravated kind at the suit of the party; and in modern times, the villainous judgment having become obsolete by long disuse, the punishment of conspiracy at the suit of the party is either fine, imprisonment, or good behaviour, at the discretion of the court.

(Russell on Crimes and Misdemeanors, vol. ii.)

CONSTABLE. This word is supposed by Du Cange, Spelman, Cowell, and other legal etymologists, to be corrodinately derived from the Latin constare, to stand firm, and from the ancient Gaulish const, to stand. Sit the horse, frequently mentioned as an officer of state in the middle ages. (See Du Cange’s Glossary, ad vocem Comes Stations.) The name is still retained in other languages, other writers, insist upon another etymology—from two Greek words, kono, a king, and staelp, a stay or support—quadrum column regis. Both these derivations are equally remote from the description of the office of our constables, which is constantly to enable its possessor to assume or to maintain his station with more probability; and, in accordance with it, the Constable of France was an important officer of the highest rank in that country, who had the chief command of the army, and had judicial cognizance of military offenders; and whose duty it was to regulate all matters of chivalry, such as titles, tournaments, and feats of arms. This office was suppressed in France by an edict in the year 1607; it was revived by Napoleon, and constituted one of the six grand dignities of the empire. The office was and is still considered as the symbol of the restoration of the Bourbon dynasty in 1814.

Immediately after the Norman conquest, we find in England an officer of the crown called the Lord High Constable, whose duties, powers, and jurisdiction were in most respects similar to that of the constable in France. The office was one of great dignity and power, both in war and peace, the constable having the command of the army and the regulation of all military affairs. He was the supreme judge of the court of chivalry, in which character his envoys and others on other courts were as heavy a grievance in early times, that the stat. 13 Rich. II. 2 was passed to restrict his jurisdiction to contracts and deeds of arms and things which touch war, and which cannot otherwise be tried by the king in council. The office, for several centuries after the Conquest, passed by inheritance in the line of the Bohuns, Earls of Hereford and Essex, and afterwards in the line of their heirs-general, the Stafford, Dukes of Buckingham, in right of certain manors held by them in the fee simple of several constables of England. The fees of the office were extremely burdensome to the crown, and the possession by a subject of the hereditary right to command the militia of the realm. This is not surprising, while the great officers of state, such as the privy council, were frequently a dangerous power; and on this account Henry VIII., in the early part of his reign (1514), consulted the judges respecting the means of abolishing the tenure. He was advised by them, that as the individuals holding the office were so frequently in disgrace, that under the name of the "first regis," he had the power of discharging the feudal service altogether; and acting upon this opinion, the king abolished the office, by disclaiming to have the services any longer executed. (See Dyer’s Reports, p. 265.)
effect of this, was, that Edward Stanley, the last duke of Buckingham in that line, the hereditary high constable of England, was accused of bribery, discharging after this period discharged of the service of being constable. All doubt which might have been suggested respecting the legal extinction of the office by this means, was removed eight years afterwards by the attainder of the Duke of Buckingham on high treason, upon which the matter was in question were forsooth to the crown. Since that time, the office of high constable has never been granted to any subject, excepting pro hac vice, upon great and solemn occasions, such as the king's coronation or trials of peers.

Out of 'apprenticeship' or state, the Duties of Constables: 'the lower constableship was first drawn and fetched, and is (as it were) a verie finger of that hand; for the statute of Winchester, which was made in the time of Henry VII, for the greater security and order of the hundreds and franchises were first-ordained, doth, amongst other things, appoint, that for the better keeping of the peace, two constables in every hundred and franchise should make the view of armour. He then concludes, in justification of his etymology of the term, that 'the name of a constable in a hundred or franchise doth mean that he is an officer that supporteth the king's majesty in the maintenance of his peace.' This derivation of the office of a constable is no less very improbable, especially as it is the better opinion that it is to be referred to common law before the statute of Winchester. (See Hawkins' Pleas of the Crown, book ii. cap. 10.) An ancient judicial authority, chief justice Finch, in the reign of Henry VIII, states that: 'Constables may be bro't before the court. He says that when the superstition of the peace of a county was found too great a task for the sheriff, hundreds were formed, and a conservator of the peace under the sheriff appointed in each, who was called a constable. This was the high constable, or constable of the hundred. In process of time, as population increased and towns grew into existence, it was found expedient to make a further subdivision for the preservation of the peace; and accordingly were appointed for manors, vills, and titheings, who were then called petty constables. (See Year Book, 12 Henry VII, pl. 18.)

Following this account of their origin, which is confirmed by many of the minute incidents of the two offices, constables, in the usual acceptation of the term at the present day, are of two kinds: constables of hundreds, who are called high constables, and constables of vills or titheings, who are called either petty constables or titheungmen. Both high and petty constables were formerly at the court leet, sworn in, and admitted there by the lord or his steward; but at the present day the high constables are usually chosen by the magistrates at the quarter-sessions. The petty constables continue in the court leet, but by the stat. 13 and 14 Car. ii. c. 12, s. 15, it is enacted, that if any constable shall die or go out of the parish, any two justices shall make and swear a new constable, until the lord of the manor shall hold a court, or until the next quarter-sessions, who shall approve of them or appoint others. By virtue of this statute, and by reasons of the diuise of courts-leet in modern times, the duty of nominating and swearing the constables is now generally discharged by the justices of the peace.

By the Metropolitan Police Act, 1 Geo. iv. c. 44, the police force is appointed by direction of the Secretary of State, and sworn in as constables by the commissioners, and in boroughs affected by the provisions of the Municipal Reform Act (5 and 6 Will. iv. c. 76), constables are now appointed by the Watch Committee under the authority of the 76th section of that statute. The office of constable at common law is a yearly appointment; and if any officer has served longer than a year, the justices at quarter-sessions will not, of course, discharge him, and appoint another officer in his stead. Besides these general constables, two or more justices of the peace, upon information that disturbances exist or are apprehended, are empowered to appoint constables, 41, to appoint special constables; and by the 83rd section of the Municipal Reform Act, magistrates in boroughs are authorized to swear in as many inhabitants as they think fit to act as special constables when called upon. In general, all the permanent inhabitants within a district, borough, parish, or place, are liable to serve as constables; but they must be persons of good character and of competent ability; and the lord or steward of the manor at whose direction the constables are appointed must sign as to the appointment of proper persons. It is obligatory upon a constable who has been legally appointed to serve the office, unless he can show some lawful exemption; and if he refuses to serve, he may be fined or punished by indemnitie or imprisonment. The constable, however, must perform his duty at the office; namely, members of the colleges of physicians and surgeons in London, apothecaries in London, or within seven miles thereof, who are free of the Apothecaries' Company, and also those in the country who are serving seven days in the year, are allowed to be excused from serving at the office, to go to any case where the necessity of their services for their livelihood except that of a schoolmaster, and publicans. The Municipal Reform Act and the Municipal Corporation Reform Act contain provisions that the constables to be appointed under those statutes respectively shall have all such powers and privileges, and be liable to all such duties and responsibilities as any constable has within his constablewiek by virtue of the common law of the land. In consequence of these provisions, it becomes of great practical importance to ascertain with precision the common-law incidents of the office of constable.

1. By the common law, constables are said to have been conservators of the peace; and in consequence of this character probably every constable has undoubted authority to arrest all persons who commit an affray, assault, or breach of the peace, either in his presence, and keep them in safe custody until delivered over to a magistrate. It is said also by antient authorities that by virtue of his power as a conservator of the peace, he may himself, on view of a breach of the peace, take surety of the peace by bond, though he cannot do so by recognizance, being incompetent to administer an oath. But as his duty is to prevent crime, it is not to punish for the breach of it, it is doubtful whether he can arrest by his own authority and without a warrant, upon the information or charge of a third person, for an affray or assault. (See the case of Morton v. Simpson, 1 Crompton, Meeson, and Roscoe's Reports, p. 760.) By sect. 9 of the Metropolitan Police Act, and by sect. 79 of the Municipal Corporation Reform Act, constables appointed under those acts are expressly authorized, in charges of petty misdemeanor in the night-time, to take bail by recognizance for the appearance of the offender before a magistrate within a limited time.

2. A constable having reasonable cause to suspect that a felony has been committed, may arrest a supposed offender until he can be brought before a magistrate to have his conduct investigated; and he will be justified in doing even though it should afterwards appear that in fact no felony was committed. In this case there is a sufficient authority of a person of a good character to a private person; the former may arrest if he can show a reasonable ground of suspicion that a felony has been committed; but a private person, in order to justify himself for causing the imprisonment of another, must prove, in addition to the reasonable suspicion of the individual, that a felony has actually been committed. A constable is bound to arrest any person whom he sees committing a felony, or any person whom another positively charges with having committed a felony; but generally speaking, he has no authority to arrest for a misdemeanour, either upon his own reasonable suspicion or the charge of another person, without a magistrate's warrant. With respect to the authority of a constable to arrest for felony or breach of the peace, Mr. Justice Buller is reported to have said, that 'if a peace officer, of his own head, takes a person into custody on suspicion, he must prove that such a crime was committed; but if he receives a person into custody on a charge preferred by another of felony or breach of the peace, then he is to be considered as a mere conduit; and if no felony or breach of the peace was committed, the person who preferred the charge alone is answerable.' Lord Ellenborough, in the case of Hobbs v. Branscomb, (3 Campbell's Reports, 415), it is decided that 'the police officer must be present when the facts are committed as to be considered as a mere conduit; and if no felony or breach of the peace was committed, the person who preferred the charge alone is answerable.'

3. Constables were authorized by the common law to arrest such 'strange persons as do walk abroad in the nightseason.' (See Lambard's Constable, p. 12.) This authority, which was perhaps sufficiently definite to be 'practised in peace and war,' is at the present day of so vague a nature, that a
peace-officer could scarcely act under it without imminent danger of an action in every particular instance. It is however obviously essential to the efficiency of any system of police, that constables should be armed with some general authority of this nature, especially in towns. By the 7th section of the Metropolis Police Act, no improper or unreasonable officer belonging to the police force appointed under that act, may apprehend all loose, idle, and disorderly persons whom he shall find disturbing the public peace, or whom he shall have reason to suspect of being seditious, and all persons whom he shall find between sunset and the hour of eight in the forenoon lying in any highway, yard, or other place, or loitering therein, and not giving a satisfactory account of themselves, and deliver them to the constable in attendance at the watch-house, until the same can be brought before a magistrate. The Municipal Reform Act contains a similar but less comprehensive provision, authorizing 'any constable appointed under that act, while on duty, to apprehend all idle and disorderly persons within the borough whom he shall find disturbing the public peace, or whom he shall have just cause to suspect of intention to commit a felony.' Besides these specific authorities, however, which apply only to the metropolitan police district and the boroughs affected by the Municipal Reform Act, there is no doubt that in general a constable, by virtue of his common law authority, may stop any person carrying by night a bundle or goods under circumstances of reason, and search him if upon examining him his suspicions are not removed, he may detain him in his custody. A constable has also a general authority to apprehend for offences against the Vagrant Act, 4 and 5 George IV., c. 63, or against the Larceny Act, or the Malicious Injuries Act, 7 & 8 Geo. IV., c. 29 and 30.

4. In the execution of a warrant a constable acts no longer as a conservator of the peace, but as a ministerial officer to the magistrate who signs it. He is the proper officer to a justice of the peace, and is bound by law to execute his warrants, and may be indicted for disobeying them. It is his duty to execute the warrant of a magistrate as soon as it comes to his hands; and where he arrests or detains or does any other act, though it is not absolutely necessary, if he should afterwards be removed or suffer any other change in his situation, he is always to give notice of it, and he will be wise to produce it in all cases where it is demanded; but as the warrant constitutes his justification, he is not required to part with it out of his possession. If the constable has a legal warrant to arrest for felony, or even breach of the peace, he may break open doors after having demanded admittance and given notice of his warrant; and if, after such notice, he is resisted and killed, it will be murder. If a warrant be directed to a constable by the magistrate merely 'authorized by the Stat. 5 George IV., c. 18, to execute it out of his own constabulary, provided it be within the jurisdiction of the magistrate who signs it; but he is not bound to obey anything in all, but to make his election whether he will go beyond his own precincts or not.

5. The law has made several provisions for the indemnity and protection of constables in the proper discharge of their duty. Thus by the Stat. 7 Jac. I., c. 5, if an action be brought against a constable for any thing done by virtue of his office, he may plead the general issue and give the special matter in evidence; and if he recovers, he is entitled to double costs. Formerly if a magistrate granted a warrant in matter over which he had no jurisdiction, the officer who executed it was liable to an action of trespass for so doing; but by the Stat. 24 Geo. II., c. 44, s. 6, it is enacted, that 'no action shall be brought against any constable for anything done in obedience to the warrant of a justice of the peace, until he has neglected or refused to show his warrant on being demanded so to do. And if after he has shown his warrant, his action is brought against the constable alone, without joining the justice who signed the warrant, the defendant in producing the warrant at the trial, shall be entitled to a verdict, notwithstanding the defect of the justice's jurisdiction; and if the action be brought against the constable jointly with the justice, the constable is to be entitled to a verdict on proof of the warrant.' 8th sect. and 4th, 'actions against constables for anything done in the execution of their office must be brought within six months.' For the further protection of constables, the Stat. 9 Geo. III., c. 58, enacts that persons convicted of assaults upon peace-officers in the due execution of their duty may be imprisoned with hard labour for two years, and be fined or required to find sureties for keeping the peace.

For the guidance of the metropolitan police force, the commissioners deliver to each of the magistrates copies of which is printed an abstract and perspicuous summary of the laws relating to the duties, liabilities, and indemnities of constables. In those boroughs which have adopted a new system of police under the Municipal Reform Act, similar copies of the summaries are annexed to the constables. (For fuller information upon the whole of this subject, see Viner's Abridgment, Bacon's Abridgment, and Burn's Justice, title 'Constable.')

CONSTABLE, LORD HIGH, OF SCOTLAND. In the twelfth century it was acquired.

Hugh de Morvill, of the family of de Morvills, baron of Burgh, co. Cumberland, contemporary with one Edward, Constableb, himself constable of Scotland, and the predecessor of vast estates in Tevenham, Lauderdale, Lochian, Clydesdale, and Cuninghame. He died anno 1162, when his son, Richard de Morvill succeeded him in his possessions and high office. On his death, anno 1195, he was succeeded by his son.

William de Morvill, who died, anno 1196, without issue. Helen, his eldest sister, being married to Roland, lord of Galloway, the latter became constable in her right, and lord high constable of Scotland on his death, anno 1200, the office passed to their son and heir, Alan, lord of Galloway. He died, anno 1234, leaving only female issue; of whom was Helen, his eldest daughter, who being the wife of Roger de Quincy, lord of Winchester, the latter became constable in her right. He died, anno 1246, leaving, by the said Helen, daughters only; of whom Margaret, married to William de Ferraris, earl of Derby, was the eldest. It is said that William de Ferraris, of Groby, their son, was some time constable. But the countess retained the office, and then resigned it into the king's hands, in favour of Sir Alexander Conyn, earl of Buchan, lord Juristic of Scotland, who, being married, his immediate younger sister; and on his death the office fell to his son and heir John Conyn, earl of Buchan, who was forfeited in the year 1308 for his adherence to the Baliol interest.

Sir Gilbert de Hay, of Errol, was then made constable of Scotland during pleasure; and in 1311 the office was bestowed on David de Strathboe, earl of Athol, in like manner during pleasure; but he being soon afterwards outlawed for coerceing the cause of Baliol.

Sir Gilbert de Hay, before mentioned, got the office in fee and heritably in the year 1314; since which time the constable's staff, then put into his hands by Bruce, has re mained in the Errol family.

The jurisdiction of the lord high constable of Scotland differs from those of the like officer in England. The formal distribution of the powers of the lord justiciar of Scotland, such as took place at the breaking up of the auld regiments of England, was ever made in the former kingdom; nor was it in the course of years this happened, did the once large powers of the justiciar pass to the like officers in the one country as in the other. On the new model of the judicial policy of England by King Edward I., the constable and marshell were no longer the court of chivalry, but a court of chivalry, masters of honour and arms. But in these, the constable of Scotland never had jurisdiction. His jurisdiction was of the nature of that in England, vested by 33 Henry VIII. c. 12, in the lord steward of the king's household, or in his absence of the treasurer, comptroller, and steward of the marches; for according to the Loges Macl. II., he judged jointly with the marshell in all transgressions committed within certain limits of the king's court. But even this jurisdiction has been vouched in fact by the lord justiciar; the constable only pressing against the interference with his powers. In the reign of King Charles I. a commission was issued to inquire into the nature and extent of the constable's powers, and they reported that it extended to all slaughters and riots committed within four miles of the king's person, or of the parliament.
or privy council. No alteration was made at the Union; and by the act 20 Geo. II. c. 43—which swept away so many other heritable jurisdictions—the office and jurisdiction of the lord high constable of Scotland were expressly reserved.

CONSTANCE. [Constance.]

CONSTANCE, COUNCIL OF, was assembled in 1414 at the request of the emperor Sigismund, chiefly to put an end to the great schism, during which John XXIII., Gregory XII., and Benedict XIII., each claimed the rank and office of sovereign pontiff. The Council deposed all three, and elected Ottone, cardinal Colonna, as legitimate pope, by the name of Martin V. It was on this occasion that a canon or decree was passed, ascertaining the supremacy of a general council. The Council's node was more than met, but how far this to this decision, the latter after much demurring; but Benedict continued the schism in Spain to the time of his death.

The Council was also engaged in the trial of John Huss, who was summoned and appeared before it, and was arrested by order of the Council, notwithstanding a safeguard from the emperor. His doctrines were condemned as heretical, and as he would not retract he was publicly degraded from his priestly office, and then consigned to the civil magistracy, who by order of the emperor had him burnt. For the peculiar doctrines of Huss, some of which concerned doctrine, and others discipline, see Huss. The Council condemned likewise the doctrines of Wycliffe, most of which were identical with those of Huss. Jerome of Prague, a disciple of Huss, having been brought before the Council, first retraced his obstinate dogmas, but being still kept in prison, as his retraction was not considered to be sincere, he demanded a public audience, at which he declared that he had been seduced by certain abbeys. Adrian V., by his letter of 1418, afterwards Pope Pius II., in his 'Historia Bohemica.' The Council had promised to occupy itself with a reform of church discipline, which was much wanted in that age; but the consequences of the Council, so far as it is known to us, were not of a cheering nature, as the new pope, Martin V., in April, 1418. The Council of Constance is one of the most noted in the history of the church, and was one of the most numerous ever assembled. Lenfant has given a full and instructive account of all its proceedings, session after session. (Histoire du Concile de Constance. 2 vols., 4to, Amsterdam, 1727.)

CONSTANS, son of Constantine, had for his portion at his father's death, Italy, Africa, and Illyricum. His elder brother Constantine, having his share, attacked him, was defeated, and killed near Aquileia, A.D. 340; after which Constans took possession of his brother's dominions, and became emperor of the whole west. Magnentius, commander of the troops in Gaul, having revolted against him, the two brothers fought, and Constans, who happened to be in that province at the time, was obliged to take flight towards Spain, when he was pursued and overtaken at the foot of the Pyrenees by some emisaries of Magnentius, and killed, A.D. 350. He is represented by the historians as indulgent and rapacious; Zosimus accuses him also of cruelty and other crimes, but Zosimus wrote under the influence of party feeling. The character however of all the three sons of Constantine is open to much criticism. From that moment, Spain, as a country, was forever under the power of the Saracens, and especially of the Moors, who were so fatal to that country. After his death Magnentius took possession of Italy and of Rome, and styled himself Augustus, until he was overthrown by Constantius. [CONSTANTINIA.]

CONSTANT, a quantity which remains the same throughout a problem. Thus in the question, required that point of a circle which is at a given distance from a given straight line belonging to a circle; in the solution of the problem require the use of twenty different points of the circle, the radius is the same for all.

A constant may be determinate, or it may be indetermini-

The term constant is frequently applied to any remark-

able or very necessary number which enters a question, as follows. By the constant of aberration is meant that one constant by the determination of which the aberration is obtained from its known laws at any given time; in this case it is the correction of the aberration of all directions [Facts and Recon-

nations.] Thus we have the constant of nutation, the con-

stant of friction, &c.

Nothing is more common in mathematical works than a term variation of constants, which appears contrary to the meaning of it. But its meaning is as follows: Constancy which upon one supposition would remain constant, becomes variable by the introduction of another supposition. Thus, taking into account the earth's attraction only, the longitude of the stars is determined; but by the attractions of the sun and planets, its place is slowly changed. In this case one of

the constants is said to vary.

CONSTANTINE, POPE, a native of Syria, succeeded Sixtus in 708. He visited Constantinople and Nicomedia, where he received with great honour by the Emperor Basil. Amongst his other important acts he defended the worship of the images against John, patriarch of Constantinople, and against Philippicus, who had usurped the empire. Felix, bishop of Ravenna, who had at first refused to acknowledge Constantine, and had been exiled on a false charge, was now summoned by the pope, and stated his case. Constantine died in 714, and was suc-

ceeded by Gregory II.

CONSTANTINOPLE (Stamboul), literally, 'the city of Constantine,' is the most important city in the Ottoman empire, is situated in 41° 9' lat. and 25° 45' of E. long. on the sea of Marmora (Propontis), and at the west end of the narrow channel of the Bosporus, which connects the sea of Marmora with the Black Sea (the Euxine). The ground on which it stands is extremely fertile, and the site of a great commercial city, the connecting link between Europe and Asia. A gently-sloping promontory, secured by narrow seas, stretches out in a triangular form towards the west and north of the city. Having crossed by a narrow strait the (Bosphorus), that in a quarter of an hour a boat can row from one continent to the other. Indeed, Scutari, on the Asiatic coast, immediately opposite, is always considered as a suburb of the European capital. Just beyond the north side of Constantinople, the Ottoman empire, is situated, is an open elevated flat, with some slight inequalities. The area of the triangle is occupied by gentle hills, which are highest towards the land side, and the suburb of Eyoub, and grain-ously decline to the Seraglio point, apex of the triangle, sifting off on each side to the sea of Marmora and the port. As Rome was built on seven hills, so the Roman founders of Constantinople called these the Seven Hills; though it was only situated on one hill. The population there would be less; and if the minor hills or spaces were included, there would be more than seven. The ridge of the first hill, departing from the acute part of the triangle, is covered by the main building of the Seraglio, or vast pile of the palace of Suleyman the Magnificent. A vast area of the hill, the dome of Santa Sophia shows itself. The second hill is crowned by the bold and lofty dome of the Osmanlie Mosque. The still loftier mosque of Suleyman the Magnificent towers on the third hill; whilst an antient
squad; the arches which are of a considerable span, and which is generally attributed to the Emperor Valens, unites the summits of the third and fourth hills. On a fifth point, the most elevated of the little chain within the triangle, there is a slender lofty tower, built in 1285, in which a ghost is constantly kept to break the frequency and destructiveness in a city where all the private habitations are built almost entirely of wood. The situation of Constantinople upon hills is the main cause, not only of its picturesque beautiful appearance, but also of its aspect of danger and attenuation. It is free from all the breezes from the Bosporus, the sea of Marmora, and the adjoining plains of Thrace; and the dirt that might otherwise accumulate descends the hills’ sides to the port or the open sea, in both of which it is carried off by a stream. In dry weather, the advantage is improved by the number of fountains and the abundance of running water which is always carrying off parts of the dirt, and by the heavy rains, which, when they fall, thoroughly cleanse the sides of the hills. The lower edge of the city that touches the port, and the suburb of Galata (the Wapping of the Turkish capital), on the opposite side of the port, may be called filthy places, but the term cannot be correctly applied to Constantinople as a whole, although from various other causes the interior of the city is far from being so beautiful and imposing as its external aspect.

The form of the triangle is somewhat irregular, the side on the sea of Marmora, from the old state prison called the Severus, is the longest; from Thracian point to Sinope, the Greek point is the longest; we have no exact measurement, but its length cannot be much short of five English miles. On this side the old walls and towers are in a very ruinous state, and on the side towards the port they have almost entirely disappeared. There are now a few very low conical mounds and a double line of strong and lofty stone walls (the work of Theodosius II.), which might be easily put in a complete state of repair, and which, in their more dilapidated parts, present such magnificent fragments and subaquose specimens of mural ruins as probably no other city can boast of. The length of this latter line of wall, from the head of the port to the sea of Marmora, is about four English miles. The walls are flanked at short intervals by towers, which are mostly rectangular. There are many Greek inscriptions inserted in their face; nor have the Turks been at the trouble to remove the numerous Greek crosses that are carved on the towers and over the gateways. Besides the double walls, which are almost entire, and still retain their ancient battlements, the outer ditch was faced with a wall which made a third rampart, but this is in part destroyed, and seems never to have been defended by towers. Bonalumone, a Florentine, whose plan bears the date of 1432, sets forth how wide and eight and one hundred and twenty and twenty are now standing. The intervals between the walls are in many places choked up with earth and masses of the ramparts which have fallen upon them, and are forming a third kind of earthworks to the city. A great ditch, which is about twenty-eight or thirty feet broad, is partly cultivated and converted into kitchen gardens.

There are six gates on this side:—1. Ergo-Kapossi (the Oblique Gate); 2. Ezrino-Kapossi (the Gate of Astronia); 3. Top-Kapossi (the Cannon Gate), through which the conqueror Mahomet II. made his public entry on the capture of Constantinople; 4. Selviri-Kapossi (the Gate of Selviri); 5. Yeni-Kapossi (the New Gate); 6. The Gate of Aion (the Eastern Gate), so celebrated by the Byzantinio writers, has been sought for vain, though a gate now wholly blocked up, with two mean pillars supporting a low arch, is sometimes shown to travellers for it. Near to the Top-Kapossi, where Palæologus, the last of the Christian emperors, fell, is the breach through which the Turkish besiegers poured into the city: the wide rent, which has never been repaired, is now full of trees and shrubs. A waste, a stillness, and a solitude, difficult to describe in a capital so gigantic immediately behind these walls, which are so lofty, the road is paved and passed under them the eye can scarcely catch a glimpse of the mosques and minarets of the city. This melancholy aspect is heightened by several cemeteries, with dark cypresses and white marble tombs, that lie outside of these walls.

The size of the triangle on which Constantinople stands has been greatly exaggerated. Tournon, in general a correct observer, makes the circuit of the triangle twenty-three miles (Voyage du Levant, let. xii.), but the length of the sides does not in reality much exceed thirteen miles. Gyllius (De Topogr. Const., l. I., ch. 4), makes the whole circuit rather less than thirteen miles, thus agreeing pretty closely with Chalcondylas, who estimates it at one hundred and fifty, and not of the best work. The treble walls and ditches on the land side, the extensive gardens of the Seraglio, and other palaces, the large court yards of the royal mosques, the Hippodrome and other vacant squares, materially diminish the extent of ground covered with houses.

With the exception of the land walls, and the church of Santa Sophia, there does not remain much of the Byzantine architecture; the greater part of the antiquities which are seen are those built by the Turks, and the old local buildings have disappeared. The fact is, the Turks, instead of digging in the quarry, have knocked down the Grecian buildings to use the materials in their own public edifices, such as mosques, minarets, and fountains, and to cut them up into tomb-stones.

There is a vast subterranean edifice, the roof of which is supported by an immense number of columns, each column being oddly formed of three separate pillars placed one on the top of the other. The Turks call it the palace of the "thousand and one pillars;" not that this is the precise number, but because it is a favourite number with all eastern nations. Though the earth has in part filled it up, it is still of great depth. It was originally one of the greatest 

The Turks retain the translated name (they call it the At-Median or horse-course) of the famed Hippodrome, but all the antient splendour of the place has disappeared. It is now not a circus, but an oblong open space, about 300 paces long by 150 wide. It is partly flanked on one side by the mosque of Sultan Ahmet, and on the other by the high dead walls of a building which was once an hospital, but in 1828 a receptacle of a few wild beasts kept by the sultan. At the upper end of the Hippodrome there is a granite obelisk of rather mean proportions, and partly buried in the earth near the mosque called the "Sultan's" mansion; it is called after Theodosius, though it is probable that emperor only removed it from another part of the city where it was erected by Constantine, and set it up here. Nothing retains the aspect of the place, the marble columns and the fragments of the marble seats, but the obelisk is the fragment of the wreathed columns of bronze, which has been the subject of many discussions. Whether it supported three serpents' heads, which Mahomet II. struck off at a blow with his battle-axe—whether it was brought from the osseous shrine of Delphi or not, we will not attempt to determine, but we can safely assert that it is now a poor mutilated thing, with one end stuck in the ground, above which it does not rise more than seven feet, and with the other end open, and the hollow almost filled up with dirt, and only surmounted by the heads of the Grecian emperors.

The marble pyramid of Constantine Porphyrogenetus, the Colossus Strettilis of the old topographers, does not at present fairly stand on the At-Median, though it is near it and visible from it: it has long been toppled of the plasters of gilded bronze that once covered it; the shaft is held together by rude iron hoops, and blackened by the many conflagrations that have raged round it. It is now an unsightly object, about 80 feet in height, and 33 in circumference.

Many of its blocks were of fine white marble, with black engravings by grandeur and beauty. There are fourteen chief or imperial mosques, nearly all lofty, and magnificent in their general dimensions, and built from bare to dome of excellent form; some of the principal materials' white, and slightly tinged with grey. Some of these have two, some four, and one (that of Sultan Achmet) has even six of those light, thin, lofty, arrowy, and most graceful towers called minarets. Besides the imperial mosques, there are 69
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others, varying in size and beauty, but all considerable edifices; and then 200 and more small mosques or messesigla, which are built for the use of the common people, the Forum by having little minarets, often made of wood, contiguous to them. The mosque which has been most talked of, because it was antiently a Christian temple, and was supposed (we think erroneously) to have suggested to the Turks the grand domed mosques they built themselves, is that of Santa Sophia. Several of the imperial mosques, however, in situation, boldness, and beauty, far excel Santa Sophia, which, externally is not inferior to the clumform structures that have been built against it, at different periods, to keep it from falling. If the Turks really copied the dome from it, they have improved on the original, which is comparatively low and heavy, whilst most of their cupolas are lofty, light, and of great beauty. The cupola of Santa Sophia is the principal part of the Sultan Achmet, which flanks the Hippodrome, and which may be deemed altogether the grandest edifice in Constantinople. The colleges and hospitals, which are generally attached to or near the great mosques, offer no striking architectural features; but some of the detached chapels or sepulchres (turbés), where sultans, viziers, and great personages repose, are handsome. The spacious barracks erected by the reigning Sultan Mahmoud for the accommodation of his retinue of 30,000 men, externally, though within many of them are exceedingly handsome and spacious. The public fountains are remarkable and numerous: some of them, with their pure white marble facades, elaborate arabesque ornaments and Chinese roofs, are most beautiful objects. All this water, the daily consumption of which is immense, is supplied by Bendir or artificial lakes in or about the forest of Belgrad, at the distance of ten or twelve miles from the city: it is conveyed to Constantinople, as also to the suburbs of St. Dimiri, Pera, Galata, &c. by means of narrow subterranean aqueducts, and souterrains, or hollow hydraulic pyramids, which latter are placed at certain irregular distances, and so contrived as to overcome the inequalities of surface presented by the country that intervenes between the bends and the city. Within the walls the lofty aqueduct of Valens still performs its duty, carrying the fluid across a deep hollow. The exception of one very long street, which traverses the city nearly from the high walls of the seraglio to the gate of Adrianople, the streets are narrow, winding, and uncommonly dull and deserted. The gazebo or street where the wind is blowing like the windows of convents; and many of the houses have no windows at all towards the street, but only a low, narrow, dingy door. All the life and activity of the interior of the city is concentrated in the bazaars or benetines. These are long wide corridors, communicating with each other mostly in an irregular and striking manner; their side walls are built of stone, and they are covered in with stone arches or successions of domes, through which a subdued light is admitted. The bazaars are separated by nations or religions and by trades. [Bazaar.] Towards the evening the coffee-houses, which are excessively numerous, though chiefly of mean appearance and dimensions, are much thronged by Turks, Armenians, Greeks, and Jews, all of whom, the soldiers, speculators, and adventurers, generally drank by the poorer classes, not only without milk, but without sugar. The communication between the city and the opposite suburbs of Galata, Pera, and Tophana, is kept up by means of caiks, or light boats, whereas the constant passing and repassing of which give the port an animated appearance in the day-time. The imperial dock-yard, the arsenal, the artillery barracks, are all on this side of the water, and the elephants, the cavalry, the gendarmerie, the ambassadorial and garrison ships, the dromgams, Frank merchants, &c. An active communication is also kept up by the same means with Scutari, where caravans and travellers are constantly arriving from Ismail (Nicma), Brusa (Otranto) and other places in the league of Asia Minor.

The port of the Golden Horn is safe, accessible, and beautiful; but it has one serious drawback, which affects Constantinople as a commercial emporium. During the winter, when the north wind, the Tornado, supplies the climate with little minarets, often made of wood, contiguous to them. The mosque which has been most talked of, because it was antiently a Christian temple, and was supposed (we think erroneously) to have suggested to the Turks the grand domed mosques they built themselves, is that of Santa Sophia. Several of the imperial mosques, however, in situation, boldness, and beauty, far excel Santa Sophia, which, externally is not inferior to the clumform structures that have been built against it, at different periods, to keep it from falling. If the Turks really copied the dome from it, they have improved on the original, which is comparatively low and heavy, whilst most of their cupolas are lofty, light, and of great beauty. The cupola of Santa Sophia is the principal part of the Sultan Achmet, which flanks the Hippodrome, and which may be deemed altogether the grandest edifice in Constantinople. The colleges and hospitals, which are generally attached to or near the great mosques, offer no striking architectural features; but some of the detached chapels or sepulchres (turbés), where sultans, viziers, and great personages repose, are handsome. The spacious barracks erected by the reigning Sultan Mahmoud for the accommodation of his retinue of 30,000 men, externally, though within many of them are exceedingly handsome and spacious. The public fountains are remarkable and numerous: some of them, with their pure white marble facades, elaborate arabesque ornaments and Chinese roofs, are most beautiful objects. All this water, the daily consumption of which is immense, is supplied by Bendir or artificial lakes in or about the forest of Belgrad, at the distance of ten or twelve miles from the city: it is conveyed to Constantinople, as also to the suburbs of St. Dimiri, Pera, Galata, &c. by means of narrow subterranean aqueducts, and souterrains, or hollow hydraulic pyramids, which latter are placed at certain irregular distances, and so contrived as to overcome the inequalities of surface presented by the country that intervenes between the bends and the city. Within the walls the lofty aqueduct of Valens still performs its duty, carrying the fluid across a deep hollow. The exception of one very long street, which traverses the city nearly from the high walls of the seraglio to the gate of Adrianople, the streets are narrow, winding, and uncommonly dull and deserted. The gazebo or street where the wind is blowing like the windows of convents; and many of the houses have no windows at all towards the street, but only a low, narrow, dingy door. All the life and activity of the interior of the city is concentrated in the bazaars or benetines. These are long wide corridors, communicating with each other mostly in an irregular and striking manner; their side walls are built of stone, and they are covered in with stone arches or successions of domes, through which a subdued light is admitted. The bazaars are separated by nations or religions and by trades. [Bazaar.] Towards the evening the coffee-houses, which are excessively numerous, though chiefly of mean appearance and dimensions, are much thronged by Turks, Armenians, Greeks, and Jews, all of whom, the soldiers, speculators, and adventurers, generally drank by the poorer classes, not only without milk, but without sugar. The communication between the city and the opposite suburbs of Galata, Pera, and Tophana, is kept up by means of caiks, or light boats, whereas the constant passing and repassing of which give the port an animated appearance in the day-time. The imperial dock-yard, the arsenal, the artillery barracks, are all on this side of the water, and the elephants, the cavalry, the gendarmerie, the ambassadorial and garrison ships, the dromgams, Frank merchants, &c. An active communication is also kept up by the same means with Scutari, where caravans and travellers are constantly arriving from Ismail (Nicma), Brusa (Otranto) and other places in the league of Asia Minor.
him his daughter Fausta in marriage. From that time Constantine was acknowledged as Emperor by the West. Soon after Maximianus having quarrelled with his son Maxentius, left Rome for Pannonia, where he met Galerius and Diocletian, who had left his retirement of Salonica for a public mission appointed to him by the new Caesar in the room of Severus. There were then in the empire no less than six emperors and Caesars, namely, Maximinus, Maximianus, Galerius, Constantine, Maximinus and Licinius. Galerius soon after acknowledged both Constantine and Licinius as Caesars and augusti equal to himself. Maxentius continuing to maintain himself at Rome, Maximianus visited his son-in-law Constantine, whom he attempted to dispossess of his authority by excising his soldiers to revolt, but he seized and took him at Rome, who treated him with great indulgence, and allowed him to remain in his palace. Maxentius having next attempted to murder him in his bed, was seized and put to death. In the year 311 Galerius published an edict to stop the persecution against the Christians; this document bears the name of three emperors, Galerius, Constantine, and Licinius: Maxentius, who was in Asia, is not mentioned in it. Galerius soon after dying at Sardica in Dacia, Licinius took possession of his dominions as far as the Hellespont, and Maximinus had the whole of Asia. Maxentius continued to govern Italy, and was making warlike preparations against the other emperors, when Constantine moved with an army from Italy, A.D. 312, and stormed the walls of Rome, where several bodies of troops sent against him by Maxentius, entered Mediolanum (Milan), and then attacked Verona, where Pompeius, a general of Maxentius, had stationed himself. After an obstinate battle, Pompeius was defeated by Constantine. Romulus, and con stricting his harbour, the Goths appeared again, and invaded Massilia and Thrace. Constantine again attacked them, and pursued them into the territories of Licinius. This was made the pretext of a war between the two emperors, in which Maximinus himself was put to death by the two emperors, and the Roman provinces were divided between the emperors. Constantine being now master of the whole empire, extended to the east his laws in favor of the Christian religion. He forbade consulting the haruspices and the oracles, ordained his church to be the Lamb of God, and the church of the Saviour of the Christians. In 325 he assembled the first universal council of Nicea, which he attended in person. [A. D. 325.] On the 25th July of that year, being the anniversary of his ascension to the empire, he gave a great entertainment to all the clergy of the council, to whom he gave considerable gifts and sums to distribute to the poor. From Nicomedia, where he resided for some time, he issued an edict inviting all the subjects of the empire to address their complaints to him in person against any abuse of authority of the governors and magistrates. By another edict he abolished the rights of gladiators, and ordered that the convicts, who were formerly compelled to fight against them or against the wild beasts, should be employed in working the mines. By another alteration in Constantine's mind from the time when he gave up the Frankish prisoners to the wild beasts in the amphitheatre.

In the year 326 he repaired to Milan, and then to Rome, being consul, for the seventh time, with his son Constantine; he remained at Rome but a short time, and left it in disgust, never to return to it. According to Zosimus, and Libanius the Romans were dissatisfied with him for having been in neglect of public works, and for granting public benefits to his friends. By the end of the year we find Constantine at Sirmium, in Pannonia. In this same year is recorded the tragic death of Crispus, the eldest son of Constantine, whose father would have concubined with a beautiful young girl, who had been given proof of his courage and ability. He was falsely accused by his stepmother, and put to death.
sovereign power, and upon either of these charges his father had him beheaded: at the same time he put to death young Licinius, his sister's son, the motive for which is not ascertained. But it is seen, soon after discovered, some say through Helena, the mother of Constantine, a young prince was innocent, and that Fausta herself had been repeatedly guilty of adultery, upon which she also was put to death with several of her accomplices. Constantinian's suspicions turned to the victims of this persecution.

About the year 328 Constantine began to build his new capital, which was called by his name, and the spot was judicially chosen. It was a Christian city, chiefly inhabited by Christians, and no Heathen temples were built in it. In May, 330, the city was solemnly consecrated to the Virgin Mary. Meanwhile the emperor was repeatedly engaged against the Goths and other barbarians on the banks of the Danube. In the year 328 he recalled several African nobles; Eusebius of Nicomedia among others, who had been exiled by the council of Nicaea. This change is said to have happened at the suggestion of Constantina, who was herself in the Arian communion, and retained to the last much influence over her brother Constantine. Athenasia having opposed the re-admission of the Arians into the church communion, this led to a long controversy between him and the emperor, which lasted till the death of the latter. [Athanasius.] Constantine was fond of religious sects; one of them was the Arian and Donatist controversy. The remaining years of Constantine's life were chiefly spent in embellishing his new capital and attracting inhabitants, especially Christians, to it; the rich by privileges, the working men by daily distributions of corn and oil, the poor by instructions of the emperor himself after his death, among his three sons, whom he had named Cæsars, giving to Constantine, the eldest, the Gauls, Spain, and Britain; to Constans, Illyricum, Italy, and Africa; and to Constantianus. Of the Donatists, one of his nephews, he gave Macedonia and Achaia, and the other, Amphilochus, he made king of Pontus and Cappadocia. He likewise divided the authority of the praefect of the praetorium among four praefects of the East, of Macedonia and Dacia, of Asia, and of Illyricum. These four great cities were subdivided into provinces, administered by vicars or praefects. He took away from the praefects all the military power, constituting them merely as civil and political officers. He is charged by Zosimus, who is strongly biased against Constantine, with having effected another change which proved fatal to the empire, namely, the removal of the military stations on the frontiers, and the placing of the soldiers in garrison in the towns of the interior; but perhaps this was done to save barbarians who had encroached and were likely to cut off the old border stations. We find that he gave lands in Thrace and other provinces south of the Danube to the Sarmatians, who then, driven by the Goths, began to invade their country. Constantine probably thought of making the barbarians a rampart to the empire against the other. In the year 337, when preparing to march against the Persians, who had commenced hostilities, he fell ill at Nicomedia, and died, in his sixty-fourth year. He is said to have received baptism on his death-bed from an Arian bishop; for although long converted to Christianity he was still only a catechumen, as was frequently the case with converts in that age. His body was transferred to Constantinople, where it was buried, after a sumptuous funeral. The senate of Rome placed him among the gods, and the Christians of the East reckoned him among the saints: his festival is still celebrated by the Greek, Coptic, and Russian churches, on the 21st of May.

The character of Constantine has been the object of various and contradictory judgments, according to the religious and political spirit of the various writers. Eusebius, Nazarius, and other Arian contemporaries, grateful for the protection afforded them by the emperor to the Christian religion, may be considered his panegyrist, while Zosimus and other Heathen writers, animated by an opposite feeling, were his enemies. The brief summing up of Eutropius is perhaps nearer the truth. 'It is the first emperor who was equal to the best princes, in the latter to middling ones. He had many great qualities; he was fond of military glory, and was successful. He was also favourable to civil arts and studies; fond of being loved and praised, and liberal to most of his friends. He made many laws; some good and equitable, others superfluous, and some harsh and severe.' He has been blamed for dividing the empire, but that had been done already by Diocletian; in fact it was too large and staggering to remain in the possession of a single dynasty. By founding another capital in the east, probably did not accelerate the fall of the west, while at the same time he established a second empire, which lasted for more than a thousand years after his death. (Eusebius, Life of Constantine; Zosimus; Aurelius Victor; Eutropius, and other numerous writers, a list of whom is given by J. Vogt; Historia Literaria Constantini Magni, 1720.)

[Coln of Constantine the Great.]


CONSTANTIUS I, called CLORUS, on account of his habitual paleness, son of Eutropius, of a distinguished Illyrian family, and of Claudia, niece of the Emperor Claudius I, was born in 250. He was brought up under Aurelian, Probus, and Diocletian. In the year 291, Maximianus, the colleague of Diocletian, named him Cæsar and his colleague, while Diocletian chose on his side Galerius in the east. The empire was divided among the four. Constantinus had for his share the Gauls, Spain, and Britain. Both the new Cæsars were obliged to repudiate their wives. Constantinus, whose first wife was Helena, the mother of Constantine, married Theodora, daughter of Maximianus: Galerius married Valeria, daughter of Diocletian. Constantius carried on war against the Franks, who began to be troublesome on the Lower Rhine, and took a vast number of them prisoners. He restored the town of Augustodunum (Autun), which had been devastated by Tetricus, one of the thirty tyrants. He then repaired to Britain, with Asclepiodotus, one of his lieutenants, who defeated Allectus (A.D. 300) the successor of Carausius in the usurped dominion of the island. Britain was thus restored to the empire after a revolt of ten years. On his return to Gaul, Constantius went against the Alemani, whom he defeated with great slaughter near Vindonissa in Helvetia, some say near Langres, and drove them beyond the Rhine. About this time he founded the town of Constantia (Constance). In the year 304 the two emperors, with the two Cæsars, came to Rome, where they enjoyed the honour of a triumph. In the following year Diocletian and Maximianus abdicated, and appointed Constantius and Galerius their successors, who in their turn appointed two new Cæsars as their colleagues, namely Severus and Maximinus Daia, or Daza. Constantius continued to administer his old government of Gaul, Spain, and Britain. His administration, which was equitable and humane, is greatly praised by the historians, both Christian and heathen. He put a stop to the persecutions against the Christians, and employed many of them about his person. The last campaign of Constantius was against the Caledonians, some say against the Picts, whom he defeated. He died soon after at Eboracum (York) in the arms of his son Constantine, whom he appointed his successor A.D. 306. By his second wife Theodora, Constantius left several children, Dalmatius, Julius Constantius, who was the father of Constantius Gallus and of Julian the Apostate, and Constantia, afterwards married to Licinius.

[Coln of Constantine.]

[British Museum. Actual size. Copper, silvered. Weight 116 grains.]

CONSTANTIUS II, FLAVIUS JULIUS, son of Constantine the Great, was left, by his father's will, emperor...
of the east. The troops, however, in order to secure the empire to the three sons of Constantine, killed Julius Constantius, half-brother of the late emperor, Dalmatius and Anniobalaeus, his nephews, and several other persons and ministers. This massacre was allowed by Constantius, and some say was ordered by him; only two nephews of Constantius escaped, Gallus and Julianus, afterwards emperors. Constantius was repeatedly accused of the murder of his two nephews, and in A.D. 350, Constantius marched with a large force against Magnentius to revenge his brother's death, and at the same time to take possession of his dominions. A desperate battle was fought, A.D. 351, near Magonis; and Peterhausen, which lies on the other side of the strait that connects the Bodensee and Untersee, is united to Constanza by a covered wooden bridge, on which there are grining and sawing mills. In this last suburb is the castle of Petershausen, a fortress the works of which have been converted into pleasure grounds. There is a suburb, called Paradise, in which Vuss the reformer, and Jerome of Prague, his brother-reformer, were burnt, and which may now be termed the nursery grounds and orchard of Constant. The most remarkable buildings in the town are the palace of the ancient Benedictine monastery, built in 1388, which contains the hall where the council sat (1414-14), which deposited three popes, andcondemned Huss and Jerome of Prague to the stake; the old Dominican monastery on the island of Gem in, which are the tomb and epitaph of Emmanuel Christ, who died here in 1415, &c. Constant is the seat of various official departments, and has a lyceum, gymnasium, hospital, and Dominican nunnery for the education of young females. It contains about 900 houses and 5000 inhabitants, and a decrease since the fifteenth and sixteenth centuries, when the population was from 25,000 to 30,000. Indeed it is now a lonely deserted place, and the grass is growing in the streets. The chief occupations are trade, commerce, gardens, brewing, and some few manufactories. Constant is one of the oldest towns in Germany, and previously to the fourth century bore the name of Gandanor. [Constantius I.] It was formerly a free imperial town, but fell under the authority of the Emperors of the East, and was annexed to Austria, which ceded it to Baden in 1810.

CONSTANZ, or CONSTANCE, a large lake, called also the Bodensee (from the ancient castle of Bodiarnann) or the lake of Constz, forms part of the south-west boundary of Germany on the Swiss frontier, and extends into the several states on its banks, namely, Austria, Bavaria, Wurtemberg, Baden, and Switzerland. It lies between 47° 29' and 47° 39' N. lat., and 9° 9' and 9° 44' E. long. It is 1283 feet above the sea, and is the largest lake on the continent of Europe, and the fourth largest in all Europe, and the third largest in all Europe, and the fourth largest in all Europe, and the third largest in all Europe. It is about forty-five miles; its greatest breadth, between Ronshach and Friedrichshafen, is about thirteen miles, and its average depth is 320 feet, the greatest being 964. The entire lake occupies an area (exclusive of the islands) of about 199 square miles, which about twenty-three, lie to the Zellersee. It is divided into the Upper and Lower Lakes, of which the Upper, which is by far the most considerable, extends from Bregenz to Constance. The latter is subdivided into Lake Constance, or the Zellersee, which is about sixty feet deep, and contains the islands of Reichenau, belonging to Baden, and into what is properly called the Lower Lake (Untersee), through which the Rhine flows. The northernmost bight, which contains two islands, is called Lindau; and the southernmost island of Lindau, is called Lake Bodmer, or the Ueberlingen. The Rhine enters the lake at Rheineck, and leaves it at Stein. Above fifty larger and smaller streams, such as the Bregenz, Schussach, &c., empty themselves into Lake Constance. It was frozen over in 1477, 1572, 1695, and 1830. It has on several occasions been subject to sudden risings of the waters. In 1549, according to Dr. Steim, it rose four or five times in one hour to the height of an elk, or upwards of two feet above its ordinary level; in 1771 it rose in one hour from twenty to twenty-four feet above its ordinary level. There is a considerable traffic on the lake in corn, timber, cattle, wine, fruit, &c., but it is rather dangerous, from being subject to sudden squalls; the navigation is beset with several dangers. The islands of Reichenau contain seventy-three kinds of aquatic and marsh fowl, twenty of shell-fish, and twenty-six of fish, particularly salmon-trout, pikes, carp, and salmon; the latter however is not the true salmon, but the Salmo marinus. The wine-presses yield a very good wine, which is known at Constance, and comes excellent when old. The Lake of Constance and its environs present the most varied and picturesque scenery in Germany. It is mentioned by antient writers under the name of Brunitius; Pliny expressly assigns it to Rhettia; others reckon it part of the Roman province, names, such as Rheni Lactus, Suevica, L., in addition to Brunitius L., from the Britanni who dwelt on its banks. Tiberius built a fleet on it in order to attack the Vandals. (Stibro, vi. 292.)
CON 475

CONSTELLATION (a putting together of stars), the
name of one of those groups of stars into which the whole
heavens are divided, and to each of which is imagined to be
belonging a sun, man, animal, or some other object, natu-
ral or artificial.

The history of the constellations is a matter of mytho-
logical antiquity, the most curious features of which are
connected with the twelve signs or constellations of the Zodi-
ac, or the Four Seasons; upon which a great deal of the
theatrical works are based. As to the figures of the stars,
their firmament, if confined itself to recording the vast
and striking events of their mythic system, as in Argo or
Hercules, might bear an external presumption of original-
ity; but it is not so used by them in their present state, for
us to say, that it is certain we derive our constellations for
the most part from the Greeks, and that it is nearly as
certain that they derived them from the East, though it is
highly probable that they altered the legends to suit their
own mythology. In some cases even the figures.

In most other catalogues, such as those of Bradley, La-
caille, Mayer, Fallow, &c., the stars are usually numbered
in their order from the beginning of the catalogue, the order
being that of right ascension. The Astronomical Society's Catalogue (published in 1827) is the basis of the enumeration of stars contained in this
work. It professes to be a reduction to the year 1800 of all
the stars of the following description which were ob-
erved by Flamsteed, Bradley, Lacaille, Mayer, Piazzi, and
Zach; to which a few of Piazzi's additions to Lacaille are
joined. The whole list contains—

2. All the stars to the fifth magnitude inclusive, situ-
ated within 30° of the equator.

3. All the stars to the sixth magnitude inclusive, situ-
ated within 10° of the ecliptic.

Bayer's letters of the stars numbered numbers are both given
where they exist. Where these are not found, Piazzi's
numbers are given in parentheses, ( ), and where these are not
found, Bradley's numbers in brackets, [ ].

The next step in the arrangement was that of Flamsteed,
who retained the old method of describing stars by their
situation in the figure of the constellation (as in the legs,
head, &c.), but placed the stars of each constellation in
order of right ascension, or in the order in which they come
on the meridian. Suceeding astronomers described each
star by the number which it stood from the beginning in the
constellation, and called it Flamsteed's number. Thus 7
Draco means the Star of Draco which comes on the me-
ridian the seventh from the first star observed by Flamsteed
in that constellation. Mr. Baily, in his new edition of the
British Catalogue, has introduced new stars from Flam-
steed's papers, but has allowed them to stand without dis-
turbing the established numbering, and they are easily
identified by the general numbering of the new catalogue.

There are many other constellations formed by different
individuals; but these are now not generally admitted.

Such are the Antinous of Tycho Brabé; the Mons Memadus
and Cerberus of Hevelius; the Oak of Charles II. and the
Cor Caroli of Harley; the Table Mountain and the Nobu-
lee Major and Minor of Lacaille (the latter being only
identified by the general numbering of the new catalogue).

The numbering of Piazzi is on a different and inferior
plan, but seems to have some points in common with Flam-
steed's. The stars are numbered in their respective hours of right ascension. For instance, (220) Can. Maj. is, according to Piazzi, a star in Canis
Major, not the 33rd of that constellation, but the 33rd of
the hour of right ascension in which it fell in the year
1800, counting the first star of the catalogue which passed
after the sidereal clock had marked the hour as 1, the
second as 2, &c., and affixing to each the name of the
constellation in which it is. If the equinoxes were fixed,
this method would be the true correction of the vagaries of
the constellations; but as it is, one stars which were in
one hour of right ascension when Piazzi formed his cata-
ologue are now in another, such as 12 Cancri, 15 Argus,
&c., which were in 1830 on the borders of the 7-8 hour of
right ascension.

20. Only one in Aratus and Ptolemy. Another added by Hevelius.

3 2 9

* The Avis Indices of Bayer. (Correct, Avis indices in Bayer,)

1 This is the Avis of Bayer, called Musa by Lacaille; there is however a
phasis on constellations Musca, and, as before, to Arius, the stars of which are usually considered as belonging to Arius.

2 A part of Aquila in Aratus, and Ptolemy.

3 Only one in Aratus and Ptolemy. Another added by Hevelius.
ters of distinct stars, but large nebulæ; the Reudecker of
Lemmonier; the Reaper of Lalande; The Honours of Fre-
deric, the Sceptre of Brandenburg, Herschel's Telescope,
the Balloon, the Mural Quadrant, the Cat, and the Log
Line of Bode; and George's Trip to Bull. Many others
were here proposed, but there would be little
use in revising their names. In fact, half a century ago,
no astronomer seemed comfortable in his position till he
had ornamented some little cluster of stars of his own
planet with his own name. In the large maps of the stars,
published by the Society for the Diffusion of Useful
Knowledge, the constellations are figured precisely as
described by Ptolemy, and the additional one or two
drawn which will therefore render
them more useful to the readers of Greek
astronomical works.

CONSTITUTION, an undue retention or an imperfect
evacuation of the feces. The alimentary canal, considered
physiologically, may be divided into two portions; one
appropiated to the conversion of the aliment into nutrition,
and the other appropriated, among other functions, to
the separation and discharge of the refuse matter of the
aliment. The first constitutes the apparatus of digestion, and
the second that of evacuation. Independently of the organs
appropiated to the performance of the preparatory operations
of prehension, mastication, insalivation, and deglutition,
the apparatus proper to digestion consists of the stomach,
the duodenum or the second stomach, the jejunum, and the
appendage, the matter portion being the alimentary canal,
forming the small intestines. It is in these great digestive
chambers that the processes of chymification and chylification
are performed; processes by which the multiform sub-
stances, introduced into the alimentary canal, are converted
into homogenous substances analogous to the composition of the
blood. The requisite changes on the food are effected partly
by secretions formed by the walls of the alimentary chambers
themselves, and partly by secretions elaborated by distinct
organs and conveyed into the digestive chambers by sep-
ate tubes. These auxiliary organs are the pancreas and the
liver, the fluids secreted by which perform a most
important part in the function of digestion. The chyme, the
united alimentary canal do not consist, as is
absorbed, as it is formed, by a set of vessels termed
the lacteals, spread out upon the walls more especially of
the jejunum and ileum, upon the surface of which they take
their origin by open mouths.

But a considerable portion of the substances taken as
food is incapable of being converted into chyle: this is
separated from the chyle partly in the duodenum, and still
more perfectly in the jejunum and ileum, as it flows over
the walls of the extended chambers. Moreover, a
considerable portion of the digestive fluids themselves do not
enter into the composition of the chyle, but is separated
from it and mixed with the refuse matter of the food.
Again, the whole extent of the alimentary canal, from its
commencement to the terminus, is lined with a vis mera, a
membrane which secretes a peculiar fluid, termed mucus.
This fluid, which defends the delicate and sensitive vessels that
are crowded on every point of the digestive chambers, and
which maintains those chambers in a state of suppliance
and moisture, is constantly formed, removed, and renewed.
That portion of it which has served its office, and which has
become effete, is mixed with the refuse matter of the al-
iment and of the digestive fluids. All these substances
mixed together in a common mass is called
the common second portion of the alimentary canal, which consists of the
large intestines; namely, the cæcum, the colon, and the rec-
tum, by the operation of which the second part of the diges-
tive mechanism is ended, and the evacuation of the aliment
consists of two processes; first, of that by which the
common mass of excrementitious substances is brought
into a state fit for its discharge from the body; and sec-
ondly, of that by which a force is excited adequate to
effect its discharge. The chief agent by which these
processes are brought into a state fit for their discharge is the bile. [Bile]
The agent by which their actual discharge is
produced is the muscular coat of the intestines, which is
excited to contraction and thereby to the generation of the
force requisite to the accomplishment of the object, by the
stimulus of the bile.

It is obvious, then, that the matters to be discharged
from the alimentary canal do not consist, as is vulgarly
supposed, merely of the refuse portion of the food; this
situates only a small part of those matters; an es-
tential part of it consists of the refuse matter of secretions
which have performed most important offices in the
economy.

There is manifest in the performance of certain func-
tions of the body a tendency to constipation. The
remarkable of these are the return, at regular periods, of
the necessity for sleep, of the appetite for food, and of
the command to remove from the body the excrementitious
matters prepared in the alimentary canal. Whatever
may have been the basis or the cause of these habits, and
however they may be varied by circumstances which op-
erate at an early period of life, they cannot, after having
been once formed, be material and frequently interrupted,
for they are rooted in habits of life. These habits are
recurred to by the retention of the fæces beyond a deter-
minate period, namely, the period of twenty-four hours,
constitutes the disease termed constipation, a disease often
disregarded, generally considered of little importance,
always productive of mischief, and very frequently termi-
nating in a fatal result.

The slighter degrees of constipation, when, as is some
times the case, they are attended with no appreciable
disturbance of any function, can scarcely be considered as
morbid; but, in general, a retention of the fæces beyond
the period of twenty-four hours, is attended with manifest
disorder. This disorder is commonly increased in proportion
as the retention is protracted beyond that determinate
time. The stomach, the intestines, the whole alimentary
system, are subjected to such a state of retention. The
amount of the disorder thus induced is however a good deal
influenced by constitutional peculi-
arity; for there are individuals whose fæcal evacuations
take place not less than once or twice
a day, or even once in three weeks. Such an habitual retention
of the fæces, in the few cases in which it occurs, generally
happens in females who lead a sedentary life, and who
take little food and less exercise.

It may be sometimes difficult to connect any distinct
order with this torpid action of the apparatus of fæces;
yet the health of the persons in whom it occurs is seldom
sound, and never robust. Even in the still more
extrava-
caneous order, in which the fæcal evacuations are
recorded in the annals of medicine, in which persons have gone five,
six, seven weeks, and even, as is
stated, as many months without a single fæcal evacuation.
No manifest, at least no decided, injury to the health ap-
ppears to result for some time; but sooner or later, in
almost every case, the enormously distended intestines
became slowly inflamed, and death followed with great
rapidity. Two remarkable instances of this are on record,
both of which concerned young females, who never had more than one
 evacuation every two or three months during a period of five years, and who enjoyed good health
during all that time, at length went on for the space of
seven months without passing a single fæcal evacuation.
Two young girls, in whom the disease was
et al. A third young girl, in whom the health did not appear materially to suffer, until at last
inflammation suddenly came on, which rapidly terminated life. Mr. G——, a medical officer in the French
service, had always been coughing from birth. He ate largely, but seldom passed a stool oftener than once in one or two
months, and his abdomen assumed a large size. At the age of 42 his constipation was unusually prolonged to three
or four months. In 1806, after medicines had been taken to produce evacuation, he had an enlargement of four months, and sudden evacuations continued for nine
days, and contained the stones of raisins taken a twelve-
month before; but the constipation returned. In 1809 the
constitution was again considerably changed, vomiting supervened, and he died at the age of 54, having seldom or
never passed more than four, five, or six stools in the year.
These are the extreme cases of constipation; and they
show the ordinary result that takes place when the un-
natural食品被吸收。因此，这些物质被带入一个适合其从体中排出的状态。之后，由
胆汁产生的力是足够的来排出这些物质。胆汁的产生是通过肠道的肌肉层，这些肌肉层
被兴奋而收缩，从而产生所需的力量来排出物质。刺激来源于胆汁。

当然，排出的物质不仅包括食物残渣；其中还包含重要器官所排出的分泌物，这些分
泌物在维持身体正常功能方面起着关键作用。因此，尽管食物残渣在排出过程中
扮演主要角色，但其数量仅占这些物质的一小部分；真正重要的部分是未排出的
分泌物，这些分泌物在身体的正常运作中扮演重要角色。

在许多情况下，这些习惯在未排出的粪便中得到维持，特别是当粪便在体内停留超过
24小时时，这种状况被称为便秘。便秘的程度通常会随着排出的时间延长而增加，因
为在这种情况下，胃，肠，整个消化系统都会受到影响。通常，便秘会伴随着身体
功能的失常，如食欲和睡眠的丧失。这些习惯的根由是生活中的固定模式。如果排
便延迟了超过24小时，这种状况被认为是明显的疾病。这种情况会加剧，尤其是在
长时间内未能排出的情况下。便秘的严重程度也受到个人体质的影响，有些人每
天至少排便一次或两次，有些人甚至每周仅排便一次或两次。这种不规律的排便在
女性中更为常见，她们经常久坐不动，并且吃得较少。

便秘的轻微程度通常不会立即对健康造成明显影响，但随着时间的推移，随着肠道
内容物的积累，可能导致炎症的形成，最终导致死亡。即使是轻微的便秘，也无
论其形式，都可能对健康产生影响。在文献中，有些案例记录了连续数月甚至数周
未曾排便的个体，他们通常没有明显的健康损害，但随着便秘的持续，肠道内容
物的积累可能会导致炎症的形成，最终导致死亡。在一个案例中，一个年轻女孩
在出生时就一直咳嗽。他饮食丰富，但排便次数很少，通常一个月才排便一次或
两次，他的腹部也因此逐渐增大。在42岁时，他的便秘状况尤为严重，持续了三
或四个月。1806年，虽然尝试了药物来促进排便，但他仍有四个月的便秘情况，
并且在九天内连续排便，排出的粪便里包含了前一个月的葡萄干。一年后，虽然
情况有所改善，但呕吐症状也随之出现，并在54岁时因长期未排便而亡。

这些是便秘的极端案例；它们显示了便秘所导致的常见结果。当食物残渣未排出
并积聚在体内时，可能会导致炎症，最终导致死亡。这种情况通常会伴随着身体
功能的失常，如食欲和睡眠的丧失。这些习惯的根由是生活中的固定模式。如果排
便延迟了超过24小时，这种状况被认为是明显的疾病。这种情况会加剧，尤其是在
长时间内未能排出的情况下，便秘的状况会演变为危及生命的严重情况。在最严
重的情况下，肠道内容物的积累可能会导致炎症的形成，最终导致死亡。因此，
在早期，危险会增加到数百倍。如果便秘发生在其正常程度，在日常生活中，这是
通过收缩所有肠道和解剖结构而来的。这是由胆汁产生的力是足够的来排出这些
物质。胆汁的产生是通过肠道的肌肉层，这些肌肉层被兴奋而收缩，从而产生所需
的力量来排出物质。刺激来源于胆汁。
name of dyspepsia. There is disordered appetite, which is either deficient, capricious, or voracious; a dry, coated, or clammy tongue; thirst, or some disagreeable taste in the mouth; dulness, heaviness, confusion, giddiness, or pain in the head; physical and mental torpor; dry and hot skin; and last, though not least, an irritable temper, and a capricious disposition.

The remote effects of constipation are far more numerous and serious than is commonly understood. It is impossible to enter into a full detail of them in this place. But among the various inconveniences attendant on the evacuation of the bowels are those of the skin, the diseases of the skin. Between the internal covering of the body, a principal part of which consists of the membrane which lines the inner surface of the alimentary canal, and the external covering of the body, or the skin, as there is a close communication between them, the secretions of the latter act upon the action of the organs, by depriving them of the stimulus on which their action mainly depends. Torpor of the mucous coat of the alimentary canal itself, and more especially of that portion of it which constitutes the large intestine, is a decided symptom of this disposition. The temperature may be increased in these organs, by which their thin parieties are distended, and even a mechanical obstacle is afforded to the passage of the feces. The treatment of constipation should always have in view two objects—1. the immediate removal of the impacted feces; and 2. the change of the pathological condition of the system in general, or of the alimentary canal in particular, on which the fecal retention depends.

The choice of the particular remedies selected for the immediate removal of the retained feces is often a matter of the last importance. The coats of the intestines are already in a state of preterrestrial distension; they have lost a great deal of their power; they are little disposed to yield, to lapse, from the operation of slight causes, into the state of inflammation. All purgative medicines are irritants, and the most active are powerful irritants. If the purgative employed be of a highly acid nature, it may inject the intestine with inflammation, and by which it removes the retention of the feces; but if it irritate the intestines, without overcoming the obstruction, it will be still more likely to induce uliis or enteritis. Only the mildest purgatives should therefore be used in general the more protracted the retention, the less irritating should be the purgative selected to remove it. The various preparations of aloes, senna, and castor oil, combined with a narcotic, as hyoscyamus, to lessen the irritation sometimes excited by these gentle agents are the best remedies; and fortunately, when judiciously combined, alternated, and repeated, they are generally effectual. In the slighter and more ordinary cases of constipation, from three to five grains of the blue pill, with from five to ten grains of the compound gamboge, or aloetic pills, taken at bed-time, followed by a draught in the morning, consisting of equal quantities (about an ounce) of the compound essences of senega root and gentian, or about the same quantity of the compound decoction of rhubarb, and these doses repeated about twice a week, are all the medicines required. The remedies most appropriate for the removal of habitual and protracted constipation can be discovered only by the detection of the particular state of the condition on which the retention depends. This should be investigated with the utmost care; and when ascertained, the particular medicines, and the form of exhibiting them best adapted to the case, will be sufficiently obvious. But medicines alone, though the most judiciously chosen, and producing the best effects, will accomplish but little. The general management must co-operate with the medical treatment. There must be the strictest attention to regimen, including the use of all wholesome means of putting and keeping the body in general, and the disordered organ in particular, in a state of the most perfect health and vigour; namely, diet, exercise physical and mental, pure air, retirement to rest at regular and early hours, with a moderate, and only a moderate, quantity of sleep, &c. (Copland's Dictionary of Practical Medicine, and Southwood Smith's Philosophy of Health.)

CONSTITUTION, a term often employed by persons at the present day with a signification of what it means. Such a definition of a constitution, if it were offered as one, might be defined as equally good with many other definitions or descriptions which are involved in the terms used and spoken of as constitutions.

The constitutions which are most frequently mentioned are the English constitution, the constitutions of the several states composing the North American union, the federal constitution, by which these same states are bound together, and various constitutions of the European continent, which
have hardly been permanent enough to be submitted to an accurate investigation.

The vague notion of a constitution is that of certain fundamental rules or laws by which the general form of administration in a given country is regulated, and in opposition to which no other fund of rules or laws, or any rules or laws, whatever, can be thought to be made.

The exact notion of a constitution cannot be obtained without first obtaining a notion of sovereign power. The sovereign power in any state is that power from which all law proceeds; it commands and can enforce obedience. Such a power, being sovereign or supreme, is subject to no other power, and cannot therefore be bound by any rules laid down, either by those who have at any previous time enjoyed the sovereign power, by any other laws, or by any rules of conduct practised or recommended by its predecessors in power, whether those rules or maxims be merely a matter of long usage or solemnly recorded in any written instrument. The sovereign power for the time is supreme, and can make what laws it pleases without doing any illegal act, and, strictly speaking, also, without doing any unconstitutional act. For this word constitution, taken in its strongest sense, can never mean more than a law made or a usage sanctioned by some one or more predecessors of the sovereign power, which law or usage has for many generations been observed by all those who have successively held the sovereign power in the same country. To suppose such a rule or law might be a matter of unwise, as being an act in opposition to that to which many successive generations had found to be a wise and useful law; it might be dangerous as being opposed to that to which the prejudices of many generations had given them. No rule or usage can lead to the conclusion of the governed, if either their own interest or their passions were strong enough to lead them to risk a contest with the sovereign power. If (as would generally be admitted) the sovereign power in Great Britain and Ireland possesses the sovereign power, there is no act which they could do which would be illegal, as every body must admit: and further, there is no possible act which they could do which would be unconstitutional, for such act would be no more than repealing some law or usage having the force of law which the mass of the nation regarded with more than usual veneration, or enacting something at variance with such law or usage. For example, if the next assembled parliament should abolish the trial by jury in all cases, except criminal matters, or where the crown is the prosecutor, such an act might be called by some illegal, unconstitutional, and worse. But it would not be called illegal by any person who had fully examined into the meaning of the word and the history of the word, and understood that it is the word to say anything which any man who, having called it illegal, wished to be consistent with himself: it could only properly be called wise or unwise by those who had reflected sufficiently on the subject of the words and their operation, and known whether such a modification would do more or less harm.

The words constitution and unconstitutional appear to be only strictly applicable to such a case as the following; where the sovereign power being invested in one, or two, or five hundred, or all the males of an independent political community who are above a certain age, or in any other number in such a community, lays down certain rules to regulate the conduct of those to whom the sovereign power intrusts the legislative functions. Such are the Constitution of the United States of America and that of the Commonwealth of Pennsylvania, and such is the Constitution of the Federation of these several states. In these several states the people, in the mass, and as a general rule, are the sovereign. The people assembled by their delegates, named for that especial purpose, have framed the existing Constitutions; and they change the same Constitutions in the same way whenever the majority of the people, that is, when the sovereign, choose to make such change.

These Constitutions are made by certain rules, according to which the legislative, executive, and judicial functionaries must be chosen; they fix limits to their several powers, both with respect to one another, and with respect to the object which they are to serve the sovereign, they do ordain and declare the future form of government. For example, the Constitution of Virginia of 1776, declares 'that all ministers of the Gospel of every denomination shall be ineligible to the House of Assembly, or of the Privy Council.' The same rule, we believe, forms a part of the recently amended Constitution of the same state. If the Virginia legislature were to pass an act to enable clergymen to become members of the House of Assembly or of the Privy Council, such an act would be unconstitutional, and no other act or any other law could be thought to be made.

A constitution is not nothing more than an act of the sovereign power, by which it delegates a part of its authority to certain persons, or to a body, to be chosen in a way prescribed by Act of Constitution, which at the same time fixes in a general way the power and duties of the body of delegates so chosen. The act of the sovereign power is thus delegated. And the sovereign power changes this Constitution whenever it pleases, and in doing so acts neither constitutionally nor unconstitutionally, but simply exercises its sovereign power. No body can act unconstitutionally but a body which has received authority from a higher power, and acts contrary to the terms which fix that authority. Wherever then there is a sovereign power, consisting either of one, as the Autocrat of Russia, of three members, king, lords, and commoners, as the English constitution, or such as possess the complete sovereign power, or of all the males born of American citizens and of a given age, as in most of the States of the United States of America—such sovereign power can make any Constitution, and in such case acts constitutionally or unconstitutionally, as in the case of a foreign state. Where the sovereign power is the people, it would be to act against a rule imposed by some superior authority, which would be a contradiction.

The policy of having a constitution in a state where the sovereign power is in the hands of the community, may be this: the people one day may be tired of independent power; the community have settled that certain fundamental maxims are right, it is a saving of time and trouble to exclude the discussion of all such matters from the functions of those to whom they are committed by the Constitution as the First Legislative Power. Since fundamental rules also present a barrier to any sudden and violent assumption of undue authority either by the legislative or executive, and oblige them, as we see in the actual workings of constitutions, to obtain their object by other means, which, if not desirable, are, at least, are more slow in their operation, and thus can be detected and are exposed to be defeated by similar means put in action by the opposing party. There are disadvantages also in such an arrangement. Constitutional rules when once fixed are not easily changed; and the legislative body when once established, though theoretically, and in fact too, under the sovereign control, often finds means to elude the vigilance and defeat the wishes of the body to which it has committed the power. One of the great means by which these ends are effected is the interpretation of the written instrument or constitution, which is the warrant for their powers. The practice of torturing the words of all written law, till in effect the meaning of the law is made that of what seemed to be at first intended, appears to be deeply implanted in the English race, and in those of their descendants, who have established constitutional forms on the other side of the Atlantic. The value of all written instruments, whether called constitutions or not, seems considerably impaired by this peculiar aptitude to construe words which once seemed to have one plain meaning only, so that they shall mean any thing which the actual circum stances should require it, or which can or ought to have.

It is beside our purpose to discuss the advantage of a Constitution in a community where the sovereign is one. Being supreme, the sovereign may change the Constitution when he pleases. It may be said that if the Constitution is good, and has been allowed to remain, the holders of possessory power mentioned above, have not been disposed to change it. This is a more constitutional description of the sovereign, which cannot touch with impunity. It would shock common justice if the actual sovereign were to violate that which has been sanctioned by his predecessors, and is recommended by an apparently higher antiquity than the power of which it is supposed a violation. The English Constitution must be got from the various writers who have made its origin and progress their study. In
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reading them it may not be amiss to bear in mind that the word Constitution, as used by them, has not the exact, but the vague meaning as explained above.

In respect of the historical development of the Constitution, which necessarily implies the notion of a Constitution, see FEDERATION.

CONSTITUTIONS, APOTOLICAL or CLEMEN-
TINE, are a code of regulations, attributed by some ecclesi-
astical writers to the Apostles, and said to have been col-
lected by St. Clement. According to what is called the constitution clementina, there were, in the earliest ages of Christianity, nine (or eight, according to some), constitutions, containing a great many precepts and rules concerning the discipline, doctrine, and ceremonies of the church.

Besides the gospels, epistles, and apocryphal, which now constitute the New Testament, there were, in the earliest ages of Christianity, many constitutions, consisting of eight books, containing a great many precepts and rules concerning the discipline, doctrine, and ceremonies of the church.

The holy and venerable Bible consists of the Old Testament (of which the several constituent books are enumerated) and the New Testament, which consists of the gospels of Matthew, Mark, Luke, and John; 14 epistles of Paul; 2 of Peter; 3 of John; 1 of James; 1 of Jude; and 2 of the Clement, which are not to be divested of all, because of the mystical things contained in them; and the Acts of the Apostles. (Labbe, Collect. Cons., tom. i.) One of the epistles of Clement and part of the New Testament is also included in the ALEXANDRIAN MS. Epiphanius (A.D. 400) cites the Constitutions not only as the work of an honest Catholic Christian, but as the divine word and doctrine; yet in his catalogue of canonical books they are not included, and it is contended that the Constitutions now extant are not identical with those from which Epiphanius cited.

The authenticity and date of this work have been a subject of much learned contention; and though by far the greater number of authorities later, the constitutions, compilation, made in the third or fourth century, there have been some who support the opinion of its apostolic origin.

Those who wish to examine the state of the evidence will find in the following works, and in various others to which they refer, some useful assistance. Turrinius, who argues for the authenticity of the Constitutions, in his five books Adversus Mageburgenses, addsuce many passages from Tertullian, Ignatius, Justinus, and others, as instances of constituent persons; these are in the first book. (Sacer, p. 115, et seq.) Since these fathers say nothing of the Constitutions by name, it is just as likely that the Constitutions are compiled from the fathers as that the fathers quoted from the Constitutions. Scultetus, another opponent of the authenticity of the Constitutions, and author of an explanation of all the books of the Constitutions in his Medulla Patrum, i. ii. c. 5. Cottelerius (Apparatus Patrum Apostolicorum, tom. i.) declares them to be apocryphal and pseud-epigraphical, and the production neither of the Apostles nor of Clement. Tilmont expresses a similar opinion. Dal- laus (in Pseudigraphi Apostolici, lib. iii.) dates them subsequent to the council of Nice, in A.D. 325. Le Clerc (Bibliothea) assigns their origin to some Ariam in the 4th century, in which he followed the newest writer in the subject of the Constitutions, 'A Discourse on the Prejudiced Constitutions,' which regards them as a compilation from numerous Constitutions, canons, travels, traditions, and liturgies, ascribed to the apostles. Bishop Pearson (On the Constitutions) supposes them to have been compiled from others which were attributed to Clement, Ignatius, Hippolytus, and others; but altered and interpolated since the time of Epiphanius. Archbishops Wake and Usher, the former in 'Genuine Epistles of the First Century,' and the latter in 'Ignatium,' p. 2, consider them as apocryphal and pseudonym- ous; but Whiston, regardless of all such opinions, contends with great learning and warmth, in his 'Vindication of the Constitutions,' 3 vols., vol. ii., 1737, that they are quite authentic as the author of the New Testament, were dictated by the Apostles and written from their mouths by Clement, and that they contain a good scheme of (Arian) faith, and form a valuable supplement to the New Testa- ment. The Constitutions are given, in the great collec-
tion of Councils by Labbe, tom. i.; in the several Biblio-
dean Patrum; in Cottelerius S.S. Patrum Opera Vet. et Suppositici. (See also Bishop Beveridge, Codex Canonum Eccles. Primitivi vindicatus et illustratus; Gerhard, Hist. Cathol., tom. ii. p. 212; Jortin's Remarks on Eccles. Hist., vol. i., p. 290.)

CONSTITUTIONS, ROMAN. The word constitution (from constitutio, i.e., to set up, to establish), signifies any dis-
tinct body of rules emitting authority or regulating a matter, and decisions of Roman emperors are also called constitutions; and, according to Gauze (i. 5), an imperial constitution is what the emperors declare by a decree, or an edict, or a letter. That such constitutions were letters and not edicts notes the fundamental law of a state, was not in use among the Romans; yet Cicero (de Republica, i. 43) employs the word to express a similar notion.

During the republic the Roman laws were made or developed by decrees of the people in the comitia (lege popularis), by decrees of the senate, and by the edicts of various magistrates, as the praetors and ediles. (Roman Law.) After the great internal change and revolutions which had taken place in the Roman state, and Augustus had united in himself the powers of all the branches of govern-
ment, with the direction of the senate, and of the assemblies of the people, the imperial power was firmly established. The emperor not only had the right of issuing edicts, as the constitutions of the emperors had done before, but he could also make entirely new laws. Provisions of laws from the emperor to the senate were called orationes principum. Thus arose the imperial constitutions, with the supremacy of the Emperor; Augustus, in 27 B.C., under the name of the ALEXANDRI-
NE MS. Epiphanius (A.D. 400) cites the Constitutions not only as the work of an honest Catholic Christian, but as the divine word and doctrine; yet in his catalogue of canonical books they are not included, and it is contended that the Constitutions now extant are not identical with those from which Epiphanius cited.

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tion of Councils by Labbe, tom. i.; in the several Biblio-

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were lost, but some parts of them have been recently discovered at Milan, by Clossius (Clossii 'Theodos. Codic. Genuin. Fragm. ', 1624); and at Turin, by Peyron, ('Codic. Theod. Fragn. Ined. ', 1823-4.) The best edition is that of J. G. G. Trechsel, in the 'Scriptores Bibliothecae Romanae', vol. vii., Lugd., 1865, who also wrote an excellent commentary on it, which was published, together with the text, by Ritter, Leipzig, 1876-54.

In the year 506, Alaric I. made a truce with the Roman king. This truce, according to the excerpts from the Codex Gregoriani and Hermogeniani, and of the works of the Roman lawyers Sulpicius and Palladius, for the use of the Romans then living in the empire of the Visigoths: the consent of the Roman army. The last and most important collection of Roman constitutions was made by the order of Justinian. (Justinian's Legislation).

A TCION (geometry), all formation of lines, figures, &c., which is not absolutely implied in the hypothesis of the problem or theorem in question. Thus, in the proof of the theorem, 'the square on the hypotenuse of a right-angled triangle is equal to the sum of the squares on the sides,' the formation of the right-angled triangle and of the squares is not technically considered as part of the construction, the latter term being only used to imply all the additional formation of figure necessary to the proof.

In the solution of a geometrical problem, when it is only meant that a geometrical method of solving it is adopted (Solution, Geometrical), as distinguished from an algebraic solution. An equation is also sometimes said to be constructed, in the sense inverse to the preceding, that is to say, to be solved, when its roots are given, and the equation is required to be found. (Equations, Theory of.)

SUBSTANTIAL (Consistent) is equivalent in expression to co-extensive, and is the translation of the term 'σύστασις', homoeousia, which, in the commencement of the fourth century, was the subject of so much zealous contention among the Trinitarian and Unitarian sects of Christians. The Arians and Eusebians, who asserted the separation of the Trinity, and the consubstantiality of Christ and the Father, who asserted the third person, to be different and distinct in nature from the first, were strenuously opposed by the Athanasians, who, at the council of Nice (A.D. 325), adopted as the pass-word of their party the term 'συστασις', consubstantial, or, as it is English in the Nicene creed, 'Of one substance with the Father.' There were three conflicting denominations: those who held the three persons to be three substances, 'συστασις', those who asserted them to be of a similar substance, 'συστασις'; and those who contended that they were of a different substance, 'συστασις.' Between these parties the dispute was carried on during several years with great violence; and successive councils, held hundreds of times, were not able to meet for the purpose of altering creeds and reciprocating anathemas. In modern times the 'συστασις' doctrine has been advocated by Dr. Bury in his 'Naked Gospel,' a work which, though condemned and burnt by the University of Oxford, was approved and adopted by Locke, Clarke, and Whiston. The circumstantial particulars of the ancient controversy may be found in the various histories of the councils of that period, and its modern revival in the numerous works on the Unitarian doctrine. See especially the article 'Arianism,' in Plumptre's 'Dict. des Héritiers.'

CONSULTATION, or IMPOSITION, is a term adopted by the Lutheran Church to designate its consistory, in contrast to the trinitarian Church of Rome. Luther, when separating from the Catholic communion, still retained the doctrine of the real presence; but instead of teaching, as the Romans did, that the priest's pronunciation of the words of consecration is the true consecration of the bread and wine, that is, that the bread and wine retain upon the altar their natural qualities, and transform them into the real body and blood of Christ, he taught, that after the consecration of the bread and wine, they are mysteriously accompanied with the real body and blood. In short, in 'transubstantiation,' the divine body and blood are present without the bread and wine; and in 'in consubstantial' it is present with the bread and wine: the former effects a reality, the latter a change of circumstance.

The Lutheran doctrine of consistory was first introduced into the church by John, successor of the chief beloved consistory, in the thirteenth century. His work on this subject, entitled 'Determinatio F. Joannis Parisiensis de modo existendi Corpus Christi in Sacramento Altaris,' was republished by Alili in 1636.

CONSUL (a word of the same family as consuli, to consult, to be consulted, to be consulted upon) was in the Roman republic. King Tarquinius Superbus having been expelled from Rome by his tyrannical conduct, by the joint efforts of the patricians and plebeians, B.C. 409, a republic was publicly elected in the Consulat. The consuls called consules (consules, in Greek 'θεαραι') were appointed to administer the republic. The first consuls were Lucius Junius Brutus and Lucius Tarquinius Collatinus (or M. Horatius, according to Polybius, iii. 22). The consuls were annually elected in the Consulat Centuriat, and at first only chosen from the patricians.

As the consulship was established in the place of the kingly office, the consuls also were invested with the same power that the kings had. (Nestor, 'History,' i. 3; Cicero, 'De Leg.,' iii. 3, who ascribes to them 'regiam potestatem.') The consuls were, with the exception of the dictatorship, the highest, and, before promotor,sellae, and censors, existed, the only superior administrative office in Rome. The consuls were at the head of the whole republic: the judiciary (jurisdiction), the military (imperium), and the executive powers were all united in them. Accordingly, we find them also called presters, monarchs, or kings, by which names they were distinguished in the other States, where they had an elevated seat, and the business in the comitia curiata and centuriata was conducted by them. The consuls created the quaestors of the public treasury, and thus had great influence in the administration of the finances of Rome. The power of the consuls, in which the roots of the power of the emperors. They could also conclude peace and make alliances. They were the supreme judges in all suits and criminal trials.

The consuls possessed the same external insignia of honour as the kings, except the golden crown and the trabea (purple cloak), which latter they were only allowed to wear in a triumph. They had a sceptre of ivory, with an eagle at the end. In the assemblies of the people they sat on the sella curulis (an ornamental chair); and like the kings, they had other public privileges of a different kind, and bore the titles of lictors, with the fasces and axes, as the symbol of the consul's power over the lives of the citizens, preceded each of them at first; but P. Valerius, called Poplicola, a name which implies his respect, or affected respect, for popular rights, limited the power of the consuls, and curtailed the external symbols of their authority. In the city, the axes were taken from the fasces, and only one of the consuls was preceded by the twelve lictors. From their sentence appeals made to Rome were not heard, because the consuls were deprived of their former power of condemning citizens to death in Rome, and the power of scourging them only re mained. But while they were at the head of the army out of Rome, when they left the fasces, and all their former rights. The consuls who, according to the settlement of Valerius, was not preceded by the twelve lictors, had a public slave, called accensus, to precede him. The right to the twelve lictors and the supreme authority in matters of administration were enjoyed by the consuls alternately from month to month.

The patricians, after expelling the kings with the help of the plebeians, desired to transfer the royal power to themselves, which they accomplished by securing the election of both consuls out of the plebs. The consuls therefore being invested with the supreme power, the struggle of the people with the patricians was at the same time a struggle against the consuls. Their power sustained a great shock by the institution of the tribunate of the plebs. Each of the tribunes, whose number at last amounted to ten, had the right of putting his veto on the measures of the consuls. In order to prevent arbitrary acts of the consuls the tribune Appius Hergetius, B.C. 581, made a proposition for a code of civil and military laws. B.C. 442 ten men (decemviri) were named for this purpose, who were invested with full powers, and all other functionaries for the time were suspended. The consolate being re-established, the tribunes of the plebeas being reformed, and people should choose consuls from the plebeians also, a state of things which gave rise to a long and violent contest. The consul ship was again suspended, and tribunes of war (tribuni militum) were established, in which the consuls were only paid. The power was appointed to the office of plebeian also was made eligible. The tribune of plebeians was first elected consul. (Liv. vi. 47; vii. 1-21.)
Afterwards both consuls were on several occasions plebeians. In the mean time the extension of the state made it impossible for the consuls to perform the increased duties of their office, and new functionaries were created. In the year 448, the censors, and in the year 364, the praetors, were created, which latter had the judicial functions previously attached to the consulates. In relation to these new magistrates, the consul was called magistrate major, or superior magistrate.

Though the consular power was thus much diminished, it was still very great. All the officers of the state, except the tribunes, were under the consuls; they summoned the meetings of the senate, received all dispatches, and gave authority to the laws. It was the business of the consuls to keep his great campaign, and under the consuls commanding-in-chief, and the election of the military officers partly depended on them. In critical times the consular power was made unlimited by the decree of the senate, 'violent consules nec quid repulsacula detrimenti capit' (they should take care that the republic sustained no harm). Under such circumstances they could require the strictest obedience from all the citizens; and they presumed their right to condemn to death without appeal.

The imperium or military command was granted to the consuls by the lex curiata (Consociation), whereby a province (provincia) was assigned to them. The term provincia originally denoted the power given to discharge some public duty out of Rome, particularly the command of the army in conquered countries; and these countries themselves were called provincias (provinces). When a consul, after the expiration of his term of office, was appointed to govern a province, he was called pro-consul.

At first no particular age was a necessary qualification for the consulate. But by the lex Annalis, proposed by the tribune L. Villius, in the year 181, a certain age was required for each magistrate; and the consul must be forty-three years of age. But this law was not always observed; M. Valerius Corvus was elected consul in his twenty-third, and Scipio Africanus in his twenty-eighth year. No one could legally be re-elected till after an interval of ten years; but M. Valerius Corvus was re-elected six times, and Marcus seven times.

The candidate for the consulate was required to be at Rome when the election took place in the comitia centuriata, a rule which was also sometimes not observed. The elder of the two consuls first received the fasces, until the Emperor Augustus prescribed, by the law called lex Julia and Papia Poppea, that he should take them first who had most children. The time of election varied at different periods of the Commonwealth; but they were always chosen some time before they entered on office, and were called designati. The time of entrance on office likewise varied; but about the year 200 it was fixed that they should always enter on their office on the ist of January. The years were made objects of the lottery and designati were kept for that purpose, which were called fasti consoles. When the consuls entered on their office, they went in a solemn procession to the capitol to sacrifice to Jupiter Capitolinus; and after this ceremony the senate held a solemn session. Within the five next days they were to take the oath to administer the republic according to the laws; and at the end of their term of office they took a similar oath. Those who had discharged the office of consul were called consules, and enjoyed a kind of preeminence in rank over the other senators.

[Consular Medal of M. Agrippa.]

From the time of Sulla and Cæsar, who were elected perpetual dictators, the consulate gradually lost all its powers, and under the emperors it sunk to a mere shadow and a name. Yet consuls were still annually elected by the people, until the time of Tiberius, who ordered that they should be chosen by the senate. The number of the consuls was much augmented by the emperors; and several kinds of consuls were made, as consules ordinarii, after whom the years still were called; consules suffecti, created by the emperors; and consules aediles, of whom the title and rank, but no power. The last consul after whom the year was denominated, was Basilius, junior, in the year 1294 A.U.C. or 541 A.D., in the reign of the Emperor Julianus.

CONSUL, an officer appointed by a government to reside in some foreign country, in order to give protection to such subjects of the government by whom he is appointed as may have commercial dealings in the country where the consul resides, or through him to keep his government informed concerning any matters relating to trade which may be of interest or advantage for them to know. To these duties are sometimes superadded others having objects more directly political, but into this part of a consul's duty it is not necessary to enter at present, as such functions are assigned to consuls not as such, but in the absence of an ambassador or other political agent. The duties of an English consul, as such, cannot perhaps be better described than by giving the substance of the general instructions with which he is furnished by the government on his appointment.

His first duty is to exhibit his commission, either directly, or through the embassy, to whatever member of the government of the country to which he is accredited, and to obtain their sanction to his appointment: the document whereby this sanction is communicated, is called an exequatur; its issue must precede the commencement of his consular duties, and to the consular officials in those countries, such privileges, immunities, and exemptions, as have been enjoyed by his predecessors, and as are usually granted to consuls in the country in which he is to reside. It must be understood to be the particular duty of the consul to become conversant with the laws and general principles which relate to the trade of Great Britain with foreign ports: to make himself acquainted with the language and with the municipal laws of the country wherein he resides, and especially with such as have any bearing on the enjoyment of trade in two countries. It is the consul's principal duty 'to protect and promote the lawful trade and trading interests of Great Britain by every fair and proper means;' but he is at the same time to 'concern all British subjects against every violation on an illicit commerce to the detriment of the revenue and in violation of the laws and regulations of England, or of the country in which he resides;' and he is to give to his own government notice of any attempt at such illicit trading.

This consul is to 'give his best advice and assistance, where ever called upon, to his Majesty's trading subjects, quieting their differences, promoting peace, harmony, and good-will amongst them, and conciliating as much as possible the opinions of the subjects upon all points of law, which may fall under his cognizance.' Should any attempts be made to injure British subjects in person or in property, he is to uphold their rightful interests and the privileges secured to them by treaty. If, in such cases, he cannot be obtained from the local administration, he must apply to the British minister at the court of the country in which he resides, and place the matter in his hands. The consul must transmit to the Secretary of State for Foreign Affairs, at the end of every year a return to be carried on at the different ports within his consulate, according to a form prescribed. He is also required to send quarterly an account of the market prices of agricultural produce in each week of the preceding three months of the state of exchange, and any other remarks which he may consider necessary for properly explaining the state of the market for corn and grain. It is further his duty to keep his own government informed as to the appearance of any infectious disease at the place of his residence, and if any consuls are required to afford relief to any distressed British seamen, or other British subjects thrown upon the coast, or reaching by chance any place within his district, and he is to endeavour to procure for persons thus in the service of the crown food and board. He is to exercise the entire intelligence to the commanders of king's ships touching the coast where he is, and to obtain for them, when required, supplies of water and provisions, and he is to exert himself to recover all wrecks and stores belonging to king's ships when found at sea, and brought into the port where he resides.
In most cases consuls are subjects of the state by whom they are appointed, but this is by no means an inviable rule, and they are sometimes the subjects of the country in which they reside, or of some other country foreign to both. Persons are usually selected for filling the office among the mercantile class, and it very commonly happens that they are engaged in commercial pursuits at the port where their official residence is fixed. In this respect the English government is chargeable with some inconsistency, for while, in many instances, British consuls are permitted to trade, in others they are expressly interdicted from so doing. It would be difficult to discover the application of any fixed principle in determining the places where either of these opposite rules has been adopted. We believe the interdiction to be of modern application, and that the desire of diminishing the public expense has since led, in many cases, to the relaxation of what was once intended to be a necessary rule, because it is conceded to give a higher salary whenever trading is not allowed. Many traders are willing to undertake the office at a low rate of direct remuneration for the sake of the commercial influence which it brings, and which is frequently of far greater value to them than any salary which the government would give. The policy of this kind of economy has been much questioned.

The number of consuls and vice-consuls appointed by the English government, and their distribution in the year 1835, were as under:

<table>
<thead>
<tr>
<th>Country</th>
<th>General Consuls</th>
<th>Vices Consuls</th>
<th>Unpaid Consuls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Britain</td>
<td>67</td>
<td>93</td>
<td>9</td>
</tr>
<tr>
<td>Sweden</td>
<td>13</td>
<td>11</td>
<td>5</td>
</tr>
<tr>
<td>Denmark</td>
<td>14</td>
<td>16</td>
<td>3</td>
</tr>
<tr>
<td>Norway</td>
<td>11</td>
<td>14</td>
<td>7</td>
</tr>
<tr>
<td>Belgium</td>
<td>14</td>
<td>10</td>
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<tr>
<td>Prussia</td>
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</tr>
<tr>
<td>Hanover</td>
<td>12</td>
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<tr>
<td>Bremen</td>
<td>6</td>
<td>7</td>
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<tr>
<td>Switzerland</td>
<td>11</td>
<td>9</td>
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<tr>
<td>Holland</td>
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<tr>
<td>Austria</td>
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<tr>
<td>Italy</td>
<td>13</td>
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<td>Spain</td>
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<tr>
<td>Italy</td>
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<tr>
<td>United States of America</td>
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<td>9</td>
<td>3</td>
</tr>
<tr>
<td>Mexico</td>
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<td>9</td>
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</tr>
<tr>
<td>Greece</td>
<td>14</td>
<td>11</td>
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<tr>
<td>Turkey</td>
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<tr>
<td>Syria</td>
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<td>12</td>
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</tr>
<tr>
<td>United States of America</td>
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</tr>
<tr>
<td>Mexico</td>
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<tr>
<td>Phillipines</td>
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<tr>
<td>Japan</td>
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<td>China</td>
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<td>Japan</td>
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<td>Japan</td>
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</tbody>
</table>

The salaries paid vary not only in the manner above stated, but likewise according to the particular circumstances attending the appointment, a residence in some countries being necessarily more expensive than in others.

The total amount paid in salaries to English consuls and vice-consuls in 1835 was 61,950£; and in 1825 the amount was 71,716£. In addition to their salaries, consuls are in the receipt of fees on signing various documents, but these fees are of small amount. In 1834 only 12,143£ was divided among the whole number in unequal proportions: the largest, at Rio de Janeiro, in that year was 890£; while, in some cases, the sum did not exceed one or two pounds.

CONSUMPTION, PULMONARY. [Pythium Pulmonalis.] CONSUMPTION, MESENTERIC. [Marasmus.] CONSUMPTION, in political economy, is the end of production; the use, the expenditure, of articles produced. It is among the most necessary here to enter upon any extended discussion of the theories of productive and unproductive consumption, which have so largely occupied the attention of writers upon political economy. We have stated the general principle of consumption. The nature and relations between production and consumption appear very unlikely to be greatly disturbed in any condition of society in which there is freedom of labour and security of property. The most injudicious and extravagant consumption on the part of the few seems to be the least liable to a more strenuous production on the part of the many; and under these circumstances there is sure to be that excess of production over consumption which constitutes capital.

The creation of capital shows that the production has been greater than the unproductive consumption. A judicious and well-regulated expenditure on the part of the few would doubtless afford a more certain encouragement to the industry of the producers, and the excess of production over consumption would, in the long run, be greater.

Whatever injury the inadequate consumption of individuals may cause to themselves, it is quite clear that the producing class of society will always repair the waste of the spending class; that in point of fact there will be an excess of production over consumption, wherever the course of industry is not interrupted by the laws that have been granted on the part of a government. Whenever a government engages in the ruinous consumption incidental to war, for example, a very powerful stimulus may indeed be given to particular branches of industry; but it is very evident that this would have been more to the money remained in the pockets of the tax-payers, which proportionately will be depressed. The compensating power of production that is called forth in all cases of private consumption must be deranged, or unequally, and therefore imperfectly excited, by the consumption of the state.

CONTACT. (Geometry.) Two lines, one of which at least is curved, are said to be in contact when they have a common point, and recede from that point in such a way that the distance between any one from the other will, if a sufficiently small departure be taken, become as small a fraction as we please of that departure; that is, if there be no limit to the smallness of the ratio which PQ may be made to bear to ON, as we approach the point O. The subject will be further discussed mathematically in TANGENT CURVATURE, CURVATURE (Theory of), SURFACES (Theory of); and we shall at present confine ourselves to pointing out the connexion between the preceding definition, which is refined and mathematical, and the obvious ocular phenomenon, by perception of which we immediately admit a marked difference of character between contact, as shown at S, and simple intersection, as shown at R.

But all the lines of one kind, regular and physical, in the first instance, there is a minimum visibilia, or least visible distance, at which lines will run into each other. Now if PQ and ON always preserve such a ratio to each other that the minima visibilia of these lines arrive nearly together, PQ will not be lost to sight before ON, and the curves will continue distinct up to the very point of meeting. But if PQ diminish so rapidly as compared with ON, as to be lost to sight while ON is still visible as a line, then the two curves will appear to coincide for a visible length, which forms the principal ocular feature of contact. But this practical contact is not admitted in geometry, a science of reason, in which no length is considered as visible; so that contact is only said to exist where the ratio of PQ to ON diminishes—not merely very much—but without limit. Let ON and PQ be the fractions x and v of a linear unit. If then v diminish without limit when compared with x, but always retain a finite ratio to x, the contact is said to be of the first order; or if v also diminish without limit when compared with x, but always retain a finite ratio to x, the contact is said to be of the second order, and so on. These different orders of contact exhibit nothing to the eye but a modification of the former; but beyond this, that contacts of an even order are always accompanied by the intersecting coincidence shown at S, while contacts of an odd order make the curves tangent to each other in the manner in which the word is used by the intersecting coincidence shown at S, while contacts of an odd order make the curves tangent to each other in the manner in which the word is used by the
the distinctive character of which is that in its progress a peculiar matter is secreted from the blood, which, when introduced into the blood of another individual, produces precisely the same disease. The term contagion is also in common use to denote the actual propagation of disease from person to person. Such diseases, so propagated, are called contagious diseases. The peculiar phenomena constituting it a distinct or generic disease. The putrescences formed in its progress, the formation of which is one of the series of morbid phenomena distinctive of it, contain a peculiar secretion, a specific poison, which, on being introduced into the body of another individual, is capable of injuring the health, as by inoculation, produces in that person small-pox. This disease, then, presents all the characters of a contagious disease.

According to the etymological signification of the term, the propagation of disease from person to person by contagion depends on the actual contact of the body which receives with that which communicates the poison. But direct contact is not indispensable to the propagation of a contagious disease, and contagious diseases which are absolutely incommunicable without direct contact; but there are others which are capable of communication both by contact and without it. A particle of the matter of small-pox, for example, placed in direct contact with the body, will produce the small-pox; but a number of times smaller than this is likewise capable of being dissolved or suspended in the air; and the air thus loaded with small-pox matter, on coming in contact with the body, is capable of producing small-pox. Hence contagious diseases are divided into two great classes; into those in which the contagious matter acts only by positive contact of person with person, and into those in which it acts both by positive contact and through the medium of the air. Contagion may therefore be said to be immediate or mediatale, contactual or remote.

Contagion is carefully to be distinguished from infection. The distinction is clear and broad. From not regarding it, medical men have fallen into the grossest errors, both in their supposed facts and in their reasonings. It is of great importance, theoretically and practically, that this distinction should be understood; it is a subject in which, on many accounts, the public has a deep interest; and an attempt will be made to elucidate it under the article Infection. [Infection.]

CONTARINI, an illustrious family of Venice, which has given to the republic many senators, doges, and statesmen. The first doge of the name was Domenico Contarini, in the eleventh century, and that name appears to have been used during the war of Chioggia. After the Genoese had taken that place, and were threatening the very existence of Venice, in 1380, Contarini, then eighty years of age, led the Venetians against the enemy; and being assisted by Vettor Pisani and Carlo Zeno, he defeated the Genoese, retook Chioggia, and thus saved the republic. Ambrogio Contarini was sent, in 1473, by the republic, then at war with Mahomet II., as ambassador to Hussum Hassan Bey, sovereign or usurper of Persia, to contract an offensive alliance against the Ottomans. The coasts of Asia Minor and Syria being occupied by the Turks, Contarini was obliged to take his way through Poland and Tartary to Caffa in the Crimea, which declared itself his enemy. He went thence to the mouth of the Phasis, and thence proceeded through Mingrelia and Armenia to Persia. He met Hussum Hassan at Isphahan, accompanied him to Tabrezen, and then returned homewards by Derbent and the Caspian Sea to Astrakhan, and thence to Moscow, where he was received by the grand duke of Moscow. He returned to Venice in 1477, and published the journal of his mission, which is curious, and written with much apparent regard to truth. 'Itinerario nell' Asia,' by the Venetian, Domenico Contarini, 1524. Hussum Hassan attacked Mahomet, while the Venetian fleet was ravaging the coasts of Asia Minor; but the Persians were defeated by the Turks near Trebizond, and the alliance led to no other result than to effect a temporary division of territory in favour of the Turks. The grand men of learning of the family of Contarini, such as Cardinal Gaspare Contarini, in the sixteenth century, who was employed on several important missions, and wrote many philosophical and political works; among others, 'De Immortalitate Animarum adversus Petaremum Composita, Libro Arbitrio et Predestinatione,' and also a treatise, 'De Magnatibus et Republica Venetorum.' His works were collected and published together at Paris, folio, 1571. Vincentio Contarini, one of his successors, and also wrote of the revival of the science of medicine, and the study of moral and physical education; 'De re frumentaria,' 'De Militari Romanorum Stipendio,' and 'Variarum Lectionum Liber.'

CONTUMPTA. A contempt in law is a disobedience of the rules, orders, or process of a court of justice, or a disturbance or interruption of its proceedings. Contumpts by a continuance resistance to the process of a court, such as the refusal of a sheriff to return a writ, are punishable by a fine. A contempt of a court consists in a direct disturbance of the court, which cause an obstruction to its proceedings in administering the law, may be punished or repressed in a summary manner by the commitment of the offender to prison or by fining him. The power of enforcing their process, and of vindicating their authority against open obstruction or defiance, is incident to the nature of all courts; and the means which the law intrusts to them for that purpose are attachment for contempt committed out of court, a commitment of the contumac to the common stocks, and full sequestration done in facie curiae. [Attachment.] (See Visor's Abridgment, tit. 'Contempt.')

CONTENT (contentus, contained), the quantity of space contained in any portion of space, measured by the number of units of the same space. Thus, linear content is simply length; superficial content is area or surface; solid content (in which sense the word is primarily used), also called volume, is the number of cubic units contained in a space. These solid units are always cubes, described in the unit of length. Thus, when the inch or foot is employed in measuring lengths, the cubic inch or cubic foot is always employed as the measure of solid content.

The solid content of any cylinder or prism is found by multiplying together the units in the base and the number of linear units in the altitude; and one-third of a similar product is the content of a pyramid or a cone. The content of any irregular solid bounded by spherical planes must be found by dividing it into pyramids.

Weight is thus connected with content accurately enough for common purposes. Multiply the number of cubic feet of a stone, rock, or gravel 12 times (if you do not know the number of ounces avoirdupois). Roughly, multiply the number of cubic feet by the specific gravity, and five-ninths of the result is the number of cwt. Thus, the specific gravity of brick being 2, a cube of bricks 20 feet long every way weighs 1 of 200 X 20 X 20 X 2 X 2 = 16,000 lb.

To find the solid content of a sphere, take 7/9 of the radius squared, and then 3/4 of that product.

CONTINENTAL SYSTEM, the phrase used by Bonaparte to designate his scheme for combining the strength of the Continent against Great Britain. It was in part developed in the Berlin decree, issued 21st November, 1806, which declared that all the United Provinces were to be considered as in a state of blockade by all the Continent; forbade under severe penalties all correspondence or trade with England; ordered all letters to and from England to be detained and opened, and all the effects detained as contraband all articles of English manufacture, or the produce of the British colonies; and declared property of every kind belonging to British subjects, wherever found, to be lawful prize. From this time Bonaparte adopted it as the rule of his policy to compel all the contending powers who would remain at peace with him to comply with these commercial regulations, and in addition to seize and imprison all English subjects found within their dominions.

CONTINUED BASE, in Music, is the figured base of a score used throughout, and so called to distinguish it from the vocal base, as well as from the base staves assigned S Q 2.
to particular instruments. The term is only to be found in very old music, and is now become obsolete.

CONTRACTION. [Arctocarpus.]

CONTRABAND, from the Italian Contrabando, against the proclamation, a term commonly used in commercial language to denote articles the importation or exportation of which is prohibited by law. Since the adoption of the warehousing system in this kingdom, the list of goods the importation of which is prohibited has been made exceedingly short; it comprises at this time (1836) only the following articles:

Arms, ammunition, and utensils of war, by way of merchandise, except by license from His Majesty for the public stores only.

Livestock last printed in the United Kingdom, and reprinted in any other country and imported for sale.

Cattle, sheep, swine, lamb, mutton, beef or pork, fresh or corned, or slightly salted.

Clocks or watches, with any mark or stamp representing any legal British assay mark or stamp, or purporting to be of British make, or not having the name and abode of some foreign maker visible on the frame and the face, or not being complete.

Coin, counterfeit, or not of the established standard in weight and fineness.

Fish of foreign taking or curing, or in foreign vessels, except turbot, lobsters, stock-fish, live eels, anchovies, sardines, botargo, and caviare.

Milk of foreign车辆, tobacco-stalks, and tobacco-stalk flour.

The list of articles contraband as regards exportation from the United Kingdom is still more limited, and is in fact confined to the three articles above named.

Clocks and watches: the outward or inward case or dial-plate of any clock or watch without the movement complete, and with the clock or watchmaker's name engraved thereon.

Bone made of inferior metal, in whole or in part, to imitate gold or silver lace.

Tools, utensils, and machinery.

The schedule of prohibitions to importations was formerly much more extensive. As it stands at present, it except those articles which are introduced for the protection of agriculture, warlike stores, and fish, the insertion of which is intended for the encouragement of a branch of native industry, the list is calculated only for the prevention of fraud. The same might be said of the second list, if it did not contain the prohibition to export tools and machinery; this restriction has of late years been very much relaxed under the power given by Act of Parliament to the Board of Trade upon application the exportation of such tools and machines as in the opinion of the Board may without inconvenience be allowed to go out of the country; and at present the restriction is limited almost entirely to machinery required for the prosecution of the precious metals kindred industries.

There are some other prohibitions by which trade in certain articles is restricted; but these refer to the manner in which the trade may be conducted, as the size of the ship, or the package, or the country from or to which the trading may take place, and these being only of the nature of regulations, the articles in question cannot be considered contraband. Of this nature are the prohibitions which extend to our colonies, and which have for their object the encouragement of the mother country. The list of articles prohibited by many foreign countries is much larger than that enforced in this country; though the system in the case of some of those countries has of late been somewhat relaxed. Russia is however still principally filled by designating articles which are contraband.

Another sense in which the term contraband is applied refers to certain branches of trade carried on by neutrals during the continuance of war between other countries. It has no application to goods which have been brought into China, where the seamen of all nations, and even the sailors of nations with which we have a right to treat as contraband, and to capture and confiscate, all goods which can be considered munitions of war, under which description are comprehended everything which can be used directly or obviously available for a hostile purpose, such as arms, ammunition, and all kinds of naval stores, and all such other articles as are capable of being used with a like purpose, such as horses, and timber for building ships. Under some circumstances, provisions which it is attempted to convey to an enemy's port are contraband, as when a hostile armament is in preparation at that port. These restrictions rest upon principles which are reasonable in themselves, and have been generally recognized by neutrals; others which have at various times been enforced or attempted to be enforced have been contested, but a description of this branch of the subject belongs rather to the matter of International Law, than to a description of contraband trading.

CONTRACT. [Agreement.]

CONTR' ALTO, CONTRATENOR. [Alto.]

CONTRARY and CONTRADICTORY. Two propositions are contrary when the one denies every possible case of the other: they are contradictory, when one being universal, the other denies some only of the things ascribed in the first. Thus the contrary proposition to "every A is B" is "no A is B," and its contradictory is "some As are not B".

Contrary propositions may be both false, but cannot be both true: as in "all angles are equal," and "no angles are equal." But of contradictory propositions one must be true and one must be false; either "all angles are equal," or "some angles are not equal." One of the most common fallacies of conversation and debate (and occasionally of written argument) is fixing the assertion of the contrary upon one who simply contradicts. And on the other hand, nothing is more common than to assume a contrary as proved upon which only establish the contradictory. The most easy way of establishing general propositions is, in many cases, the refutation of the contradictory; and here is another source of error, since the refutation of the contrary is frequently supposed to have the same effect.

CONULINA. [Polyplacata Membranacea.]

CONULUS. [Echinodermata.]

CONUS (zoology), a genus of gasteropodous mollusks, founded by Linnaeus; and though multitudinous in species, left untouched by modern zoologists, with the exception of De Montfort.

Animal elongated, very much compressed and involved, with a very distinct lead, terminated by a proboscis capable of much extension; mouth with a tongue rather short, but projecting, and armed with two rows of sharp teeth; tentacula cylindrical, carrying the eyes near the summit; foot oval, elongated, wider before than it is behind, with a transverse anterior channel; mantle scantly, narrow, forming an elongated shield in front. Shell thick, solid, rolled up, as it were, in a conical form; epidermis membranous, sometimes very thick; spire of different degrees of elevation, sometimes almost flat; aperture long and narrow; suture generally straight and parallel, the outer lip simple and sharp-edged, sometimes a little curved, the inner lip without any plaits on the columella, but with a few elevated striae on its anterior termination. Operculum horny, very small, sub-oval, with a central summit, in the back part of the foot, and, when compared with the length of the aperture, appearing like a rudiment.

Geographical Distribution.—Southern and tropical seas. The form becomes gradually less developed as the locality approaches the north. In the Mediterranean there are a few species, but none appear to have been detected in the northern seas.

Habitat.—Carnivorous. Found on sandy mud at depths varying from near the surface of the sea to seventeen fathoms.

The species are very numerous. Lamarck records 181 recent; and several of these include varieties. Deshayes in his Tables gives the same number. To these must be added one new species described by Mr. G. B. Sowerby in his 'Genera,' four new species brought to this country by Lieutenant Belcher, R.N., and by the Blossom, described by Mr. Broderip and Mr. G. B. Sowerby ('Zool. Journal,' 1829, iv. 152). These, and the few new species and some varieties described by Mr. G. B. Sowerby, and thirteen new species and several varieties described by Mr. Broderip from Mr. Cuming's collection ('Zool. Proceedings'). The following observations of Mr. Broderip in his introduction to the description of the latter species of use to the student. After stating out the difficulty of the task arising from the infinite variety presented by the genus, and the very few points of form and structure in the shell that can be relied on as
the foundation of specific character, the author thus continues: 'M. de Blainville, when noticing the numerous species already recorded, gives us a hint that many of them may be what Adamson calls "aspéces de cabinet," and no one can examine an extensive collection of cones, particularly if it contain many individuals of each species, for the purpose of comparison, without being struck by the force of the observation. Colour, granulation, or smoothness, length or shortness of the spine, its plainness or coronation, will be found in many species the result of locality, food, or temperature.' M. Duclos, in reference to the numbers given by Lamarck, states, that he is convinced that there are many others of the species which can only be regarded as varieties at most.

Many of these species and varieties are very beautiful, both in shape and colour, and the genus has always been highly valued by collectors. Coni, gloria-maris, cedo-nulli, tomacis, aurinacis, ammiralis, and some others, have brought very large prices, and some of the finest specimens of these shells are now in this country.

Lamarck separates the genus into two divisions: the first comprising those species whose spire is coronated; and the second those whose spine is simple. By far the greater proportion of species belong to the latter division.

De Blainville thus divides the genus.

Conical species with a projecting spire, which is not crowned with tubercles. (Example, Conus generolis.)

(Genus Rhombus, De Montfort.)

Conical species with a coronated spine, which is either projecting or flattened. (Example, C. imperialis.)

(Genus Cylinder, De Montfort.)

Species a little elongated, suboval; the spire projecting and pointed, but not coronated. (Example, C. textile.)

(Genus Rollus, De Montfort.)

Subcylindrical species, the spine apparent and coronated. (Example, C. geographus.)

(Eigen Hermes, De Montfort.)

Elongated, cylindrical species with a projecting spire, and the aperture as in the genus Terebellum, that is, angular posteriorly. (Examples, C. Nussattella and C. mitratus.)

[Shell of Conus generolis.]

Mr. G. B. Sowerby ('Genera of Recent and Fossil Shells') observes, that the cones are liable to be con

founded with the Pleurotomata, and the young specimens of some Strombi; and those which are rather ventricose with young Cypræae; but that they may be distinguished from the Pleurotomata by their short spine, their linear aperture, and their straight columella; from the young Strombi, by their being entirely destitute of varicose su

tures, and in their never having any appearance of a notch near the lower extremity of the outer lip; the young Strombi moreover are seldom, if ever, so regularly conical; and from the young Cypræae by the thickness of their shell, by the coronated or abrupt spine, and by their not being naturally polished in every part, while the Cypræae always are, in consequence of the want of epidermis which covers the shell of the cone, while in the Cypræae the large mantle comes in contact with the whole of the shell.

CONVENT, from the Latin conventus an assembly or meeting together. This word is used in a double sense, first, for any corporation or community of religious, whether monks or nuns; and secondly, for the house, abbey, monastery, or nunery in which such monks or nuns dwell. Shakespeare uses it in the first sense, when he says of Wols
ey—

* At last, with easy roads, he came to Leicester,
 Lodged in the abbey; where the reverend abbot
 With all his court honourably received him.'

Hera VIII., xxv., sc. 3.

Addison uses it for the building:—'One seldom finds in Italy a spot of ground more agreeable than ordinary that is not covered with a convent.'

Furetiere, who wrote his dictionary in the time of Louis XIV., says there were no fewer than 14,000 convents for
tery in France.

Convent, as related to the foreign military orders, meant the principal seat or head of the order. Furetiere says, 'La Commanderie de Boisy, près d'Orléans, est le Convent général de l'Ordre de St. Lazare.'

The earliest inhabitants of convents were termed Camo

bites, from the Greek words καμεός and βίος, as living in community. They dwelt chiefly in Egypt. Fleury (Hist. Eccles., 4to, Paris, 1720, tom. v., p. 14) dates their insti

tution as early as the days of the Apostles; others, probably with more correctness, give them a later origin. St. Pachomius, abbot of Tabenna, on the banks of the Nile, who was born at the close of the third century, is believed to have been the first person who drew up a rule for the Camobites. (Morel, Dict. Histoire, tom. viii.)

CONVENTION, MILITARY, a treaty made between the commanderies of two opposing armies concerning the terms on which a temporary cessation of hostilities shall take place between them. It is usually solicited by that
general who has suffered a defeat, when his retreat is not
sured, a small advance is left of maintaining his position;
and it is seldom refused by the victor, since, without incur-
ccurring the unavoidable loss attending an action, his force
becomes immediately disposable for other operations.
In 1757 the duke of Cumberland, when in danger of
being surrounded, entered into a convention with the duke
de Richelieu, through the medium of Denmark, by which,
on consenting to disband all his auxiliaries, he was allowed
to retire with the English troops across the Elbe. And in
1778, when the Anglo-Russian army failed in the attempt
to recover Holland from the French power, the duke of
York made a treaty with General Brune by which the in-
vading force was allowed to re-embark on condition that
8000 French and Dutch prisoners of war in England should
be restored.

After the battle of Vimiero in 1808, the duke of Abrantes,
having been defeated, and fearing a general rising in Lisbon
against him, sent General Kellerman to the quarters of the
British commander-in-chief, to request a cessation of arms,
and propose a convention by which the French troops
might be allowed to retire from Portugal. This being granted,
it was finally arranged in the convention that they should
not be considered as prisoners of war; and that, with their
property, public and private, their guns, and cavalry horses,
they should be transported to France: on the other hand,
all the fortresses which had not capitulated were to be
given up to the British, and a Russian fleet, then in the
Tagus was to be detached in English ports till after the
conclusion of the convention. This is the celebrated convention
which was made at Lisbon, and is generally but improperly
called 'of Cintra.' It excited much dissatisfaction both in
Portugal and England, as the inability of the French in-
ducing them to appropriate property to which they had no claim.
(Napier, vol. i.) By the appointment of a committee consisting of one individual of each of the
three nations, all causes of complaint were, however, finally
resolved.

CONVERGENT, CONVERGENCY, DIVERGENT,
DIVERGENCY. When a series of numbers proceeding
without end, has terms which diminish in such a manner
that no number whatsoever of them added together will be
as great as a certain given number, the series is called con-
vergent. But when such a number can be added together as
will surpass any given number however great, the series
is called divergent. Thus of the two following series—

\[ 1 + \frac{1}{2} + \frac{1}{4} + \frac{1}{8} + \cdots, \quad \text{and} \quad 1 + \frac{1}{2} + \frac{1}{3} + \frac{1}{4} + \cdots \]

the first is convergent, for no number of its terms, however
great, will amount to 2: the second is divergent, and the
sum of its terms may be made to exceed any number.

By going one mile, then a quarter of a mile, then a
half mile, etc., two miles could never be completed: but by
going one mile, then half a mile, then one third of a mile, &c., a
hundred million of miles, or any greater number, could be
sur-

The subject of the convergence of series is one of fundamental
importance in the whole of the mathematics; but it
is seldom treated in works on algebra in the manner which
its importance requires. Algebraical writers seem to have
imagined that a series, however obtained, is safe and fit for
use, whether convergent or divergent. If this be true,
which, in a sense understood by writers on the higher part
of the subject, we do not altogether deny, it is certainly not
true, so to the beginner, without a great deal more of

and so on. The results are alternately too great
and too small.

6. When such a series as the last has its terms not dimin-
ishing with the limit, but towards a finite limit, the sum of
any number of terms, increased by half the limit, is never
wrong by so much as the first-rejected term differs from the
limit.

7. When series produced by algebraical development
have their terms alternately positive and negative, the error
committed by stopping at any term is never so great as the
first-rejected term, even though the series become after-
wards one of continually increasing terms. If then such a
series have the first few terms rapidly diminishing, a close
approximation may be made by means of them to the real
value of the expanded function. For instance, in the series

\[ 1 - x + 2x^2 - 3x^3 + 4x^4 + \cdots \]

in which the limit is \( x = 1 \). By stopping after the
5th term, the error committed is never more than \( \frac{1}{3} \).

8. Series which are functions of \( x \), may be divided into—
1. Those which are sometimes convergent, and sometimes

The theorem which results from the expansion of

\[ \frac{1}{1 + x^2} \]

is

\[ \text{Series which are} \quad x + \frac{x^2}{1 + x^2} + \frac{x^3}{1 + x^2} + \frac{x^4}{1 + x^2} + \cdots \]

The series which are always convergent, both in reality
and appearance, are those upon which an arithmetical
algebraist would reckon with most security, do, however,
offer difficulties of a very peculiar character. They are the
only ones in which the usual algebraical generalizations would lead to absolute error (so far as has yet appeared). On this subject generally, see Peacock's 'Algebra,' and especially in the treatise on Book IV., prop. i., vol. ii.; Cauchy, 'Cours d'Analyse,' Grunert, 'Supplemente zu Klügel's Werterbuche der Reine Mathematik,' in the article Convergenz der Reihen; Encyclopédie méthodique, article Calculus of Infinitesimals.

CONVERSE, in logic and mathematics, means a proposition which is formed by another by interchanging the subject and predicate, thus: the converse of 'Every A is B' is 'Every B is A.' But care must be taken to put the proposition into the same form as the original one, otherwise erroneous results will ensue. Thus the converse of 'Every A has a B' is not 'Every B has an A.' For the proposition first stated is

Every [A subject] [capula] [a thing which has a B] predicate.

and the converse is 'Every thing which has a B is an A.'

Of the four forms to which all assertions can be reduced, namely (A) 'Every A is B;' (B) 'no A is B;' (I) 'some As are B's;' (O) 'some As are not B's,' the logical converses (so called) are those in which the new subject appears with the same degree of generality of assertion as the old one. Thus the converse of 'Every A is B,' is 'Every B is A.' Consequently in the first and fourth forms, or the general affirmative and the general negative, the logical converse is not necessarily true. Thus 'Every A is B,' does not give 'Every B is A necessary,' but only 'some Bs are As.' The latter is called by writers on logic conversion per occasionem, a term which, though not of frequent use, is found in the following rules with respect to A, E, I, and O above.

B and I are simply convertible.

A and O are convertible by diminution.

A and O are convertible by contraposition.

Nothing is more apt to make a beginner believe that 'Every A is B' yields 'Every B is A,' than the study of geometry without close attention to the meaning of terms and the force of the parts of an assertion. For as a majority of the propositions which the student may be required to prove or disprove, the student does not sufficiently reflect upon this being contingent and not necessary.

In mathematical propositions there is a species of conversion in the proposition however it be phrased, and the predicate with a part only of the subject. Thus if P, Q, R, and S be four circumstances, of which the existence of any three makes the fourth also exist, we may observe this species of conversion in passing from the first to the second of the following propositions:

Every (thing which gives P, Q, and R) is (a thing which gives S).

Every (thing which gives P, Q, and S) is (a thing which gives R).

Thus of the following set of circumstances: 1. That two figures be parallelograms; 2. That they be equal; 3. That the sides about equal angles be reciprocally proportional; 4. That the areas be equal; exhibit the possibility of this conversion. For (1) (2) and (3), give (4); (1) (2) and (4) give (3); (1) (3) and (4) give (2).

There is an important logical proposition which would save some theorems in Euclid, and give a much clearer view of some of the arguments. It is evidently most desirable, when a proposition is a purely verbal and logical consequence of another, that it should be known to be such, and its proof distinguished from those which do not merely develop implied propositions.

So, for instance, a certain thing must be either an A, a B, or a C, but cannot be two of them; and that each, A, B, and C, must either be a P, a Q, or an R, but cannot be two. Suppose also that each P, Q, or R, must either be A, B, or C. Then it can be proved that every A is P (and not Q or R) every B is Q, S, and every C is R, S, and the simple converses necessarily follow; namely, that
of the law of England cannot carry into effect with cer-
tainty. Upon the whole, I am of opinion that this
may not be applied or rendered instrumental, no event, or
combination of events, which can possibly happen in a
family, of whatever rank or number, which may not be
provided for and met, by a family settlement framed by a
master of the art of the law as a riskier situation of the
wealth and livery of seisin, and also the statute of Uses,
are expressly abolished by the legislature.

Conveyances in Scotland are made according to the strict
principles of the feudal law there established, which im-
port a much greater and more certain security of value
and quietness than those used in modern English practice.
(Bl. Comm.; Butl. Co. Litt.; Kent's Comm.)

CONVEYANCING is the business of preparing con-
veyances, or legal instruments whereby the feudal
title of the vendors and purchasers of property, and of
framing those multifarious deeds and contracts which go
and define the rights and liabilities of families and
individuals. It is carried on by barristers, or members of
the Inner Court, who having kept twelve terms, obtain a cer-
tificate according to the provisions of the 9 Geo. IV., c. 49,
and are called Certified Conveyancers. The increased
number of transactions in this branch of the law has ren-
dered a union of labour, and a special course of study
necessary.

There are two opposite systems, by which the transfers
and transactions of the owners of real property are capable
of being carried on; and between these extremes points
of which are occasionally introduced. In one system, the
ground, all existing contracts must arrange themselves.
In one of these systems, as in the present system of Eng-
land, every transaction is accomplished and evidenced by
means of written instruments, which are written in a
manner which must be observed and verified by a
scientific and ascertained mode of construction.
In the other, the effect is accomplished somewhat like the
transfer of stock, by a comparatively mechanical operation,
the performance of bookkeeping, of which the evidence is to
be kept, not in private muniments, but in the ledgers-books
or registers of the State.

The respective objects of these systems are, in the one,
to protect the rightful owner, in the other, the innocent
purchaser; in the former system, the duty of seeing to the
title of the owner whom it admits to registration, and consequently takes upon itself the risk
of being deceived; in the former, it leaves the parties to con-
cert titles and transfers in secret and in silence, leaves them
unrestrained and unenjoined to transact with one another,
but compensates this want of interference by the alternative
of following the right, by its judicial machinery, against all
parties, however ignorant, however innocent, who may
have been prejudiced by identity, at any time, of the effec-
tive transaction, or wrongful succession, to become the
owners or purchasers of the property; limiting that restaura-
tion or succession only by reference to certain durations of
advantageous use. (Parkes's Lect.)

In the time of the feudal law, and the period imme-
diately succeeding, restraint was placed on every species of alienation; landed property was rarely the subject of bar-
ter. Every transfer of land took place in open court, that
is, on the land itself vacant paribus (before the pars or peers),
who were the other tenants of the feudal lord, and who
subscribed the instrument of investiture as witnesses (Suvil.
Lect., p. 58); so that, in the words of Lord Mansfield, it was
a notorious who was feudal tenant de facto, as he who is now
de facto incumbent of a living, or mayor of a corporation.
Land was of a stubborn nature, money portions were un-
known, and personal property did not exist in sufficient quan-
tities to be the subject of settlement, and consequently
conveyancing transactions were very rare. But the in-creases of the ecclesiastics to evade the statutes of mortmain, the
invention of uses and trusts, and subsequently the passing of
the statutes of uses and wills, which enabled the possessor
of land to provide for the contingent wants of his
in family, and to mould his estate according to his whim or
fancy, controlled only by the laws from time to time estab-
lished to guard against the abuse of the privilege, the
power of devise, the statute, and the multifarious wants of
a large and wealthy popula rion, have contributed to the
perfection of the system of modern conveyancing. 'By means of this sys-
tem,' says a late eminent professor, 'there is no device, ar-
rugment, settlement, or disposition which imagination
conceive, or ingenuity construct, which the machinery

When such an assembly was called together under the
supreme authority of the state, it was natural that such
subjects must be introduced, discussed, and in some in-
stances determined by, and even the subversion of
power may be said to exist rather in name than in reality,
seems to form the proper constitutional assembly in which
to legislate on such subjects, whenever legislation upon
these subjects is necessary.

The crown, however, had always in its hands the power
of controlling this assembly, possessing as it did the
 prerogative of proroguing and dissolving. But at the Refor-
bation the act was passed (25 Henry VIII., c. 19) which
expressly provided that the convocation of any assembly or
performing any act which could make such an assembly
belegious to the public. It was restricted by it from making
any canon or ordinance which was opposed to the king's
derivation, or to the laws, customs, and statutes of the
realm.

Again, in 1665, the clergy gave up the power of taxing
themselves, consenting to fall within the scope of the stat-
utes made in parliament for such purposes, like the laity,
when they received a right of voting with the lady in the election of knights of the shire.

But though virtually the conviction thus became almost a nullity, yet the practice has been continued, and continues to the present day, of summoning the clergy to meet in convocation whenever a new parliament is called; and the forms of election are gone through, and the meeting is held, usually in St. Paul's Church, when the form is gone through of electing a proctor or speaker. The king's writ is directed to the archbishops, commanding them to summon the bishops and the inferior clergy. The archbishop complies with this writ, summoning the bishops, and commanding them to summon the archdeacons and deans in their respective dioceses, and to command the chapters to elect one proctor each, and the great body of the clergy in each diocese, two proctors, to represent them in the convocation. When assembled, they form two houses. In the upper house sit the bishops; in the lower, the other clergy, in all 143; viz., 22 deans, 53 archdeacons, 24 canons, and 44 proctors of the inferior clergy. It is the usual practice for the king to prorogue the meeting when it is about to proceed to any business.

**CONVOLVULACEÆ.** A natural order of monopetalous exogens, with bell-shaped flowers, opening or contracting beneath the influence of light. Papaverous development of the corolla, five stamens, and a fruit with two or three cells, in which one or two ovules stand erect. The embryo is crumpled up in the midst of very firm albumen. The common bind-weeds of the hedges, the Ipomoeas and Convulgi of the garden, offer illustrations of the ordinary state of this order, the species of which have purgative roots, and in the case of scammony, yielded by Convolvulus Scammonia, and of jalap, produced by various species of Ipomoea, are of great medicinal importance. Occasionally the purgative principle is so much diffused among the fuscula of the root as to be almost inappreciable, as is the case in the Convolvulus Batatas, or sweet potato of America, which was the forerunner of the common potato, and gave it its name, and which is still cultivated in the south of Spain and France.

In most instances the stems of this natural order are twining, and in such cases it is immediately recognized; but occasionally they are erect and more spiny, and when that happens it is not so easy to know the order. If however attention is paid to the very imbricated state of the calyx, two of the sepals being quite exterior with respect to the other three, no real difficulty in identifying it need be experienced. For illustration we have taken a singular East Indian genus called Neurepeltis, in which the flowers grow from the midrib of the bracteal leaves: it would be superfluous to figure a bind-weed.

**CONVOLVULUS.** The genus of plants upon which the natural order Convolvulaceae is founded, is known by its roots being divided into two linear arms, and its ovary having only one ovule in each of which stand two cells, in each of which two ovules. Many of the species are exceedingly beautiful; even C. arvensis, the common bind-weed, would be prized as a lovely flower, if it were not so common, and such a troublesome weed, but for the necessity of its creeping roots. C. allioides, italicus, and scammonia are the three prettiest of the hardy exotic species of the genus.

**CONVOLVULUS JALAPPA.** and C. SCAMMONIA. The resin of the Convolvulaceae, upon which these and other species are collected during their activity, is not of two distinct kinds; the one soluble in proof spirit and insoluble in ether (found in jalap, turbitis, and bind-weed), the other soluble both in alcohol and ether (found in scammony, c. allioides, and c. ficinus). The resin is obtained from Vera Cruz, and takes its name from the town of Jalapa, or Jalapa, in the interior. It is best when collected in March or April, before the young shoots have begun to be developed. The large root, which often weighs 50 pounds, is divided into portions, which are hung in nets over a fire, and dried in ten or twelve days. It occurs in commerce in irregular round or pear-shaped masses, which, when good, are dry, hard, with a brown shining fracture, resinos, not light, in weight. It is often confounded with jalap, which is the root of white bryony, which however are white, or when old, grey, not heavy, very brittle, fracture not resinos, spongy, without smell, but with a bitter taste. Dried pears are also often substituted for it; but they are black, and open, and yield more of the volatile oil than the scammony, containing the seeds. Analysed by Cadet de Gassicourt, 100 parts of the dry root yielded resin 10, gummy extractive 44, woody fibre 29, starch, albumen, salts of lime, and potash, &c. Its excellence depends upon the fact that the vascular system of the root is free from the inner coat of the intestines of the ox, and therefore causes no mucus covering, and thereby causing it to become inflamed. [CACTARIDEA.]

**CONVOLVULUS.** In the military service, is a detachment of troops appointed to guard supplies of money, ammunition, provisions, &c., while being conveyed to a distant town, or to an army in the field, through a country in which such supplies might be carried off by the peasantery or by parties of the enemy.

In the navy, the name is applied to one or more ships of war which are ordered to protect a fleet of merchant-vessels on their voyage.

**CONVOLVULIONS.** Irregular (anormal) and violent con-
tractions of muscular fibres with alternate relaxations. The muscles of the body are divided into two great classes, those which produce the motions necessary for the due exercise of the organic functions, and those which produce the movements or performances, as the case may be, of the animal functions, namely locomotion. The first division comprises the class of the involuntary, and the second that of the voluntary muscles. Contractility, the property of shortening its fibres and applying a force to the point of the muscle fibre; and by this property all vital motion of every kind which takes place in the living system is performed. [MUSCLE.]

The property of contractility is inherent in the muscle; but the expression of this property is wholly dependent on the nervous influence; for if the nervous influence be abstracted from a muscle, its fibres are incapable of contracting, whatever degree of stimulus be applied to them. When the fibres of a muscle are in a sound state, and are supplied with the nervous influence in proper quantity and of proper quality, the fibre contracts with a given degree of force on the application of a certain amount of stimulus. This degree of contraction constitutes its regular or normal action. Contraction, after it has continued a certain time, is succeeded by relaxation; relaxation, in its turn, yields after a given time to another contraction; this contraction to relaxation, and so on successively according to the regular system to muscular action when natural and sound. [MUSCLE.]

But when, on the application of a given stimulus, the muscular contraction is either more violent or more rapid, or longer continued than natural, that is, when it does not yield to relaxation, the alternate relaxation of the muscle is said to be convulsive, and the disease termed convulsion is induced. The state of convulsion is also produced when the muscular fibre is excited to inordinate action on the application of a stimulus not natural to it. The function ultimately deranged in convulsion is the muscular contractility; but the function proximately deranged is the nervous influence; the manifestation of disease is in the muscular, but its true and proper seat is in the nervous system.

Both divisions of the muscular system, the voluntary and the involuntary, are subject to this irregular and violent action. When the muscles of animal life, or those of voluntary motion, are thus affected, it constitutes the disease called convolution in its true and proper sense; when the muscles of organic life, or those of involuntary motion, are thus affected, the disease is usually termed spasm. This distinction is not indeed invariably and universally observed by medical writers; but it would be well if general practice were so. When the muscle is rigid and tense, and its contraction is persistent, not quickly alternating with relaxation, the contraction or spasm is called tonic; when the contraction or spasm is more violent than usual, the contraction or spasm is called clonic. In the first, the vital energy of the muscle is in excess; in the second it is deficient. When the convulsive or spasmodic action is of the clonic kind, but instead of being violent is slight, and when very slight contractions rapidly alternate with relaxations, it constitutes what is called tremor.

Convulsions differ, first, in kind, as dependent on an excess or a deficiency of vital energy; secondly, in degree; varying from the most powerful, violent, and persistent contractions, without perceptible relaxation, to relaxations of very short duration, down to the feeblest contractions, with the most rapid alternate relaxations of the slightest tremor; thirdly, in their seat, affecting either the voluntary or the involuntary muscle fibres; the convulsion or spasm is called clonic. In the first, the vital energy of the muscle is in excess; in the second it is deficient. When the convulsive or spasmodic action is of the clonic kind, but instead of being violent is slight, and when very slight contractions rapidly alternate with relaxations, it constitutes what is called tremor.

Convulsions differ, first, in kind, as dependent on an excess or a deficiency of vital energy; secondly, in degree; varying from the most powerful, violent, and persistent contractions, without perceptible relaxation, to relaxations of very short duration, down to the feeblest contractions, with the most rapid alternate relaxations of the slightest tremor; thirdly, in their seat, affecting either the voluntary or the involuntary muscles; the convulsion or spasm is called clonic. In the first, the vital energy of the muscle is in excess; in the second it is deficient. When the convulsive or spasmodic action is of the clonic kind, but instead of being violent is slight, and when very slight contractions rapidly alternate with relaxations, it constitutes what is called tremor.

When convulsions attack a single muscle, or a particular set of muscles, the convulsions are called partial or local; when they attack a great number of muscles simultaneously or in rapid succession, they are called general.

The accession of convulsions, whether local or general, is commonly, though not invariably, preceded by premonitory signs. An attention to such premonitory signs, when present, as they will almost always be found if carefully looked for, is of the last importance; because it may lead to the adoption of means which may prevent the attack. Among the most common and decisive premonitory signs of an approaching attack of convulsions may be enumerated, flushing of the face, or the opposite state, an unusual pallor of the countenance; giddiness; noise in the ears; spectra floating before the eyes; sudden and transient loss of sight or of hearing; unusual drowsiness, or the contrary state of sleeplessness and restlessness; a sensation of coldness creeping down the back or pervading the limbs; sickness or nausea at the stomach; palpitation of the heart; hurried irregular respiration; tendency to sigh; a sensation of faintness; torpor or despondency of mind, and an unusual insensible face, or, it is rare that one or more of these or other analogous signs do not give warning of the approach of the paroxysm. The presence of such signs should therefore not only not be neglected, but, whenever the predisposition to the disease, should be carefully looked for, that the particular nature of the case may be promptly taken to prevent an occurrence of the attack.

In the actual paroxysm, the features are sometimes drawn, the eyelids are prominent, staring, vacant, wild, and are rolled in every direction; the
teeth gnash; the mouth foams; the tongue protrudes; and the action of inspiration from the passage of the air through the clenched teeth, is attended with a hissing sound. So violent are the contraction of the tongue, and the muscular action of the body, that it is probable the effort is too much for the force of the muscles. When the muscles of respiration are involved, and the respiratory function is much obstructed, the face becomes tumid, bled, and of a dusky or purple colour: and sometimes the body yields to a lethargic sleep; the breath is fresh, but slow and laboured. The imperfect aeration of the blood. Such is the obstacle to the progress of the blood, that the blood-vessels sometimes give way, and the blood bursts from the nose, or is exuded extensively beneath the skin, and probably partakes in the injuring mischief to the brain. At other times, the face, instead of being red, is pallid and sunk, and then the pulse is feeble, small, and compressed; as in the former case, the breath is suspended, and attended with a violent beating of the carotids. The violent contractions of the muscles act upon the bladder and rectum, and expel their contents involuntarily and with force. In all the cases in which the current of the blood is much obstructed, the functions of the brain are proportionally impaired, the general sensibility is diminished, and there is sopor, or even coma; at other times consciousness is but little affected, and the violence of the contractions produces severe pain.

The mode of life of this man is such as is conducive to several accidents of which he has been the victim. He usually indulges in sleep for ten or twelve hours, and sometimes even for twenty or thirty hours a day. He is generally excited by an absorbing kind of inanition or weakness of the stomach.

The paroxysm commonly returns at uncertain intervals, preceded by the premonitory symptoms just enumerated. But sometimes it takes place fatal at the very first attack, by producing apoplexy or asphyxia; and not unfrequently it leaves behind it either paralysis or some indefinite and permanent form of convulsive disease, as epilepsy, chorea, and so on. The frequent recurrence of the fits invariably imitates and modifies the modern phthisical and scarlet fever.

In some peculiarly nervous and irritable temperaments, instead of the languor and lassitude which ordinarily follow a severe convulsive paroxysm, the exhaustion is so extreme that the patient falls into a state of profound syncope or fainting, which continues for so long a period as justly to excite alarm; and sometimes the patient actually dies in this fainting fit, the brain never recovering its functions.

At other times, when the animal life is completely suspended, the motive nerve is not in direct communication with the brain, but the latter is not wholly extinguished, though its functions are performed so feebly as to afford no indication of their existence; and consequently, to all outward appearances, the patient appears to be in a state of deep sleep or torpor, and may ultimately revive. It is in cases of this kind that there is a real danger of premature internment. Several cases are on record in which this event is stated to have actually happened, and the evidence on which the truth of some of these narratives rests is difficult to resist. At all events it is quite certain, that several persons who had fallen into the state of syncope, after the exhaustion of convulsions, have narrowly escaped being buried alive; and such cases should make the medical attendant more cautious in the mode of examination of every instance of apparent death, after a convulsive paroxysm, until he has observed the most unequivocal evidence that death is real.

The principal character of a paroxysm of convulsion, is the description of it only as it exists in its severest form. In general even the tonic seizure is a much more mild attack; the convulsions being not violent; affecting only a few muscles at a time, and rather passing in succession from one part of the body to another, without the number simultaneously. In general too the convulsions are unattended with the obstruction of respiration; are without the abolition of sensation; in short, are without the common features of convulsions of a violent, organic or animal. And more especially when the paroxysm is of a clonic character, the muscles are not rigid, the contractions are not vehement and long-continued, the face is not swollen and livid, but rather pale and sunk, the features are little distorted, and the pulse is feeble and rapid, and the extremities are cold.

Convulsions are frequently excited in the progress of other diseases, towards the termination of continued fevers, for example, in which they are almost always of bad, and sometimes of fatal omen; at the commencement of eruptive fevers, as smallpox, to mention one. They are sometimes also, though generally indicative of a severe form of disease, they are not so alarming as at the close of continued fever; in inflammatory affections of the brain; in hooping-cough; in the convulsions of the digestive organs, and more especially of the uterus, and in long-continued suction or imperfect performance of the catamenial function.

The causes of convulsions are exceedingly numerous and varied. There is, without doubt, a constitutional predisposition to such convulsions. They are connected with all that regulates the nervous temperament than in any other. The distinctive character of the nervous temperament is muscular mobility combined with nervous irritability. The muscular fibre is relaxed, delicate, and weak; the nervous fibre is peculiarly sensitive, while it is proportionally without energy. Other powerful causes are, peculiar conformation of the body, namely, a feeble frame, with a largely-developed head; a relaxed and delicate fibre; a full and pathetic habit; a constitution often manifestly propagated from parent to child; all circumstances capable of producing over-excitement, or in any other mode of inducing debility, physical or mental; as an idle and luxurious mode of life, including regular and active exercise, and, as would appear, certain local irritations of the air, by which the nervous system is rendered more susceptible of impressions, and its vital energy is more rapidly exhausted.

The exciting causes are those which act either upon the animal or upon the organic portion of the nervous system. It has been stated that contractility, though a property inherent in the muscular fibre, can be excited only through the agency of a stimulus derived from the nervous system. All the muscles which are under the control of the will, or which depend on an act of volition for the exercise of their function, derive their nervous stimulus from a particular portion of the nervous system, namely, the spinal cord. The spinal nerves demonstrate this, as well as the nerves which supply the stimulus necessary to voluntary muscular motion, are different from the nervous fibres which communicate sensation. The first, the motive nerves, communicate with a particular portion of the spinal cord; the second, the sentient nerves, communicate with another portion of the spinal cord. Now, it is found that whatever disturbing influences act immediately upon the motive nerves, or upon that portion of the spinal cord with which they directly connect, excite in the spinal cord the most powerful exciting causes of convulsions. But there is a close sympathy between the sentient and motive portion of the spinal cord, and between the spinal cord and brain, that being influenced by the former so as to act upon the latter fully on the one is rapidly communicated to the other. It is indeed seldom that it is possible to trace the seat of the irritating cause either to the motive or to the sentient portion of the nervous system exclusively; that would imply an accuracy and completeness of knowledge which pathologists are at present far from possessing. All that the present state of knowledge almost ever admits of is to trace the seat of the irritating cause to some portion of the spinal cord or brain; and this, which in nearly all that can be done in any other case, is sufficient to connect the morbid condition of the organ with its disordered function. There are then morbid conditions of the spinal cord and brain which are clearly ascertained to be immediately connected with that disorder of their functions of which convulsions are the result.

Such are, 1. A disordered state of the circulation of the blood through these organs. One of the conditions which are most essential to the distinction of the functions of the nervous system, is, that the spinal cord and brain receive a certain supply of arterial blood. If the quantity of blood which flows to these organs be deficient, syncope will be induced, with a diminution or loss of muscular power; or, if the convulsions are of a clonic character, a constant result. If the blood transmitted to the spinal cord and brain do not circulate through the blood-vessels with a certain impetus and velocity, but be sustained either by the kinetic and circulatory arteries, or by the state termed congestion [CONGESTION], will be induced, of which convulsions, also in general of a clonic character.
are a constant result. If the blood sent to the spinal cord and brain be in preternatural quantity, and if it circulate with preternatural energy, the state of inflammation will be induced, of which convulsions, always of a tonic character, are a constant result. Whether, then, the balance of the blood be disturbed by deficiency or excess it is a matter of amount, of quantity of the circulating blood, or deficiency or excess in the motion of it, it will prove alike an exciting cause of convulsions. 2. Precisely the same results are produced if there circulate through the blood-vessels blood vitiated in quality, or if the vessels be engorged, or engorged and impregnated with poison. The characters of the convulsions induced by exciting causes of this class vary essentially according to the nature and extent of the vitiation of the blood, and the severity of the dose of poison with which it may be bombarded. 3. Extravasation of blood upon the surface or into the substance of the spinal cord and brain, by the rupture of the blood-vessels; or the effusion of the serous portion of the blood, occasioning direct pressure on the nervous matter. 4. Organic changes in the constitution of the nervous substance, as a preternatural softening or a preternatural hardening of it. 5. Morbid growths within the nervous substance, forming tumours of various nature and sizes. 6. Mechanical injury of the nervous substance, from the irritation occasioned by the deposition of bony matter on the investing membranes of the nervous substance, or from apoplexy of bone growing out from the inner table of the sphenoid cases. Not include it. 7. Mechanical violence directed against the various substances of the brain, by a blow, which, by a shock, exhaustive of its vitality, may be communicated to it, or its substance injured or its circulation disturbed. Such are the more powerful exciting causes which act directly on the animal portion of the nervous system.

But convulsions may be equally induced by the action of an irritating cause on the organic portion of the nervous system. The irritation excited in the organic nerves is transmitted to the communicating branches of the spinal and cerebral nerves, and is by these communicating branches conveyed to the spinal cord or brain. It is in this manner that irritating substances in the stomach or in the intestines induce convulsions, as indigestible or acrid substances taken as food, or acrid matters generated or evolved during the digestive process, or retained by long-continued constipation [Constitution] in some part of the alimentary canal; or the accumulation of acid, or the presence of worms, &c. Many other noxious agents which act upon one or other of these nervous circuits, or upon both conjointly, might be enumerated as the exciting causes of convulsions; but those which have been stated may suffice to form a general idea of this afflection, by disturbing the functions of the nervous system.

The treatment in every case of convulsion must be directed to the subduing of the paroxysm and to the prevention of its return. There are certain things proper to be attended to in every case; the person is supported in a fit of convulsions, with a knowledge of which it is desirable that every one should be familiar. The patient should be immediately surrounded as completely as possible with fresh cool air. If he be seized in a small closed and crowded room, circumstances of themselves sufficient to produce a paroxysm in a person strongly predisposed to it, he should be removed into a spacious apartment, the windows of which should be thrown open, and every one whose assistance may be required should be permitted to enter the room. In the male, the neckcloth should be immediately untied, and the face, neck, and bosom freely exposed to the air; in the female, the stays should be unlaced, and every thing tight about the body should be removed. If the skin be cool and the face palid and sunk, the patient should be placed in the horizontal posture; if the skin be hot and the face flushed, he should be sustained in the sitting or erect posture, in order, in the former case, to favour the flow from the spinal cord and brain; and in the latter, to retard it.

The remedies employed to put an end to the fit must of course depend on the nature of the exciting cause, and on the pathological condition of the nervous system. If the particular affection of the nervous system be such that the pulse be rapid, full, and strong; if the skin be hot, and the face flushed; if the eye be injected, wild, and glassy, means must be taken very opposite to those which are proper when the circulation is depressed, the pulse rapid and feeble, the skin cool, the face pallid and sunk, and the eye dull, heavy, and expressionless. The experienced eye of the observing and discriminating practitioner will gather at a single glance, from the presence or absence of sopor, from the presence or absence of the signs, 

[Cocco Bahar, a princely state, occupied the north-eastern part of the country of Bengal, and lying between 26° and 26°30' N. lat., and between 88° 32' and 89° 52' E. long. This princely state, which once formed the western division of the independence of Sutanuti, now forms a state of absolute dependence on the English government, to which an annual tribute is paid to the amount of half the revenue, and for the purpose of securing this tribute, the princely state has been placed under the control of the collector of the adjoining district, Rungpur. The extreme length of the principality from east to west is sixty miles, and its mean breadth about twenty-two miles, the total area being 1302 square miles. The country is excluded from the province of Bengal. The name Cooch, has been given in order to mark the difference between this principality and the province of Bahar (described vol. iii. p. 776). This name, Cooch, is derived from that given to the majority of the inhabitants. The name of Cooch Bahr is displeasing to the chiefs of the country, who repudiate all connection with the Cooch, and call themselves Raghunagies (descendants of princes). Many of the Cooch tribes have relinquished the practices of their ancestors, which were characterized by various impurities, and have adopted the Brahminical system of life; while others, who inhabit the same principality, near the frontiers of Bootan, continue rude and barbarous in their habits. Their religion allows them to eat pork, mutton, venison, and poultry, but not beef; some of the mahrattas, who are a nation of the tribe, will not eat beef, but other sorts of flesh, such as pigs, cats, dogs, and snakes.

The southern parts of the principality are much improved by culture, and of considerable fertility; but in the north the country is low and marshy, and contains abundance of...
thick jungle. A considerable quantity of opium is produced, as well as indigo, and some cotton. Wheat is cultivated and a little barley. Trade between the principality and the British territory is small, but the people have also commercial dealings with Asam and Bootan. Among the more indigent classes in the north, it is customary for the people to sell their children for a price. This trade is much discontinued by the English government.

The sovereign of this country is described in the Ayin Akbari as having been a powerful chief, at the head of an army of 1,000 horse and 100,000 foot soldiers, and having Asam and the whole kingdom of Bootan under his sway, his territory being bounded on the east by the Brumspootha river, on the south by Gohaghat, on the west by Tirhout, and on the north by the Tibetan mountains. This country was also by all means about the year 1650, and was subjected to an annual tribute of ten lacs of rupees. In 1772, when the East India Company had succeeded to the rights of the Mogul emperor, the rajah of Cooch Bazar ap-plied to the collector of Rungpore for protection against the attacks of the Bootaniers, by whom he had been reduced to great extremities. It was on this occasion that the rajah offered to pay an annual tribute to the English equal to one-half of his revenue, which offer being accepted, a British commissioner was sent to establish the trade, and the Bootaniers were made to retire precipitately. The tribute having fallen into arrear, and the internal affairs of the country being greatly disorganised, an English commis-sioner was appointed in 1789 to collect the revenues and compel the Bootaniers to pay the annual tribute. He reached the settlement in July 13, 1789, and after cruising for a month among the other Society Islands, sailed southwards in quest of the unknown continent, Terra Australis Incognita, which was formerly supposed to exist somewhere, as a counterpoise to the great mass of land in the north. The Bootan mountains were seen October 6, and it was supposed that the object of their search was found. The land however proved to be New Zealand, which had not been visited by Europeans since it was discovered by Tasman in 1642. Cook spent six months in sailing round it, and found it to consist of two large islands, divided by a narrow channel: the warlike and savage temper of the natives hindered him from doing much to explore the interior. Sailing westward, he reached New Holland April 12, 1770, and ran down its eastern side from lat. 38° to its northern extremity at Torres Strait, lat. 104°, where he took possession of the coast which he had explored in the name of Great Britain, and denominated it New South Wales. He then shaped his course towards New Guinea, and by passing between them proved what had been disputed, that New Holland and New Guinea were distinct islands. Of the various interesting adventures and narrow escapes which occurred to the crew during their long sojourn among the savage tribes and unknown seas, especially that difficult and tedious navigation of near 2000 miles along one of the most dangerous coasts in the world, we have no room to detail. Cook's own narrative of this voyage is published in the Account of the voyage of discovery undertaken during the reign of George III. into the Pacific, illustrated with plates and charts at the ex pense of government.

This voyage was distinguished by two things: first, that neither New Zealand nor New Holland were parts of the supposed southern continent; secondly, that no such continent could exist to the northward of 40° S. lat. It was now determined to send out a second expedition under Commodore D. G. Gray, to explore the breadth of the continent, and the Resolution, of 360 tons, and a smaller ship, the Adventure, Captain Furneaux—which parted company in the second year of the voyage—were commissioned for this purpose. Cook was already on his voyage, and arrived in the same northern latitudes, prosecuting his discoveries as near the South Pole as possible, and making such traverses, from time to time, into every corner of the Pacific Ocean not before ex-
amined, as might finally and effectually resolve the much agitated question about the existence of a southern continent in any part of the southern hemisphere to which access could be had by the efforts of the boldest and most skilful navigator.

The two ships sailed from Plymouth, July 13, 1772, quitied the Cape of Good Hope Nov. 22, and traversed the Southern Ocean in high latitudes during February. Equinoxes, being near the limits of E. long. 20° 22', and 70°, the extreme point to the southward being lat. 57° 15'. Having satisfied himself that no land of great extent could exist between these limits, Captain Cook made sail for New Zealand, and on March 29, after spending the winter months (our summer) among the Society Islands, he resumed his quest of the southern continent in November, proceeding eastward, principally between the 60th and 70th parallels of latitude, and from E. lon. 170° to W. lon. 106° 24', where he reached his extreme southward, lat. 71° 10', where he was finally stopped by ice. Returning northwards, during the winter months he traversed the Pacific Ocean in the southern tropic, from Easter Island to the New Hebrides, and discovered another island, the largest in the Pacific except New Zealand, which he called New Caledonia. Thence he returned to New Zealand, to refresh the crew, and resumed his quest of a southern continent, November 10. Having sailed in different latitudes, between E. lon. 138° 56' and 27° 34', and being in W. lon. 138° 56', he gave up all hope of finding any more land in this ocean; and determined to steer direct for the western entrance of the strait of Magallanes, with a view of coasting the south side of the Fiordo, which at that time was imperfectly known. December 29 he passed Cape Horn, and standing southward, discovered Sandwich Land, a desolate coast, the extreme point of which was named by him the Southern Thule, lat. 59° 13', W. lon. about 22°, as being the most southern land which had been then discovered. Thence he ran to the eastward, nearly to the longitude of the Cape of Good Hope, and having thus encompassed the globe in a high latitude, and satisfied himself that no land of considerable magnitude could exist between the 50th and 70th parallels, he began to put in to various isles in those tempestuous seas with a worn ship and nearly exhausted provisions. Accordingly he made sail for the Cape, which he reached March 22, 1774, having sailed no less than 20,000 leagues since he left it, without meeting even with so trifling an accident as the loss of a mast or yard. July 30 he anchored at Spithead.

He was immediately raised to the rank of Post Captain, and received a more substantial reward for his services in locating the continent of Terra Australis, and the demonstration of the theories of science were powerfully interested, not only by his geographical discoveries, but by his unprecedented success during this voyage in preserving the health of his ship's company, by not losing one of his crew by any sickness. His method consisted chiefly in a strict attention to diet, and to keeping the ship clean, well- aired, and dry. Much however was found to depend upon the care and influence of the commanding officer; for the crew of this second voyage he published his own journal, illustrated by maps and engravings; a supplementary volume containing the astronomical observations was published at the expense of the Commissioners of Longitude. The style is pervading, clear, and manly, and, considering the impenetrable of his education, does credit to his sense and ability.

While Cook was exploring the Southern Ocean, the attention of government was also turned towards discoveries in the Arctic Ocean, and Commodore Ponsonby, who had on a former occasion been detached with Cook in both his former voyages, were fitted out with every thing that could promote the health and comfort of the crews and the scientific objects of the voyage. They sailed from Plymouth July 12, 1776. Cook's instructions were to proceed, as far as possible, in the following words:—he was to visit the Good Hope to the Pacific, and to revisit the chain of islands lying along the southern tropic, in which he was to endeavor to disseminate and naturalize a variety of useful animals, plants, to visit the coast of America, and then to bend his course northwards, and on reaching the western coast of America, to proceed with as little delay as possible to the latitude of 65°, and then to use his best endeavors to return to the Atlantic by the high northern latitudes. He left London March 24, with the usual course of Arctic voyagers. He arrived at the Friendly Islands too late in the spring of 1777 to attempt anything in the Arctic Seas that year. In December he took a final leave of the Polynesian Archipelago, and January 16, 1778, the British carried the name of Sandwich Islands, about 20° N. lat. Making no long stay, he reached the coast of America March 7, being in 44° 33' N. lat. In Nootka Sound, lat. 49° 32', he stopped a month to put the ship in perfect repair before encountering the dangers of the Polar Seas, and proceeded April 26, keeping near the coast whenever the state of the weather permitted. Following this course to the extreme northern point of the Pacific, he there examined a deep sound, and at last reached it on May 5, 1778. He was strong hopes were entertained that it might lead to the long-sought discovery. These proving unfounded, he ran to the southward, along the narrow peninsula which forms the west side of the strait of Kamtschatch, and after touching at Unalaska, made for Bering's Strait. There he determined the position of the most westerly point of America, lat. 63° 40', long. 168° 15' W.; and ascertained it to be distant from the coast of Asia only thirteen leagues. August 18, he reached his extreme latitude, 70° 41', where he was stopped by an impenetrable wall of ice. He continued to prosecute his search until August 29, when the daily increase of ice warned him to return. Before proceeding to the south, however, he spent some time in examining the nature and extent of the coast of Bering's Strait, during which he had satisfactory proof of the correctness of that navigator, and made valuable additions to our geographical knowledge of that region.

Returning to winter at the Sandwich Islands, he discovered two which he had not before visited, Molava and Owyhee, the largest of the group. In sailing round the latter he spent ten weeks, from December 1 to February 13, 1779, without any serious disagreement with the natives, whose treatment of him was in every respect the utmost respect. Speaking of the disappointment in not finding a northern passage, he uses the following words, which conclude his journal:—To this disappointment we give them no time, in order to revisit the Sandwich Islands, and to endeavor our voyages, though the last, seemed in many respects to be the most important that had hitherto been made by Europeans throughout the extent of the Pacific Ocean. These pleasant anticipations were cut short by their painful death. On the night of February 13, one of the Discovery's boats was stolen. Cook went ashore on the 14th to try to recover it; the natives became alarmed, blows were struck, and Cook was obliged to fire in self-defense. In retreating to the boats, four of the marines who attended him were killed, and Cook, who was the last person left on shore, was struck down from behind. He struggled vigorously, but the confusion of the boat's crews was such, that no assistance was given, and he was seen overboard, but apparently having been left in the possession of the natives, his body only was recovered, the flesh having probably been devoured. His remains were committed to the deep with military honors. Mr. Smawell, an eye-witness, has given the fullest account of the event, which he described to the scheme of premeditated treachery, but a sudden impulse, arising from the belief that the loss of the boat would be revived by hostile measures. Captain Clarke succeeded Cook in the chief command of the ship, and in the following summer to the Polar Sea; but he was unable to advance as far as in the former year: the voyage therefore failed in his chief object. The ships returned by China and the Cape to England, which they reached in October, 1780. An account of the voyage was published from Cook's Journal, continued by Lieutenant King. Charts and plans were
accepted at the expense of government, and one-half of the profits of the work were bestowed upon Cook's widow and children, upon whom a pension was settled.

As a navigator, Cook's merits were of the first order. He was thoroughly acquainted both with the practical and scientific parts of his profession, and possessed the qualities which are necessary to make him a successful navigator. He was patient, persevering, and full of resources, sagacity, self-possession, and decision, and an intuitive readiness of perception in professional matters; so that his first opinion as to a course to be pursued, the nature of an emergency, tides, currents, &c., was seldom found to be incorrect. His perseverance was unyielding, and needed no relaxation nor respite. He was a strict disciplinarian, but watchful and solicitous in an uncommon degree for the health and comfort of his crew; and to this conduct he owed the diminished number of instances of injury sustained by his men, and the number of unpleasant events, even to grass, wood, and water. Nor did he give way to the gratifying of a natural curiosity, when by doing so he was likely to provoke a hostile collision. Once only he was treacherously attacked and unjust aggressor, which ended in bloodshed; an act which he remembered with pain, and in his journal acknowledged to be an error, while explaining the motives which led to the commission of it. The same benevolence and steady principle which he displayed in public, he maintained in private life. His constitution was robust, inured to fatigue, and patient of self-denial.

(See Kip's Life of Cook, which is inserted, entire we believe, in the biographical Britannia, giving the several voyages to the Pacific Ocean; Sedgwick's Narrative of the Death of Captain Cook, which is printed in the Biographia.)

COOKE, BENJAMIN, a highly-distinguished composser and organist, who during the latter half of the last century supported and advanced the science of music, both by his works and precepts. He was the son of Benjamin Cooke, a music-publisher in New-Street, Covent Garden, and before he had attained his ninth year became the pupil of the celebrated Dr. Pepusch, under whose tuition his precocious genius was developed; and, in the year he was ten years old he was found capable of doing the duty of organist at Westminster Abbey, as deputy of Mr. Robinson, son-in-law and successor to Dr. Croft. On the death of Pepusch in 1748, he became organist of All-Saints' Church in Greenwich, and in 1749 was appointed director of the music at the Temple Church, which office he held till the year 1789, when he relinquished it to Dr. Arnold. In 1757 he succeeded Bernard Gates as lay-clerk and master of the choristers at Westminster Abbey, and in 1762 was appointed organist of that venerable church. In 1777 he was University of Cambridge conferred on him the degree of Doctor in Music. In 1782, after a severe contest, in which Dr. Burney was his chief opponent, he was elected organist of St. Martin-in-the-Fields, with all the emoluments, and was made a Companion of the Order of the Garter. He was one of the sub-directors of the famous Commemoration of Handel. He died in 1793, leaving two sons—Henry, still living, who formerly held a very respectable situation in the Post Office, and Robert, who followed his father's profession, and became one of the Abbey on the decease of Dr. Arnold; but shortly after, in a fit of insanity, threw himself into the Thames, and was drowned, to the grief of his numerous friends, by whom he was much valued, both for his talents and moral qualities.

Dr. C. was a member of the board for the Academy of Antient Music, the Church, and the Catch Club. For the first he made the important additions, so well known to connoisseurs, to Galliard's Morning Hymn, For the second, he composed the piece known as Dunham's C. To the highly-distinguished Catch Club, he contributed his fine glees, 'In the merry month of May,' 'How sleep the brave,' 'Hark! the lark,' 'As now the shades of eve,' &c.; and obtained seven of the gold prize medals given by the elegant and useful society. He was the intimate friend of Sir John Hawkins, the musical man of the hour, and was supported by much by the occasional hints of so learned a professor—and the master of some of the deservedly celebrated musicians of the last and present age, among whom it would be an injustice to omit the name of the Parson. Greaves, the Swallow, Walmisley, &c. (Harmonicon, vol. i.)

COOKE, GEORGE FREDERICK, a popular actor, was born in the city of Westminster, April 17th, 1755. He was the son of an officer of the navy, and his father's death was a serious blow to the family. He was apprenticed, after various essays in private, as a professional actor at the Theatre Royal, Drury Lane, in the character of Dumont in the tragedy of 'Jane Shore.' In 1778 he made his debut in London, at the Haymarket theatre, for a benefit, but without attracting any particular attention. After a period of two-and-twenty years, during which he became the hero of the Dublin stage, he returned to London, and made his first appearance at Covent Garden theatre, Oct. 31, 1800, in the character of Richard III.; a part which he then did the greatest service to the success of the play, and which was the first step in the way of his establishment in favour of the town with Mr. Kemble. In 1810 he sailed for America, and arrived at New York on the 16th of November, in which city, intemperance having been long undermining a wonderfully strong constitution, he expired in 1812, aged 57 years. His most popular characters were, in tragedy, Richard III., Iago, and Shylock; and in comedy, Kilye, Sir Archy Macarsac, and Sir Pertinax Macyscopent. Mr. Keen, in one of his visits to America, caused a monument to be erected over his grave. His memoirs were published by his friend Mr. Dunlop from a MS. journal kept by Mr. Cooke for many years, and other equally authentic documents, in 2 vols., 8vo., London, 1813.

COOLER. Various concoctions have been made by brewers and distillers for cooling their worts. This has been done by exposing the hot liquor in shallow wooden vessels to the air, and by the use of stirrers or fans to keep the liquor in motion, and thus expose fresh surfaces to the air.

The plan has also been adopted of passing spring-water, which in deep wells is usually about 52° even in summer time, through metal pipes placed in the liquor to be cooled.

Wine-coolers are made of porous earthenware, which being soaked in and saturated with water, by its gradual and copious evaporation occasions cold; and in Spain water-coolers, called alcarrazas, are made on the same principle. Coolers of this kind, made of porous clay, lightly baked, and fixed in bottles or pitchers, represent the ancient Egyptian performers on the antient monuments of that country in a form very much resembling both those now used in Egypt, and such as we see in use at Cadiz and other places in the South of Spain.

On the monument of Thoth we sometimes observe a man fanning these earthen vessels with a palm-leaf, in order to promote the evaporation. The Arabs of Egypt are well acquainted with the practice of fanning their earthen vessels to quicken the evaporation. M. Costaz, when in Egypt, made the following experiment on the refrigerating power of these earthen vessels. The thermometer in the shade, but exposed to the air, marked 116°.75 Fahrenheit during the greater part of the day. At sunset the Nile water was 98°.6; an earth-cooler, filled to the brim, was placed on the deck of the boat in which M. Costaz passed the night on the Nile. At day-break the temperature of the river was the same, but that of the water in the jar was only 61°.25, and more than half of the water was evaporated.

COOPER. [SHAPTSBURY.] COORDINATES mean lines, angles, &c. ranged in order. The notion from which the word arose was this, when the positions of consecutive points on a curve are referred to given points, or lines on a plane, as angles are by degrees; those lines or angles present a succession of arranged data, by which the several points of the curve may be treated in treated in order. It was Descartes who first used coordinates in the second book of his geometry, and this notion of the expression was announced as follows: "Eligo rectam aliam lineam, veluti A B, ut ad diversa ejus puncta referam omnia puncta hujus lineae C E; deinulo eligo
etiam punctum aliquod in AB, velut A. ad ordemcum ab eo calculum. We do not find the word in Schooten, Beaune, or others of the immediate school of Des Cartes. De Witt calls the abscessa crus patiens, and the ordinate crus officiens. Coordinates (so called) are used in the writings of John Bernoulli, but in Newton the phrase first occurs, as the first six books of Principia. They determine the position either by straight lines only, or by a straight line and angles: in the latter case they are called polar coordinates.

1. Rectilinear coordinates in a plane. In the given plane, draw two straight lines meeting in a point O (called the origin). From any point P draw parallels to the two lines just named: the parts intercepted between P and these lines (called axes) are the coordinates of the point. When the axes are at right angles, the coordinates are said to be rectangular; when at any other angle, oblique. [Auscissa.]

2. Rectilinear coordinates in space. Through any point O the (origin) draw three planes which intersect in right lines (the axes). Through any point P draw parallels to these axes: the parts intercepted between P and the coordinate planes (three in number) are the coordinates of P.

3. Polar coordinates in a plane. Choose any point O in the plane, and an angle right line O. Through any point P, taking any point O, the distance OP (called the radius vector) and the angle POA (which has no distinct name, but might be called the vectorial angle) are the polar coordinates of P.

4. Polar coordinates in space. Choose a plane (M), a point O, and a line OA, in the plane M. Take any point P above or below the plane, and let fall PB, a perpendicular on (M) meeting (M) in B. Then the radius vector OP (the angles POB and BOA are the polar coordinates of P. In astronomy, if O be the earth's centre, OA the line passing through the equinox, and (M) the plane of the ecliptic; then BOA is the longitude of P, and POB its latitude. But if (M) be the plane of the equator, then BOA is the right ascension of P, and POB its declination.

COORG, or CADAGA, a small principality which occupies the eastern part of the mountain range called the Western Ghauts, and extends from the Tambercherry pass, on the south, in 11° 25' N. lat. and 76° 26' E. long., to the river Hennavuty, on the confines of Bedune, on the north, in 12° 42' N. lat. The greatest length is about 70 miles, and the greatest breadth about 22 miles. On the north it is bounded by Canara and Mysore, and on the west by the state of Malabar, and on the east by Mysore. The country presents a succession of hills and valleys, placed at a medium elevation between the sultry plains and the mountains. The rainfall of the monsoon season is considerable, and has a fertile soil: in many parts it is well cultivated, but in others is overrun with jungle, which is the resort of wild elephants and many beasts of prey; some considerable forts also occur, and from these a good deal of sandal-wood is obtained. The Tangha and Badora, which after their junction are called the Tumbuddra and the Cavery, have their sources in the Coorg country, which is so well watered and subject to so much rain, that rice is produced in abundance, both for the inhabitants, whose principal food it forms, but also for exportation to Mysore: a considerable quantity of cardamom seeds are raised and exported. There is besides abundance of excellent pasture for the wants of cattle. The manufactures of the country are confined to a coarse kind of blanket, which forms part of the dress of the common people: the cotton clothes which they use are all imported. Periapandam, in 12° 12' N. lat. and 76° 11' E. long., which was the head-quarters of the principality, is now the residence of the rajah and the seat of his government. This town is surrounded by an amphitheatre of hills, in 12° 26' N. lat. and 75° 59' E. long. The fort is a pentagon, with towers and bastions; within this is the rajah's palace, which is handsomely furnished in the European style.

The rajah of Coorg is mentioned by Fersita as an independent prince in 1583. Many vain attempts were made by the Mysore rajah to subjugate the country, but a dispute about the succession having arisen between two brothers, Hyder Ali offered his mediation, and this being accepted, he by treacherous means obtained possession of the territory. One of the brothers he destroyed, together with the paper where the succession letters were, and the fort of Cuddoor, on the eastern frontier of Bednore. This rajah dying in 1779, Hyder put aside his son, whom he confined in Periasam, and parceled out the country into jaghirs among several chiefsmen. The Maratha Mughals, in the reign of the young rajah, Beer Rajindra, was released from his confinement by twelve of his subjects, chiefs of villages, who for that purpose repaired in disguise to the place of his confinement. His standard was immediately joined by all ranks of the people, and the rajah was released with difficulty driven out. This prince, Beer Rajindra, was a man of enlarged mind and noble disposition, and during his reign he succeeded in preserving order within his dominions, and in conciliating the afection of his subjects. At his death, in 1808, he left the succession to an infant daughter, to the exclusion of his brother, to whom of right it belonged according to antient usages; but the young ranzy or princess having abdicated in favour of her uncle, with the sanction of the British government, Beer Rajindra, the rajah of Coorg, people, the country has since remained tranquil and prosperous. [Mill's History of British India; Buchanan's Journey through Mysore, Canara, and Malabar; Heyne's Statistics of the Goan States.]

COPAIVA or COPAIVA, an oleo-resin or turpentine (incorrectly termed a balsam, since it is destitute of benzoic acid), is procured not merely from the Copaifera officinalis (Wild.), a native of Venezuela, but also naturalized in the Guianas and other parts of South America. The chief sources are Brazil, and on the west coast of South America (in Peru). Copaiva is a resin that consists of a volatile oil, in the proportion of 40 to 42 per cent., and 50 per cent. of an acid crystalizable resin, consisting of a volatile oil, in the proportion of 40 to 42 per cent., and 50 per cent. of an acid crystalizable resin, consisting of a mixture of 3 parts of copaiva with alcohol of specific gravity 0.837, shaking them diligently, then mixing 100 parts of the oil with 374 parts of alcohol, and the modified oil of copaiva, to be again well shaken; after which 150 parts of water are to be thrown into the mixture, and the whole left to rest. The specific gravity of the oil thus obtained is 0.900. A slight difference exists between the oil thus procured and that by distillation. Both are used in medicine; indeed the oil is the active principle of copaiva, the resin being of very secondary importance. The oil is destitute of oxygen, and may be employed for the preservation of potassium.

Copaiva is frequently adulterated: the presence of any excessive proportion may be known by the manner in which the suspected portion conducts itself towards solvents and re-agents. Copaiva is occasionally mixed with castor-oil, almond, poppy, nut-oil, and the finer sorts of turpentine. All fixed oils (except castor-oil), the presence of which may be detected by sulphuric acid, but the accuracy of this test (called in question by Brandes) separate from it by being allowed to remain at rest. Good copaiva should be perfectly soluble in alcohol of the strength of 90 per cent. Any insoluble material is known as "bile," and consists of oils. Three parts of copaiva with one of mustard ammonia of specific gravity 0.950 form by agitation a clear soap. The simplest test of the purity of copaiva is to heat a small quantity of the liquid in a glass; when, if good, a hard brittle resin remains, which has considerably more crystals which form in this resin are six-sided prisms, and have the property of polarizing light.

A kind of copaiva is obtained in St. Domingo from the
COPAL, a resin possessed of peculiar properties, the produce of the Rhus copallinum, a native of Mexico; it is in rounded masses, smooth and brittle, transparent or nearly so, without colour, or having a slight tinge of yellow; it has but little taste, and is nearly inodorous; it is insoluble in water, fusible, and inflammable. It differs from most other resins in its very sparing solubility in alcohol; and of the little that dissolves with the assistance of heat the greater part is deposited as the solution cools. It is dissolved by ether and some essential oils.

COPAL, VARNISH, is the substance for preparing which this resin is most employed. It is probable that every manufacturer has his peculiar mode of proceeding: Tingry prepares the simple copal varnish by heating eight ounces of oil of turpentine in a matrass with the heat of a salt-water bath; as soon as this reaches its boiling point, he gradually throws in an ounce and a half of copal reduced to powder, keeping the vessel in a state of circular motion. This author further states that to obtain this varnish colourless, the rectified oil is to be exposed previously to the sun for some months in bottles, leaving an interval of some inches between the cork and the surface of the liquid; by this the oil undergoes some change, which renders it a better solvent of copal.

The varnish thus prepared is stated to be exceedingly durable and brilliant; it resists scratches, and is susceptible of a fine polish. Tingry particularly recommends it to be applied to philosophical instruments. There are several modifications of this varnish used for particular purposes, as with the addition of oil of lavender and oil of lavender and camphor, an account of which may be seen in the author above named.

COPENHAGEN, or KIOEBENHAVN, one of the six royal districts into which the Danish province of Seeland is divided, comprises the centre of the eastern portion of the island of Seeland and the islands of Amager (Amak) and Falsholm. It is situated on the north east by districts of Seeland, and on the east by the Sound and the Baltic. It contains an area of about 525 square miles, which are divided into three provinces or provostships, each of which contains two harden or circles. Exclusive of the capital, the population is about 40,000; inclusive of it, the numbers are about 156,000; it has 76 parishes, 4 towns, besides the capital, and 197 villages. This circle is on the whole very fertile.

COPENHAGEN, the metropolis of the kingdom of Denmark, is situated, as its name indicates, partly on the eastern coast of the island of Seeland, and at the southern extremity of a gulf in that narrow channel of the Baltic called the Sound, which is here about 14 miles broad, and partly on the northern coast of the small island of Amager, or Amak. The Baltic in 55° 42′ N. lat. and 12° 3′ E. long., is about 5 miles in circumference; if in length, and if in breadth; and is divided into three principal districts—the Old Town or Altstadt, the New Town or Friedrichstadt, and Christianstadt. The quarters are surrounded by ramparts and ditches, and defended by 24 bastions, besides outworks, and towards the sea by a very strong citadel. Without these lines are the three suburbs of the North Bridge, East Bridge, and West Bridge. Altogether Copenhagen is one of the most beautiful capitol in Europe.

It is divided into 12 quarters, and contains 10 public squares, 5 market-places, 3 royal palaces, 9 parochial churches, a Roman Catholic chapel, 5 synagogues, 3 religious foundations, 13 hospitals, a foundling asylum, and 30 orphanhouses; this last is an emporium from the narrow entrance into the port, which is capable of containing 500 merchant vessels, besides the whole navy, is very grand and striking.

The Old Town, or what is called the City, is the most southern quarter. It is separated from the New Town by a canal and the‘ Gothic Street,’ and united to Christianshavn by a bridge; it is large and populous, has a fine appearance, and contains the spacious area called the New Market, the Tivoli Gardens, the flourishing street called Christianshavn, and the place of Christianburg. Here also is the royal palace of Christianberg, built by Christian between 1732 and 1740. It was burnt down in 1795, but is now nearly restored, and is one of the finest buildings in Europe. It contains a magnificent palace and church, its popular galleries of paintings, natural history, &c., in a series of twelve saloons; the library, in which are 400,000 volumes, a valuable collection of engravings, and the marble sculptures and casts of Thorwaldsen. The other remarkable buildings in this quarter are the Prince Frederick’s palace; the palace of Charlottenburg, above mentioned, and now occupied by the Academy of Arts, a picture gallery, and a repository for the artillery, &c.; the bank, exchange, new town-hall, and Trinity church, where the Danish sovereigns are anointed. The tower, which is 115 feet high, an observatory is erected; and the university with four colleges, which was founded in 1478 by Christian I. This university is attended on an average by 700 students, and has a library of 60,000 volumes, a collection of MSS. relating to the northern and polaric history, a museum of northern antiquities, a botanical garden, a cabinet of natural history, a theatre of anatomy, &c.

The New Town, which is the most northern quarter of the city, and which Fredericks werd the finest portion, is laid out in broad streets, and contains the handsomest buildings in Copenhagen. Here is the antient royal palace of Rosenborg, in which are deposited the jewels, a beautiful collection of antiquities, and a cabinet of coins and medals; its ample gardens form a public promenade. Frederic’s place, a noble octagonal space, is chiefly formed
oy the Amalienborg, a structure composed of four large palaces—those of the king, the prince royal, the king's brother, and the naval school; one of the sides is open, and is embellished with a beautiful equestrian statue of Frederick V.

The third division of Copenhagen is Christiansanhavn, situated on the island of Amager, and united to the town by two bridges thrown across the narrow arm of the sea which separates Amager from Zealand; it forms an admirable harbour, which is the great naval station of Denmark, and is capable of accommodating two hundred and thirty thousand tons of shipping. It presents regular well-built streets and handsome squares, is St. Saviour's church, the finest in Copenhagen, with its singular tower, 282 feet in height; the beautiful Frederick's church, formerly a monastery of the Order of the Annunciation, and the East India Company. In this direction are situated the two smaller islands of Old and New Holm, which contain the stores, dockyard, slips, and arsenals of the fleet, &c.

Copenhagen is the seat of a bishopric. It contains altogether 29 Protestant churches, one Roman Catholic chapel, 3 synagogues, 22 hospitals, (one of which accommodates above 2000 patients,) a naval hospital for 1000, and other benevolent institutions for human infirmities. The city possesses also a museum for northern antiquities, and a philosophical and botanical institute for historical natural history, &c., containing above 34,000 volumes; a royal museum of the arts, cabinets of coins, mechanical objects, &c.; a naval and military cadet academy, 114 schools of various descriptions, a mechanics' institute, conservatory of music, &c. The corporation also maintains a society for improving the Society for promoting Northern History and Languages, a Society of National Economy, Societies for Icelandic Literature and for Northern Antiquities, a Bible Society, &c., &c.

The population in 1797 amounted to 85,161, in 1829 to 111,957, of whom 54,950 were males and 57,047 females; and at present it is about 116,000, including 2600 Jews. The chief source of employment is commerce and navigation, which is greatly promoted by the East India Company and various trading societies. The Danes are, however, rather an agricultural than a manufacturing country, there are a great number of manufactories in Copenhagen, which afford occupation to above 3000 persons; among these are silk, cotton, woolen, and woollen fabrics, 3 vinegar distilleries, 3 sugar refineries, 8 soap-boilers' works, 32 manufactories of tobacco, 21 of cloth, 23 of cotton goods, 18 of hats, 24 of gloves, 29 of linen and cordage, 3 of silk, 29 tanneries, 3 iron-founderies, &c. General trade has never been so extensively carried on as at the present time, and Copenhagen has a free port, which Copenhagen is not. The East and West India trades are however still pursued to much advantage.

Copenhagen is said to have been founded by Bishop Axl in 1168, when it was only a poor hamlet of fishermen; but as a town Copenhagen dates only from the thirteenth century, and as a city since 1443 only, when, having been much enlarged, it received municipal privileges, and became a free port. During the 17th of March, 1658, the peace of Copenhagen was concluded in the camp of Copenhagen, after the Swedes had in vain endeavoured to reduce it by a siege: on the 2nd of April, 1801, Lord Nelson gained here a great naval victory over the Danish fleet. It has frequently suffered much from conflagrations as well as from hostile bombardments, especially during that by Lord Cathcart, in 1807, when 368 houses were totally burned, 2000 considerably injured, and 1106 inhabitants killed; but it has nearly recovered from these disasters. The coast of Denmark is good for shipping, and the water is of a bad quality; and the mortality is said to be greater than in any other town in Denmark. In the neighbourhood of Copenhagen are the king's summer palace of Frederickshaven, which is surrounded by delightful gardens, in the church attached to which the corpse of the first King Christian of Denmark was interred: another royal palace, a fine specimen of the architecture of the middle ages, is at Rooskild, a small town where the royal remains, particularly of the Oldenburg line, are interred, a town at Jægersborg, another royal residence, where many great men of the north are interred, among others, Bernstorff, the celebrated Danish statesman, and Tycho Brahe.

COPERNICUS, NIKOLAIUS. The real name was Copernicus. According to others, Zephorus. We shall not discuss either this, or the somewhat more important question, whether he was born, as Junctius asserts, at 38 minutes past four on the 19th of January, 1472, or, as Mestlinus asserts, at 48 minutes past four in the afternoon, February 19, 1473. Moris adopts the date of the latter, but remarks that the horoscope was a most happy one for talent, as appears by the nativity given by the former.

The principal authorities for the life of Copernicus are the account of Gassendi, published with the life of Tycho Brahe [Brakh, Tycho]; the Narratio, Sec. Rerum, &c., of Weisweiler, from the latter two we have not seen, but Gassendi cites abundantly from them. Weisweiler also mentions Adamus, Vitas Phil. Germ. There is nearly a literal translation of a large part of Gassendi's life in Martin Weisweiler's Opera, &c., published by Weisweiler, and a full account of the writings of Copernicus in Delambre's Hist. de l'Art Mod., vol. i.

Copernicus was born at Thorn, in Prussia, a town on the Vistula, near the place where it crosses the Polish frontier. His family was not noble; but his uncle, Lucas Watzer, was bishop of Warmia (episcopus Warmiensis), whence it is frequently stated that Copernicus afterwards settled at a town of that name; whereas the cathedral was situated at Frauenburg, a town on the coast, near the mouth of the river Daugava, at the mouth of the river Aare, which runs from Königsberg and Danzig. Copernicus was educated first at home, and then at the university of Cracow, where he became doctor of medicine. He paid more than usual attention to mathematics, and afterwards to perspective painting, his father having been the royal architect. He passed into the possession of Tycho Brahe, (see his Epistolas, p. 240,) who wrote an epigram on it, the point of which appears to be (the portrait being a half-length) that the whole earth would not contain the picture of the artist himself in it. After the completion of his studies at Cracow, Copernicus went to Italy, and stayed some time at Bologna, under the instruction of Domenico Maria. His turn for unusual speculation began to appear in his having at this time written a treatise on astronomy the same at the same place. He was certainly at Bologna in 1497, and by the year 1500 he had settled himself at Rome, as appears by astronomical observations which he is recorded as having made. At Rome he had private instruction in some of the old opinions (magno applanu facuta mathematicus professor) is said, while thus engaged, to have established a reputation hardly less than that of Regiomontanus. In a few years, but the date is not precisely stated, he returned to his native land, and after remaining ten years, in which his uncle gave him a canonry in his diocesan church of Frauenburg. There, after some contests in defence of his rights, not very intelligibly described, he passed the rest of his days in a three-fold occupation—his ecclesiastical duties, astronomical and mathematical practice, and the study of economical researches. He went very little into the world; he considered all conversation as fruitless, except that of a serious and learned cast; so that he formed no intimacy except with grave and learned men, among whom he particularly regarded Gysius, bishop of Culm, and his pupil and follower, the celebrated Rheticus. A large mass of his epistles is said by Gassendi to have fallen into the hands of Brosecius, professor at Cracow, but none have been published. He was all this time engaged as well as actual observation as in speculation. His instrumental means, however, were not superior to those of Polemy; and he perfectly knew the necessity of improvement in this department. "If" (said he to Rheticus, whose Latin has been translated,) "if I were in the same position as you are, I would much more often throw out the meaning sufficiently clear,) I could determine the true places of the heavenly bodies within ten seconds of a degree. I should not glory less in this than in the rule which Pythagoras has left us."

Copenhagen is not very remarkable for the complexity of the Ptolemaic system, and searched all ancient authors to find one of a more simple character. The earth stationary in the centre of the universe, the planets moving round it carried on enormous crystalline spheres, (for though many might use this as more hypothesis, the reduction of Tycho Brahe from the nature of the orbits of comets shows that he considered the material spheres as one of the opinions of his day,) and finally the enormous sphere of the fixed stars, carried round once in every 24 hours, struck him with a feeling that such a system could not be real of nature.
He found in Mariani Capella and others proofs that an opinion had formerly prevailed to some extent that Mercury and Venus, at least, moved round the sun; that the Pythagoreans held the rotation of the earth; and that Phidias had even imagined the earth to have an orbit round the sun. It is very doubtful to what point these several opinions were carried, or on what grounds they were supported: it is sufficient for our purpose here that Copernicus found them not entirely destitute of foundation. He refers to these same Muler, in his Tabule Frische, Alemaen, 1611, has reduced the hypotheses of Copernicus to the form of tables.

We now come to the description of the Copernican system, by which we mean, the system actually promulgated by Copernicus in his book "De revolutionibus orbium coelestium," published at Liege in 1543. But though backed by a cardinal, a bishop, and two of the most learned astronomers of the age, Copernicus was well aware of the odium which an attempt to disturb established opinions would excite; and it was not, it seems, till about 1540, that a tardy consent was extorted from him. The work was accordingly delivered to Gysius, and by him to Rheticus, who, thinking that it would be best printed at Nuremberg, entrusted it to Andreas Osiander, who superintended the pressing of the plates. We intend, however, to show that this was always attributed, and even by Delambre, to Copernicus himself. This is explicitly stated by Gassendi, and the reason assigned is the obvious one that Osiander (besides thinking it necessary to print the cardinal's request) was afraid of shocking public opinion, and thought it best to represent the scope of the work, not as actually affirming the motion of the earth, but as using such an hypothesis for the more simple and ready calculation of the heavenly motions.

He says: 'It is not necessary that hypotheses should be true or even probable; it is sufficient that they lead to results of calculation which agree with observations.' He points out the admitted defects, and admitted unlikelihood, of several points of the Ptolemaic system; requires that the new hypothesis should be committed only to the motion of the antients, and ends thus—Neither let any one, so far as hypotheses are concerned, expect anything certain from astronomy, since that science can afford nothing of the last sort: in ease he should adopt for true things foignd for another purpose he should have this study more foolish than he came.'

With such safeguards, headed by the urgent request of a cardinal, and dedicated, probably by permission, to the pope, the work was ushered into the world, of which it was the ultimate destiny to help largely in overthrowing submission to authority in matters of science, whether to the doctrines of the Greeks or to the reinterpreted interpretation of the sacred writings. The title-page is as follows:—

Nicolai Co-
Pernici Torhensis De revolutionibus orbium coelestium libri sex. Habes in hoc opere iam recens nato & adito, studiosus lector, Motus stellarum, tam fixorum quam movium, cet examen ex recensibus observationibus restitutos: & nusius insuper ac admirabilissimus hypotheseos ornatos. Habes etiam tabulas expeditissimas, ex quibus eodem ad quodum tempus quinque decempoletosigitur, transire fructum.

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Norimbegae apud Io. Petrium.

Anno M. D. XLIII.

The taste of what we should now call the puff in the title-page is doubtless that of Osianer, to whom it is due that the great work of Copernicus contains an expression of recommendation to buy it in the title-page, being the only instance of the kind. The first edition printed, edited by Rheticus, was published at Basle, 1546, and is little esteemed; the third, edited by Muller, was printed at Amsterdam in 1617, and again in 1640, with notes: it is the most correct of the editions. The third edition, that of Muller, in his Tabule Frische, Alemaen, 1611, has reduced the hypotheses of Copernicus to the form of tables.

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Pernici Torhensis De revolutionibus orbium coelestium libri sex. Habes in hoc opere iam recens nato & adito, studiosus lector, Motus stellarum, tam fixorum quam movium, cet examen ex recensibus observationibus restitutos: & nusius insuper ac admirabilissimus hypotheseos ornatos. Habes etiam tabulas expeditissimas, ex quibus eodem ad quodum tempus quinque decempoletosigitur, transire fructum.

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Norimbegae apud Jo. Petrium.

Anno M. D. XLIII.

The taste of what we should now call the puff in the title-page is doubtless that of Osianer, to whom it is due that the great work of Copernicus contains an expression of recommendation to buy it in the title-page, being the only instance of the kind. The first edition printed, edited by Rheticus, was published at Basle, 1546, and is little esteemed; the third, edited by Muller, was printed at Amsterdam in 1617, and again in 1640, with notes: it is the most correct of the editions. The third edition, that of Muller, in his Tabule Frische, Alemaen, 1611, has reduced the hypotheses of Copernicus to the form of tables.

We now come to the description of the Copernican system, by which we mean, the system actually promulgated by Copernicus in his book "De revolutionibus orbium coelestium," published at Liege in 1543. But though backed by a cardinal, a bishop, and two of the most learned astronomers of the age, Copernicus was well aware of the odium which an attempt to disturb established opinions would excite; and it was not, it seems, till about 1540, that a tardy consent was extorted from him. The work was accordingly delivered to Gysius, and by him to Rheticus, who, thinking that it would be best printed at Nuremberg, entrusted it to Andreas Osiander, who superintended the pressing of the plates. We intend, however, to show that this was always attributed, and even by Delambre, to Copernicus himself. This is explicitly stated by Gassendi, and the reason assigned is the obvious one that Osiander (besides thinking it necessary to print the cardinal's request) was afraid of shocking public opinion, and thought it best to represent the scope of the work, not as actually affirming the motion of the earth, but as using such an hypothesis for the more simple and ready calculation of the heavenly motions.

He says: 'It is not necessary that hypotheses should be true or even probable; it is sufficient that they lead to results of calculation which agree with observations.' He points out the admitted defects, and admitted unlikelihood, of several points of the Ptolemaic system; requires that the new hypothesis should be committed only to the motion of the antients, and ends thus—Neither let any one, so far as hypotheses are concerned, expect anything certain from astronomy, since that science can afford nothing of the last sort: in case he should adopt for true things foignd for another purpose he should have this study more foolish than he came.'

With such safeguards, headed by the urgent request of a cardinal, and dedicated, probably by permission, to the pope, the work was ushered into the world, of which it was the ultimate destiny to help largely in overthrowing submission to authority in matters of science, whether to the doctrines of the Greeks or to the reinterpreted interpretation of the sacred writings. The title-page is as follows:—

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fixed stars is immensely distant. It must be observed that he has no notion of a universe of stars unequally distributed through it, as Mersenne and his friends were against the reasons of the antients for placing the earth in the centre of the universe, by considerations which are as purely imaginary as those against which he was contending. He says that circular motion must be that of which the whole revolutions have been performed from that of a sphere truncated from its whole; and from this assumption he deduces the falling of a body to the earth. That rectilinear and circular motion can exist together is, according to him, a thing of the same kind as if he were a sphere which were of another kind.

He is throughout possessed by the opinion that there must be a centrum mundi, or fixed point in the middle of the universe, which, however, he considers to be the sun, not the earth. It is needless to say that the centrum mundi forms the part of the Newtonian system 19. He contends for the possibility of the earth having several motions. 10. He establishes the order of the planets, remarks that it is impossible to explain the motion of Mercury and Venus upon the supposition of the earth being their centre, and observes that the motion of the other planets round the sun is perfectly possible, consistently with that of the earth, if the radii of their orbits be made large enough. He draws a diagram of the system in the manner now usual, and concludes in words which we may consider as the first announcement of the system: - Prudentissimo pudet nos fateri hoc totum, quo luna precingit, ac centrum terno per orbem illum numquam inter ceterae errantes stellas anual revolucio cirea solem transeit, et cirea ipsum ex una et eadem etiamus sinumque sequit et sequit sequit quidem de motu solis apparet, hoc potius in oblatibus tertio terre verificari, &c. It must be observed that he lays down a sphere for the fixed stars so distinctly, that his commentator Müller finds it necessary to remark to the reader that he does not mean the spheres of fixing of Planetary harmonic which he presently sees that he could not divest himself of the idea that the primitive motions of the planets were such as would be caused by their being fixed in immense crystal spheres which revolve round the sun.

Before proceeding further, it will help us here to observe that Copernicus does not in the smallest degree attempt to answer the mechanical objections to the earth's motion, which were urged with success against his system till the time of Galileo. The laws of motion, as then explained, and as admitted by Copernicus himself, were altogether insufficient to explain why, if the earth moved, a stone should fall directly under the point from which it is dropped. No explanation of such difficulties is given by Copernicus, nor can it be found in his entire compilation of the phenomena of the planets. The latter part is fully made out, and in the manner now adopted, so far as the qualities of the phenomena are concerned: we shall presently see the method of rectifying them. Qualities. With regard to the variation of the seasons, Copernicus explained it rightly, from the continual parallelism of the earth's axis. But he cannot obtain this parallelism from his mechanics. He imagines that if the globe of the earth move round the sun, and also the earth move round the sun, they are equally moved, but not in the same sense, but in the contrary sense. The effect is that the two motions is to destroy each other, and the axis remains parallel in all its positions. Then, by supposing the antecedent motion to be a little greater than the direct rectilinear motion of the sun, he could explain the phenomenon of the precession of the equinoxes. If we consider that even Newton himself, in tracing the effect of the forces which cause the precession, is thought to have misconceived his own laws of motion, it is not at this part of the mechanism that we need to stop, for the statement of the order of the planets, &c. of the planets, must always place him among cosmical discoverers of the first order of sagacity.

All that we have hitherto described will explain the mean motions of the solar system, and the mean motions only. To account for all irregularities, Copernicus (hammered with the notion that all motions must be compounded of circular ones) is obliged to introduce a system of epi-
cycles entirely resembling that of Ptolemy, and which will be most conveniently described under the head PTOLEMAIC SYSTEM. It will surprise many readers to hear that the greater part of the work of Copernicus is taken up with this description of this most essential branch of the real Copernican system. But it must be added that the Copernican epicycles are more successful than the Ptolemaic. The latter were utterly insufficient as a means of demonstrating the changes of distance of the planets and earth. The former, however, were based on a basis which brought this point not very far from the truth. The Ptolemaic system had not a few illustrating the history of England, particularly the period of the Revolution. Perhaps the most spirited design from his pencil is the death of Major Pierson, a young officer who died in the defence of St. Helier's, in Jersey, against a French landing. He put the reputation of that sanguine investigator in its proper place, and that no mean one, though lower than the one usually assigned to it.

Of the tables of Copernicus, his trigonometrical formulae, &c., we shall have to speak in its proper places; they are more connected with the sciences they belong to than with his biography.

While Copernicus was in daily expectation of receiving a complete copy of his work from Rheticus, he was seized with some violent attack, which proved mortal. He arrived May 23, 1543, and, as Gysius wrote to Rheticus, Copernicus saw it, and touched it, but was too near his end to do more. He died in a few hours after, and was buried in the church of St. John in Forchheim.


COPEING, the stone or brick covering of a wall, a term perhaps derived from the Italian coprire, to cover. Some think it is derived from the German kopf, or Dutch dop, the head. Coping-stones are placed on the tops of walls to protect them from the weather. Flat coping is called parallel coping, and is used upon inclined surfaces, as on the gables and parapets of houses, and also on the tops of gar- dens and other ornamental structures. Parapet coping is thinner than the other. Saddle-back coping is thicker in the middle than at the edges. Coping-stones should project over the walls which they cover, and should have a groove or throat underneath the projected part to throw off the water. The copings of the older churches, castles, and dwellings in the Gothic style of architecture, have a deep throating in the form of a bold cavetto in front, and are sometimes decorated with mouldings. BATTLEMENT, York stone, is used for parallel coping, and also Portland, but the latter is more expensive and not so durable. Bath stone coping is often used for Gothic works, but it is not calculated to withstand long the constant action of the weather.

JOHN PHELPS was born in Boston, in the United States, July 3, 1737. His father, who was of English extraction, resided in Ireland until his removal to America, which took place so immediately before his son was born, that Ireland has claimed him as a native. He was educated at Boston, and without the aid of instruc- tors, simply by studying from nature in the groups around him and the neighbouring woods, he taught himself to paint. In 1760 he sent a picture of a Boy and Tame Squirrel to the exhibition of the Royal Academy, which was universally admired. By the year 1767 he was in the receipt of a considerable income as a portrait painter, and was well known both by his works and by name to his brother painters on this side of the Atlantic. In 1774 he in- dulged a long-felt wish to visit Italy, which he reached by sea. In the following year he returned to London, and established himself in George Street, Hanover Square. In 1777 he was elected an associate of the Royal Academy; and in 1783 he became a member. He died in 1815. One of his children, now Lord Lyndhurst, possesses some of his father's best paintings.

The best known of Copley's works is that of "Death of Lord Chatham," a powerful and characteristic portrait, and engraved by Bartolozzi on a plate of an unusual size, and the engraving was extensively sold. The painter sent an impression to General Washington, and another to John Adams. He painted many historical subjects, some sacred, some portrait, and other landscapes, such as "Triumph of Industry," at the Royal Academy, which gained a victory over an enemy of superior numbers. There is a dryness and stiffness of manner in Copley's paintings generally, which is less observable in this picture. It is among those in the possession of Lord Lyndhurst. (A. Cun-ingham.)

COPPER is one of the metals with which the Greeks were acquainted, under the name of φαλέξ (chaleus); it was used by them, alloyed with tin, for cutting and warlike instruments, before iron was known, or at any rate before it was commonly used.

The word copper is said to be derived from the Island of Cyprus.

Copper has a red colour, and is capable of receiving a good polish; when warm or rubbed it emits a disagree- able smell, and it imparts a nauseous taste: all its prep- arations are poisonous. Its density varies according to circumstances; Belzoni states that he found the specific gravity of fusited copper to be 8.93, the same when drawn into wire, while M. Pansa (Gallerie d'Antiqu. et d'Arte, Decem- ber, 1807) gives it as 8,000. Copper is malleable both when hot and when cold, and it may be reduced to very thin leaves; it is also very ductile, and may be drawn into fine wire. After iron and platinum it is the most tenacious metal: a wire of an inch in diameter supports a weight of 300 pounds without breaking; it is extremely sonorous, and is a good conductor of heat and electricity. It melts at a temperature intermediate as to the fusing points of silver and gold, or, according to Professor Daniell, at a temperature equal to about 1195° Fahr. In pure dry air it does not readily tarnish or oxidize; but if the air be moist, by long exposure it is first oxidized and then converted into green carbonate.

This metal is one of those which occurs in the greatest number of places and in the largest quantity. It is found, though not in large proportion compared with the whole quantity actually obtained, in a metallic state, and is either amorphous, crystallized in cubes, octahedrons, or dendritic. Many of the ores are supposed to admit of being separated from the impurities, and as a mere catalogue would convey but little information, we shall only mention some of the more important. It occurs combined with sulphur, forming black sulphuret of copper, or vitreous copper ore; but principally with sulphur and iron, forming a double sulphuret, commonly called copper pyrites or yellow copper ore: this constitutes nearly the whole of the ore raised in Cornwall. It is found also combined with oxygen, forming the red, or suboxide of copper, or ruby copper ore; and less frequently it occurs as copper pyrites or galena. It occurs also in the state of combination with some acids, as blue and green carbonate of copper, phosphite, sulphate, and silicate of copper.

Copper pyrites occurs in the north of Europe, in England, particularly in Cornwall and Devonshire, and in many parts of Asia and Africa, and the American continents.

We shall now give a brief statement of the mode of treating this ore, from an account given by J. H. Vivian, Esq., M. P., and published in the 21st vol. of the 'Annals of Philo- sophy.'

The ores are conveyed from Cornwall and Devonshire to Wales, to be smelted, on account of the supply of fuel in South Wales. By this arrangement, the ore is carried the smaller quantity of material to the greater, but is load back with coal for the use of the engines of the mines.

The principal smelting works are situated on the naviga- ble rivers of Swansea and Neath. The furnaces in which the operations are carried on, are of the vertical construc- tion; they are of different uses for different purposes. Thus the calcining furnaces or calciners are from
seventeen to nineteen feet long, and fourteen to sixteen wide, and the melting furnaces are from eleven to eleven and a half feet long, and seven and a half to eight feet wide; the form of the calciun is hexagonal; the melting furnaces are oval flattened at one end.

The charge of the ore usually put into the calciun weighed about three to three and a half tons; it is distributed equally over the brick bottom of the furnace.

The process continues twelve hours, and towards the end of it it is observed that the slag begins to form over the face of the charge. To prevent this, it is frequently stirred during the operation.

When this process is over, the charge is drawn out through holes in the bottom of the calciun, and if it has been well conducted the ore is black and powdery. During the calciuning some of the sulphur and some of the copper is got rid of in the state both of sulphurous and sulphuric acid, and the copper and iron are both oxidized.

Melting of the calcined ore.—The furnaces are charged through an aperture placed on the top of it. When the charge is spread over the bottom of the furnace, the door is put up and well luted. Some slags from the fusion of what is called the waste metal are added, not only on account of the copper, but to assist in the fusion of the charge itself.

In this operation, unlike the first, the object is to melt the charge, and when this has taken place, the door of the furnace is taken down, and the liquid mass is well rubbed off, or stirred, to allow the metallic sulphur to separate from the slag. If the charge is taken from the latter when it is skinned off, and this being done, fresh charges of calcined ore are added till the metal collected at the bottom of the furnace is as high as the furnace will admit without flowing out at the door; the tapping-hole is then opened, in which the molten metal and which the metal flows into a pit of water. It thus becomes granulated, and collects in a pan, which is raised by a crane.

In this process a great proportion of the earthy matter and iron from the ore is lost. The sand or uncalcinated metal generally contains about one-third of copper, or is about four times as rich as the average ore; it now consists chiefly of copper, iron, and sulphur. When the ores are refractory they are rendered more fusible by the addition of fluorspar in this state it is sold as sand.

The slag obtained in this operation is broken up to examine whether they contain any copper, and if so, they are returned to the smelter to be remelted.

Calcination of the coarse metal.—This operation is conducted under circumstances as nearly as possible those as when the calciun are applied to the ore; the charge is nearly of the same weight; it remains twenty-four hours in the furnace; the great object is to oxidize the iron; the heat during the first six hours should be increased, and afterwards decreased to the end of the operation. This is the calcined coarse metal.

Melting of the calcined coarse metal.—This is performed in furnaces similar to the melting furnace. To the calcined metal are added some slags from the last operations in the works, which are also being oxidized. The likewise pieces of furnace bottom impregnated with metal. In this operation the oxide of copper in the slags becomes reduced by a portion of the sulphur which combines with the oxygen, and passes off as sulphuretted acid gas, while the metal thus reduced enters into combination with the sulphur; sometimes a little uncalcined ore is added to assist the operation, which it does by the sulphur that it contains.

The metal, after the slag is skimmed off, is either tapped into the ladle or into sand beds, according to the mode of treatment to be adopted, and is subjected to the operations of the granulated state it is called fine metal; in the solid form, blue metal, from the colour of its surface. The former method is practised when the metal is to be brought forward by pouring it into moulds containing about sixty per cent. of copper, and it is called fine metal.

Calcination of the fine metal is performed in the same manner as the calcination of the coarse metal.

Melting of the calcined fine metal.—This is effected in the same way as the melting of the coarse former; the resulting product contains eighty to ninety per cent. of copper, and it is called coarse copper.

Roasting.—This is chiefly an oxidizing process. The furnace in which it is performed are called roasters, and are of the same kind as the melting of naps. The pigs of coarse copper obtained by the last process are put into the furnace and exposed to the action of the air at a high temperature, which is gradually raised to the melting point; by this process the expulsion of volatile matter is completed, and the metals are oxidized; each charge is from twenty-five to thirty hundred weight. The metal is fused towards the end of the operation, which is continued for twelve or twenty-four hours, according to the state of forwardness when filled into the furnace, and is tapped into sand beds. The pigs are then covered with black blisters, in which state the copper is known by the name of blistered copper. In the interior of the vessel is a layer of slag, the sulphur is not in contact with it, and is occasioned by the gas liberated during the ebullition which takes place in the sand beds on tanking. It is in this state fit for the refinery, the copper being freed nearly from all the sulphur, iron, and other substances with which it was connected.

Refining or Toughening.—The refining furnaces are of great length, and consists of an arrangement of the bottom, which is made of sand, and laid with an inclination to the front door instead of to the side, as is the case in those furnaces in which the metal is flowed out. The refined copper is taken out in ladles from a pool formed in the bottom near the front door. The pigs from the roasters are filled into the furnace through a large opening in the cover, and the heat is regulated to complete the roasting or oxidizing process, in case the copper should not be quite fine. After the charge is run down, if there is a good heat on the furnace, the front door is taken down, and the slags skimmed off. An assay is then made of the metal, and if it is not in the ratio of the copper in the vase; and from the general appearance of the metal in and out of the furnace, the state of the fire, &c., he judges whether the toughening process may be proceeded with, and can form some opinion as to the quantity of pulp that is necessary. When the metal appears as tough as it is termed, it brings to the proper pitch. The copper in this state is what is termed dry. It is brittle, of a deep red colour inclining to purple, of an open grain, and a crystalline or granulated structure. The rough metal, the surface of the metal in the furnace is first well covered with charcoal; a pole, commonly of birch, is then held in the liquid metal, which causes considerable ebullition, owing to the evolution of gaseous matter. This operation of puddling is continued with the metal until the charcoal is consumed, so that the surface of the metal may be kept covered, until, from the assays which the refiner from time to time takes, he perceives the grain, which gradually becomes finer, to be perfectly closed, to assume a silky polished appearance, and then to be removed from the fire, and be of a light-red colour. He then makes further trial of its malleability by taking out a small quantity in a ladle and pouring it into an iron mould, and when set, beating it as hot on the anvil with a sledge. If it then is left under the hammer, and in that state it is found to be sated as to its malleability, or, as they term it, that it is in its proper place. He then directs the men to ladle it out, which they do in iron ladles coated with clay, pouring it into moulds as required by the manufacturer. The usual size of the cakes for common purposes is 12 inches wide by 18 in length.

The process of refining or toughening copper is a delicate operation, and requires great care and attention on the part of the refiner to keep the metal in the malleable state. Its surface should be kept covered with charcoal, otherwise it will go back between the rounds of lading, in which case fresh piling must be had recourse to: the cakes are allowed to cool in the pot, and others are laded thereon, and by repeating the process, the metal becomes more malleable even more brittle than when in the dry state: its colour also becomes a light yellowish-red, and its structure fibrous. When this is found to be the case, or, as they say, it is gone too far, the refiner directs the charcoal be drawn off from the surface of the metal, and thus by taking down a little charcoal exposing the copper to the action of the air, it is brought back to its proper pitch; that is, it again becomes malleable. Copper for brass-making is granulated, in order that its surface may be rendered hard, and it will then more readily with the zinc or calamine. This is effected by pouring metal from the ladles in which it is taken out of the furnace into a large ladle pierced in the bottom with holes, and supported over a cistern of water. The water is allowed to run in, and by this process the metal is brought to the form to be given to the metal. When warm, the copper assumes a round
form, and is called bean shot. When a constant supply of cold water is kept up, the metal has a light ragged porosity, and is called feathered copper. The former is the state in which it is prepared for brass wire making. Another form into which copper is cast, chiefly for export to the East Indies, is in pieces of the length of six inches, weighing one pound each; this is called long copper.

The copper is dropped from the moulds immediately on its becoming solid into a cistern of cold water, and thus, by a slight oxidation of the metal, the sticks of copper acquire a faint bluish tinge on the surface.

Various important applications are made of copper in the state of sheets or rolled copper. Copper, like most of the unalloyed metals, is generally rolled hot, being malleable at all degrees of heat till it approaches its melting point. Most of its alloys, with the exception of those called belter, known in commerce by the general term brass, are malleable only when cold, with the exception of one or two lately brought into use, which are extremely malleable at a certain high temperature. Copper for the purpose of rolling leaves the smelting works in cakes about 13 x 1 6 inches thick, each weighing about 90 lbs. The cakes are then put into muffles, where they are uniformly heated; the degree of temperature depends on the quality of the copper; in general it is something beyond a bright red heat. In this state they undergo the process of rolling into sheets called duoces, which consists in passing them between strong cast-iron cylinders as in the rolling of iron, the rolls being forced nearer together so as to diminish the intermediate space after each passage of the cakes through them. This process is continued until the sheet is generally single fold; by this time it has become too cold for further procedure in that stage. It is then cut by strong shears into pieces, called blanks, of the required weight, which are heated in the muffle and rolled out till they are properly long as broad. Being again heated, they are now doubled, and thus rolled crosswise till they reach the required lengths, though in this process of finishing it becomes necessary frequently to heat them, and when the sheets are thin to roll several thicknesses of paper between each pair, in order to prevent the rolling being pressed in the surface, must now be removed; to effect which each sheet is first dipped into a saline mixture, and then put into the muffle. When red hot it is withdrawn and plunged into cold water, where the scale or oxide is suddenly cooled, and by its contraction is separated from the sheet and falls to the bottom, leaving the surface of the copper clean. This process also softens the sheet, which is now fit to be worked into any form. The enamel or glass process is that of shaving the edge which is effected by a pair of circular shears, which, when required, cut both edges at the same time. Copper is sometimes rolled cold after it has undergone the process of breaking down, as above described, in the same manner as brass; it is generally rolled thus when it is needed hard in texture and bright on the surface.

We shall now describe the more important compounds of copper.

**Oxygen and Copper** may be readily made to combine, and in two proportions: when copper is nearly heated, scales are formed upon it, which, when removed, are found to consist of a suboxide and protioxide of copper. If these scales be reduced to powder and heated in dilute sulphuric acid, a red powder is left and a blue solution is obtained. This red substance is the suboxide of copper, and is composed of

1. equivalent of oxygen
2. equivalents of copper $\times 2 = 64$

It is therefore a dioxide. This oxide exists in nature, and occurs in Cornwall in the form of beautiful transparent crystals of a fine red colour, and is hence frequently called ruby copper. This oxide is not soluble in acid unless it acquire additional oxygen by the act of solution. Thus it is not acted upon by dilute sulphuric acid either hot or cold; but when heated with the concentrated acid, it is decomposed, sulphurous acid being evolved and oxide of copper formed with the oxygen of the decomposed acid. It undergoes the same change by nitric acid, which decomposes, and combines with the oxygen of it. In muriatic acid it is soluble, but then becomes a chloride from which water throws down a white subchloride and potash yellow or orange suboxide. With ammonia it forms a colourless solution, which becomes speedily blue by the oxidizement that occurs on exposure to the air. This oxide, it is evident from what has been stated, forms no salt with any acid.

**Oxide or protioxide of Copper.** When the scales which have been described as falling from copper by the application of heat and air, are subjected to a high temperature with access of air in a crucible, the whole quantity is converted into protoxide of copper; or when the blue solution, already mentioned as obtained from the scales, is boiled with excess of potash, first a blue precipitate, which is hydrate of copper, is obtained, and in a short time it loses water and becomes black—this is the protoxide of copper, consisting of

1. equivalent of oxygen
2. equivalent of copper

It may also be obtained by means of potash from any other salt of copper. The properties of this oxide are that it is black, insoluble in water; it combines with acids in general, and is the base of all the salts of copper. It dissolves in ammonia, to which it imparts a splendid blue colour; but it is insoluble in alkalis, which are incapable of digestion. When passed over ignited copper, the copper is not oxidized, and no hydrogen is consequently given out; it appears therefore that the affinity of copper for oxygen is not very great. This oxide is not decomposed by the mere action of heat. It sometimes, though of a rare consequence, yields to the dioxide, occurs in nature. It imparts a green colour to glass generally, but by particular management may render it blue.

**Azote, Hydrogen, and Copper** do not combine.

**Chlorine and Copper** unite to form two chlorides; the sub or dichloride may be obtained by exposing copper filings to the action of chlorine gas, not in excess; or by evaporating, with as little contact of air as possible, a solution of dioxide of copper in muriatic acid. It is a yellow, translucent, crystalline powder, which is insoluble in water, but dissolved by muriatic acid, from which water throws down a white precipitate, and potash a yellow one. It is applied to no use: it is composed of

1. equivalent of chlorine
2. equivalents of copper

**Chloride of Copper** may be formed by dissolving the oxide or protioxide of copper in muriatic acid, when a fine green coloured solution is procured, which by evaporation to dryness at a temperature not exceeding 400° leaves chloride of copper; this compound is yellow, and soluble in water, and composed of

1. equivalent of chlorine
2. equivalent of copper

**Chloride of Copper** gives a very readily at a moderate temperature. The compound occurs in nature, and is frequently called vitreous copper. It is composed of

1. equivalent of sulphur
2. equivalents of copper

It is therefore a disulphuret of copper. It may be prepared artificially by heating a mixture of sulphur and copper. The native compound is black, frequently shining, and crystallized in six-sided prisms. When the disulphuret is met with also amorphous. The artificial compound is brittle and brownish-black. When exposed to heat and air the sulphur is expelled and oxide of copper remains. Nitric acid converts it into sulphate of copper; the same effect is produced by exposing the artificial compound to air and moisture.
are used, the compound has not this colour, and it becomes whiter as the proportion of antimony is increased.

**Copper and arsenic form a greyish white mixture, with a compact granular texture; it is not applied to any purpose whatever.**

**Acids and oxide of copper form salts, some of which occur in nature, and others are very extensively used in the arts. Our limits will permit the mention of the more important only.**

**Acetic acid and copper form two salts; namely, the acetate of copper, sometimes called distilled verdigris, and the diacetate of copper, or common verdigris. The diacetate was formerly prepared almost exclusively in France, by causing the husks and stalks of the grape after wine-making to ferment in contact with copper plates. It is now prepared in England by more direct processes. This salt, when pure, is in the form of light blue acicular crystals, of a silky lustre; they are decomposed by water into acetate, which remains dissolved, and a subslat, which is precipitated. It is usually obtained in large masses, which have no crystalline form, having been packed while moist in leather bags. This salt is decomposed by the stronger acids, by the alkalis, and by heat. It is much employed as a pigment, and in hat-making, dyeing black, and several processes in the chemical arts. It consists of—**

1 equivalent of acetate acid . . . 51
2 equivalents of oxide of copper . . . 80
6 equivalents of water . . . 54

**equivalent . . . 185**

**Arseniate of copper is prepared by dissolving the diacetate in acetic acid; twigs are put into the solution, upon which the salt crystallizes; it is of a beautiful deep green colour, and the form of the crystal is an oblique rhombic prism; it is soluble in five parts of boiling water, but little soluble in alcohol. When submitted to destructive distillation, it yields very long acetic acid, with some other products. It is composed of—**

1 equivalent of acetate acid . . . 51
1 equivalent of oxide of copper . . . 40
1 equivalent of water . . . 9

**equivalent . . . 100**

**Arsenious and arsenic acid both combine with oxide of copper. The arsenite of copper is employed as a pigment, under the name of malmesbury or Schiller. It is prepared by adding a solution of arsenite of potash to one of sulphate of copper, by which arsenite of copper is formed and precipitated. Arseniate of copper is found in Cornwall in various forms and composition, and constitutes a beautiful series of copper ores. It may be artificially prepared by mixing solutions of arsenite of potash and sulphate of copper.**

**Carbonic acid and copper combine in two proportions, which may be artificially prepared, and occur in nature. The green carbonate called malachite is found principally in Russia, and is of a fine green colour. It is artificially prepared by mixing hot solutions of sulphate of copper and carbonate of potash. It is composed of—**

1 equivalent of carbonate acid . . . 22
2 equivalents of oxide of copper . . . 80
1 equivalent of water . . . 9

**equivalent . . . 111**

**It is used as a pigment under the name of green verditer; it is decomposed by the stronger acids and by heat.**

**Blue carbonate of copper is found in France and Siberia beautifully blue and very hard, and is obtained artificially by decomposing nitrate of copper. It is of a fine light blue colour, and known by the name of refiners verditer. It is employed as a pigment, especially as a water colour for paper-hangings. It is composed of—**

2 equivalents of carbonate acid . . . 44
3 equivalents of oxide of copper . . . 120
1 equivalent of water . . . 9

**equivalent . . . 173**

**It is decomposed in the same way as the green carbonate.**
Nitratic acid and copper readily combine; the salt may be prepared either by dissolving the metal or the oxide of copper in the acid; it is a crystalline deliquescent salt, which dissolves in water and in alcohol. Much of this salt is formed by the silver refiners by precipitating silver from solution by copper; it is then used for making blue verditer. It is composed of:

1 equivalent of nitratic acid
1 equivalent of oxide of copper

Equivalent 94

When carbonate of lime is added to the solution, a precipitate is precipitated.

Phosphoric acid and copper, from phosphate of copper. This salt occurs native in crystals, and may be artificially prepared by mixing nitrate of copper with phosphate of soda. It is a light blue precipitate, insoluble in water, and readily dissolved by acids. There probably exist two or three phosphates. It is not an important salt.

Sulphuret acid and copper form sulphate of copper, blue vitriol, or Roman vitriol, or blue coppera. It is prepared in large quantity for the use of the glass-maker, and is one of the most useful of the salts of this metal. It is readily prepared by dissolving the oxide in the dilute acid; by evaporation large and beautiful blue crystals are obtained, which have the form of rhombic prisms. This salt is a most efficacious astrigent for the ulcer and in two parts at 21°. When heated, it loses the greater part of its water of crystallization, and becomes powdery and white; by a very strong heat the sulphuric acid is expelled, and oxide of copper is left; when solutions of the alkaline metals are added to a certain extent, sub-sulphate of copper is precipitated, and this is used as a pigment.

It is composed of:

1 equivalent of sulphuric acid
1 equivalent of oxide of copper
5 equivalents of water

Equivalent 125

These are the principal salts of copper; but many more may be prepared. These salts are all either blue or green when combined with water; they are all decomposed by potash and soda, which at first throw down blue hydrate of copper, which, when heated and the alkali are used in excess, become black oxide. The solution of the salts of copper and all is precipitated of a reddish-brown colour by the ferrocyanide of potassium, yield a black sulphuret with hydrolyphuric acid, are soluble in ammonia, and yield a precipitate of metals that are not to be gotten into combination.

The uses of copper are so numerous, that it would require a volume to describe them all. It is used for coin, for making boilers and numerous utensils, for covering the bottoms of ships and the tops of houses, and in the construction of about four parts, being dependent on the kind and quantity of acid which it may meet with in the stomach; but all its salts occasion peculiar effects, which may be fatal if the dose be large. It is not necessary that the substance should be introduced into the stomach, for the introduction of it through the lungs into the system, and the more energetically, the more directly they enter the blood. The greater the degree of solubility, the more rapidly are the formidable symptoms displayed. Of copper used in medicine are, the sulphate, or blue vitriol, called also blue-stone, the ammoniacal sulphate or ammonium; and the dis- ciate, or verdigris. The two former are used internally, the latter rarely; and the sulphate being applied by surgeons to wounds and sores in particular cases.

Sulphate of copper influences powerfully the nervous system, and acts as a tonic and antispasmodic: it has also some astringent properties. In a considerable dose it causes vomiting; in still larger doses it causes purging, accompanied with tenesmus, falling of the leg, rigidity amounting to tetanic, laborious respirations, pain and tightness of the head, insensibility, lethargy, and speedy death. In some instances the narcotic symptoms are the first to be displayed, those of irritation succeeding; jaundice, if the patient survive, or yellowness of the cornea is no uncommon occurrence; a fact to be borne in mind as a distinctive mark of poisoning by copper among metals; the same sign, however, occurs in poisoning from aconite and most ranunculaceous plants. If the effect of the poison when copper has been taken has been speedy, few traces of morbid action are found in the intestinal canal; and the more distal the belance of the stomach is the more blue or greenish colouring of the membranes of the stomach; for Orfila and Guérin have both observed that the inside of the stomach as well as its contents may acquire these tints in a very remarkable degree in consequence of nitrates of copper. (Christie.)

In cases of slow poisoning by copper, such as happen when some of its salts in substance or solution have been taken daily for a considerable time, fatal results follow; and the copper may be detected accumulated in the liver, though not discoverable in any other organ of the body. The circumstance of the copper being carried to the liver explains the frequent occurrence of jaundice, as stated above.

In small medicinal doses, sulphate of copper has been employed in diarrhoea, which, when chronic, it often checks; even in Asiatic cholera it has proved useful. Indeed it seems to check augmented secretion from all mucous surfaces, on which account it may be used in the inflammatory diseases of the respiratory organs, to prevent congestion of the lungs, to benefit which last organ it is usually given as an emetic. It may likewise be employed as an emetic in cases of poisoning by narcotic agents, in preference to tincture of antimony or ipecacuanha, as its action is not precoated by antimony, which promotes the absorption of the poisonous agent.

Its chief internal use, however, is as a tonic and anti- spasmodic, in many convulsive and nervous diseases, such as epilepsy and hysteria. In the case of the ammoniacal sulphate is often to be preferred, given in the form of pill. Sulphate of copper is however in most fre- quent use by surgeons as an external application to wounds, when indolent, or filled with the unhealthy kind of granu- lations termed "caseous flesh:" it is also used in the forms of ophthalmia, especially of the inner surfaces of the eyelids.

Diacetate of copper is rarely given internally; but it is the frequent source of accidental or intentional poisoning. As its general effects are nearly the same as those of the sulphate. In the form of a liniment it is of great utility in certain affections of the mouth and gums, applied by means of a camel's-hair brush. Likewise as an ointment stimulates old and indolent ulcers if it is superior to all other means.

Poisoning often results from the formation of verdigris in copper vessels used in cooking, or the more reprehensible practice of putting copper coins into pickles to make them green. The green thus obtained, except if clean, are not dangerous, provided whatever is boiled in them (unless of an acid nature, which will always form some dangerous compound,) be not allowed to stand to cool in the vessel, but be instantly poured out. Tinning the interior of copper vessels affords protection so long as the tinning remains entire. In case of poisoning, the best antidotes are whites of eggs, milk, or wheat flour; ferro- cyanide of potassa, or iron filings in gum-water, may be given: sugar or any syrup is useful. But liver of sulphur should never be used in this case.

COPPER, STATISTICS OF. No effective attempt has ever been made to ascertain the actual productiveness of the mines in this country, and all that is hitherto known on that subject is derived from particulars published in various journals. By this means a tolerable account has been taken of the produce of the copper mines in Cornwall, reaching back to 1771, with the exception of a few intermediate years, the returns of which are wanting. Since the year 1821 similar returns have been given of other mines in the United Kingdom. The average-annual produce of the Cornish mines at different periods between 1771 and 1820, was as follows: 1771 to 1775, 3430 tons; 1776 to 1780, 3310 tons; 1781 to 1785, 2960 tons; 1786 to 1790, 1800, 5170 tons; 1791 to 1795, 5055 tons; 1796 to 1800, 6075 tons; 1801 to 1815, 7181 tons; 1816 to 1820, 7601 tons. Since the annual production has been as follows:—

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The copper yielded by the British mines being more than sufficient for the use of the kingdom, a considerable quantity is exported every year, both in its unwrought and in a manufactured state. The exports since 1820 have been:

In the accounts of exports of English produce and manufactures exported, the Custom House statements include brass and copper manufactures together; the total quantity and declared value of these shipments in each year, from 1827 to 1855, it has as follows:

The principal shipments in 1835 were made to the following countries, viz.: India, 73,377 cwt.; China, 131,204; France, 67,832 cwt., 298,904; United States of America, 33,628; Canada, 9,015; Brazil, 2625 cwt., 39,429; Italy, 8106 cwt., 35,920; British West Indies, 6080 cwt., 32,932; Foreign West Indies, 4595 cwt., 21,554; and British North American Colonies, 2371 cwt., 12,737.

With the last few years a considerable quantity of copper ore has been brought to England for the purpose of its being smelted and re-exported in the metallic state. These imports, which have come chiefly from Colombia and Chile, have been, 1825, 2 cwt.; 1826, 1297; 1827, 659; 1828, 6925; 1829, 23488; 1830, 2673; 1831, 30,919; 1832, 79,115; 1833, 116,632; 1834, 139,740; 1835, 278,900.

(Tables of Revenue, Population, Commerce, &c. of the United Kingdom, compiled at the Board of Trade, parts 3, 4, and 5.)

COPPER, ORES OF [Copper]

COPPER, NICKEL [Nickel]

COPPER-PLATE [Engraving]

COPPER-MINE RIVER is a river in North America, which flows into the Arctic Ocean. It rises in a rocky country, near 65° N. lat. and 112° W. long., where are a series of lakes unite and form the river. The most southern of these lakes is Lake Providence (about 64° 50' N. lat.). The river first runs nearly due north, until it has passed 68° 30' N. lat., when it turns west and flows along the foot of a rocky, but not high chain of mountains. Having attained 116° 30' W. long. it turns abruptly north, and breaking through the mountains continues its course in a northern direction to its mouth at 64° 50' N. lat., and a few minutes east of 116° W. long. Its whole course may be about 300 miles. It contains numerous rapids, but none which form insurmountable difficulties to canoes and boats which descend the river. The most difficult part is the Bloody Falls, about 10 miles from the mouth. Hearne discovered the mouth of this river in 1771, and it was the first place on the coast of the Arctic Sea of America which was visited by Europeans. Sir J. Franklin descended the greatest part of the river in his first journey. (Franklin and Richardson.)

COPPERAS. There are three metallic salts which are occasionally called copperas, as sulphate of copper (blue copperas), sulphate of iron (green copperas), and sulphate of zinc (white copperas).

COPPICE, a wood or plantation of various kinds of trees, which shoot up from the root when cut down, and which are periodically cut down before they acquire any considerable size. The most common use of coppice is for stools, the chestnut, the maple, the birch, the ash, and the willow. The hazel and the elder are also frequently planted in coppice, the former in dry and chalky soils, the latter in moist and marshy situations. Timber trees are generally allowed to grow in coppice, or more properly the coppice is the underwood where timber is the principal object. There is a doubt, however, whether it is judicious to allow many trees to stand where there is a ready sale for coppice wood. The quick return of the latter overbalances the small price of the former, on the supposition of its usual price. The sequence of this opinion, large trees fit for ship-building, which require a long time to arrive at the required size, are become very scarce; and many woods, once thickly studied with majestic trees, are reduced to the rank of coppice wood. In the vacant space of these woods is considerable where the produce can be readily manufactured into useful articles, and carried to a good market. Ash hoops, hop-poles, chestnut gate-hurdles, and sheep-hurdles are the principal articles manufactured or purchased in coppice. What is of instruction in these purposes is made into faggots for use, where this is scarce, or converted into charcoal, which is more easily transported. A good coppice will bear to be cut down every eight or nine years, and will thus come, when it is not too old, or too young, when sold to those who undertake to cut and prepare the wood.

Little attention is generally paid to the coppice, except when it is fit to be cut, but this is a great mistake: with a little attention the coppice may be made to bring in even for a few years. It should be carefully drained where the water has not a ready outlet. Where the most profitable kinds of wood are deficient fresh plants should be supplied. The whole should be kept well stocked, but not overstocked; for in these woods we should be used where it appears necessary, especially where hop-poles are in request, which usually bear a good price. Hop-poles require a longer time to attain the proper size, and more room to grow. For this purpose the coppice should be carefully and regularly cut down. When a coppice is cut, attention must be paid to the manner in which the poles and rods are cut out from the stem. They should be divided by a clean slanting cut with a very sharp axe or bill-hook, so as not to soil the wood. The wound will then soon heal over, and the stump will not be injured by the wet and decay, as is too often the case. When fresh ground is planted for a coppice, it should always be previously trenched and drained. The extra expense of this will soon be repaid. Scotch fir may be planted at first as nurses and shelter to the oaks and other forest trees. In seven or eight years the firs will have acquired a considerable height, and may be thinned out or cut down: they never shoot again from the root. The other trees may grow a few years more before they are cut down. After the first cutting, attention must be paid to the stumps and all superficial shoots removed. In seven or eight years a thick coppice will be formed, which will increase in value every time it is cut, and will for a long time retain its value. It would not have been profitable in cultivation, either as pasture or arable farms. The annual expense of a coppice is trifling, and the regular returns are certain and profitable. When a portion of coppice is cut the year before to have a regular rotation, the practice is as regular as that of any other part of an estate. A proportion of coppice on an estate is essential to the production of game and to its preservation.

The ground most favourable for coppice is that which is too steep or rocky for cultivation, and where the climate will not allow of the vine. Where the land is flat, and can be well drained, arable farms will always be most profitable,
unless in some poor sandy soils, where corn will not grow without extraordinary manuring, while the roots of some kinds of trees will sink to a great depth and find there the nourishment necessary to their growth. In such sandy soils the birch, the maple, and the sycamore sometimes grow luxuriantly, when the greater part of the surface area consists of signs of vegetation. On wet and boggy soils the willow and the alder are almost the only trees that will thrive. Whoever plants a coppice must be well acquainted with the soil to a considerable depth, and must choose his plants accordingly.

COPT, the Copts, is the name we give to a branch of the ancient Egyptians. It is correctly pronounced either Cshort or Chsib, and it is generally believed that the name is derived from Coptos, once a great city in Upper Egypt, now called Coptos, to which they owed their persecu-
tion by the Roman emperors, many of the Egyptian Chris-
tians retired. They are not an unmixed race, their ancestors in the earlier ages of Christianity having intermarried with Greeks, Nubians, and Abyssinians. The secession of the early Christians of Egypt from the Church of Constantinople occasioned bitter enmities to spring up between them and the Greeks, on which account they suffered so much persecu-
tion, that they united with the Arab invaders of their country to expel the Greeks; but though their revenge was great, they were compelled to bow to a heavier yoke. With the exception of a small proportion who profess the Romish or the Greek faith, the Copts are Christians of the sect called Jacobites, Eutychians, Monophysites, and Mono-
theists. A church council held by them at Chalcis in the year Chaledon A.D. 451. The number of churches and convents in ruins prove that the Copts were once far more numerous than at present: they do not now compose more than one-
fourteenth part of the population of Egypt, their number never exceeded six hundred thousand, two-thirds of them retired to Cairo. Conversions to the Mohammedan faith, and inter-
marrriages with the Moslems, have occasioned this decrease in their numbers; to which may be added the persecutions which they endured from their Arabic invaders and subse-
quently from the Turks, whose new dress, and who, though they still wear a turban of a black or blue, or a greyish or light brown colour, in contradistinction to the red or white turban. The distinction is generally carefully observed in the towns, but less so in the villages. At the domineer of the present Bshayf of Egypt, the Copts are not now the despised race they once were: some of them have even been raised to the rank of Beys. The male adults pay a tribute, besides the income tax which they pay in common with the rest of the inhabitants; but the females are exempt from military service. This immunity is the result of Moslem prejudice.

In some parts of Upper Egypt there are villages exclusively inhabited by Copts, and in every village of modern date, the Mo'alla, are not without a considerable number of those of the poor class or peasants), who keeps the register of the taxes. Most of the Copts in Cairo are employed as secretaries and accountants, or tradesmen: they are chiefly engaged in the service of the courts, and as such are exempt from military service. This immunity is the result of Moslem prejudice.

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of which can be traced with tolerable accuracy, we are warranted in supposing that the old Egyptian language bore a relation to the Coptic, similar to that which the Latin does to the Italian, the Zend to the modern Persian, or Sanskrit to many of the vernacular dialects now spoken in India. Though we cannot here support the assertion by any direct evidence, we may consider it as an established fact, that the ancient Egyptians possessed an extensive written literature, besides the numerous religious and other works which still exist. It is by no means probable, that the conquest of Egypt by Cambyses, or the period of Persian dominion which followed that event, should have materially injured the literature of the country; and the subsequent dynasty of the Ptolemies did not scruple to employ the Greek alphabet rather than to have checked the progress of literature in Egypt. Plutarch tells us (Vit. Anton., c. 27), that Cleopatra spoke several barbaric languages fluently, and though he does not expressly mention the Egyptian, there can hardly be a doubt that it was among the number. Egypt lost much of its consequence when it became a Roman province; and when Alexandria ceased to be a royal residence, arts and literature would naturally fall into decay. Another cause which probably contributed to Egyptian literature was the early introduction of Christianity into Egypt. This event which contributed to extend the study of Greek literature and the use of the Greek language, at the same time deprived the antient literature of the country, as chiefly connected with the old religion. The influence of its introduction for destroying Egyptian books been wanting. The Emperor Severus collected as many of the Egyptian writings relative to the mysteries of the priests as he could obtain, and buried them in the tomb of Alexander (Coptic) instead of other countries, and the Egyptian, or as it is on alchemy to be destroyed, from an apprehension that by the cultivation of that science the Egyptians might again become wealthy, and thus find means to shake off their allegiance to the Roman empire. (Stuidia, v, 883, and 883.) Notwithstanding these circumstances, the use of the foreign language of the country continued in ordinary use, particularly in the interior provinces. Many hermits in the desert of Thebais, and many bishops of Upper and Lower Egypt, knew no other language; and the Egyptian, or as it is more appropriately called during these latter times, the Coptic language survived for seven or eight centuries after the conquest of Egypt by the Arabs. We cannot be surprised if at last it entirely disappeared. Vexations of all kinds, religious persecutions, these evil passions, massacres, and persecutions by fire and sword, had from century to century thinned the native population of the country, which had in the same proportion been replenished by settlers from different provinces and Africa. It is believed that the same language that formed the Coptic gradually gave way to the Arabic, which is now the language generally in use throughout Egypt.

The literature extant in the Coptic language is by no means plentiful. The only part of any intrinsic value seems to be the Coptic translations of the Bible, probably made towards the close of the third and in the beginning of the fourth century, and following, as far as the Old Testament is concerned, the Septuagint version, the readings of which, as well as those of the Alexandria text of the New Testament, they may serve to determine. Besides these, there exist Coptic translations of sermons from the Greek fathers, fragments of the decrees of councils, likewise generally translated from the Greek, liturgies, acts of martyrs, original fragments of the New Testament, including the lives of the pious hermits, and translations from the Greek of some apocryphal books of the New Testament. Coptic literature offers little or nothing of sufficient interest in itself to make the study of the Coptic language attractive; and, except its use in biblical criticism, its study is of importance only as furnishing the only means by which the inquiry into the hieroglyphic records of ancient Egypt may with any chance of success be approached.

The Coptic language exhibits evident traces of the fate of the country in which it was spoken. Under the Ptolemies, and afterwards under the Romans, new forms of government and administration were introduced into Egypt; the inhabitants necessarily bore a new system of substituting new officers for the old, and other terms relating to political matters. The Coptic language received a further supply of foreign words in consequence of the introduction of Christianity. A great number of Greek words were retained in the Coptic versions, partly because of the necessity of profaning the Christian doctrine by translating works of evident originality and beauty. In the case of certain technical terms, as a great measure, also from ignorance or laziness, or from desire to display learning by the use of Greek words. It has been remarked, that the proportion of Greek expressions is not the same in all Coptic writings; and that only in some of these might not be found among the genuine Coptic words.

It is well known that the antient Egyptians, besides the hieroglyphics, possessed an alphabet or syllabic system of writing of their own. In the modern Coptic we find the consonants of the Greek alphabet, as well as a few of the vowels, but no other letters. In this alphabet only a few fragments have hitherto been discovered and published. The character common to all these dialects is that of a language which, having lost its original power of expressing by grammatical inflection the relations of notions or thoughts, has been restored to its primitive use of being sorted to particles and auxiliary words to supply that deficiency. The precision with which these auxiliary words are employed, and the extent to which they can be combined in forming derivative words, are remarkable, and may be compared with the use of a single letter in an arithmetical or geometrical formula. The plural of nouns is distinguished from the singular by a monosyllabic prefix; the genders of substantives are seldom marked by a peculiar termination, but are determined either by the article, or by the addition of a word implying 'male' and 'female.' There are no terminations of case; and all changes of declension must be expressed by means of particles. There is a definite and an indefinite article. The definite article has in the singular distinct forms for the masculine and feminine genders, but does not distinguish the gender in the plural; the indefinite article admits of a distinction of number only. The degrees of comparison are expressed by subjoining auxiliary words to the adjective. The personal pronouns are distinguished by a word of speech which has preserved some traces of inflection; besides these, the Coptic has separate forms for the possessive, the demonstrative, the relative, and the interrogative participles. In the same manner, the personal pronouns (infinitives) which are applied to nominal and verbal inflections. Ordinal numbers are formed by prefixing various auxiliary words to the cardinal numbers. The verb has only an active voice, and the passive must be expressed by circumlocution, usually by the third person of the plural (as in Latin, ferunt = ferunt, or in English, they say = it is said.) The imperative generally exhibits the root of the verb in its pure state. The conjugation of verbs is accomplished by adding pronominal prefixes to the root, which vary to a certain extent. The personal pronouns, as in the Latin, the person singular is preceded by a relative pronoun, its pronominal prefix is usually dropped; there are no participles in the strict sense of that term. The number of prepositions in the Coptic language is large.

Of the three dialects, the Memphitic, Sahidic, and Bashmuric, the first appears to be the most polished. The Sahidic has admitted a greater number of Greek expressions. Words which in Memphitic end in s, have in Sahidic r for the Memphitic kh, and the tenures s, k, r, for the aspirate b, b, ch, x, also sometimes av or a, and sh for s. The Bashmuric agrees with the Sahidic in preferring the tenures k, r, v, to the corresponding aspirate, and h to kh; moreover, the substituent in the definite article is sometimes , and particularly s for r.

(Henry Tattam, A Compendious Grammar of the

CONCEALMENTS for terms of title at the coronation plain the term which connects the subject with its predicate, as in the sentences 'I am a Christian,' and 'the tree is green,' the expressions 'I' and 'tree' respectively denote the subject, and the verbs 'am' and 'is' serve for the copula.

Plurality of tenements in court involves the heartiness of the lord, according to the custom of the same manor. And such a tenant may not alien his land by deed, for then the lord may enter as into a thing forfeited unto him. But if he will alien his land to another, it behoveth him after the custom to surrender the tenement he has of the lord, and to refer him to the demand of the same manor. Such tenures are called by copy of court roll, because they have no other evidence concerning their tenements, but only the copy court roll, which is the manner by which the copyhold lands is not only modified but altogether constituted by custom; subject to the estates in them which the custom confers they are held by the lord under the common law as part of the demesnes of his manor. For these customary estates were in their origin mere tenancies at will, though by long indulgence they have in many instances acquired the character of a permanent inheritance descendible (except where otherwise modified by custom) according to the rules of the common law; and as tenancies at will they are subject to the same breaches and disabilities as distinguished from the customary property in the land.

The origin of copyholds is involved in great obscurity. The opinion generally adopted among our lawyers and antiquaries, and authoritatively pronounced by the Lord Chief Justice Sir Martin Wright, and Mr. Justice Blackstone, is, that copyholders have gradually arisen out of the villains or tenants in villeinage who composed the mass of the agricultural population of England for some centuries after the Norman conquest. Under the tenure of the vicar for services into specific rents either in money or money's-worth. (See Co. Litt., 38 a—61 a; Blackstone's Comm, ii., p. 92; Wright on Tenures, 3rd edit., p. 215.) See also Hallam's Middle Ages, vol. iii., p. 254. [VILLEINAGE]

Although the law of copyhold is of the highest importance, it is the duty of the solicitor to confine the substance of this class of persons. The copula is, that there is a certain number of persons to whom the lord is responsible for the performance of certain acts which were recorded in the lord's book. The descendants of persons so privileged began to claim a customary right to be entered on the court roll on the same terms as their predecessors, and, in process of time, prevailed on the lord to obligate himself to perform the services. This view of the law is confirmed by Britton in a passage cited by Lord Coke (Co. Litt., 61 a) and was adopted by the judges in Edward IV.'s time, who in that case held that a tenant might maintain an action of trespass against the lord for dispossessing. The two great essentials of copyhold tenure, according to Blackstone, are: 1. That lands be parcel of and situate within that manor under which they are held; and 2. That they have been demised or demised by party of copyhold rent immemorially. 'For immemorial custom, says author, ii., p 96, is the life of all tenures by copy; so that no new copyhold can, strictly speaking, be granted at this day.'

The burden to which a copyhold tenure is liable in common with all other estates in fee-simple is by surrender and acquittance, and escheats; besides which it has certain liabilities peculiar to itself in the shape of heriots and fines. A heriot is the payment of the best beast or other chattel (as the case may be) to the lord in satisfaction of the debt of the rent for their security. It is said in the year-book of the 42nd of Edw. III. to be ' admitted for clear law that if the customary tenant or copholder did not perform his services the lord might seize his land as forfeited,' which seems to imply that the same right of entry is in the tenure as in the copyhold, and that the same powers are exercised by the lord. The resolution of the question is, whether the lord's entry for his services has been performed. This view of the law is confirmed by Britton in a passage cited by Lord Coke (Co. Litt., 61 a) and was adopted by the judges in Edward IV.'s time, who in that case held that a tenant might maintain an action of trespass against the lord for dispossessing.
sented by his steward), expressing the surrender to be to the use of A, and his heirs; and thereupon A is admitted tenant of the land to hold it to him and his heirs at the will of the lord according to the customs of the manor. He then pays a fine, and also (if required) a copyhold bond, as by the delivery of a bond, glove, or other symbol, to the steward or other person taking the surrender. Surrenders may also be made to the lord in person out of court; to the steward; and by special custom to the lord's bailiff; to two or more persons for the term of a tenant, or for the presence of other persons. But when a surrender is taken out of court it must be presented by the homage or jury of copyholders at the next general court, except where a special custom authorizes a presentment at some other court. Admissions also may be made out of court and even out of the manor.

The words in the admissitance 'to hold at the will of the lord,' are characteristic of those customary estates to which the term copyhold is in our popular language exclusively appropriated, in contradistinction to what are sometimes called 'customary freeholds' (which estates are very common in the north of England), and antient demesne lands. These are all included under the term copyhold in the statutes of 3 and 4 Edw III., which old tenures in England except common socage, copyhold, and some other specified tenures. Though customary freeholds and antient demesne lands for the most part pass by surrender and admissitance, the admissitance is expressed to be 'to hold according to the custom of the manor, or to have the use of his will,' as it was called. This ceremony was rendered unnecessary by the statute 53 Geo. III. c. 192, which however does not extend to customary freeholds. A devise of copyholds by will may be made without observing the formalities prescribed by the statute of frauds (29 Car. II. c. 3), the terms of that statute not extending to copyholds. The Statute of Entails (13 Ed. I.), commonly called the Statute of Westminster the 2d, does not extend to copyholds; but in most manors a custom of entailing copyholds prevails. These entail may be barred by a procuring in the Lord's Court, analogous to a common recovery, or in the absence of a custom authorizing such a proceeding, by a mere surrender. And now by statute 3 (4) Wm IV. c. 44, deeds of copyholds may be barred by assurances made in pursuance of the provisions of that act. It is a general rule that no statute relating to lands or tenements in which those of a customary tenure are not expressly mentioned, shall be applied to customary estates, if such application would be derogatory to the customary rights of the lord or tenant. Hence neither the provisions in the Stat. of Westm. the 2d, (13 Ed. I. c. 18) rendering debtors' lands liable to process of execution by writ of ejectment, nor the Statute of Uses (27 Henry VIII. c. 10), nor the Statute of Partition (31 Henry VIII. c. 1), and 32 Henry VIII. c. 32), nor the statute enabling persons having certain limited interests in lands, to grant valid leases (32 Henry VIII. c. 28), nor any of the proceedings under are applicable.

Copyholds cannot be seized upon an outlawry, nor are they liable for payment of special debts at law, nor are they even liable for debts due to the crown, although they have always been subject to sequestration under the decree of a court of equity. But copyhold lands belonging to travelling dealers have been subjected to the operation of the bankrupt laws (v. stat. 6 Geo. IV. c. 16, sec. 68 and 69; 3 and 4 Wm. IV. c. 74, sec. 66;) and by stat. 3 and 4 Wm. IV. c. 94, copyhold lands of all persons whatever which have been devised to copyholders are rendered assets to be administered in a court of equity for the payment of specialty and simple contract debts. Copyholds are not liable (except by special custom) to the exactions of curtesy or dower. The latter, where authorized by the custom, is called the widow's 'free bench.' These estates being considered continuations of that of the deceased tenant, are perfected without admissitance. A purchaser or devisee of a copyhold has an incomplete title of admissitance; but the customary heir is so far legal owner of the land before admissitance that he can surrender or devise it, or maintain an action of trespass or ejectment in respect of it. The lord may by a temporary seizure of the land continue to be styled lord of the lands of a tenant, and he is himself compellable by a mandamus of the Court of King's Bench to admit any tenant, whether claiming by descent or otherwise.

By the general custom of all manors, every copyholder may make the landlord a quit-rent of a term of years, if he can obtain a license from the lord, and even without such license he may demit for one year, and in some manors for a longer term, and the interest thus created is not of a customary nature, but a lease for years, to be admissible as if it had been created out of a freehold interest. But every demise without license for a longer period than the custom warrants, and in general, every alienation contrary to the nature of customary tenure, as a feoffment with livery of years, is lawful to be so barred by the lord. A copyhold estate may also be forfeited by waste; as by cutting down timber, or opening mines, when such acts are not warranted by the custom. In the absence of such special custom, the general rule seems to be that the right of property both in the lands and in the reversion is vested in the lord, whoso necessary interest is vested in the tenant; but neither can the lord without the consent of the tenant, nor the tenant without the license of the lord, cut down trees, or open and work new mines. In like manner, a mortgage may be imposed by indenture or other alteration of the bond by the tenant of an estate, refusal to attend the customary courts, or to perform the services, or to pay the rent or fine incident to the tenure. The 9th section of the 1st Wm. IV. c. 65, provides, that every copyholder shall, upon the just mentioned cause of forfeiture. In case of felony or treason being committed by a copyholder, the lords has the absolute benefit of the forfeiture, unless it has been expressly provided otherwise by act of parliament. In all cases of forfeiture the lord may recover the estate for his own use, without prejudice to the rights of the copyholders (if any there be) in reversion or remainder. He may waive the forfeiture by a subsequent act of recognition of the tenure. If he does not take advantage of the forfeiture for twenty years, he is bound to do so by a barrow by the act for the limitation of Actions, 3 and 4 Wm. IV. And if he neglect to take advantage of the forfeiture in the lifetime, his heir cannot avail himself of it.

The Lord, as owner of the lands, is alone entitled to a customary tene" ments by escheat for want of heirs. Formerly when a copyhold was surrendered to a mortgagor and his heirs, and no condition was expressed in the surrender, and the mortgagee died intestate and without an heir, the lord was entitled to demand the debt from the tenant, without prejudice to the rights of the copyholders (if any there be) in reversion or remainder. He may waive the forfeiture by a subsequent act of recognition of the tenure. If he does not take advantage of the forfeiture for twenty years, he is bound to do so by a barrow by the act for the limitation of Actions, 3 and 4 Wm. IV. c. 23, enacts that where a tenant or mortgagee of lands of any tenure whatsoever, dies without an heir, the Court of Chancery may appoint a person to convey or surrender the legal estate for the benefit of the persons entitled to the equitable interest in the property, and provides against the future escheat or forfeiture of lands by reason of the attainer or conviction of trustees or mortgagees who have no beneficial interest therein.

The lord does not recover debts. A copyhold tenement by forfeiture, escheat, or surrender to his own use) afterwards grant it away by an assurance unauthorized by the custom, the customary tenure is for ever destroyed. And if he makes a legal conveyance in fee-simple of a copyhold tenement to the tenant, the tenement is said to be enfranchised, i. e. converted into freehold.

Copyholders were till very lately incapable of serving on juries, or voting at county elections of members of Parliament; but the former disability was removed by 6 Geo. IV. c. 36, sec. 1, and the latter by 8 Geo. IV. c. 19, sec. 19. As to the qualification for killing game under 22 and 23 Car. II. c. 25, sec. 3, there seems to be no distinction between freeholders and copyholders.

There are no lands of a copyhold tenure in Ireland.

END OF VOLUME THE SEVENTH.
This book is under no circumstances to be taken from the Building