

the interest of Sir Stratford Canning, the British museum advanced a small fund in aid of the undertaking; and in 1847 a number of cases of antiquities, including the colossal human-headed lions and bulls and the Nimroud obelisk, which had been floated down the Tigris to Bagdad, and there placed on shipboard, were received in England, and deposited in the Assyrian transept of the British museum. In the same year Mr. Layard returned home, and, after recruiting his health, prepared for publication his "Nineveh and its Remains" (2 vols. 8vo., London, 1849), accompanied by 2 folio volumes of illustrations and a volume of inscriptions in the cuneiform character. In 1848 he returned to Constantinople as attaché to the embassy there; and in the latter part of 1849, at the invitation of the trustees of the British museum and under their direction, he resumed the excavations at Nimroud, which were carried on for about a year, after which he transferred the scene of his labors to Babylon. The excavations at this place produced no important result; but the discoveries at Nimroud, particularly the tablets containing Ninevitic records, were of great value. Returning to England, he published in 1853 the results of his second expedition, under the title of "Discoveries among the Ruins of Nineveh and Babylon, with Travels in Armenia, Kurdistan, and the Desert" (2 vols. 8vo.). Upon the retirement of Lord Palmerston from the foreign office in 1851 Mr. Layard was appointed under secretary of state for foreign affairs, and soon after entered parliament as member for Aylesbury. He declined appointments under the succeeding administrations, preferring to give his attention chiefly to questions of eastern politics, and soon attracted attention in the house of commons as a debater. In 1854 he visited the Crimea, and was subsequently instrumental in procuring the appointment of the committee of inquiry into the state of the British army before Sebastopol. He declined office under the Palmerston administration of 1855, and became a member of the "Administrative Reform Association." His motion embodying the views of this organization was rejected in the house of commons in June, 1855, by a decisive vote. At the general election of 1857 he was defeated at Aylesbury, and subsequently at Wigton, and has not since then occupied a seat in parliament. He has of late years devoted himself to the preservation of the frescoes and paintings of the early Italian masters. Of these he has made a series of elaborate drawings and tracings, a portion of which have appeared in the publications of the "Arundel Society."

LAYBACH, or LAIBACH, a town of Austria, in the duchy of Carniola, situated on the river Laybach and on the railway from Vienna to Trieste, 273 m. from the former and 40 m. from the latter city; pop. about 18,000. The town occupies both banks of the river, which is here crossed by 5 bridges. It has manufactories of linen, woollen, and silk, a large sugar refinery, and oil, paper, and cotton mills. Laybach is a

place of great antiquity, the seat of a bishop, and of the civil and military government of the province. A congress of European monarchs was held here in 1821 to regulate the affairs of Italy.

LAYNEZ, LAINEZ, or LEYNEZ, JACOBO, the second general of the society of Jesus, born in Almançario, Castile, in 1512, died Jan. 19, 1565. He received the degree of master in arts at the university of Alcala, and subsequently went to Paris with the double purpose of completing his theological studies and seeing Ignatius Loyola, the fame of whose virtues had aroused his interest. He was the second person who joined Ignatius in founding the order of Jesuits, the first having been Francis Xavier; and the constitution of the society is frequently though erroneously supposed to have been mainly of his devising. He went with Ignatius to Rome in 1537, and was appointed by the pope professor of scholastic theology. After extensive missionary labors in Italy and other parts of Europe, he was sent to Africa, and on his return was thrice present in the capacity of pope's theologian at the council of Trent, where he upheld the supremacy of the Roman pontiff in a discourse which attained a wide celebrity. He succeeded Ignatius as general of the order in 1558, and on the death of Pope Paul IV. in the following year 12 of the cardinals were in favor of raising him to the vacant throne. To avoid being elected, he withdrew from the city. He was a zealous opponent of the Calvinists, not only at the council of Trent but at the famous "colloquy of Poissy" (1561), whither he went in the suite of the legate, Cardinal Ferrara. He disputed here with Beza, but distinguished himself by moderate and pacific views, which, however, were not adopted. On his return to Rome the pope offered him a cardinal's hat, which he refused. He left the society at his death in a flourishing state, and no small part of its prosperity was owing to his prudence and good government. It has been asserted that he made several modifications in its constitution, but this is an error. Laynez left several unfinished theological works and some minor pieces. His life was written in Spanish by Ribadeneira.

LAZARISTS. See PRIESTS OF THE MISSION.

LAZULITE. See LAPIS LAZULI.

LAZZARI, DONATO. See BRAMANTE D'URBINO.

LAZZARONI (It. *lazzaro*, a leper), the lowest classes of the populace of Naples, including porters, itinerant venders of food, boatmen, beggars, and all without a fixed place of abode. The name is derived from that of the beggar Lazarus mentioned in the parable of Christ. During the middle ages lepers were obliged to wear a peculiar dress, consisting simply of short drawers, shirt, and hood, and until within a few years this costume was generally retained by the lazzaroni. At the end of the last century their number was estimated at 40,000, most of them sleeping in the open air, in archways, or in large baskets

which they carried with them. Though idle, ignorant, and vicious, they are abstemious, frugal, and, when not excited, proverbial for their good nature. They still annually elect their chief, the *capo lazzaro*, the election taking place in the open air, and being determined rather by clamor than by choice. The lazzaroni have frequently played an important part in political revolutions. The revolt of Masaniello was principally due to them; and during the siege of Naples by Championnet in 1799 they fought bravely, their *capo Michele* being afterward appointed a French colonel. In recent times the lazzaroni have generally been identified with the royal interests and conservatism; the dread of their being turned loose to pillage the city having been used as an effectual check on the middle classes. Of late they have lost many of their peculiarities; efforts have been made by government to inspire them with a love of cleanliness and order; and they are no longer recognized as a separate class, but are enrolled in different districts, and subjected to the same police regulations as other citizens.

LEA, ISAAC, LL.D., an American naturalist, born in Wilmington, Del., March 4, 1792. His ancestors followed William Penn from England, and were ministers in the society of Friends. At the age of 15 he was placed with his elder brother, a merchant in Philadelphia, but retained a fondness for natural objects. With the late Prof. Vanuxem, then a youth, he passed all his leisure time in collecting minerals, fossils, &c., and in observing the rocks of Pennsylvania. In 1815 both were elected members of the academy of natural sciences of Philadelphia, and Mr. Lea shortly after published his first paper in the "Journal of the Academy," being an account of the minerals which he had observed in the neighborhood of Philadelphia. To a collection of minerals and geological specimens made by his own exertions, those of palæontology and recent shells were added, which at the present time have grown to great magnitude; that of fresh water shells is entirely unequalled, the family of *unionides* alone consisting of about 8,000 specimens of both sexes, all ages and varieties, and of wide geographical distribution. In 1821 he joined the firm of his father-in-law, Matthew Carey, who was engaged in the largest publishing business in the United States. In 1827 he began a series of memoirs on new forms of fresh water and land shells, which have been continued to the present time. These were published in the "Transactions of the Philosophical Society," vols. iii. to x., in the "Journal of the Academy of Natural Sciences," vols. iii. and iv., and separately under the title of "Observations on the Genus *Unio*," &c. (7 vols. 4to., Philadelphia, 1827). In 1832 he visited Europe, and in 1833 published "Contributions to Geology," consisting of descriptions of 228 species of tertiary fossils from Alabama, illustrated with great exactness in colors. He retired from business in 1851 with an ample fortune, and his time has since been devoted to his favorite scientific

pursuits. In 1852 he made a second visit to Europe. Recently he has published, in large folio, with colored plates, "Fossil Footmarks in the Red Sandstones of Pottsville," intended to illustrate the remarkable discovery made by himself of saurian footprints in the red sandstone 700 feet below the conglomerate of the coal formation at Pottsville, and named by him *sauropus primævus*. This discovery was of great interest, as it had been believed until within a few years that no "air-breathing animal" had existed even so low as the coal measures. In another memoir he described the bones and teeth of a saurian from the new red sandstones of Pennsylvania. These constituted the first bones and teeth observed in this formation in the United States, and the animal was named by him *clepsysaurus Pennsylvanicus*. These discoveries were followed by others which have been communicated to the academy of natural sciences. Mr. Lea has contemplated the publication of a large work on the *unionides* of the United States, which will be a complete monograph of the genera and species of that family. His memoirs published within the last 33 years are preparatory to this object. The importance of the extensive publications of Mr. Lea, consisting as they do almost entirely of original observations, has been acknowledged by numerous learned bodies both in Europe and America. He was elected a member of the American philosophical society in 1828, and subsequently of the zoological society of London, the Linnæan society of Bordeaux, the imperial society of natural history of Moscow, &c. In Dec. 1858, he was elected president of the academy of natural sciences of Philadelphia, over which he still presides. Among his works, beside those already mentioned, are: "Description of a New Genus of the Family Melaniana" (8vo., 1851), and "Synopsis of the Family of Naiades" (3d ed. enlarged, 4to., 1852).—THOMAS GIBSON, an American botanist, brother of the preceding, born in Wilmington, Del., Dec. 14, 1785, died in Waynesville, O., Sept. 25, 1844. He was engaged in mercantile affairs until his 43d year, when he retired from business and devoted himself to botany. He left an extensive herbarium, with the synonymy and description of many new species, and an unfinished catalogue. A "Catalogue of Plants, Native and Naturalized, collected in the Vicinity of Cincinnati, O." (8vo., Philadelphia, 1849), was prepared from papers by Mr. W. S. Sullivan.

LEACH, WILLIAM ELFORD, an English naturalist, born in Plymouth in 1790, died in St. Sebastiano, Piedmont, Aug. 25, 1836. As a boy he showed the bent of his inclinations by making collections of natural objects; and with a view of devoting himself to scientific pursuits he became in 1809 a student at St. Bartholomew's hospital in London, then under the care of Dr. Abernethy. Before the completion of his medical studies he became known as an ardent student in zoology; and from Edinburgh he was called to London to fill the post of cura-

tor of the natural history department of the British museum. He entered upon the discharge of his new duties with a zeal which never relaxed, and found time also to prepare papers for publication in the "Transactions" of the chief scientific societies in Europe and America. One of the first and most important of these was that on "Crustaceology" (1818), a branch of natural history to which he devoted much attention, and in which he made many important discoveries. Its leading feature was the separation of the *myriopoda*, *arachnida*, and *insecta* from the *crustacea*, all of which had been grouped by Linnæus under *insecta*. In this arrangement he showed his predilection for the natural system of classification, as opposed to the artificial system of Linnæus to which English naturalists were strongly attached; and his subsequent labors in this direction are considered to have produced the first movement toward the adoption of the system now in vogue in England. His other most important works were the "Zoological Miscellany," a serial commenced in 1814 after his appointment to the British museum, and completed in 1817 in 3 vols.; and the first part of the "History of the British Crustacea," of which 17 parts appeared. His severe labors finally so affected his eyesight and his general health that he was obliged to resign his curatorship, and to a great extent the pursuit of his favorite studies. In 1826 he visited southern Europe, and occupied himself at intervals in making collections of the insects in the localities where he happened to be residing. These are preserved in the Plymouth institution and by the Devon and Cornwall natural history society. He died of cholera. His love of animals was excessive, and he had a peculiar faculty for subduing the most ferocious kinds. One of the most faithful and attached companions of his walks was a wolf which he had tamed.

LEAD, a bluish gray soft metal, of specific gravity, when condensed by rolling, 11.44, otherwise 11.35; chemical symbol Pb, from Lat. *plumbum*; equivalent, 103.57. It is easily cut with a knife, and when rubbed on paper leaves a dark bluish gray streak. Its lustre when freshly cut is strongly metallic; but the bright surface soon tarnishes in consequence of the formation of a thin film of basic carbonate of the oxide of the metal. Lead is so ductile that it can be rolled into thin sheets, or drawn into wire; but its tenacity is feeble, a wire $\frac{1}{16}$ inch in diameter supporting only 30 lbs. It possesses flexibility in a high degree, but is deficient in elasticity. It has a perceptible peculiar odor, but no taste. It fuses at 612° F., and on cooling tends to assume octahedral crystalline forms. By repeated heating and cooling below its freezing point it is said to acquire a permanent increase of bulk. In a brasqued crucible in the high heat of a furnace, estimated at 130° Wedgwood, it volatilizes, losing $\frac{1}{10}$ of its weight in an hour. It even takes fire and burns with a bluish white light in the air at a very high temperature, forming with oxygen the oxide

known as litharge. When finely divided, the metal is even more inflammable than gunpowder, as shown by Faraday. When about melting, its surface is covered with an iridescent pellicle of oxide of lead, which soon gives place to the yellow litharge. Lead is scarcely attacked by hydrochloric acid, even concentrated and boiling; and sulphuric acid has no effect upon it unless the acid is in this condition, when it converts the metal into an insoluble sulphate. Nitric acid diluted and cold readily dissolves it. Lead forms alloys with all the metals except iron; and some of these combinations are much used in the arts. Type metal is formed of various proportions of lead and antimony, with sometimes a little tin; pewter, of lead and tin; 2 parts of lead and one of tin form the alloy used for organ pipes, and in this and other proportions it is the solder of the plumbers. Equal parts of lead and tin make the solder of the tin smiths, a very combustible alloy, which when heated to redness gives a combination of oxides of lead and tin known as polishing putty, and much used in the arts for polishing hard substances and preparing enamels. It is on the strong affinity of lead for gold and silver that the method of separating these metals from earthy admixtures and oxidizable metals is based, the lead seizing upon them when melted together, and then being made to separate from them when converted into an oxide by the process described in ASSAYING and CUPELLATION. The qualities of the metal render it ill adapted for purposes requiring strength; but being easily moulded from a fused state into any form, its cheapness and weight recommend it as the best material for small shot and musket balls, and its cast sheets when rolled thin serve as an excellent lining of cisterns, and are used for those in chemical works designed to contain sulphuric and hydrochloric acids. Lead pipe is exceedingly convenient for conveying water, being transported in coils like ropes, and when unwound for laying furnished in any desired length; it is easily bent to turn corners, cut without difficulty, and joined with great facility by soldering. If ruptured by water freezing within the pipe, the damage is limited to a small space, and is easily repaired. These advantages cause lead pipe to be very generally used, notwithstanding the evil effects often experienced by the poisonous qualities of the salts produced by the chemical action of the water and of the foreign substances carried along with it. This subject will be specially considered in the course of this article.—Little is known of the early use of lead. The metal is several times named in the Old Testament, and it is supposed that the word translated tin should have been rendered lead. Mines were worked in Britain at a very early period, Camden stating that lead was obtained from Cornwall and Cumberland before the Christian era. Under the government of the Romans the metal must have been largely produced, judging from the Roman relics found about the old mines, among which are blocks

of lead with Latin inscriptions. The Saxons continued these operations, and one of their mines near Castleton was dedicated to Odin. A sarcophagus of lead lined with linen has been found near Wirksworth, which must have been of as early date as the year 714. In Spain also lead together with silver and copper was obtained by the Romans from numerous mines on the southern slope of the Sierra Nevada; and in some of these mines recently reopened were found old Roman and Moorish lamps and other tools. Many other European countries are known to have produced lead as far back as the 10th to the 14th century; but out of Europe there are no records nor evidences preserved of ancient lead mining. Prescott states that the ancient Mexicans procured lead with silver and tin from the mines of Tarco, but no further mention is made of the metal. Even at the present day there seem to be no lead mines of importance known excepting in Europe and the United States; a fact which should argue neither a deficiency in the general distribution of the prevalent ore (the sulphuret or galena), nor difficulty in extracting from it the metal, which indeed is one of the easiest metallurgical processes; but the fact is probably due to the little use to which the metal can be applied by ignorant races. The Chinese, however, must work extensive lead mines from the amount of the metal which they consume as a lining for their tea chests.—Lead occurs in a great number of mineral combinations, but few of them will require notice as sources of supply of the metal. It has been found native at Alston Moor in Cumberland, disseminated with galena in a quartzose rock; also in a lead mine near Carthage in Spain, and at another in Ireland. The sulphuret or galena furnishes nearly all the lead of commerce. This is a compound of one atom of lead and one of sulphur, consequently yielding when pure 86.55 of lead and 13.45 of sulphur in 100 parts. Its hardness is 2.5–2.75; specific gravity 7.25–7.7. It is not malleable, and is too brittle to be cut with a knife, but is easily crushed to a gray powder. The color of the mineral is a lead or blackish gray. Its crystals are cubic, or readily cleave into cubes. The ore also occurs in granular masses more or less mixed with quartz and other gangues, and with zinc blende and iron and copper pyrites. The freshly cleaved faces of the crystals have the lustre of metallic mirrors, and masses of the pure ore of perfect crystalline structure have been met with more than 5 feet in thickness and weighing several tons. Galena fuses easily, requiring little more heat than lead to melt it. It is more volatile than lead, and as it evaporates it is decomposed, and its vapors are converted into sulphate of lead. Melted in contact with charcoal, it is readily reduced to metal. Silver in the state of sulphuret probably occurs in all galena as a trace at least, but very commonly in quantities sufficient to furnish a few ounces, and from this to 100, and in rare cases 200 oz. of silver to the ton of lead. Such ores are known as argenti-

ferous galena. In some of the mines of Freiberg galenas are found containing $\frac{1}{10}$ of silver, and are then properly considered silver ores. In Mexico many of the silver ores worked are of this class. At Tarnowitz in Prussian Silesia silver constitutes $\frac{1}{2}$ the weight of some of the galena. In the European mines the silver is an important object of exploration, and is profitably extracted when found only in the proportion of 8 oz. to the ton of lead; but the lead is not neglected, as it is in Mexico. In the United States argentiferous galenas are not treated for silver, except at the Washington mine in North Carolina, where silver is procured from other varieties of ore as well. Galena is sometimes found, as in Derbyshire, England, coating the walls of the veins in thin mirror-like sheets, which are called slickensides. These when accidentally scratched have the singular property of exploding with a loud report. Galena is the principal ore of nearly every lead mine. It is found in the crystalline rocks and metamorphic slates in veins associated with a great variety of other metals; and in the stratified rocks from the lower silurian to the lias in veins of various forms, and in beds, the last often being only the expansion of the materials of the veins between the planes of the strata. In Cumberland, England, where galena is extensively mined in the metalliferous or carboniferous limestone, which underlies the millstone grit, this mode of occurrence of the ores is distinguished by the name of flat veins or strata veins. These are productive usually but a short distance from the "rake" veins (or true veins cutting the strata) with which they connect. In this district, comprising a portion of Cumberland and adjacent parts of the counties of Durham and York, and furnishing more than half of all the lead product of Great Britain, the veins traverse the parallel and alternating beds of limestone and sandstone; in the former attaining their maximum thickness and yield of ore, and in the latter contracting and becoming poor. The features of this lead region are exhibited in that of Missouri, Iowa, and Wisconsin, where lead ores are extensively worked in the lower silurian limestones which also alternate with sandstones. A few mines in Cumberland have been profitably worked in sandstone, and in the United States the hard grit of the Shawangunk mountain in Ulster co., N. Y., has proved a repository of large quantities of galena found in veins cutting the strata.—Another ore which furnishes some lead to commerce is the carbonate, called also ceruse and white lead ore (PbO, CO_2), a compound of oxide of lead 83.5 and carbonic acid 16.5 per cent., containing metallic lead 77.5 per cent. It occurs in acicular, tabular, and various crystalline forms derived from a right rhombic prism, of adamantine lustre, sometimes transparent, and exhibiting the phenomenon of double refraction. The mineral is brittle with conchoidal fracture; hardness 3–3.5; specific gravity 6.465–6.48, the earthy varieties sometimes 5.4. When of this structure, the mineral

is frequently colored by the presence of other metals, green, blue, or brown, and black. It is associated with galena in most localities of the latter, but is not often found as a workable ore. At the Missouri lead mines it was formerly rejected in large quantities through ignorance of its true character; but since this has been understood it has added many millions of pounds of lead to the production of these mines. It was especially abundant at Mine La Motte, Mo. In St. Lawrence co., N. Y., it has been largely obtained for smelting in an impure pulverulent form, and was known as lead ashes. It contained sulphate of lead and carbonate of lime, and was evidently produced by the reaction of the last named compound upon galena. The Washington mine, Davidson co., N. C., the Perkiomen and other mines near Phoenixville, Penn., and the Mine La Motte, Mo., and others in the United States, have furnished splendid crystallizations of this ore, as well as considerable quantities for the furnace.—Phosphate of lead, or pyromorphite, has commonly been regarded as a rare mineral; but at the mines near Phoenixville it has been largely worked, the furnaces sometimes being chiefly supplied with this beautiful green crystallized ore, which in the upper levels of some of the mines furnished $\frac{1}{4}$ of the whole metallic product. It occurs in hexagonal prisms, sometimes transparent, but generally green from sesquioxide of chromium, yellow, or brown and orange yellow from intermixture with chromate

of lead. It is of resinous lustre and brittle texture; hardness, 3.5–4; specific gravity, 6.59–7.05. The ore is a mixture in variable proportions of phosphate of lead, chloride of lead, phosphate of lime, and fluoride of calcium, the last often replacing some chloride of lead, and arsenic acid some of the phosphoric acid. The proportion of phosphate of lead is usually from 77 to 89 per cent., and of chloride of lead from 9.5 to 10.8 per cent. The ore is fused without difficulty, and the button obtained on charcoal with the blowpipe presents angular faces on cooling.—The arseniate, sulphate, chloride, chromate, molybdate, and some other combinations of lead occur as beautiful minerals, associated especially in the Phoenixville mines with the other compounds named, but they are not of sufficient importance to be treated as productive ores.—The artificial compounds of lead, the oxides and carbonate, will be described after completing the account of the sources of supply and metallurgic treatment of the ores.—Great Britain has probably supplied more than half the lead product of Europe. In 1810 the annual yield of her mines was estimated by Villoresse at 12,500 tons; but Mr. Taylor considered this largely underrated, and in 1822 estimated the annual product at 31,900 tons, and in 1835 at 46,112 tons, of which Northumberland, Durham, and Cumberland furnished 19,626 tons. The following table exhibits the production in tons of the several lead districts for the years named:

Districts.	1845.	1846.	1847.	1848.	1849.	1852.	Tons of ore consumed, 1846.
Devon and Cornwall	7,188	5,947	8,333	7,458	8,045	43,812 $\frac{1}{2}$	11,828
Northern counties	28,820	27,621	28,408	28,922	30,751		39,660
Shropshire	2,500	3,200	2,769	2,762	2,310	3,223	4,130
Ireland	855	811	1,880	1,188	1,653		1,912
Scotland	901	942	822	1,736	957	13,708	2,268
South Wales	4,807	5,084	6,419	4,053	5,941		16,305
North Wales	6,207	4,943	5,875	7,069	7,448	1,834 $\frac{1}{2}$	2,221
Isle of Man	1,523	1,663	1,699	1,665			
Total	52,801	50,211	55,705	54,853		64,960	78,964

The exports in 1850, including ore, metal, shot, litharge, red lead, and white lead, were of the declared value of £387,575, and sent chiefly to France, Holland, Russia, and the East Indies. The value of the lead ores in silver is presented in the following table furnished by Mr. R. Hunt for the year 1852:

Districts.	Silver, oz. in ton of lead.	Amount in oz.	Value.
Cornwall ..	85	250,008	£62,502
Devon	40	91,840	22,585
Cumberland ..	9	52,898	13,228
Durham, Northumberland, and Westmoreland ..	13	191,736	47,984
Cardigan, Caernarvon, and Caermarthenshire ..	15	91,680	22,920
Flintshire and Derbyshire ..	7	47,188	11,784
Montgomery and Merionethshire ..	6	5,562	1,390
Ireland	10	82,220	8,065
Scotland	8	19,048	4,762
Isle of Man	20	86,700	9,675
Total	..	818,825	£205,080

From this table, as from other sources, it appears

that the most argentiferous galenas are found in the districts of crystalline and metamorphic rocks.—Spain follows Great Britain as the next largest lead-producing country in the world. An extraordinary impulse was given to the development of her mines after 1825. It is stated that in 1826 more than 3,000 mines had been opened in the sierras of Gador and Lujar, and the increased production of lead was so great, that many mines in England and Germany were ruined. In 1823 the production was 25,000 tons, and in 1827 it had increased to 42,000 tons, causing a great decline in the price of the metal. In 1845 there were 826 mines of argentiferous galena in operation, employing 8,000 miners and 88 smelting works in the Sierra de Almagrera. The production of these mines in that year was 108,230 lbs. troy of silver, and 8,350 tons of lead. The ore was found in metamorphic micaceous slates, containing intercalated beds of trap and porphyry, and was disseminated in bunches lying in the lines of the stratification. These were most productive in

silver near the surface, the galena often yielding from 130 to 180 oz. to the ton. The ancient mines between Carthage and Almeria have within a few years again been worked, and much lead has been extracted from the immense piles of old Roman slags, and from the inferior qualities of carbonate of lead rendered refractory by its intermixture with blende and pyrites. Some of the most important mines were worked in the granite hills of Linares upon the southern slope of the Sierra Morena, and these have produced enormous masses of galena. Catalonia, Granada, and Murcia have productive mines, and also the district above the town of Canjajar. For 1847 and 1849 the production of Spain was rated at about 30,000 tons each year. The metal is largely exported to the United States, France, and the countries up the Mediterranean.—In Prussia about 7,195 tons of lead are reported to have been produced in 1851, together with 26,493 lbs. troy of silver, derived from argentiferous lead and copper ore. The mines are chiefly in Silesia and the Rhine provinces. The Hartz mountains are supposed to produce from 5,000 to 6,000 tons of lead and 30,000 to 35,000 lbs. of silver annually. The principal mines are near Clausthal in the Upper Hartz, where the veins are found most productive when split up and ramifying through the palæozoic strata in narrow threads, constituting what the Germans call a *Stockwerk*. Such a repository of ore, known as *Rosenhöfer Zug*, a little west of Clausthal, spreads out through 800 feet in width. In the Andreasberg group of veins is that known as the Samson vein, on which is the deepest mine now worked in the world. Rich collections of ore found at a depth of about 2,100 feet led to the workings being continued to the depth of 2,520 feet. (See HARTZ.) The skilful and economical methods applied to the treatment of the ores of this district render it profitable to keep mines in operation that would be abandoned in most other countries. The annual product of Saxony is said to be nearly 2,000 tons. Lead and silver are extracted in comparatively unimportant quantities in nearly all other European countries, but the product of none beside those named is estimated to amount to more than 1,000 tons of lead, except those of Austrian Illyria. For 10 years preceding 1847 her average annual product is put down at 3,253 tons, and the whole annual product of the Austrian empire during these years at only 8,837 tons, of which Hungary furnished 246 tons. The duchy of Nassau, having an area of only 82 German square miles, contains several hundred mines in operation, and among them about 80 of argentiferous lead, some of which have been worked since the year 1158. They are in argillaceous slates and sandstones of the silurian period. The annual product was a few years since stated to be about 600 tons of lead and 2,500 lbs. of silver.—In the United States, lead mines have been worked in the metamorphic rocks of the New England states, northern and eastern New York, Pennsylvania, and North

Carolina, and the chief ore, galena, is of frequent occurrence along the metamorphic belt of the Appalachian chain. But with the exception of the mine (also producing silver) in Davidson co., N. C., all these enterprises have proved unprofitable, and the mines have been abandoned, though some of them, as those of St. Lawrence co., N. Y., and possibly Shelburne, N. H., would have justified continued operations. The Coal Hill mine near Rossie, St. Lawrence co., in 3 years preceding 1839, is known to have produced about 1,800 tons of lead. It has been worked only to the depth of about 180 feet, principally by an open cut of the extreme length of 440 feet. The vein is nearly vertical in gneiss rock, and averages about 2 feet in width. The veinstone is calcareous spar, through which the galena and occasionally the earthy carbonate of lead is disseminated. Vugs or cavities frequently occur lined with splendid crystals of galena, and others of double refractive calcareous spar. One of the latter, nearly transparent, in Yale college cabinet, weighs 165 lbs. The galena contains but a mere trace of silver; it is also remarkably free from hurtful associations of other metals, as blende and iron and copper pyrites. Other similar veins are found in the same vicinity; and the time must come when they will be extensively worked. Detailed accounts of this and the other lead mines of the United States, most of which can be little more than named in this article, may be found in "The Metallic Wealth of the United States," by J. D. Whitney. At Southampton, Mass., lead mining was commenced in 1765 in an immense and very conspicuous true vein at the contact of the red sandstone of the Connecticut river valley and coarse-grained feldspathic granite. The lode consists of quartz containing sulphate of baryta, galena, some blende, and copper pyrites. Neither this nor the similar veins in Northampton and Easthampton have paid for the expenditures which at various times have been incurred in their exploration. At Middletown, Conn., the existence of lead ore was probably known in 1651, when a license was granted to Gov. John Winthrop to work mines of this and other specified mineral productions, with particular reference to any he might discover near Middletown. There is no tradition of the time when the mine was first worked. In 1852 it was reopened and worked to some extent. The ore is highly argentiferous galena, but not abundant. Shipments made to England yielded 25 to 75 oz. of silver to 21 cwt. of lead; and what was remarkable, a peculiar fine-grained variety of the ore, such as is usually found to be most argentiferous, proved to be only $\frac{1}{4}$ as rich in silver as the coarsely cubical ore. The vein consists chiefly of quartz, often in crystallized plates or combs, with some calc spar, sulphate of baryta, and fluor spar, also blende and iron and copper pyrites. It is from 10 inches to 3 feet in thickness, and is included in silicious and micaceous slates, with the dip and direction of which it

appears at the surface to coincide. In Dutchess co., N. Y., explorations were made for lead in 1740, and during the revolutionary war the committee of public safety sought to obtain supplies there. Veins of argentiferous galena are found also in Columbia, Washington, and Rensselaer cos., but have never proved productive. They traverse the strata near the junction of the metamorphic slates and limestones. The principal one is the Ancram or Livingston mine in Columbia co. On the other side of the Hudson river lead mines have been worked at various localities in the unaltered silurian limestones and sandstones; but these, too, have all been abandoned as unprofitable. The most productive among them were in the Shawangunk grit of Ulster co., which overlies the Hudson river slate group. On the W. slope of the Shawangunk mountain, at Ellenville, several nearly vertical veins have been followed into the hard sandstone, the strata of which and the direction of the mountain ridge they cross nearly at right angles. The principal one of these yielded in 1853 galena which produced about 459,000 lbs. of lead, and 60 to 70 tons of pyritous copper, 50 tons of which produced 24.3 per cent. of metal. The vein was unlike the true veins of the metamorphic rocks, having no gangue or veinstones, but wherever productive filled between the walls with rich galena and pyritous copper, the former sometimes being 5 feet thick unmixed with other matters. In places it contracted to a knife-edge seam in the hard sandstone, and again opened out in hollow fissures, one of which, extending to more than 100 feet in depth, with an equal horizontal range, has never been completely explored. It was partially filled with tough yellow clay, in which were imbedded loose fragments of sandstone, magnificent bunches of quartz crystals, and lumps of lead and copper ores; and its walls were also lined in places with the same ores. In these features a striking resemblance is exhibited to the so called "openings" of frequent occurrence in the western lead mines, although found there only in limestone. The vein is moreover like those of the western mines in lacking veinstones, and probably also in being limited to certain rock formations, beneath which it will not prove productive. But as the lead-bearing rock is there limestone, and as limestone overlies the Shawangunk grit, it will be interesting to trace the vein into the calcareous rock, which, concealed beneath the soil of the valley, cannot be far off. It is true that the lead-bearing rock of the West is somewhat lower in position than the Shawangunk grit; and the Niagara limestone that overlies this grit is not productive in lead at the West, although largely developed in the vicinity of the lead mines; hence nothing can be predicted as to the characters which the vein will assume in entering the limestone. Before reaching the western states the grit rock, like most of the other sandstones, thins out. Though the lead veins lack the character of

"true veins," they prove more productive for the amount of ground worked than those thus designated. This is the case with the Ulster mine, while the extent of the formation stretching up the side of the mountain for 1,500 feet, and below to unknown depths, with a thickness on the course of the vein probably exceeding 500 feet, insured abundant working ground for extensive mining operations. The extreme hardness of the rock caused the mining to be expensive; but though abandoned in 1854 as unprofitable, this is no doubt one of the lead mines of the Atlantic states the working of which will again be prosecuted.—In Chester and Montgomery cos., Penn., near Phoenixville, is a group of lead and copper mines, in a small district of only 5 or 6 miles in length by 2 or 3 in breadth, some of the remarkable productions of which have already been noticed. They occur in gneiss and the red shale and sandstone of the middle secondary, cutting the strata in direction and dip. Nearly all the veins, of which there are 12 or more, are parallel to each other, directed N. 32°–35° E. and dipping steeply S. E. When confined chiefly to the gneiss, they produce as a general rule lead ores; when included in the red shale, their principal product is copper ores. Quartz and iron pyrites make up the larger part of the lodes, the latter in the upper portions of the mine decomposed to a soft brown gossan. This material sometimes yields 10 oz. of silver to the ton. Prof. H. D. Rogers, from whose "Geology of Pennsylvania" these data are obtained, enumerates the following large variety of metallic constituents of the Wheatley lode, beside the gangue of quartz and sulphate of baryta: of lead—sulphate, carbonate, phosphate, arseniate, molybdate, chromate, chromomolybdate, arsenio-phosphate, sulphuret, and antimonial argentiferous; of zinc—sulphuret, carbonate, and silicate; of copper—native metal, sulphuret, black oxide, malachites green and blue; of iron—the oxide containing silver, pyrites, brown spar, and hematite; native silver; black oxide of manganese. Native sulphur is also met with. This mine was opened in 1851, and up to Sept. 1854, had produced, according to the manager's report, 1,800 tons of lead ore, principally phosphate, estimated to yield 60 per cent. lead. The Chester county mining company commenced operations in 1850 in the same vicinity, and up to Nov. 1851, had smelted 190,400 lbs. of dressed ore, almost exclusively phosphate, which produced about 47 per cent. lead. Dr. Genth found this kind of ore to contain 1.6 oz. of silver in 2,000 lbs.; the coarsely granular galena gave 16.2 oz., and the radiated and finely granular galena 11.9 oz. Operations ceased at these and the other adjacent mines in 1854 and 1855.—In S. W. Virginia and E. Tennessee many lead mines, not in the metamorphic belt, but in the great silurian limestone formation of the valley of Virginia, have been worked with greater or less success for many years past, their ores being compact and crystallized carbonate of lead as well as galena. Those belonging to

the Wythe union lead company on New river, Wythe co., Va., are known to have been productive in 1754. The workings in these have been carried to the depth of 190 feet, and the mines together with others in the vicinity are still in successful operation. All the mines of this region resemble in their geological associations and metallic products those of the western lead region. In 1855 the Wythe union lead mines were reported to have produced 500 tons of lead per annum.—The Washington mine, Davidson co., N. C., has attracted much interest on account of its being the only mine in the United States that has produced much silver. It was opened in 1886 in the silicious and talcose slates of the gold region, and, like most other veins of the metamorphic rocks of this region, has the strike and dip of the strata. There are two parallel veins worked together, which dip steeply toward the N. They are underlaid by a granitic rock, and above is talcose slate. The mine was commenced for the carbonates of lead, which were found in considerable quantity in a heavy dull ore of earthy appearance, and also in glassy crystals. Some galena and phosphate were also met with. It was not until after smelting large quantities of these ores that native silver was discovered, and the argentiferous character of the lead ores. In 1840, at the time the mine was visited by the writer, the display of native silver in arborescent forms and disseminated through the magnesian veinstones was very striking, and excited expectations of great richness at lower depths. Till 1844 the mine continued to produce largely rich argentiferous ores, after which the ores gradually diminished in quantity; the yield of that year is stated to have been \$24,009 of silver, and \$7,253 of gold, separated from 160,000 lbs. of lead, an average of 240 oz. of auriferous silver to 2,000 lbs. In 1851 the production was 56,896 lbs. of lead and 7,942.16 oz. auriferous silver, equal to 279 oz. to the ton of lead. Dr. Genth found the proportion of silver in the sulphurets very variable, running from 2.5 to 19.5 oz. to 2,000 lbs. From 200 assays an average of 7.5 oz. was found. In 1852 mining operations were stopped as unprofitable, but were soon after renewed and are still continued.—The great lead mines of the United States are what are called the upper mines on each side of the Mississippi river, in N. W. Illinois, S. W. Wisconsin, and Iowa; and the lower mines, found chiefly S. of the Missouri river in the state of Missouri. The former were discovered by La Sneur in his voyage up the Mississippi in 1700 and 1701, and were first worked in 1788 by a French miner, Julien Dubuque, who continued in possession of a tract of land upon which the city in Iowa bearing his name now stands, and worked the mines till he died in 1809. The United States acquiring possession of the region, leases were authorized of the mineral lands in 1807, but were not issued till 1822, and little mining was done till 1826. In 1839 a geological survey was made of the district by

Dr. D. D. Owen, under authority of the United States, for the purpose of designating the sections of mineral lands to be reserved from sale. In 1844, in consequence of the difficulties attending the collection of rents, the leasing system was abandoned and the mineral lands were entered for sale. The lead region, as reported by Dr. Owen, spreads over about 62 townships of land in Wisconsin, 10 in the N. W. corner of Illinois, and 8 in Iowa, extending in extreme distance W. from the Mississippi about 12 miles. It reaches N. nearly to the Wisconsin river, S. to Apple river in Illinois, and E. to the E. branch of the Pecatonika. The rock which contains the lead veins was designated by Dr. Owen as the "upper magnesian limestone," a term which was also applied to the Niagara limestone in its extension through the western country. Owing to the confusion this caused, Prof. James Hall in his report of the geology of Iowa, published in 1859, proposes the very appropriate name "galena limestone" for the peculiar calcareous formation in which the lead veins are almost exclusively found. Its position in the geological column is between the Hudson river group (some shales which obscurely represent this formation being recognized in Iowa by Prof. Hall, underlying the Niagara limestone) and the Trenton limestone, with the upper layers of which the lower layers of the galena limestone alternate. The formation is entirely western, not being recognized E. of Wisconsin. The rock is described as a gray and yellowish gray dolomite, generally coarse-grained, lying in thick strata, and containing few fossils, but in the middle portion flint nodules in layers and scattered. Its greatest thickness is found about Dubuque and between the opposite banks of the Mississippi and Fever rivers, before the formation is lost as it passes with the prevailing gentle dip toward the S. beneath the Niagara limestone; it here amounts to 250 feet, but the greater portion of the lead mines are in this rock where its thickness does not exceed 50 to 60 feet. Where the rock has its maximum thickness the lead veins are limited to its central and lower part, not approaching in their vertical descent much nearer the base of the formation than 50 feet. Where it thins out as it rises toward the N. the lower portion contains productive veins down to the blue limestone, and sometimes in this and the other calcareous strata; but no veins penetrate the sandstone, which lies beneath these. The upper portion of the formation is more argillaceous, less porous and friable, and comparatively free from open vertical joints and fissures, such as contain galena in the lower beds. Usually it caps over these productive fissures, and is hence commonly known as the cap rock. The class of veins containing the ores is described by Mr. J. D. Whitney, who was associated with Prof. Hall in the Iowa state survey, as "gash veins," being distinguished from true veins by want of continuity through the lower strata, and by want of veinstones. The crevices and fissures they occupy are sup-

posed to have been produced by a lateral shrinkage or other force, which caused the rock to be rent apart in parallel lines. These lines are for the most part nearly due E. and W. On their extension mining may be prosecuted for long distances, but in depth its range is evidently very limited. The galena is found in great purity, sometimes free from all associations of other ores, but sometimes mixed with zinc blende, and more rarely with iron pyrites. It contains but a trace of silver. Three modes of its occurrence are recognized, viz., surface deposits, vertical crevices, and flat sheets. In the first the ore is in the clayey loam of the prairies, left behind in fragments when the rock that contained it decomposed. It is called by the miners "float mineral," and when found indicates the proximity of deposits in the rock, and encourages "prospecting." This consists in sinking shafts into the rock, and driving across the presumed direction of the crevices. Miners are constantly engaged in this work, going from place to place till the discovery of a rich deposit rewards their search. In the natural sections along the cliffs that border the streams discoveries are most easily made; but under the deep soil of the prairies and the Hudson river shales that cover the elevated surface, rich crevices will remain concealed for centuries. In the vertical fissures the galena is found in a thin sheet attached to one or both walls, or separated from one or both by clay and ferruginous matter. It may be one or several inches thick, rarely a foot, and several may be so close to each other as to be mined together. The walls may maintain their parallelism for some distance, and gradually close up; or, as is often the case, they may suddenly separate and form what is called "an opening." This enlarged crevice is usually only in part filled with the loose materials left behind by the decomposition of the rock, as fragments of the walls, the remains of the strings, bunches, and sheets of ore, and the loose matters that have been introduced. These openings, of irregular dimensions, are usually from 4 to 15 feet in height, 4 to 10 but sometimes 40 in width, and have been met with several hundred feet long. They are sometimes repeated to the number of 5, one below another, but one alone is more common. In some of the openings conical-shaped cavities, called chimneys, are found running up to a point in the cap rock, and occasionally lined with layers of galena, calc spar, and clay. These cavities were apparently worn and dissolved out by water. Some noticed by Mr. Whitney near Dubuque, rising up from the roof of a barren opening, which was traced the unusual length of some 500 feet with a height of 6 to 8 feet, extend 25 or 30 feet into the overlying strata. Flat sheets are a form of deposit that may occur anywhere, proceeding from the vertical crevices; but they are chiefly limited to the lower part of the formation, and are even found in the Trenton limestone, as well as in the true lead-bearing rock. Features of distribution of the ore and of open-

ings similar to those already described distinguish this mode of occurrence of the galena, with the exception of the arrangement being horizontal and between the strata, instead of vertical and crossing them. Moreover, other ores, as blende and iron pyrites, and mineral substances like veinstones, as calc spar, or tiff, as the miners call it, are more commonly associated with the galena, the different materials arranged in layers, the lead ore often the lowest, and in case of an opening incrusting the roof with bunches of crystals. Crevices have been found taking a saddle shape by the portions each side of the centre gradually dropping down to lower strata. One of these at Mills's lode, near Harle Green, presented a flat sheet at top measuring 20 feet across, with 2 to 3 feet thickness of solid galena. On each side the mineral sheet dropped down, gradually diminishing in thickness, but presenting so far as exposed an area of nearly 100 square feet of ore, from which about 1,200,000 lbs. of galena had been removed, and large quantities more remained in sight. In various parts of the lead region are groups of productive mines, as in the vicinity of Mineral Point, Shullsburg, and other places in Wisconsin, Galena in Illinois, and Dubuque in Iowa. The last district for its area has probably produced the largest amount of ore, and the crevices are here found in greater regularity and more extensive in length and depth than elsewhere. From many of the caves, which extend several hundred feet on the course of the crevices, several million pounds of galena have been obtained. The Langworthy crevice, which has been worked in different places along a line of nearly $\frac{1}{4}$ of a mile, has produced, it has been stated, about 10,000,000 lbs. of ore. It usually presented 8 tiers of crevices, of which the upper one was the most productive; their width was often 15 to 20 feet, and the width of workable ground sometimes 40 feet. Several other crevices are noted, which have produced from 2,000,000 to 4,000,000 lbs. of ore.—The statistics of the yield of the mines have been imperfectly preserved. The following table of lead shipped from the Galena river mines for the years named is compiled from reports made to government, and from records kept in Galena; the amount of receipts from the sales is estimated at \$32,824,913:

Years.	Pigs.	Pounds.	Years.	Pigs.	Pounds.
1831 to '33	4,790	835,180	1842..	447,909	31,358,660
1834.....	2,503	175,230	1843..	553,261	39,145,370
1835.....	9,490	664,530	1844..	524,673	43,736,040
1836.....	13,700	956,343	1845..	778,408	54,494,880
1837.....	74,180	5,192,180	1846..	782,404	51,363,210
1838.....	158,655	11,105,810	1847..	772,556	54,085,990
1839.....	190,620	18,348,150	1848..	684,969	47,787,580
1840.....	119,060	8,338,998	1849..	698,984	44,025,850
1841.....	91,170	6,381,793	1850..	568,589	38,301,320
1842.....	61,164	4,281,876	1851..	474,115	33,188,000
1843.....	113,440	7,941,792	1852..	408,628	28,608,900
1844.....	113,648	7,971,579	1853..	423,814	29,504,900
1845.....	153,890	11,058,100	1854..	428,617	29,638,190
1846.....	191,750	18,422,500	1855..	430,965	30,125,550
1847.....	219,860	15,855,900	1856..	435,654	30,495,780
1848.....	200,465	14,082,550	1857..	463,475	34,188,350
1849.....	357,785	25,044,950			
1840.....	317,845	22,249,160			
1841.....	458,168	32,071,410			
			Total	11,636,488	820,622,580

The most available crevices being worked out, and the greater attractions of the newly discovered gold region of California drawing the miners away, the production declined from a maximum of about 25,000 tons in 1847, till in 1853 it amounted to only 13,300 tons. Since that time, the transportation from the mines being in part by the railroads instead of altogether by the river as before, no exact record has been kept of the quantities. The following are given in the Iowa geological report as the amounts of lead received at Chicago and St. Louis for the years named; but to represent the actual production an unknown amount should be added for the home consumption, which has been largely increased by the establishment of white lead and shot works in the region:

Tons of lead received.	1853.	1854.	1855.	1856.	1857.
At Chicago.....	1,452	1,895	4,449	2,919	?
At St. Louis.....	14,348	10,128	9,737	6,076	6,847
Total.....	15,700	12,018	14,206	8,995	

The sum given for the receipts at St. Louis in 1857 includes the receipts from the Missouri mines, which however are but trifling. A more complete table, including domestic receipts, foreign imports, and invoice value, will be given, after noticing the lower or Missouri mines. Little of the products of the western mines now reaches the Atlantic coast; in 1857 only about 100 tons arrived at New York. The seaboard is almost entirely supplied from the English and Spanish mines.—The Missouri lead mines were discovered and first worked in 1720 by Renault and his mineralogist La Motte, who came out with a large party under authority of a patent granted by the French government to John Law's famous company. Mine La Motte and the Potosi lead mines were discovered and opened by them; but little however had been done up to Renault's return to France in 1742. The only smelting of the lead ores appears to have been done on log heaps, a wasteful process, much practised even of late years. In 1798, as stated by Schoolcraft in his "View of the Lead Mines of Missouri," p. 19, Moses Austin of Virginia, having obtained a grant of land from the Spanish government near Potosi, sunk the first regular shaft, and erected a reverberatory furnace, and also a shot tower. According to the same authority, there were 45 mines in operation in Missouri in 1819, giving employment to 1,100 persons; in 1811 Mine Shibboleth produced 3,125,000 lbs. of lead from 5,000,000 lbs. of ore. From 1798 to 1816 Mine à Burton and the Potosi diggings were estimated to have produced over 500,000 lbs. annually; and from 1834 to 1887 the production of Mine La Motte is rated at an average of 1,085,820 lbs. of lead per annum. For 14 years succeeding 1840 Dr. Litton in his state geological report makes the annual average of all the mines over 8,833,121 lbs.; and yet in 1854 he thinks there were scarcely 200 persons engaged in mining, beside those employed at Perry's, Vallé's and Skew-

ers's mines. The most productive mines have been found in Washington co., but many others are met with in the S. E. part of the state. The geological formation in which they are chiefly contained lies below the Trenton limestone, and by Prof. Swallow is regarded as the equivalent of the calciferous sandrock of the New York reports, which appears to be here represented by a group of alternating beds of magnesian limestone and sandstone. The 2d and 3d of these limestones below the Trenton limestone have produced the principal supplies of the ore; and in some localities in the state lead is found in the coal measures, even in the coal beds themselves, and has been worked to some extent in the carboniferous limestone called the Archimedes or mountain limestone. The 3d magnesian is regarded by the Missouri geologists as corresponding to the lower magnesian of the upper lead region, which is there unproductive. The mines are frequently along the line of meeting of the limestone with granitic rocks, though in this position the deposits are either superficial or run between the calcareous strata, without penetrating the granite. Various other ores are found associated with the galena, as the carbonate of lead, called by the miners dry bone, white mineral, &c., the sulphuret and silicate of zinc, known as black jack, pyritous iron and copper, and at some of the mines, as Mine La Motte, carbonate of copper and black oxides of manganese and cobalt. The surface of the country in the lead region is strewn with crystallized quartz derived from the lead-bearing rocks, and called by the miners "mineral blossom." The modes of occurrence of the lead ore are generally the same as those already described as common to the northern mines. The openings on the vertical fissures vary from the capacity of a cubic foot to 10 or 12 feet square, and when very small are called pockets. They do not preserve a uniform course, but connect one with another by passages filled with material different from the walls, and extending toward every point of the compass. Vallé's mine in St. François co. and Perry's on its extension S. present a remarkable network of veins spread over an area of about 1,500 feet in length by 500 in breadth, ranging N. W. and S. E. They are also examples of mines of a more permanent character than are found in the northern lead region. Vallé's mine was discovered in 1824, and it is believed has been worked ever since without interruption. There are 14 shafts upon it, and 8 more principal shafts upon Perry's mine. Of all these, only 2 are less than 50 feet deep; 6 exceed 110 feet, and one of them is 170 feet deep. They are in gravel and clay 10 to 30 feet, then in a light-colored silicious magnesian limestone, which passes below into another variety of very close texture and known by the miners as the cast-steel rock. Three series of caves are found, the 2d set 18 or 20 feet below the first, and the 3d about 8 feet below the second. The middle set has been most worked. They run out in every direction,

and in some instances communicate by chimneys with the series above or below. They are filled with clay, loose rock, and ore, the last often an intermixture of galena and silicate and carbonate of zinc, which requires roasting and washing to prepare it for the furnace. From 1824 to 1834 Vallé's mine, it is estimated, produced about 10,000,000 lbs. of lead, and about as much more in the next 20 years; Perry's mine about 18,000,000 lbs. from 1839 to 1854. These are remarkable instances of lead mining regularly prosecuted for so many years at one locality. But excepting at these and Skewers's mine there appears to have been little regular mining conducted in the state in 1854. Dr. Litton was of opinion that $\frac{1}{4}$ of all the lead obtained in Missouri had been from clay diggings overlying the rock. These operations have often been highly productive, but were carried on without system and without capital by men who had no interest or ability to prosecute the work in the rock, and thus the more permanent deposits have been passed over. The estimates of the production are based upon very uncertain data, no records for the most part having been preserved of the lead mined and smelted.—The table below, compiled for Hunt's "Merchants' Magazine," July, 1859, presents various data of interest relative to the lead business of the United States; but the production is imperfectly represented for late years by the figures in the second column, for the reasons that other outlets are now opened to the eastern market, and the consumption about the mines has largely increased:

Years.	Pig lead from American mines received at St. Louis and New Orleans, lbs.	Pig, bar, and sheet lead imported, lbs.	Invoice value of yearly importations.	Average rate of duty per 100 lbs.	Amount of white and red lead imported, lbs.	Invoice value of yearly importations.
1832	8,540,000	5,888,588	\$124,311	\$8.00	557,781	\$30,791
1833	12,000,000	2,252,063	60,660	8.00	625,069	36,049
1834	14,140,000	4,997,293	168,311	2.77	1,024,668	57,573
1835	16,000,000	1,006,472	35,668	2.77	882,215	50,225
1836	18,000,000	919,067	35,263	2.55	908,105	62,287
1837	20,000,000	835,772	18,571	2.67	569,950	47,816
1838	20,860,000	165,544	6,573	2.34	522,631	38,688
1839	24,000,000	528,922	18,631	2.31	721,408	50,905
1840	27,000,000	519,348	18,111	2.08	648,418	41,048
1841	30,000,000	62,246	2,605	2.07	592,122	31,617
1842	33,110,000	4,639	155	8.00	479,788	28,747
1843	39,970,000	290	8	8.00	93,166	5,600
1844	44,730,000			8.00		
1845	51,240,000	19,609	458	8.00	231,171	14,744
1846	54,950,000	214	6	8.00	215,434	15,885
1847	46,180,000	224,905	6,283	56	293,337	15,223
1848	42,420,000	2,684,700	85,387	64	818,781	19,708
1849	35,560,000					
1850	40,319,910	36,997,751	1,192,597	64	858,463	43,756
1851	34,984,480	33,470,210	1,517,603	70	1,105,552	52,631
1852	23,593,190	37,544,568	1,238,331	70	842,521	43,365
1853	31,497,950	43,174,447	1,618,058	70	1,224,068	69,058
1854	21,472,990	47,714,140	2,055,059	90	1,865,593	102,812
1855	21,441,140	56,745,247	2,556,523	90	2,319,099	134,855
1856	15,347,830	55,394,256	2,523,014	91	3,548,409	174,125
1857	14,028,140	47,947,695	2,305,767	71	1,793,877	113,075
1858	21,210,420	41,230,019	1,972,243	72	1,785,851	109,426

The imports of lead into the United States in the year ending June 30, 1859, amounted to about 64,000,000 lbs., valued at nearly \$2,700,000. About 1,140,000 lbs., valued at \$57,000,

were reexported to foreign countries. The exports of American lead were valued at about \$30,000, beside a small quantity of manufactured lead.—*Metallurgic Treatment.* As lead ores are ordinarily received from the mines, they require preparatory treatment for the furnace. The earthy matters adhering to them, as clay and sand, may be washed away by exposing the ores to a current of water; but before the intermixed gangues and foreign ores can be separated, the lumps must be reduced to small fragments, and the fine materials be subjected to a systematic dressing by the process of jigging or other convenient methods of sorting materials according to their different specific gravities. The coarse lumps may be reduced by hand upon an iron-top table with the so called buckler, a thick cast iron plate with a face 3 inches square and a socket on the upper side for a handle; or they may be passed through the crushing rolls, of which two or more pairs are commonly employed, one set above the other. After the ores have been dressed and sorted into heaps, it is the practice at some of the European smelting establishments, as in Cornwall, to roast at a moderate heat about one half of each heap in a special calcining furnace of the reverberatory class. The effect of this is to produce considerable quantities of sulphate of lead, which is more fixed in the smelting furnace, and consequently diminishes the loss that would be experienced by volatilization of the sulphuret. Being then mixed with the unroasted sulphuret and subjected to the heat of the smelting furnace, one equivalent of sulphate and one of sulphuret afford just 2 equivalents of lead and 2 of sulphurous acid, the last escaping; thus, $PbO, SO_4 + PbS = 2Pb + 2SO_2$. Hence the best results are obtained when the two compounds are in equal atomic proportions. If the sulphate is in excess, sulphite of lead will be formed and remain unreduced. As smelting is conducted in the reverberatory furnace, the roasting is effected upon the surface of the charge; and when it has proceeded sufficiently far, the whole is stirred together and subjected to the reduction heat. In the blast furnace, as the operation is conducted in this country, the smelter seeks to attain the same end by a surface roasting with each addition to the charge before putting on the blast. Two kinds of furnaces are employed in the United States for smelting lead ores, the reverberatory and the Scotch hearth. Beside these, a small high or blast furnace is used in some parts of Europe for silicious refractory ores. Reverberatory furnaces are constructed on the general principle of those described for smelting copper ores or puddling iron. Those for lead have a shallow basin-shaped hearth, the greatest depression beneath the arch being about 2 feet. The aperture into the flue is only about 6 inches high, and the space over the fire bridge is 14 inches. The dimensions, however, vary in different districts. The sole is about 8 feet in length by 6 in breadth, and formed of the slags of previous operations. The charge is supplied

through the top by a hopper, and, being immediately spread over the hearth, is afterward worked through apertures in the side, by which air also is admitted as required. On one side holes are also made for the scoriae and metal to flow out; or, as at the western mines, the discharge may be at the extreme end, the hearth being made to slope from the bridge. The charge varies in different countries; in Derbyshire and near Alston Moor it is composed of several varieties of ore suitably mixed, and weighing about 2,000 lbs. and sometimes 2,500 lbs.; in Wales it is from 20 to 24 cwt., and in Wisconsin from 45 to 60 cwt. In Yorkshire $7\frac{1}{2}$ cwt. of bituminous coal are consumed to the ton of lead, and the smelting of each charge occupies 5 to 7 hours. A common allowance of fuel is $\frac{1}{4}$ ton to the ton of lead. In Wisconsin the working through one charge occupied 9 hours, with the consumption of one cord of wood and the production of 5,250 to 5,810 lbs. of pig lead. The slag produced by these furnaces is rich in lead, and is saved to be treated by other processes. In the operation the heat is very slowly brought up if the ore has not been previously roasted, and the furnace is kept close, with a small aperture only open for the air to enter. In a short time the charge becomes heated and the sulphur slowly consumes. The operation of rabbling or stirring over the materials is then commenced, and continued at intervals for nearly 2 hours. The skimmings of the receiving pot and any rich slags are thrown into the end of the furnace furthest from the fire, and soon cause a separation of metal as they react upon the roasting ores; this metal is occasionally drawn off. Some coal is usually worked into the molten mass to aid the reduction and protect the metal from oxidation. In England, after the roasting process is far advanced and the rich slags introduced have been partly smelted, the doors are all opened and the charge is allowed to become partially cool. To this soon succeeds the second stage or "firing," the first being the roasting. In half an hour the furnace becomes red-hot and the materials begin to flow. The working doors are then opened and the charge is pushed back and spread out, and quicklime is spread over the surface, the effect of which is to thicken or "dry up" the slags, and protect the metal from oxidation, but more especially, in case of the ores being silicious, to break up the compound formed of silica and oxide of lead and set the latter free. Another partial cooling and subsequent firing succeed, and these processes continue to be repeated, till in about $4\frac{1}{2}$ hours the tap hole is opened for the flow of the metal, the slag floating upon it being pushed back to be further treated by renewed melting, or to be dried up with quicklime and taken out from the door in the opposite side of the furnace. Six hours are consumed in the whole operation, thus allowing a succession of 4 every 24 hours; though for a week's work 16 charges are sometimes admitted, and 22 are a maximum. Better results are obtained by this

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slow and interrupted process than by more hurried ones, the yield being 75 per cent. or more of lead. From the rich galenas of Wisconsin it was formerly thought that no more than 65 per cent. could be thus obtained, the remainder going with the slags, the principal bulk of which as in England were afterward worked over in small blast furnaces or slag hearths. These employed at the West are in fact nothing more than large crucibles built in brickwork open at top, with an aperture in the back for the tuyère, and another at the base in front for the metal after it is separated to run out into the receptacle made in the ground in front of the furnace. The cinder flows out also with the lead and floats over its surface into a second receptacle. The separation, however, is generally far from being completely effected. The fuel employed is charcoal. —The common blast furnace or Scotch hearth is a cheap, convenient, and easily managed furnace, much used at our own mines and in the northern part of England. In its improved form with the hot blast arrangement, as introduced in the United States, and furnished by some of the iron foundries ready to be set up, it is a cast iron box about 2 feet square and one foot deep, open at top, with the sides and bottom 2 inches thick. A sloping shelf, called the hearth, is attached to the front edge for the lead to flow down, and for holding the materials of the charge when these are occasionally spread out in the course of working the furnace. Over the reservoir is fitted a cast iron chest, open in front and at top, with sides and back about 14 inches high. These are made hollow, the iron walls $\frac{1}{4}$ inch thick enclosing a space of $4\frac{1}{2}$ inches. The blast is made to enter at one side, and passes out at the other by a pipe, which bends round and enters the tuyère set in the back of this chest, 2 inches above the top of the reservoir. When in use this reservoir continues full of melted lead, and the excess as produced from the charge floating upon it flows down the hearth into the pot set to receive it. Under the pot a small fire is kept up, so that the lead may be ladled from it as convenient into the moulds. The furnace is kept in continual operation by introducing new charges about every 10 minutes, and working them down as they become roasted at the surface. Before adding more ore the blast is turned off, and the charge already in the furnace is drawn forward on the hearth. Billets of light dry pine wood are then thrown in against the tuyère, and the charge is thrown back with the addition of fresh ore upon the wood. The blast is then let on again, and in a few minutes the charge is stirred over. It is advantageous to use a blast with more pressure than that obtained from the fan; cast iron blowing cylinders are the most effective. No other fuel is required but light pine wood; but in England bituminous coal is used. The combustion of the sulphur in the ore produces a large portion of the heat required. Fluor spar is sometimes used as a flux, and also blacksmiths' cinders and bits of iron, the effect of

which is to desulphurize the galena by the affinity of the iron and sulphur. The inner walls of the air chest would be rapidly destroyed by the sulphur, but for the cooling effect of the air driven behind them; this also tends to keep them of uniform temperature. In smelting about 5,000,000 lbs. of lead at Rossie with this class of furnaces, the consumption of fuel was less than $\frac{1}{2}$ cord of wood to 2,000 lbs. of lead. Each furnace produced an average of 7,500 lbs. of lead every 24 hours, employing 2 lead smelters and 2 assistants, or one of these every 12 hours. The cost for wood was \$1.50 and labor \$5 — \$6.50, or \$1.75 per ton. In Wisconsin, before the use of the hollow air chest, the expense of one furnace shift, continuing till 80 pigs weighing 2,100 lbs. were produced, and usually occupying 8 to 10 hours, was about \$4 for labor and \$1.50 for fuel, charcoal and wood, both of which bore a very high price in the prairie region. In England the ore for the Scotch hearth is first roasted in a reverberatory furnace. In the Hartz mountains and some other parts of Europe poor silicious galenas are sometimes smelted in small blast furnaces, measuring about 8 feet across inside, and 20 to 23 feet in height, and surmounted by flues, which are made to wind up and down in the masonry for the purpose of arresting the metallic portions of the escaping gases. Such ores cannot be treated like pure galenas to afford first a sulphate, which shall react upon the sulphuret; for the silica would seize upon the oxide of lead of the sulphate and form with it a refractory silicate. A flux therefore is employed of metallic iron, in the form of scales, cinders, or of cast iron obtained by beating up the cinders from iron smelting furnaces. The charges are complicated mixtures of ore, containing about 24 per cent. of lead, various furnace products as scoræ and litharge, and finally the granulated iron or scales, all properly apportioned according to their chemical composition and the reactions required.—Considerable loss is experienced in smelting lead ores from the tendency of their particles to escape in the form of white fumes or lead ashes, that are seen pouring out from the chimney flues. Not only is a loss of lead thus occasioned, but serious injury is done to the vegetation around, and the cattle and dogs in the neighborhood are sometimes destroyed. An interesting paper upon this subject was read by Dr. George Wilson to the royal society of Edinburgh, and published in the "Monthly Journal of Medical Science," May, 1852. He had been called upon to investigate the cause of the death of 18 horses and a number of cows, supposed to have been poisoned near some lead furnaces, and had found the herbage and the water drunk by the animals impregnated with carbonate of lead; and the metal was detected in the organs of the body, especially the spleen, which Dr. Wilson suggests is the most convenient organ to submit to this examination. Attempts have been made to remedy the evil by conducting the fumes brought together from the different furnaces through

chambers, in which they are cooled and condensed by showers of water. But these arrangements, as also drawing the gases through cold water to cause the metallic compounds to be retained, involve obstructions to the draft, and require exhausting machinery at the extreme end to supply its place. At the great exhibition of 1851 a model of the apparatus of the duke of Buccleuch, in use at his works in Dumfriesshire, was exhibited, the original of which had proved perfectly effectual in saving the lead and preventing all the evil effects consequent on the escape of the fumes. The arrangement however is costly, and adapted only to large establishments. The water used for showering is conducted into tanks in which it deposits the metallic particles it takes up. The specimens of lead ashes thus recovered were said to contain about $\frac{1}{2}$ their weight of pure lead, and nearly 5 oz. of silver to the ton.—Lead varies much in purity, according to the ores from which it is obtained and the methods of reduction adopted. Generally it is more pure the lower the temperature at which it is smelted; but some ores are intermixed with iron pyrites, blende, and sulphuret of antimony, to such a degree that more or less iron, zinc, and antimony remains alloyed with the lead, seriously injuring its quality, especially for the manufacture of white lead, and also increasing its hardness. In some of the European works special methods of purification are found necessary after the metal has been obtained. It is not so with American lead, the quality of which is remarkable for its softness and purity. Spanish lead received in the United States is not so good, but is better than the English. Silver accompanies most of the foreign ores, and is very commonly present in European lead in sufficient quantity to render its extraction profitable. The method of effecting this was formerly to melt the lead upon cupels placed in reverberatory furnaces, and, by a current of air playing over the surface of the metal, convert it into litharge or oxide of lead till the silver remained behind. This operation was hardly remunerative with lead yielding less than 10 oz. of silver to the ton. The large cupels used in extensive refineries are made in an iron frame usually of oval form, the outer rim being an iron bar $\frac{1}{2}$ inch thick and 4 inches wide bent around and the ends welded together. The larger diameter may be 4 feet and the lesser 2 $\frac{1}{2}$ feet. Cross bars of iron support the pounded bone ashes, mixed for the best cupels with $\frac{1}{4}$ their bulk of fern ashes or $\frac{1}{4}$ their weight of pearl ashes, or for common cupels with very fine cinders. When the pigs of lead are thoroughly melted upon one of these cupels, a strong current of air is blown over the surface in the direction of the longer diameter, and the oxide of lead, as it is formed, is swept on over the further edge of the cupel and falls into a receptacle conveniently placed for its removal. In the Hartz, at Clausthal, the refining is done directly upon the floor of the reverberatory furnace, which is specially

prepared for the purpose. The upper layer, which is of marl, or, as in some establishments, of 4 parts of leached ashes and one of lime, is beaten for $2\frac{1}{2}$ hours; and soon after this it usually requires renewal at every fresh charge, the material mixed with litharge going back to the smelting furnaces. The charge varies from 4 to 8 tons. After about 8 hours it is melted, and the surface is covered with impurities that were mixed with the crude lead and are called *Abzüge*. These being raked off, the blast is let on the surface, and grayish colored infusible oxides, called *Abstriche*, collect, which the workmen remove every half hour or so. A stick of green wood occasionally thrust into the melted bath facilitates their separation. As the heat increases more oxide of lead is produced, so that it gives a fusible character to the materials that collect on the surface, and they begin to flow down the channel prepared for them, which the workman keeps clear. The first products are still impure, and are known as black litharge. Gradually they assume the red or yellow colors of merchantable litharge; the former are more valued, and result from longer exposure to the air before cooling. When only 4 or 5 per cent. of the charge remains, the litharge is reserved to be treated again for silver. In the course of 20 hours, or in case of the larger charges of 30 hours, the sudden brightening takes place which marks the close of the operation. The oxidation as it went on was a process of combustion, increasing the brilliancy and heat of the metallic bath; but when the lead has nearly disappeared the brilliancy and heat diminish and the surface is comparatively dull. Toward the last a thin pellicle of melted litharge dances rapidly over the surface, displaying a constant succession of bright colors with its varying degrees of oxidation. All at once it bursts away, and leaves the brilliant surface of the melted silver exposed to view. The current of air is then stopped, and water is cautiously added to the cake of silver to cool it. This retains a little lead, which is afterward separated by another cupelling on a smaller scale. A variety of products are obtained by the cupellation above described. The *abzugs* and *abstriche*, the rich litharge, and the cupel bottoms are melted over for recovering the lead; the merchantable litharge is either sold as such or reduced to metal, and the black litharge is reduced by itself with charcoal; it produces an inferior quality of lead mixed with antimony, fit only for the manufacture of shot or of type metal. The loss of lead in the whole operation is from 4 to 8 per cent.—A process by which silver may be separated with economy from lead containing even the small quantity of one or two oz. per ton was discovered quite accidentally by Mr. H. L. Pattison of Newcastle-on-Tyne, about the year 1829, and has been very successfully adopted throughout Great Britain, France, Spain, and Prussia. It is known as the crystallizing process, and is founded on the principle that the melted argentiferous lead, being occasionally stirred while cooling, forms

small crystals which contain much less than their proportionate weight of the silver in the whole mass, and may be removed, thus enriching the portion that remains. In the operation in the large way any number of cast iron pots are set in brickwork conveniently for heating; each may hold 4 or 5 tons of lead. The middle one being charged, and the lead melted and stirred with an iron instrument, the fire is removed to the next pot to the right, and into this the crystals of lead as they are produced are removed by a perforated ladle, care being taken to shake back into the first pot all the fluid metal. The ladle is kept up to greater heat than that of the lead by occasionally immersing it in a small pot of lead placed over a constant fire. About $\frac{2}{3}$ of the charge are removed from the 1st pot to the 2d, and the remaining $\frac{1}{3}$, which retains the principal portion of the silver, is ladled into the next pot to the left. The middle pot is again charged, and the process is repeated; and when the 2d pot has received a full charge the same operation is commenced with it, $\frac{2}{3}$ going forward to the right, and the last $\frac{1}{3}$ coming back to pot No. 1. Thus all the pots become at last filled, the portions poorest in silver working furthest to the right, and the richest toward the left; the former are turned at last into the moulds, and the latter, concentrated no further than about 800 oz. to the ton, being cast into bars about 2 inches square. These are known by the name of "lead riches." They are finally subjected to cupellation in a reverberatory furnace specially constructed for the work. At one establishment in England, that of Messrs. Walker, Parker, and co., the cupellation is conducted to the removal of all traces of lead, and the litharge is pure oxide of lead, with the exception of 0.3 to 0.4 per cent. of oxide of iron. The weekly product of their works is 6 to 8 bars of silver, each weighing 1,000 oz. The litharge not sold as such is mixed with fine coal and reduced in a reverberatory furnace, the hearth of which is covered 2 inches deep with slack or fine coal. The crystallizing process is especially adapted to the treatment of very poor argentiferous lead. The rich are better cupelled at once. It is not adapted for impure qualities of lead, because the impurities are not removed, as they are by the German process described above. It is also sometimes more profitable to convert the lead into litharge than to sell it in metal.—*Manufactured Articles.* The principal uses of lead uncombined with other substances are for sheets, pipes, and shot. The Chinese manufacture thin sheets for lining tea chests by simply pouring the melted metal upon a large, flat, and very smooth stone, while a second workman applies upon the fluid sheet another flat stone which he forcibly presses down. A thin leaf is thus obtained, which is immediately removed, and the process is repeated with extraordinary rapidity. The ragged edges are finally trimmed and the sheets made into bundles. Sheet lead is made by two methods. By the old way a stout

table 15 or 20 feet long and 5 feet wide is made perfectly level and provided with a raised margin. It is covered with fine sand, and over it is suspended a long trough, which when filled with melted lead is upset upon the table. The surface is then "struck" by two workmen, one on each side the table moving forward from one end to the other the wooden strike, which rests upon the raised sides, the middle portion of it projecting down far enough to leave the required thickness of lead, as the surplus is pushed over the foot of the table. Sheets thus made are considered less liable to contract and expand by change of temperature than those prepared by the newer method, which is as follows: the metal is cast in a plate 6 or 7 feet square and 6 inches thick, and when cooled enough to admit of being moved is lifted by a crane and placed upon the bench called the rolling mill, the floor of which, 8 feet wide and 70 to 80 feet long, is made of wooden rollers arranged parallel to each other and across the length of the bench. In the centre of the bench are two iron cylinders 16 inches or more in diameter, one above the other, the top of the lower one level with the top of the wooden rollers. They are turned with great accuracy, and so arranged that by screws their distance apart may be regulated; they are also so geared that they may be made to rotate one way or the other as desired. The plate is immediately run through the rollers, and the motion being then reversed it is passed back; and thus it is kept going, the rollers being gradually brought nearer together. When the sheet becomes inconveniently long it is cut in two, the operation being completed with each piece separately. In passing through from 200 to 300 times the length may be increased from 6 or 7 feet to 400 feet, the breadth being 7 feet. At the Dee Bank works the rolls are 8 feet 4 inches long and 22 inches in diameter, and the sheets are sometimes reduced to $\frac{1}{4}$ of an inch in thickness. Sheet lead made by this method is distinguished by the name of "milled lead."—Lead pipe also is made by two methods. The old mode is objectionable for the reason that the length of the pipe is limited to 20 or 30 feet. A short thick cylinder is first cast of the exact bore required, and this is drawn out between suitable rolls, a long steel mandrel being kept in the portion passing through the rolls. By the improved method a hydrostatic press is employed to force the melted lead through dies of the required sizes. The press is under the floor, through which the piston passes, entering a strong upright metallic cylinder. This can be filled with lead as required by a spout in the top, and the spout can be then closely shut. The cylinder is kept to the temperature of melting lead by an annular fireplace or receptacle for live coals by which it is surrounded. Connected with the top of the cylinder is a steel die of the diameter required for the outside of the pipe, and through its centre passes from the centre of the piston below the mandrel which determines the diameter of the bore. As the piston is

driven upward, the lead in the cylinder is forced through the annular space between the fixed collar or die and the mandrel, and emerging above cools in the form of a finished pipe, and is immediately coiled upon a drum suspended above the apparatus.—Lead shot might with propriety be classed among the alloys of lead, for though sometimes made of simple lead of inferior quality, the metal is very commonly combined with arsenic, introduced in the form of white arsenic (arsenious acid) or of orpiment (the sulphuret). The effect of the arsenic is to render the hard, brittle qualities of lead, which are contaminated by antimony and iron, softer and more ductile, and of the proper consistency, when melted and subjected to the usual process in shot making, for taking the globular form. The more ductile the lead the less arsenic is required, but hard lead requires 10 parts or more of arsenic in 1,000. When the lead to the amount of 2 or 3 tons in a pot is melted, a circle of ashes or powdered charcoal is laid around the edge of the metal, and the arsenical compound is introduced in the centre and stirred in. The pot is then covered and the lid luted down and left for some hours, during which time the arsenical compound is decomposed, and the arsenic combines in part with the lead, and a portion mixes with the litharge that is produced by the reaction when white arsenic is used. The mixture is then tested by dropping a portion of it through a cullender into water. If the particles assume a lenticular form, the arsenic is in excess; if they are flattened on one side, hollowed in the middle, or elongated, too little arsenic was used. When properly dosed it is run into bars, which are raised to the top of the shot tower to be there melted and poured through the cullenders. These are either hollow hemispherical iron disks or rectangular flat sheets, each one perforated with a set of holes of uniform size, made perfectly smooth and exact. The lead when poured must be of the proper temperature for the special size to be made, and the workmen are careful to keep a film of the oxide as a lining to the cullender, which is thought to have the effect of increasing the rotundity of the shot, possibly by expediting its cooling as it passes through. The holes vary from $\frac{1}{8}$ to $\frac{1}{4}$ of an inch, but the shot are of larger diameter than the holes. In falling to the base of the tower the particles of semi-fluid lead, acted upon alike over their whole surface by the current of air, are made to assume the globular form, and by the time they reach the bottom they are sufficiently hardened by cooling to bear the shock of striking the surface of the vessel of water placed to receive them. Large-sized shot require a greater height than small-sized, and while 100 feet is sufficient for the latter, the former will require 150 feet. Dr. Ure notices a shot tower at Villach in Carinthia, 249 feet high, as the highest erection of this kind. Taken from the cistern of water, the shot are dried, then assorted according to their sizes by sifting

them in a revolving copper cylinder set slightly inclined and perforated with holes, which increase in size toward the lower end. The smaller sizes thus drop through above and the larger lower down, and each size is received in its own box. The shot receive their superficial finish by being left for some time in a rotating cylinder with some pulverized graphite. Imperfect shot are separated from the truly spherical by allowing them to roll down an inclined plane, so arranged that the latter run straight down the middle and the former work off to one or the other side. A method has been patented in the United States of manufacturing shot without the high towers, substituting for them a low elevation up which a powerful current of air is blown, thus producing the effect of a long continued fall.—Mention has frequently been made of the oxides of lead produced in the metallurgical operations described. Four compounds of lead and oxygen are recognized, but 2 only are of practical importance. The one called litharge is the protoxide of the metal (PbO), its chemical equivalent 111.57, specific gravity 9.2–9.5. When obtained at a temperature below that required to fuse it, the oxide is in the form of a yellow powder, and is known as massicot. Common litharge ground to fine powder is also yellow; if it have a red hue, this is owing to admixture of the red oxide or minium. Litharge fuses at a temperature above redness, and crystallizes in semi-transparent scales on cooling. It is slightly soluble in pure water, and the solution is feebly alkaline. It is the only oxide of lead which forms salts of this metal with acids. Uniting with the weakest organic acids to form definite compounds, it is of great service in chemical analysis. It absorbs carbonic acid from the atmosphere; and when in solution the oxide is thus converted into an insoluble hydrated oxycarbonate. Its use in the arts depends upon its properties as a pigment, also of forming vitreous compounds when melted with the earths and boracic and silicic acids, whence its application in the glass and earthenware manufactures, and again of causing oils to dry rapidly. Dissolved in lime water, it is sometimes used as a hair dye; the lime softens and partially decomposes the hair, and the lead uniting with the sulphur in the hair forms a permanent black stain of sulphuret of lead.—Minium or red lead is a compound of the protoxide commonly with the peroxide, represented by the formula $2PbO, PbO_2$; it is not however of uniform composition, though possessing always the characteristic red color and other peculiar qualities. It is the object of an especial manufacture, and for its preparation the purest lead is selected; for the foreign metals commonly present in lead would seriously impair the brilliancy of the color which gives to minium its value. The lead is melted in a reverberatory with a bottom of very large area at the lowest temperature, and is carefully converted into massicot or litharge, a process which occupies about 22 hours. When completely oxi-

dized, the yellow powder is removed to another furnace like the first, and there exposed to a carefully regulated heat between 550° and 600° F., which is below dull redness. Air is freely admitted, and fresh surfaces are frequently exposed to its influence. In 48 hours it has acquired a beautiful bright red hue. It is then finished by grinding between iron surfaces. Minium is a valuable pigment, and is largely used in the paper-hanging manufacture for giving orange and rose colors. It is the coloring matter in red sealing wax and various other artificial red compounds. It is preferable to litharge in the glass manufacture on account of its excess of oxygen, which may remove any combustible matter present, and also convert the protoxide of iron into the peroxide.—One of the most important applications of lead is in the manufacture of the carbonate, so extensively used as a white paint, and also as a body for other colors. This special branch will properly be treated under the title **WHITE LEAD**.—*Poisonous Properties of Lead Salts*. The soluble salts of lead possess highly poisonous properties, and they are the more dangerous from the insidious and unsuspected ways by which they are introduced and accumulate in the system. When taken into the stomach, lead is inert so long as it retains its metallic form; it begins to produce its effects only when it is oxidized. In this way bullets have been swallowed and have passed with impunity through the digestive canal. The preparations of lead vary greatly in their intensity of action, though their effects as poisons are similar; the semi-vitrified oxide (litharge), the carbonate (white lead), and the diacetate (Goulard's extract) are the most active. The sulphate, from its great insolubility in the digestive fluids, is almost if not quite inert. From the extensive use of lead in various manufactures, a great many persons are necessarily subjected to its influence. Cases of lead poisoning are common among painters, plumbers, the manufacturers of glazed cards, and those employed in the glazing of earthenware, and in the bleaching of Brussels lace, which is beaten with white lead to whiten the fibre; plumbers, who work chiefly in metallic lead, suffer very much less than other artisans who employ its oxides or salts. The susceptibility to the effects of the poison varies greatly in different persons. Some are able to follow their occupation as house painters or in manufactories of white lead without suffering materially, while the writer has known an instance where, after careful inquiry, a severe case of lead colic in a fishing-tackle maker could only be traced to his chewing bits of metallic lead, which he chipped off while engaged for a few days in making sinkers. Among artisans who use it in their work, lead is introduced into the system either by the air passages or by the digestive organs; it is inhaled in fine dust, or it is swallowed. In this way, carefully washing the hands previous to meals is of great importance as a preservative from its effects. Lead is often introduced into

the system accidentally or as an adulteration in the manufacture of various liquors. The old name of lead colic, *colica Pictonum*, colic of Poitou, arose from the prevalence of colic there produced by its use in the manufacture of wine. Devonshire colic was traced by Sir George Baker to the use of lead in clarifying cider; the dry bellyache of the West Indies arose from its use in the distillation of rum. Many glazed articles of earthenware, when acted on by acids, give up the lead contained in their glazing. In Nos. 10 and 11 of the *Medicinische Zeitung*, published by the medical society of Prussia (1859), a case is cited of lead poisoning produced by snuff, and upon an analysis of the snuff by Höckel it was found to contain $2\frac{1}{2}$ per cent. of lead. Snuff packed in lead foil, it is found, always contains lead, while that in bottles or jars is free from it. The wrappings of lead foil when the package of snuff is first opened often exhibit an incrustation resembling mould, which is carbonate of lead. The lead foil is frequently tinned on one side; but this proves to be a very insufficient protection, as it is often corroded through, and the workmen are sometimes so careless as to put the tinned surface outside.—There are four distinct affections produced by lead: colic, arthralgia, paralysis, and brain diseases or encephalopathy. Of these, colic is by far the most frequent, it having occurred in 1,217 of the 2,171 cases of Tanquerel des Planches (*Traité des maladies de plomb*, Paris, 1839), while arthralgia occurred in 755 cases, paralysis in 127, and encephalopathy in about 72. Lead is essentially a chronic poison. It is most commonly taken into the system in small and repeated doses; occasionally, however, one of its salts, commonly the acetate, has been taken in a single poisonous dose, either by accident or for the purpose of committing suicide. In this way from $\frac{1}{2}$ ounce to $1\frac{1}{2}$ ounces of sugar of lead have been repeatedly swallowed. The symptoms have commonly been metallic taste in the mouth, burning pain in the stomach, nausea, and vomiting; to these succeed pain in the abdomen. Sometimes the patient is purged; often there is obstinate constipation. These symptoms may subside in a day or two, or may last for 10 or 12 days, combined with a feeble circulation, numbness, and prostration. Sometimes colic supervenes. In chronic poisoning by lead, the skin is dry and of an unhealthy earthy color, the pulse is slow, the secretions generally are diminished, the bowels constipated, and the patient loses flesh and strength. When the gums are examined, a blue line is generally found on their free margin at its junction with the teeth, particularly the incisors; occasionally the mucous membrane lining the lips and palate has the same bluish color. If the patient be now attacked by lead colic, he is conscious of a sensation of pain and sinking, which he refers to the centre of the abdomen. The bowels are obstinately constipated; there is constant pain in the belly, aggravated in paroxysms, and relieved or not increased by pres-

sure. The walls of the abdomen are hard and sometimes retracted; there is often nausea and vomiting; dysuria is sometimes present, and the patient is exceedingly restless, sleepless, and anxious. Notwithstanding the gravity of the symptoms, the tongue is clean or but slightly coated, the skin cool, the pulse regular, and perhaps a little slower than natural. Left to itself, the disease is of uncertain duration, but under proper treatment it is ordinarily subdued in a few days; the patient, however, is subject to relapses, and when he remains exposed to the original cause of the complaint, the colic gradually becomes complicated with palsy, or perhaps it is terminated by a fatal affection of the brain. Where death has taken place, post-mortem examination shows no special lesion; but in this as in other varieties of lead poisoning, chemical reagents detect the presence of the metal in the blood and the tissues of the body. In the treatment of lead colic purgatives are mainly to be relied on. A drop of croton oil may be given every 6 hours until the bowels are freely moved, or a single full dose of calomel may be followed by an infusion of senna with sulphate of magnesia. The warm bath and copious enemata of warm water have been found serviceable, and anodynes, as opium and belladonna, are often employed to relieve the extreme pain under which the patient suffers. The purgative treatment has commonly to be persisted in for several days before the complaint finally yields.—In lead arthralgia, beside the general symptoms of chronic poisoning, the patient suffers from paroxysms of sharp, darting pains, commonly in the limbs, but sometimes in the trunk; these pains do not follow the course of the nervous cords, and they are increased by motion and diminished by pressure. In the intervals of the paroxysms the patient suffers from a sense of fatigue and constriction in the affected parts. Sulphur baths given daily for 7 or 8 days form the most efficient method of treatment. It would seem, according to the experiments of M. Melsens, that iodide of potassium administered internally has the power of eliminating lead from the system in cases in which it exists; and Valleix has found this remedy particularly efficacious in lead arthralgia. It may be given in doses of from 6 to 10 grains 3 times a day.—Lead paralysis is very rarely general; commonly it is confined to either the upper or lower extremities, and in these to one system of muscles. In 5 cases out of 6 the upper extremities alone are affected, and the paralysis is limited to the extensor muscles of the hand and wrist, the hand remaining permanently flexed, giving rise to the "dropped wrist." The muscles have lost their contractility, become wasted, and in bad cases after death look pale and as if converted into fibrous tissues. Often the paralyzed parts have more or less lost their sensibility; sometimes this loss of sensibility (lead anaesthesia) occurs independent of paralysis of movement. Lead palsy is rarely a primary affection, lead colic or arthralgia commonly pre-

ceding it. Its progress is slow, and in well marked cases the results of treatment are somewhat uncertain. The internal use of iodide of potassium for the purpose of eliminating the poison, the employment of small doses of strychnia, of electricity, and of friction to stimulate the injured muscles, are the means most to be relied upon. In all cases the disease is chronic, and the treatment requires to be persevered in for a long time.—Lead encephalopathy, brain affection produced by lead, is happily the rarest of the forms of lead poisoning. In a few cases the patient is attacked suddenly and without warning; but in the majority of instances, after the symptoms characteristic of the effect of lead upon the system are already well marked, and often after colic has supervened, the patient is attacked with headache, vertigo, sleeplessness or somnolence, frequency of pulse, stiffness or pains in the limbs. The disease may now assume one of 3 forms. He may be suddenly attacked by a delirium, which in some cases is mild and tranquil, in others serious, the patient being dangerous to himself and others. In other cases he is seized with epileptiform or epileptic convulsions, in the intervals between which he only partially recovers the use of his intellect, remaining stupid and confused. Both these forms are apt to terminate in coma. In a third the patient is comatose or deeply somnolent from the commencement, neither delirium nor convulsions being present. The mortality in encephalopathy is very high, more than one half of all the cases proving fatal. So far treatment seems to have very little effect upon it.—The great importance of thoroughly understanding in what manner lead is likely to be affected by the action of water and air is readily perceived by considering how universally lead pipe is employed for conducting water into our dwellings. The subject has received the attention of the ablest chemists, and much positive useful knowledge is established, though from the intricacies of the subject and the great variety of circumstances involved in the multitude of cases, differences of opinion may still obtain in some comparatively unimportant points. Bright lead remains unchanged in perfectly dry air or in pure water deprived of air and protected from contact with it; but in a moist atmosphere, or in rain water, its brilliancy is soon dulled, and its surface is covered with a thin film of oxide, which adheres closely to the metal and protects it from further oxidation. The oxide, however, is partially soluble in water, and is no sooner taken up by this than it combines with any carbonic acid gas present or absorbed from the air, forming with it a film made up of silky scales of hydrated oxycarbonate of lead. More lead is then oxidized, dissolved, and converted into carbonate, and so the process of corrosion goes on. The oxycarbonate is almost insoluble in pure water, this taking up of it only about $\frac{1}{4}$ of a grain to the gallon; and so perfectly does this separate from water, that if distilled water hold- ing 4 or 5 grains of oxide of lead to the gallon

be exposed to the air, the carbonic acid soon imbibed will cause the precipitation of silky crystals of the hydrated oxycarbonate, leaving in solution not more than one part of the metal to 4,000,000 of the liquid, or $\frac{1}{4}$ of a grain to the gallon. But an excess of carbonic acid gives to the water the property of dissolving this carbonate of lead, in the same way that it acquires also the property of dissolving carbonate of lime or limestone. So far it seems therefore that carbonate of lead is as likely to be found dissolved in water that comes in contact with the metal, as carbonate of lime in water flowing over limestone. But the presence of certain salts in the water, even in very minute quantity, modifies materially this action. The sulphates, phosphates, and carbonates of the alkalies, and the sulphates, carbonates, &c., of the alkaline earths, or indeed any neutral salt, the acid of which can produce with lead or its oxide an insoluble compound, greatly diminish this action, even if present in the water to the amount of only 4 or 5 grains in the gallon. Bicarbonate of lime, which is almost always present in spring water, is especially remarkable for its protecting influence. The action of these salts is to form insoluble precipitates, which accumulate upon the surface of the lead, and cover it with a protecting lining. The protection is not, however, uniformly efficient, for there are certain other salts and acids which exert a contrary influence, and frequently completely overpower the beneficial effects of the first class named. Such are the chlorides and nitrates, and especially nitric and nitrous acids, in solution. These acids are generated in all waters containing decomposing animal matter, and therefore must be almost universally present to some extent. Dr. Medlock, who has given much attention to this subject, goes beyond other chemists in the importance he ascribes to the influence of these acids. The action of any water on lead, he states, is entirely due to the presence of nitrous and nitric acid, resulting primarily from the decomposition of organic matters and of ammonia contained in the water; and further, that water deprived of these acids, and of substances capable of producing them, has no action on lead, and may be conveyed with perfect safety through leaden pipes or stored in leaden cisterns. He devised a method of removing the nitrates and also organic matters from water, unless the latter be present in great excess. It was by suspending coils of iron wire or pieces of sheet iron in the water, and after a time filtering off the deposit. The iron decomposes the nitric acid, being itself peroxidized, and nitrous gas is liberated, which acts upon the carbonaceous matters, oxidizing these, so that they are resolved into carbonic acid and a lower oxide of nitrogen. The original paper of Henry Medlock, Esq., "On the Reciprocal Action of Metals and the Constituents of Well and River Waters," is the 24th article of vol. xiv. (4th series) of the "London, Edinburgh, and Dublin Philosophical Magazine" (1857).—The quantity

of lead in solution in the gallon of water, sufficient to produce injurious effects, depends very much on the individual constitution and on the length of time that the water continues to be used. Dr. Penny, professor of chemistry at Glasgow, cites an instance of the health of a whole community being deranged by water containing only $\frac{1}{4}$ of a grain of lead to the gallon; and also quotes the conclusion of Dr. John Smith of Aberdeen, that the limit of manifestly deleterious action would seem to be somewhere between $\frac{1}{8}$ and $\frac{1}{16}$ of a grain. An interesting case is reported of the lead disease attacking a large number of the household of the ex-royal family of France in 1848, while they resided at Claremont, Surrey, Eng. The spring that supplied the palace had been selected for the purity of its water, and lead pipes had been laid 30 years previously to the palace, 2 miles distant. Four members of the family manifested some symptoms of poisoning after 5 months' use of the water, and in 7 months 13 persons were alarmingly affected. The water on examination was found to contain one grain of lead per gallon.—Although the testimony of the highest medical authorities weighs strongly against the use of lead pipe, it is not likely to be abandoned until some substitute is found equally cheap that possesses its peculiar advantageous properties. Little confidence is felt in the attempts that have been made to shield it by an internal coating of some innocuous substance, which necessarily increases its cost without insuring perfect protection. If it must then be submitted to as a necessary evil, it is important to understand how it may be used with the least risk. The greater danger is in general to be apprehended, the more of the pipe is used, the longer the water is allowed to stand in it before using, and the more the pipes are exposed to the alternate action of air and water as they are filled and emptied. Pipes in the upper parts of buildings are frequently left empty of water by this being drawn off below, and for this reason are more exposed to chemical action than those constantly filled. The first flow of water through any lead pipes that have been left some time without use will wash out the dissolved salts of lead. If this water is allowed to run to waste to the amount of several times the contents of the pipes, that which follows is not likely to contain any injurious quantity of lead. By thus drawing off every morning the water that has stood in the pipes, and then washing them out by the continued flow for a short time, all risk of lead poisoning may be avoided.—The published information on the subject of lead poisoning and the effects of water upon lead is scattered through a vast number of medical and chemical works and reports of sanitary committees. The most important works to consult are Christison on poisons, and L. Tanquerel des Planches on lead diseases, translated from the French by Dr. Samuel L. Dana (Lowell, 1848); and convenient reference may be had to the opinions of a great number of chemists in the "Collection of Re-

ports (condensed)," prepared and published in 1859 by Mr. James P. Kirkwood, engineer of the Brooklyn water works.

LEAF, an appendage requisite in the growth and perfection of plants, and of two distinct forms, constituting the organs of nutrition and those of reproduction. The first are the true leaves, the latter are flower leaves. In common usage, by leaves are understood the true leaves or foliar organs; but strictly speaking, the floral organs are leaves also—modifications of the original and typical leaf. This original and typical leaf may be defined as an expansion of the living bark of the stem, sustained by ramified processes of woody fibre called nerves and veins, forming a more or less tough network and a strong material, between and over which the tissue of soft pulpy matter (*parenchyma*) is spread. By this arrangement leaves can become very diversified in figure and size. The leaf of the great water lily of the Amazon river (*Victoria regia*) has been known to grow to the diameter of 6 feet, and yet the pulpy tissue which makes up its surface is so delicate and tender, that a straw held 6 inches above and dropped perpendicularly upon it would readily pass through it. This vast area of a substance as tender as that of a blanched lettuce is borne between and over a series of singularly contrived nerves and veins, some of which resemble arched ribs, and in order that the leaf may float they are rendered porous by large interstices; they are armed with fierce prickles to ward off aquatic animals which might injure the foliage by approaching from beneath. Such an expanded surface has been found capable of sustaining a weight of more than 70 pounds if by some mechanical contrivance the pressure is equally distributed. The leaf of the bujoor palm of India (*corypha elata*) often measures 80 feet in circumference; but growing in mid air, its nerves and veins are strong, stiff, and woody, in fact a series of woody branchlets, which seem to pierce and insinuate themselves into the parenchyma; yet in reality, at first tender and soft as itself, they only harden with their development so as to furnish the needed support to the pulpy parts. In all plants which have leaves there is to be observed an axis of growth or development, which, elongated, becomes what is called their stem or trunk. This axis may be reduced to the simplest point, and yet represent the stem. In the germination of a seed, the axis is that portion between the young descending part called the radicle and the thick fleshy apparatus called the seed lobes seed leaves, or cotyledons. These cotyledons are the first foliar organs; but there is another and accompanying process, called the plumule, which bears leaves more fully developed and of a higher though still provisional character. The angle formed by the insertion of these leaves upon the axis is called the axil, and in such an axil, through every process of vegetation thereafter, the bud which is to produce the next leaf is prepared. The axis and its axillary bud being thus provided for, we

notice that the primary condition of the leaf is that of a little conical body, which pushes out from the axis; but its after form depends upon other considerations. In internal structure, this axis and the seed lobes, or further onward the axis and foliar organs, are the same. The substance of which they are composed is called the cellular tissue. This tissue is in fact a countless multitude of very small vesicles, each possessing a sort of individual life or vegetation, which renders it capable of reproducing itself so as to form many new vesicles. These vesicles are known as cells, and are the most elementary organs of the plant—mere hollow spheres of vitalized matter, having contents capable of such changes as will eventuate in their reproduction. The primary and original form of the cell alters from the sphere to any form required by the circumstances of growth, and hardens into wood and woody fibre, following the same laws as are to be seen in operation in the stem itself. Some forms of plants are so simple that the perfected plant consists of a single cell (*protococcus*, for example), and the living pulp of a growing leaf may, in somewhat the same sense, be regarded as an aggregated or social condition of unicellular plants destined in such a society for another purpose. From the almost ideal size of the axis, we trace an upward development in the flattened base or *lecus* of the bulbous roots (improperly so called) of some vegetables, the bulb being in fact a shortened stem ending in a terminal bud, which is made up of the scaly coats enclosing the incipient leaves and flowers. Such being the office of the axis or stem, it is evident that the leaf is dependent upon the original idea of the axis in regard to its form, disposition, and general character. Thus, the structure of a monocotyledonous stem or endogen permits only a limited variation in the form of the leaf, and what are called the nerves and veins of such a leaf uniformly assume either rectilinear or at least parallel curving directions. The venation in the leaves of a dicotyledonous plant or exogen, on the other hand, is more free and unconstrained; and the nerves and veins accordingly ramify into multitudes of very delicate and fine fibres, corresponding somewhat to the mode of ramification of the stem itself into limbs, branches, twigs, and general spray. It is to be observed that the terms veins and nerves in botany have no such meaning as applies to them in zoology, they being merely appearances of such organs, but in fact neither hollow nor fitted as special vessels for the conveyance of sap or of nutritive fluid, any more than other parts of the parenchyma or cellular tissue. So close is their analogy to mere woody, branching threads, and frameworks for the support of the pulpy parts, and so similar to the larger branches of the trunk, that it is asserted that these bundles in the leaves are progressive bundles, and that they are so framed that (regarding the leaf as passing off horizontally from the axis) the oldest parts lie above, the youngest below. In the

lower part also a combined layer exists in dicotyledons; in the lower part liber bundles accompany the vascular bundles, and in the under part the vascular bundles in relatively thin and flat leaves project above the surface, while the upper part of the leaf appears level. (Schleiden, "Principles of Scientific Botany," translated by Edwin Lankester, London, 1849, p. 277.) The young and growing leaf, at first a little conical body, consists of a tender mass of cellular tissue; determinate cords of this tissue harden into fibres, which are the future framework of the entire structure. In some kinds of leaves (especially the parts of the flower) no such fibres occur. The great variety presented by different kinds of leaves in these ramifications of veins is worthy of study. The pulp itself or parenchyma is also developed in the most varied mode; but the general structure is similar in all. It consists of layers of cells placed one above another, in more or less close contiguity, and so as to have some cells which are filled with aqueous juices of a larger and looser arrangement than those which are found near the surfaces. These likewise contain most of the coloring matters that give the green hue to the leaf. In some kinds of leaves the cells are spirally fibrous; others have cells which contain peculiar juices or even crystals; others still, cells which constitute vessels containing fluids of a milky nature, or else receptacles for gum, oil, or resin. Beautifully arranged air cavities and air canals are found in the leaves of some particular plants. The distinct layers of the cellular tissue have also specific purposes. Of these may be mentioned the *epidermis* or skin, which is the hardening of a delicate epithelium exposed to the atmosphere; the same layer of tissue exposed to continued moisture, as in subterranean leaves and in those which float upon the water, becomes the *epibema*, which consists of compact cells without intercellular passages and destitute of breathing pores such as exist in the air-exposed surfaces. But while the internal structure is thus in general similar, the external contour is diverse. What may be here styled the forms of leaves constitute an essential element in the classification and description of plants. The several parts of a perfect leaf are the footstalk (petiole), the stipules at its base, and the *lamina* or blade. These, essential to a perfect leaf, may be individually wanting; as there are leaves which have no stipules, others which have no petioles, and others in which the blade is suppressed. The blade occurs more than once in some sorts of leaves, and the leaf is then compound; or if it is a single expansion without any intervening space or joint, it is simple. Some leaves are so very compound as to be made up of 80 little blades. As we have already noticed, the venation of the leaf is remarkable for its variety, and it alone would furnish a very good guide in distinguishing and arranging different species of some families of plants. The termination of the fibres which compose the veins is to be found in the edge of the pulp, at

the circumference; and whatever is the shape of the leaf, the outline appears to be determined by the development of the parenchyma between the veins. De Candolle has illustrated this by showing how, if the lateral veins are all short and of equal length, the leaf will be narrow or linear; if those of the middle are sensibly longer than those of the base and apex, the form will be elliptical, oblong, or even orbicular; but if the veins are longest at the base and gradually diminish toward the top, the leaf will be ovate, or if the longest veins are beyond the middle, obovate. The presence of a greater or less quantity of pulpy matter investing the branching development of the veins would cause a wider or narrower separation between each, as these remained in their original plane of growth or anastomosed with each other. Accordingly, in a capillary leaf we see the veins thus widely separate from the first and remaining so. These leaves are often to be found in plants submerged for a part of their existence, like the water ranunculus; if more pulpy matter were developed on each edge of the veins, the space between might become entirely filled, and an entire outline be the result. If however the pulp does not quite occupy all the spaces, the leaf may be bordered with rounded notches or scallops (crenate); or out into sharp tooth-like jags (serrate); or coarsely toothed (dentate); or more coarsely toothed in consequence of rather more deficiency of pulp (sinuate); or still more deficient (lobed); or the blade may be cut down into sharp narrow incisions (cleft); or the incisions may extend almost through (parted), or to the very midrib or petiole, and form on each side of it distinct leaflets (divided). When these several leaflets are jointed to the main stalk, they follow the same law that obtains in larger and entire leaves, each leaflet falling separately either just before or at the time of the fall of the leaf itself; and such an arrangement of leaflets on a common petiole is called pinnate. By further divisions of each pinna the leaf itself may be bipinnate, tripinnate, &c. The leaves of many plants in which the blade is still present are reduced to mere spines, as in the cactuses; or to mere scales, as in the dodders; or assume the forms of broader scales, that are thickened but taper to a sharp point, as in the cedar and juniper; or thickened, narrow, long, and needle-shaped, as in the larch and pines. The leaves of many species do not develop any blade whatever, and present flattened petioles in their place, like the acacias of New Holland; or even, extending the mere petiole beyond its typical form in the leaf, it becomes a filamentous tendril fit only for support by winding its extremity around other objects. Other peculiarities may also originate through this development or suppression of the parenchyma in different portions of the growing leaf; so that it may grow into a globular, ovate, prismatic, or flattened blade, as the cells accumulate in the middle rather than at the edges; in like manner, by the thickening of the

edges beyond that of the middle, the plane or flat-surfaced leaf may assume concave forms. This thickening of the parenchyma gives rise in some leaves to a fistulose shape, as in the onion, where, the circumference growing faster than the centre, the leaf becomes hollow by the bursting of the cells in the central portion, and by its inability to make good the void by supplying new pulpy material. Other singular forms of leaves are owing to another peculiarity in the nature of the parenchyma, which is that of a natural grafting or cohesion of the edges of the same organ. Thus in the stipules, which resemble little blades and which are situated at the base of the footstalks, we see that, although often distinct and separate, as in the heartsease, yet they cohere sometimes at their edges and surround the axis whence the leaf which bears them springs. In *polygonum* these stipules become perfect sheaths, and are called *ochreae*; in the rose they grow to the edges of the petiole, of which they become a thin leafy margin; while in some species of *astragalus* they unite and meet on the opposite side of the leaf. The petioles of some species of plants possess a similar power, as we see in the flattened united edges of the leaf of the sidesaddle flower of our swamps (*Sarracenia*), where this folding together of the two edges produces a sort of hollow goblet-shaped figure surmounted by the blade of the leaf hanging down like a lid; also in the pitcher plant of India (*nepenthes*), where the petiole is partly round and partly expanded, but rolled into the form of a pitcher, the blade fitting closely to its aperture or mouth. Sometimes, however, the reverse occurs, as in *dischidia*, where the opening of the pouch is downward and toward the base of the leaf; while in *Marcgravia* the pouches are formed by the cohesion of little leaves (*bracteae*) which are borne at the base of the flowers. This power of cohesion also exists in the blade itself, as we notice in perfoliate plants, where the bases of two opposite leaves engraft so completely at the edges as to surround the stem and cause it to appear as if it had forced itself through the centre of a single and entire leaf; as in the honeysuckle (*Lonicera*) and the cup plant (*silphium perfoliatum*).—The office which the leaf performs in the economy of vegetation is of the highest importance. The conversion of inorganic, dead, mineral matter into living substance, to make new depositions of wood, to produce seeds or fruits as well as a variety of valuable secretions, belongs mainly to the foliage or leaves. One of the means is the exposure of as large a surface of the plant as is possible and as is requisite to the air and light. In a large elm tree it has been calculated that there existed in a single summer about 5 acres of foliage. Such an apparatus is a great natural laboratory, through which the sun's rays enable the living plant to originate peculiar chemical combinations and to increase its bulk in new forms. The importance of the foliage to the healthy condition of the plant is equally seen in every

stage of its growth; and, as has been stated, the floral organs are only modified forms of foliage suited to the purposes which they are to subserve. Every horticulturist knows how essential it is to secure a large, healthy, and abundant foliage, and how injurious is any improperly applied pruning to the maturation of the fruit. Beside this office thus imposed upon the leaf in the purposes of the growth of the vegetable, the presence of plants acts constantly and favorably upon the health of animals, rendering the atmosphere pure and salubrious, or else serving to condense the vapors which would otherwise be lost. Thus the beauty, the coolness, and the refreshing shade, which trees planted in cities afford, are not the only benefits to be derived; but every green and living leaf becomes in such close and pent-up places an ever useful though humble minister, to render the atmosphere fitted for healthy respiration; and this it does by the absorption, for its own peculiar nutriment, of deleterious gases, and by giving out again others which are requisite.

LEAGUE (Sp. *legua*; Fr. *lieue*), a measure of length used for estimating distances at sea, and by European nations upon land also. The nautical league is $\frac{1}{18}$ of a degree, or 3 equatorial miles, or 3.457875 statute miles. The land league in England is 3 statute miles. In France it has been used for different distances, as the legal post league, 2.42 English miles, and the league of 25 to the degree, or 2.76 English miles. The Spanish league is still more variable, sometimes 17 and again 17 $\frac{1}{2}$ being reckoned to the geographical degree. Upon the modern roads 8,000 Spanish *varas*, or 7,416 English yards, are estimated one league. The term is supposed by some to have come from the Celtic *leach*, a stone; and by others the Gallic *leuca*, league, is traced to the Greek *λευκος*, white, white stones being used by the Gauls to mark distances upon the roads.

LEAKE, a central co. of Miss., traversed by Pearl river; area, 576 sq. m.; pop. in 1850, 5,538, of whom 1,549 were slaves. It has a rolling surface and a light, sandy soil. The productions in 1850 were 180,687 bushels of Indian corn, 46,534 of sweet potatoes, 70,040 lbs. of rice, and 1,644 bales of cotton. There were 5 grist mills, 19 churches, and 842 pupils attending public schools. Capital, Carthage.

LEAKE, SIR JOHN, an English admiral, born in Rotherhithe, Surrey, in 1656, died in Greenwich, Aug. 1, 1720. He first distinguished himself in the fight with Van Tromp in 1678, and again by conveying relief to the starving garrison of Londonderry, and thus compelling the enemy to raise the siege. In 1702, during the war of the Spanish succession, he was promoted to the rank of commodore, and appointed to the command of a squadron, with which he rescued Newfoundland from the French. For these services he was made rear admiral, and soon after vice-admiral of the blue and knighted. In 1705 he constrained the French and Spanish to abandon the siege of Gibraltar; in 1706 relieved

Barcelona, and captured Carthage; and subsequently reduced the Balearic isles and Sardinia. After the relief of Gibraltar and the reduction of Carthage, he was made vice-admiral of the white, and presented with £1,000 by the queen; in 1707 he was appointed commander-in-chief of the fleet, and in 1709 rear admiral of Great Britain and a lord of the admiralty; and on retiring from active service, in the reign of George I., had a pension of £600 settled on him by parliament. He represented Rochester in parliament for several years.

LEAKE, WILLIAM MARTIN, an English officer and Philhellenist, born in 1777, died in Brighton, Jan. 6, 1860. In the early part of his military career he was employed on special missions to Asia Minor and other parts of the East, and devoted himself to the exploration of Greece. He rose to the rank of lieutenant-colonel, but retired from the service in 1823. He was a zealous champion of the national independence of the Greeks, and endeavored to procure help for them from the English government during the conflict with Turkey. In 1814 he published his "Researches in Greece;" in 1821, his "Topography of Athens" (2d ed., 1842); in 1824, the "Journal of a Tour in Asia Minor;" in 1827, in concert with the Hon. Charles Yorke, "Notices of the Chief Egyptian Monuments in the British Museum;" in 1830, his "Travels in the Morea;" in 1835 and 1841, his "Travels in Northern Greece;" in 1846, his "Peloponnesiaca, a Supplement to the Travels in the Morea;" and in 1854, "Numismatica Hellenica," the appendix to which was published in 1859, shortly before his death. He was assisted in this work and many of his other labors by his wife, who was a daughter of Sir Charles Wilkins, and whose first husband had been Mr. Marsden of the English admiralty. He also wrote several political works on Greece. Prominent among them is his "Historical Outline of the Greek Revolution" (1826).

LEAMINGTON, or LEAMINGTON-PIERS, a town and watering place of Warwickshire, England, on the river Leam, 20 m. S. E. from Birmingham; pop. in 1851, 15,692. It is one of the handsomest towns in England. Its only manufacture is that of gloves. Its prosperity and importance have mostly arisen from its mineral springs, which are of three kinds, sulphurous, saline, and chalybeate. The surrounding country is picturesque and beautiful, and the castles of Warwick and Kenilworth, as well as Stratford-upon-Avon, are not far distant.

LEANDER. See HERO.

LEAP YEAR. See CALENDAR.

LEAR, TOBIAS, an American diplomatist, born in Portsmouth, N. H., about 1760, died in Washington, D. C., Oct. 11, 1826. He was graduated at Harvard college in 1783, and in 1785 became private secretary to Gen. Washington, by whom he was always treated with great courtesy and regard. For several years he attended to the details of Washington's domestic affairs, and was most liberally remem-

bered by him in his will. In 1802 he was consul-general at St. Domingo, and afterward consul-general at Algiers and commissioner to conclude a peace with Tripoli. He discharged this latter duty in 1805 in a manner which gave umbrage to Gen. Eaton, who in concert with Hamet Caramelli, the deposed bey, had gained important advantages over the reigning Tripolitan sovereign. It was thought that to accept terms of peace at this juncture was to throw away the fruits of hardly earned success; but Mr. Lear's conduct was approved by his government, though much blamed by a portion of the public. He returned shortly after to the United States, and at the time of his death was employed in Washington as accountant of the war department.

LEARCHUS, a Greek sculptor of Rhegium, in southern Italy, who flourished probably between 700 and 650 B. C. He belongs to the semi-mythical Dædalian period, and the accounts of him are so vague and confused that he may be considered almost a mythical personage. Pausanias mentions a statue of Jupiter, attributed to him, in the brazen house at Sparta, which was considered the most ancient work of the kind. It was made of hammered pieces of brass riveted together.

LEASE, in law, the contract whereby one party (the lessor or landlord) transfers to another party (the lessee or tenant) the use and possession of real estate. The word is sometimes used also to designate a contract for the letting and hiring of personal property. No certain words or forms are necessary for this purpose; but a lease must describe the premises to be demised with an accuracy that is sufficient for certain identification; and there are words which, being usually employed, have now a very definite meaning, as house, farm, land, and the like. Any inaccuracies or uncertainties as to names, dimensions, locations, amounts, or terms, may be explained if the other parts of the instrument suffice to make them certain. As a general rule, they may be explained by evidence outside of the contract, provided this evidence neither varies nor contradicts the written contract. If the uncertainties cannot thus be cured, they may be rejected, if they leave behind them a good and sufficient instrument. Generally, any thing, whether real or personal, which is hired to be used, carries with it all the appurtenances and accompaniments already connected with it, and proper or necessary for that use of it. We will in this article consider: 1, the right and obligation of the lessor; 2, those of the lessee; and 3, some special rules of law applicable to leases.—If the lease be under seal, there is an implied covenant of good title in the lessor, and in all leases there is one of quiet enjoyment by the lessee. If the lease contain an express covenant of renewal, on reasonable terms, which do not imply perpetuity, the law enforces them. But a lease for 6 years, with a covenant to renew "on the same terms," means the same terms excepting

the covenant to renew, which will be omitted; for otherwise this covenant to renew would amount to a perpetuity, which the law prohibits. An important practical rule is, that the landlord is under no obligation to repair the premises, without an express covenant to that effect; and it seems to be the decidedly prevailing rule, that the uninhabitaleness of the premises is no defence against a claim of rent. Even where the landlord covenants that the premises are in good repair and that he will keep them so, it has been held that the tenant must still pay his rent, however out of repair the premises may be, and seek his compensation by claiming damages from the lessor; but this is not certain. In England the law is very severe against the tenant, not permitting him to vacate the lease unless for some positive and actual wrong doing of the landlord, and not obliging the landlord to inform the lessee of objections or defects, however serious and incompatible with use. But we doubt whether this be law here.—The tenant is bound to pay his rent as agreed on, but not to pay the taxes unless the lease so specifies; but this may be inferred from an agreement that the lessee shall pay his rent "free from taxes and charges," or "a net rent," or any similar phraseology. In general, if the lease does not contain a clause giving the lessor a right to reënter and oust the lessee on his failure to pay rent, the lessor has no such right. And if there be such a clause (as is commonly the case in American leases), the law is exceedingly exact and punctilious as to the exercise of this right of reëntry. That is, to justify it, a demand must be made for the rent due, and of the precise sum, on the precise day when it is due, at a convenient hour before sunset, and at the very place where it is payable if one be specified, or otherwise at some accessible, conspicuous, and noticeable place on the premises. Without express agreement, a tenant is not bound to make repairs. It has been sometimes held, however, that he was bound to make such repairs as his own use of the house causes to become necessary, or such as are called for by some accident and are required to prevent the premises from becoming untenable. Generally, an outgoing tenant should leave the premises wind and water tight, but is not bound to any ornamental repair, unless his covenants require this of him. If the tenant agrees to make repairs, and to leave the premises in good repair, he is not justified in not doing so by the fact that the premises were not in good repair when he took them. If, with no obligation on his part to repair, he chooses to repair, the lessor is not bound to repay him unless he promises so to do. It is important to know, that if a lease contains a covenant on the part of the lessee to keep the premises in repair, and to return them in good repair, he must not only repair if injured by a fire, but rebuild if the house is burned down, unless it be done by the act of God or of the public enemy. And if there be no such clause, although the lessee is

not bound to rebuild, he is bound (by a prevailing but not universal rule) to continue to pay rent during the lease. Hence the best and most carefully prepared leases in recent times provide expressly (and all leases should), that if the premises shall be made untenable by fire, in whole or in part, the rent shall cease or abate proportionably until repair or rebuilding; and the clause requiring repair and a return of the premises in good condition contains the exception, "unless in case of injury by fire or other unavoidable accident." In the absence of express covenants, the tenant is not bound to rebuild a house burned down through his own negligence or that of his servants. The tenant of a farm is bound, without express covenants, to manage and cultivate the same in such wise as good husbandry and the usage of the neighborhood require; and for any wide departure from this he would be responsible in damages. A tenant may assign and transfer, if he do not covenant otherwise, the whole or any part of his lease. Technically, if he transfers the whole, it is an assignment; if less than the whole, it is under leasing. If therefore he covenants, as is commonly done, "not to assign, transfer, or set over" the lease, this does not restrain him from under leasing any part of it; and to prevent this, the words "or any part of it" should be added. If there be this covenant, and the lessee breaks it by assigning or underletting the premises, this only gives the lessor a claim for damages, but does not cancel the lease, nor permit the lessor to enter and oust the tenant, without an express covenant to that effect. —A tenant cannot defend against his landlord's claim for rent, by denying or contesting his title to the premises, unless the tenant can show that the landlord caused the tenant to accept the lease by a fraud upon him. But it was always held that a landlord forfeited his rent, and authorized the tenant to cancel the lease, by his expulsion of the tenant from the premises; and now it seems to be law, at least in the United States, that the lease is cancelled and all right to rent lost by any violent outrage or indecency on the part of the landlord, or any intentional and material interference with the tenant's proper use and enjoyment of the premises. (For the right of an outgoing tenant of a farm or garden to his crops, see EMBLEMENTS; for his right to remove any thing he has added to the premises, see FIXTURES.)—The lease may be for the life of either the lessor or the lessee or any other person, and then the lessee has a freehold, which is considered in the law as real estate. Or it may be for any term of years, and then it is a chattel only, although a real chattel; for the law regards a lease determinable at a time certain, however distant that time, as a less estate than one for the life of any person, however old or feeble he might be. Where a tenant, with consent of the landlord, enters into possession, without any express bargain, he is a tenant at will. To avoid some technical incidents of this tenancy, there grew up in England a custom,

which the law soon sanctioned, of considering such an estate as a tenancy "from year to year." This kind of tenancy was not transferred to this country with all its English incidents; but something like it exists here. The one essential principle is, that a tenancy at will may be determined by the will of either party, but only after reasonable notice given by the party intending to terminate the tenancy. There is no uniformity either of rule or usage as to what this notice should be. In some instances, a notice of 6 months may still be necessary, as it is in England. One of 8 months is more frequently sufficient; and in some states the notice must be equal to the interval between the periods of payment of rent. The rule is given in most of our states by statute, but depends in some upon adjudication or usage. Generally, the notice should cover the whole of the interval between payments. Thus, if the rent is paid quarterly, and 3 months' notice is sufficient, and the notice is given in the middle of a quarter, it takes effect at the end of the next quarter. No particular form of notice is necessary; but there must be reasonable certainty in the description of the parties, of the premises, of the purpose, and of the time. If a tenant for years holds over after the determination of his lease, he is technically a tenant on sufferance; and a tenant on sufferance is not a tenant at will. But by the prevailing rule of this country, such a person, if the lessor do not object to his holding over, is a tenant at will, holding upon all the terms and conditions of the expired lease which have not necessarily expired with it; that is, for example, he pays the same rent, at the same time.—If the lessor sells and transfers all his estate, the tenant now owes rent to the purchaser. If he sells a part only, there must be an apportionment of rent. How this rent is to be apportioned is not determined by any universal rule. If the premises were divided into aliquot parts, as halves, thirds, quarters, or the like, the rent would be divided in the same way. Where this is not so, the apportionment is not governed by mere quantity, but by value; and this is a question of fact for a jury, and not of law for the court. So if the lessor die in the midst of the term, the rent is apportioned accordingly. If the lessor and his assignee agree as to the apportionment, the lessee is bound by it, because it is of no interest to him whether he pays to one or another.—As to the remedy of the lessor for rent due, in some states the law of distress for rent remains. (See DISTRESS.) Where it does not, the lessor has only the same remedy he would have for any other debt of the same amount.—There are, in most of our states, provisions resembling those of the statute of frauds, which determine what leases may be oral, and what must be in writing. So also it is generally provided that leases of a certain length (most frequently 7 years) should be recorded in the registry of deeds.

LEATHER (Sax. *lether*, from *lithe*, *lither*, soft, flexible), a material produced from the

fibrous portion of the skins of various animals by subjecting them to processes of tanning and currying or other operations, the effect of which, by the chemical changes induced, is to cause the skins, without alteration of shape, to become soft and flexible or hard according to the sort of leather desired, and to lose their tendency to putrefy. From the most remote periods leather has been prepared for clothing and various useful and ornamental articles. The Hebrews ornamented it by giving it bright colors, as appears by the mention in Exodus of rams' skins dyed red; and they employed it after the manner of the Egyptians, from whom they probably derived their knowledge of working it, for vessels to contain water and a multitude of other uses. The paintings and sculptures of Thebes, described by Wilkinson in his "Ancient Egyptians," represent many of the methods of working leather practised by this people as very similar to those of the present time. Figures of men are seen currying, stretching, and working it, employing the semicircular knife like that of modern curriers, and the awl, a stone for polishing the leather, and other implements such as shoemakers now use. In their shops a prepared skin was suspended as the emblem of their trade, together with ready-made shoes and other articles in leather. For covering harps, shields, &c., their leather was ornamented by embossing and coloring. For strong cords it was cut into thongs and twisted like ropes; and it was also used in the form of straps. The method of removing the hair from the skins now practised by the Arabs, and probably the same then employed, is noticed, together with the modern methods of effecting this part of the preparation of leather, in the article HIDE. For tanning they used the pods of the *sont* or *acacia*, the *acanthus* of Strabo and other writers, and probably also the bark and wood of the *rhus oxyacanthoides*, and the bark of the *acacia seal*, both natives of the desert. Of the methods of preparing the leather used by the Romans no accounts are preserved; and the processes of the middle ages also are lost. The Saracens, it is recorded, used alum, the efficacy of which for preserving skins is well understood. The Kalmucks at the present time make use of a solution of alum and of static root, and also of sour milk, in preparing the skins of sheep and other animals. From the largest species of sea carp they have from remote times prepared garments which are nearly water proof, making use of sour milk, or some astringent, with which the skins, first dried and cleaned, are dressed 3 times a day, after which they are finished by exposure for several days to a dense smoke. The Britons exported skins in early times, but afterward, as Fosbroke states, learned the art of tanning, and carried it on in establishments of great extent erected on the banks of the streams. Many rude nations now prepare leather by methods of their own. In both North and South America the dried skins, after being cleaned from the hair, are placed in earthen

vessels with the powdered brains and some water, and heated to about 95° F. The cerebrous matter forms a lather, which thoroughly cleans the skins and makes them pliable. After remaining immersed for some time they are taken out and stretched tightly in a frame, in which state they are rubbed with a smooth stone in order to expel the water and fat. Sometimes after this they are also smoked, by which they are made to better resist the action of water. In the Pacific countries of North America leather is skilfully tanned by the natives, who employ some of the vegetable productions of the country for the purpose. Leather dressing and the working of leather in Japan and Hindostan are considered as the most degrading of all pursuits; the class that practises them is tabooed, and others are contaminated by communication with any of its members. In civilized countries the leather interest ranks among the principal departments of industry. In Great Britain McCulloch places it next to iron, cotton, and wool, while others consider it as equally important with cotton. In the use of boots and shoes alone it is supposed that the consumption amounts to an annual average of 8s. to each person, which would give for a population of 21,000,000 the sum of £8,400,000. In addition to this, the consumption in harness, gloves, bookbinding, and other uses is supposed to amount to quite as much more. In the United States the use of leather in proportion to the population is probably as large as in Great Britain. In France it is stated that about 3,000,000 skins are annually converted into leather, of which about 2,032,000 are of calves, 857,000 of oxen and cows, and 111,000 of horses, the total value of which is over \$7,000,000. Leather making in the United States was practised upon a very small scale up to the beginning of the present century; but since the introduction of improvements, which began in Massachusetts in 1803, such as the application of water power to many of the processes, and subsequently of steam power, and also of ingenious machines, as those for splitting, shaving, graining, and finishing the leather, the manufacture has become of immense importance, and is conducted in establishments of great extent. By the census of 1850 the total value of the product of leather in the United States was estimated at \$32,861,796, not including that of some 6,000,000 skins of sheep, goats, and other small animals. Of this sum the only states that produced more than \$1,000,000 were: New York, \$9,804,000; Pennsylvania, \$5,275,492; Massachusetts, \$3,519,123; Ohio, \$1,964,591; Maine, \$1,620,636; and Maryland, \$1,103,139. The total amount of capital invested in the manufacture was \$18,900,557, and the value of the raw material was \$19,618,237. The great market of the country for all sorts of leather is New York. The import trade in hides is chiefly directed to this city, as also the great bulk of the domestic production of leather. Boston also has imported largely from South America and the Pacific

countries; and the manufactures in leather, which are more extensively conducted in Massachusetts than in any other state of the Union, cause a demand in this direction for much of the leather received in New York. The following table presents the amount of importations of hides into New York for the last 10 years, together with the sources which furnished the supplies of 1859:

IMPORTS OF HIDES INTO NEW YORK.

Where from, 1859.	No.	Sales.
Africa	71,950	..
Angostura	212,717	..
Buenos Ayres	449,052	..
" salted	18,078	..
" horse	8,287	..
British Provinces	1,809	11
Calcutta, &c.	12,904	1,547
Carthagen	58,888	166
Central America	142,294	163
Curacao	8,359	13
Chili	12,180	..
Europe	170,208	451
Lagayra and Porto Cabello	87,358	88
Maracaibo	45,218	..
Karanham and Para	62,341	..
Mexico	62,620	188
Montevideo	169,083	..
" salted and horse	11,882	..
Rio Grande	162,741	910
" salted	11,371	..
" horse	2,214	..
Rio Janeiro	47,441	..
West Indies	52,090	110
COASTWISE.		
California	163,988	1
To dealers, chiefly purchases made in neighboring cities	77,050	336
New Orleans	69,552	38
Southern States	87,699	775
Texas	103,169	65
Total, 1859	2,275,988	4,797
" 1858	1,831,418	4,552
" 1857	1,815,768	3,188
" 1856	1,767,767	1,500
" 1855	1,544,124	1,550
" 1854	1,724,400	1,459
" 1853	1,251,292	1,297
" 1852	1,458,286	1,400
" 1851	1,342,598	1,458
" 1850	1,435,119	1,636

The use to which a large portion of the leather is applied is shown by an article in a late number of the "Shoe and Leather Reporter," descriptive of the shoe trade of Boston in 1859. According to this statement it appears that the shipments and sales of Boston dealers amounted in that year to considerably more than 750,000 cases of boots and shoes. This number at an average of 50 pairs to a case would give 37,500,000 pairs, worth, at an average of \$1.15 per pair, \$43,125,000. Of the shipments $\frac{1}{3}$ of the entire amount were to the following 7 marts: New York, 182,207 cases; San Francisco, 68,887; Baltimore, 62,464; Philadelphia, 59,119; St. Louis, 55,774; Cincinnati, 44,882; and New Orleans, 37,686. The foreign exports were very small, those to Australia amounting to 2,920 cases, constituting more than half of the whole. The greater portion of the remainder was taken by the British American colonies, leaving a small amount for the Sandwich islands, and a few places in Africa and the West Indies. The imports of leather and manufactures of leather into the United States in the year ending June 30,

1859, were valued at about \$6,500,000. The exports of American leather in the same period comprised 2,063,040 lbs., valued at nearly \$500,000, chiefly to the British colonies in North America and to England. The inspections of leather at Philadelphia, for the years 1850-'58, were as follows: 1850, 871,937 sides; 1851, 481,737; 1852, 427,548; 1853, 469,170; 1854, 471,690; 1855, 496,520; 1856, 476,573; 1857, 421,053; 1858, 447,827.—In each of the different civilized countries of the world most of the varieties of leather are prepared; but some have attained special success in certain branches of the art. Thus, the United States produces excellent hemlock and oak tanned leather especially adapted for belting and the soles of shoes. England is famous for its strong heavy sole leather; France for its soft and highly finished calf skin leather, and also for its finer qualities of kid for gloves; Russia for a variety, peculiarly adapted for resisting moisture and the attacks of insects, and possessing an agreeable odor, qualities derived from the oil of birch bark, with which it is impregnated after tanning with this substance; and the Levant formerly furnished the colored goat skins known as morocco.—The following are some of the kinds and sources of the leathers in use. The heaviest sorts, employed for trunks and soles of boots and shoes, are made from the butts or backs of the hide of the ox, cow, or buffalo. The hide of the American buffalo (properly bison) makes leather of inferior quality. The English import from South Africa the hides of the hippopotamus, which when tanned with oak bark make a very thick and compact leather. A thick pliant leather, formerly worn as a defensive armor and known by the name of buffe, was prepared from the hide of the urus or wild bull of Poland and Hungary; the modern buff leather, used chiefly for soldiers' belts, is made of cow or buffalo hides. Kip leather is prepared from hides of young cattle older than calves; but the name kip is also given to the hides from Calcutta, Russia, and Africa, which are of the small breeds of cattle of those countries. The best French calf skin is made from the skins of calves 5 or 6 months old. The leather obtained from the hides of horses is inferior in strength and solidity to that of oxen. It is used principally in a split form, for enamelled leather, and also makes a tawed or white leather, when prepared with alum, which serves a useful purpose as aprons for certain classes of mechanics, and also as thongs for whips and for sewing harness and belts, whence the name by which it is sometimes known of lace leather. The skins of the ass, mule, and camel are used only for the kind of leather called shagreen, which serves chiefly for scabbards. Sheep skins furnish a weak spongy leather, which, however, is much used for slippers, aprons, bookbinding, &c. An imitation morocco leather used in the United States is made of sheep skins. The best skins are from sheep that have been killed a few days after shearing. Those of fine-wooled sheep

are generally of inferior quality. Sheep skins are sometimes split, and the upper or grain side tanned with sumach and dyed to imitate morocco, which is used for pocket-books and other purposes requiring little wear, while the under side is prepared with alum, making a white leather; this is however more commonly made from lambs' skins. The latter also furnish a delicate leather largely employed for gloves as a substitute for kid, but they must be taken from animals not more than a month old. Such skins are imported into England to the number of about 1,400,000 annually. Morocco is prepared from goat skins, the best for this purpose being obtained from Switzerland. Those known as Tampico skins from Mexico are also excellent. Mogadore skins produce a black morocco, known as black or Spanish leather, so called because originally brought from Spain, where the Moors carried its manufacture to great perfection. The finest kid skins for gloves are of young animals that have not begun to graze. The leather known in the United States as buckskin or wash leather is prepared from deer skins. It is largely used for gloves, and its softness renders it a good material for rubbing polished surfaces of metal or of brass. That of the chamois goat is still softer. In parts of Europe, as Scotland, hogs' skins are tanned, and make a light but tough and durable leather, which is used for the seats of saddles and parts of harness. On the continent the skins are dressed with the hair on for covering trunks, knapsacks, &c. A very strong leather for its weight is made of seal skins, properly tanned. It is used for the legs of riding and hunting boots, and in England a black enamelled leather is prepared from it for ladies' shoes. In Louisiana the manufacture of leather from alligator skins has been recently commenced; and in Canada a new source of leather has been found in the skins of a species of whale which is taken in the St. Lawrence river. In February, 1860, specimens of leather from this source were exhibited before the polytechnic association of the American institute of New York, which were considered as combining in a remarkable degree the qualities of softness and extraordinary strength. In a paper read at the same time the fish is described as the white whale, once very common in the lower part of the St. Lawrence river, and still so in the rivers emptying into Hudson's bay. The skin is highly valued for the various sorts of excellent leather made from it.—The methods of preparing skins for tanning are noticed in the article HIDES; and a part of the final process of finishing leather is described in that on CURRYING. In the latter operation it is customary in the United States to employ gum tragacanth for finishing the leather, to which it gives a drier and harder, though no better finish than is obtained by the ordinary size and tallow. In the coloring on the grain the usual practice is, after the grease has been carefully "slicked" off with the tool called a slicker, to brush the leather over with a warm ammoniacal liquor, called

"sig," which is stale urine. Immediately after this an application of some ferruginous liquor, as of copperas, is made, followed by another of oil, the oil striking in as the water evaporates. Tanning is a chemical operation in which the tough product leather, which resists the action of moisture and the tendency to putrefy common to soft animal matters, is obtained by causing the fibrous portion of the skin, called the corium or true skin, to enter into combination with the astringent vegetable substance, tannin. The corium is the inner layer of the skin, and is known as the gelatinous tissue, though it is perhaps only made gelatinous by the action of dilute acids or alkalies or of boiling water. It readily putrefies when exposed to moisture, but when combined with tannin becomes insoluble in cold water, and without changing its form constitutes the durable compound, leather. At first this is porous, and lacks the softness and flexibility which it is the object of the currying process to impart; but unless the chemical process has been thoroughly effected, the leather can never become firm and compact, resisting the penetration of water. Its quality is judged of by this property, and by the degree of homogeneity of texture and uniformity of color it possesses. The color should be a brown, of shade varying with the kind of tanning material employed. Skins injured in being removed from the animal, by being exposed too long to the depilatory process, or by being tanned in muddy water, or with poor qualities of bark that contain foreign substances, can never make good leather. The black color is produced upon the surface of leather by simply washing it with a solution of copperas (sulphate of iron). By the action of this salt with the tannin it comes in contact with, a tanno-gallate of iron is produced of permanent black or reddish black color. Leather is improved by keeping it a certain period, not exceeding two years, before it is used; but kept longer than this, it is apt to become dry, and should then be stored in damp cellars. The soles of boots and shoes are made more durable by keeping them for some time after they are made up. Leather becomes excessively compact by being long subjected to heavy pressure of a column of water. The Cornish miners eagerly seek for the pieces of sole leather that have been used for packing of the mining pumps, and use them for soles as the most durable material they can obtain.—The principal source of tannin is the bark of trees, the vegetable principle being deposited by the sap chiefly in the inner portion of the outer bark, and the outer portion of the inner bark or liber. It is most abundant in bark at the time of the greatest flow of the sap; consequently the spring bark must be most productive, and that of the winter the least so. Oak bark was formerly regarded as the only sort suitable for affording tannin; and that obtained from the English oaks was particularly famous for producing leather of great strength. After being dried, broken up, and ground to coarse

powder in a mill, it formed the substance called tan; and this was used by the following method, which is still practised on the continent. At the bottom of a large pit old tan is laid some inches in depth, and over this a layer of new tan; upon this is spread a layer of hides which is covered with tan, and upon this are placed more hides; and so they alternate till the pit is filled, the last layer being of tan 12 inches thick. Over this boards are laid and covered with stones. Water containing tannin in solution is then let into the pit. Sometimes 600 or 700 hides are thus treated in one pit; and they are left from 4 to 8 months without being disturbed, excepting once to take them all out and reverse the order of their arrangement, putting those that were at top below, and laying them in fresh tan. In England, hides intended for heavy leather have been kept 4 years in the pit, the tan being renewed every few months. In the United States, the hides, after being thoroughly cleaned, are put in a weak solution of bark liquor and handled often, with a view to prevent their becoming "crusted" or unevenly "struck." The liquors must be adapted to the quality of the hides. By soaking green hides in weak solutions or "ooze," some of the gelatine may be extracted and lost; while liquors too warm and strong may by acting too rapidly upon the outer portions prevent, by what is called crusting, the penetration of the tanning material into the central part of the skins. This effect is in great measure obviated by adding a little Glauber's salts to the liquors, so that stronger solutions can be at once used. The liquors, however, may be gradually strengthened, the hides being handled and changed daily. In the tanning process dried hides gain in weight from 60 to 80 per cent.; and it is this increased weight that accounts for the fact that hides purchased in the New York market are carried several hundred miles into the interior, and, after being treated by expensive manipulations, are returned to the city and sold at a less price per lb. than the original cost of the hides. The object of the tanner is to add as much as possible to the weight, and this sometimes causes him to adopt processes that are not particularly designed to improve the quality of the leather, and to reject others of great value in this respect, but which cause little addition to the weight. When sufficiently tanned for the purpose, they are split by a machine into several sheets, sometimes as many as 5 from a single thickness. The knife in this machine is sometimes made 72 inches long, so as to take almost the whole width of a hide of leather at one cut. By the latest improvement, of which the patent is held in Boston, this knife is made 80 inches long. Its use secures a large saving in labor, and also 25 per cent. or more in stock, which before its introduction was shaved away. The flesh side sheet, together with the shank and other small pieces, are in a good state without further tanning to be used by the trunk makers for covering wooden trunks, and are blackened and finished

on the trunks. The other sheets are then "levelled" with the knife by the currier, and the outer one, commonly used for covering carriages, is subjected to the process called "buffing," which consists in shaving off about half the grain, so as to leave a softer surface for receiving the artificial grain. Being then returned to the tan yard, they are scoured on a table with a brush, slioker, and water, and then are retanned in warm liquors. They are frequently handled, and being very thin the process is soon completed, when they are again scoured and sent to the currier to finish in the ordinary method or to prepare for japanning. In the retanning it is found advantageous to employ the terra japonica mixed with the bark liquors. Being very soluble and containing much tannin, it increases the strength of the liquors and lessens the amount of yard room required. Sicily sumach is used also in this part of the process, its effect being to soften the liquor and brighten the leather.—The species of oak principally used in England for tanning is the *quercus pedunculata*; but the great demand for leather has caused other kinds of bark to be tried, and the following tanning materials are now largely imported into that country:

Common name.	Botanical name.	Where from.
Oak bark.....	<i>Quercus pedunculata</i> .	Flanders, &c.
Larch bark...	<i>Pinus larix</i>	Scotland.
Mimosa bark..	<i>Acacia</i> sp.....	New South Wales.
Babool bark..	<i>Acacia Arabica</i>	Bengal.
Cork tree bark	<i>Quercus suber</i>	Larache, Rabat, &c.
Hemlock bark	<i>Abies Canadensis</i> ...	United States.
Sumach.....	<i>Rhus coriaria</i> or <i>glabra</i>	Sicily.
Valonia.....	Acorn cups of <i>quercus</i> <i>agilops</i>	Smyrna, Trieste, Mores.
Divi-Divi....	<i>Cassalpinia coriaria</i>	Maracaibo, Rio de la Hache, Savanilla.
Myrobalans..	<i>Terminalia</i> sp.....	Bengal.
Algarovilla..	<i>Prosopis pallida</i>	Valparaiso.
	<i>Juglans Maritima</i>	New Carthage.
Terra japonica	<i>Acacia catechu</i>	East Indies.
Cutch.....	".....	Calcutta, Singapore.
Kassu.....	<i>Areca catechu</i>	Ceylon.

Reference may be made to a number of these productions, as ALGAROVILLA, CATECHU, DIVI-DIVI, &c., under their own names, as alphabetically arranged in this work. A great variety of other vegetable substances have been introduced, either to be used alone, or as an adjunct to oak bark, none of which afford tannin in such large proportion as the gall nuts. In the northern United States and along the range of the Alleghanies the bark of the hemlock (*Abies Canadensis*) is the chief source of tannin. It is stripped in June, and its effect is to give a more reddish tinge to the leather than that produced by oak. Though it is inferior to oak, the two kinds of bark together afford, it is supposed, a better product than either alone. The American oaks most esteemed are, the Spanish oak, known in the southern states as the red oak (*Q. falcata*), the red oak of the north (*Q. rubra*), the chestnut or rock oak (*Q. prinus monticola*), and the black or quercitron oak (*Q. tinctoria*). The bark of the white oak and of some other species is also somewhat used in tanning. The bark of the American chestnut (*Castanea vesca*)

produces a tannin that is said to render leather more solid and flexible than that prepared with oak. The percentage of tannin contained in the various substances named below is given by Dr. Campbell Morfit in his work on "The Arts of Tanning, Currying, and Leather Dressing" (Philadelphia, 1852), the most complete compendium upon this subject:

Substance.	Percentage of tannin.	Authority.
Catechu, Bombay	55.0	Davy.
" Bengal	44.0	
Rhatany root	43.6	Peschier.
" "	38.3	G. G. Gmelin.
Kino (tannin and extractive) ..	75.0	Vauquelin.
Butea gum	73.2	E. Solly.
Nut galla, Aleppo	65.0	Guibort.
" Chinese	69.0	Bley.
" Istrian	34.0	Rodera.
Old oak, white inner bark	31.0	Cadet de Gassincourt.
" "	14.3	Davy.
Young oak, white inner bark	15.3	"
" colored or middle bark	4.0	"
Young oak, entire bark	6.0	Davy and Selger.
" spring cut bark	22.0	"
Oak kermes, bark of the root	8.9	"
Terra japonica or gambir	40.0	Esenbeck.
Arens root (<i>geum urbanum</i>)	41.0	Tromsdorf.
Squill-bulb	24.0	Vogel.
Statice of South Carolina	12.4	Parriah.
Birch bark	1.6	Davy.
" "	1.4	Biggers.
Beech bark	2.0	Davy.
Larch bark	1.6	"
Hazel bark	3.0	"
Chestnut, American rose	8.0	Cadet de Gassincourt.
" Carolina	6.0	"
" French	4.0	Julla de Fontenelle.
" Spanish, white inner bark	1.8	Davy.
Chestnut, Spanish, colored or middle bark	0.8	"
Chestnut, Spanish, entire bark ..	0.5	"
" horse	2.0	Julla de Fontenelle.
Lombardy poplar	3.5	"
Blackthorn	3.2	Davy.
Ash bark	3.3	"
Sassafras, bark of the root	68.0	Reinsch.
Elm bark	2.9	Davy.
" "	18.2	"
Bumach, Sicily	16.4	"
" Malaga	10.4	Frank.
" Carolina	5.0	Cadet de Gassincourt.
" Virginia	10.0	"
Willow, Leicester, white inner bark	16.0	Davy.
Willow, Leicester, colored or middle bark	3.1	"
Willow, Leicester, entire bark ..	6.8	"
Willow, Leicester, bark of the trunk	1.4	Biggers.
Willow, weeping	16.0	Cadet de Gassincourt.
Sycamore bark	16.0	"
" "	1.4	Biggers.
Elder	2.8	Davy.
Plum tree	1.6	Biggers.
Cherry tree	24.0	Cadet de Gassincourt.
" Cornish	19.0	"
Tormential root	45.0	"
Cornus sanguinea of Canada	44.0	"
Alder bark	80.0	"
Apricot bark	82.0	"
Pomegranate bark	82.0	"
Bohemian olive	14.0	"
Tan shrub with myrtle leaves, bark	18.0	"
Service tree bark (June berry) ..	18.0	"
Cloves	15.0	Davy.
Winter's bark	9.0	Henry.

—Tanning is not the only method of converting the fibrous portion of the skins of animals into leather. Various mineral salts, that have the

property of forming insoluble compounds with the gelatine and albumen of the skins, have been found to produce a similar effect with tannin itself, and have even been used in some cases to greater advantage by reason of greater simplicity in the application, and of less cost of time and materials in the operation. Sometimes the two methods of treatment are combined, the leather being first saturated with the solution of mineral salts, and then subjected to a short process of tanning, after which it is curried as usual. The material called tawed leather is a preparation of the skins by the use of a salt of alumina. Skins prepared for the use of the furrier, as described in FUR DRESSING, are properly tawed leather. The hair may be removed, and the product is then a soft leather suitable for gloves. By Bordier's process, patented in 1842, the salt used is a subsulphate of the peroxide of iron, prepared from the protosulphate (copperas) by digesting this with a mixture of nitric and sulphuric acid, till nitrous acid fumes are no longer given off. Instead of nitric acid, peroxide of manganese may be used to furnish oxygen to peroxidize the protosalt of iron. After the mixture has been left quiet 24 hours it is diluted with a sufficient quantity of water, and freshly prepared hydrated peroxide of iron is added to give an excess of base. After standing several days, the preparation being frequently stirred, it is ready for the skins. These are left in the liquid, the thin skins 3 days, and the heavy ones, intended for sole leather, 6 to 8 days. The subsulphate of iron is absorbed, and the free acids remain in the liquor. By the Dutch or Cavalin's process, the skins are first macerated in a solution of alum and chrome salt, and after this in one of copperas. A compound, or more than one, of iron and chrome is produced in the skins, converting them into leather. They are afterward soaked 4 days in a solution of one part of bichromate of potash and 2 parts of alum in 18 parts of water, the skins being taken out every day, dried and rubbed, and the strength of the liquor kept up by additions of the salts employed. They are then similarly treated in a bath composed of copperas dissolved in 6 times its weight of cold water, the skins being suspended so as not to touch each other in the bath. Leather thus made lacks the material, tannin, which ordinarily facilitates its being blackened. To produce this effect it is consequently dyed by a different method from that given for tanned leather. A mordant is first applied, consisting of a strong solution of alum and copperas, and after this the surface is rubbed with a strong decoction of logwood. A process largely in use in New England, first invented and patented by Prof. A. K. Eaton of New York, consists in the use of sulphate of potash, not as a substitute for tannin, but as a means of facilitating its combination with the gelatine. It is used with any of the ordinary tanning solutions, and so hastens the process that calf skins, which by the old methods required from 8 to 4 months for their

treatment, can be well tanned in 10 days. It is a common but mistaken impression that leather tanned rapidly is necessarily weak. On the contrary, the longer the hides remain in the liquor the more gelatine must be dissolved and lost, and consequently the more imperfect is the process. The late Hon. Gideon Lea, in a course of lectures delivered in New York upon tanning, remarked that in all of numerous experiments he had observed of both slow and quick tanning (the preparation of the hides for the ooze being equally well done), he had found the quick-tanned leather of a firmer and closer texture, more solid, less pervious, vastly greater in weight, and far more durable in the wear than the slow-tanned leather. And when all the gelatine composing the hide is combined with the tannin, not a single additional ounce can be gained from the strongest ooze, however long the process is continued. By the ordinary process in the United States the tanning is continued from 3 to 6 or 7 months, varying in different years from different qualities of hides, and sometimes owing to the different conditions of the seasons. The largest tanneries are usually in the vicinity of hemlock forests, where the bark can be most economically procured. Some of these establishments are of immense extent, with several hundred vats, and a capacity of tanning nearly 100,000 sides of leather. The consumption of bark is rated at about a cord to 10 sides, and the sides average over 18½ lbs. each. The tanneries include extensive buildings for storing bark, mills for grinding it, and those for softening the dry South American hides, which is done by beating them after they are soaked in water. There are also machines for rolling the leather, and copper heaters for warming the liquors.

LEAVENWORTH, a N. E. co. of Kansas, bounded N. E. by the Missouri river, which separates it from Missouri, and S. by the Kansas; area, about 500 sq. m.; pop. in 1860, about 16,000.—LEAVENWORTH, a city and the capital of the preceding co., founded in 1854, on the right bank of the Missouri river, 8 m. below Fort Leavenworth and 500 m. from the mouth of the river; pop. in 1857, 2,000; in 1860, about 10,000. The river is here swift and deep, and bordered on the Kansas side by a natural levee of rocks. The city has straight avenues, crossing each other at right angles, is lighted with gas, and contains (1860) 12 churches, 7 schools, 8 banking houses, 11 hotels, 13 lumber yards, 7 steam saw mills, a flour mill, a machine shop, 8 soap and candle factories, 6 breweries, 2 coach and wagon factories, 1 sash and blind factory, 4 brick yards, and several miscellaneous manufactories. Messrs. Russell, Major, and Waddell, the government contractors, have an immense establishment here connected with the transportation business, in which are employed 6,000 teamsters and 45,000 oxen. Three daily and five weekly newspapers are published, one of which is in German and one in French. The city is connected with St. Joseph and Jefferson City by

steamboat lines, and by daily stages with Lawrence, Fort Riley, Leocompton, Topeka, St. Joseph, Atchison, Wyandot, and Kansas City. Telegraphic communication with the East was established in 1859.

LEBANON, a S. E. co. of Penn., bounded N. W. by Kittatinny or Blue mountain, and S. E. by South mountain, and drained by Swatara river and its branches; area, 288 sq. m.; pop. in 1850, 26,071. It consists almost wholly of a valley, and has mines of excellent iron ore in connection with rich veins of copper; slate, limestone, and marble also abound. The soil is very fertile. The productions in 1850 were 241,989 bushels of Indian corn, 274,095 of wheat, 372,542 of oats, 25,602 tons of hay, and 417,074 lbs. of butter. There were 36 grist mills, 13 saw mills, 15 tanneries, 5 newspaper offices, 52 churches, and 5,738 pupils attending public schools. The Union canal and the Lebanon valley branch of the Philadelphia and Reading railroad traverse the country. Capital, Lebanon.

LEBANON. I. A village of South Lebanon township, and the capital of Lebanon co., Penn., situated on Quitapahilla creek and on the Union canal, 24 m. E. from Harrisburg; pop. in 1852, about 3,000. The Lebanon valley branch of the Philadelphia and Reading railroad connects it with Reading and Harrisburg, and the North Lebanon railroad with Cornwall ore banks. It has an active trade, and stands in the midst of a rich iron mining district, having several large furnaces in operation in the immediate vicinity. The village is regularly and substantially built; the houses are mostly of brick or stone; and there are several schools, newspaper offices, warehouses, a bank, a library, and various manufacturing establishments, chiefly of iron, malt liquors, leather, earthenware, &c. II. The capital of Marion co., Ky., situated on Hardin's creek, at the terminus of the Lebanon branch of the Louisville and Nashville railroad, 5 m. from Rolling fork of Salt river, and 55 m. S. S. W. from Frankfort; pop. in 1859, about 1,200. It contains 6 churches, a female seminary, an academy for boys, a flour mill, and 3 hotels, and is the seat of St. Mary's Roman Catholic college, which in 1859 had 115 students. III. The capital of Wilson co., Tenn., situated on a branch of Cumberland river, 30 m. E. from Nashville; pop. in 1851, about 2,000. It contains several academies, churches, &c., has manufactories of cotton and woollen goods, and is the seat of Cumberland university, founded in 1844, and having, in 1859, 11 professors, 165 students, and a library of 4,000 volumes. This institution is under the care of the Cumberland Presbyterians; attached to it are a law school with 8 professors and 188 students, founded in 1847, and a theological department with 2 professors and 88 students, founded in 1855. IV. A village and the capital of Warren co., Ohio, on Turtle creek, a branch of the Little Miami river, 37 m. N. N. E. from Cincinnati; pop. in 1859, about 3,000. It is situated on the Little Miami railroad, and is the terminus of the Warren

county canal, which connects the village with the Miami canal. In 1859 it contained 7 churches (2 Baptist, 1 Congregational, 1 Cumberland Presbyterian, 2 Methodist, and 1 Presbyterian), a normal school, a public library, 2 saw mills, 2 flour mills, and 2 private banking offices. Two weekly newspapers and a monthly magazine are published here. V. A post village of St. Clair co., Ill., on the Ohio and Mississippi railroad, 20 m. E. from St. Louis; pop. in 1850, 507. It is pleasantly situated, has a newspaper office, several stores and mills, and is the seat of McKendree college, a Methodist institution founded in 1835, and having 6 professors, 82 students, and a library of 5,500 volumes.

LEBANON, LIBANUS, or JEBEL LIBNAN, the western of two mountain chains in Syria which are thrown off from the Taurus range near the N. E. extremity of the Mediterranean, and extend S. S. W. almost parallel with the coast. The eastern of these ridges is called Anti-Libanus, Anti-Lebanon, or Jebel esh-Shurki. The Lebanon is the higher of the two, its average altitude being estimated at 8,000 feet, while its culminating peak, Jebel Makmel, in lat. $34^{\circ} 12' N.$, is about 12,000 feet above sea level. On its W. side it sends off several spurs which traverse the narrow strip of coast and terminate at the Mediterranean in bold promontories. On the E. lies the valley of Cœle-Syria, now called El Bukaa, which separates this range from Anti-Libanus. It is about 100 m. long and from 10 to 20 m. in breadth, with an elevation, near the source of the Orontes, of 2,000 feet above the sea. S. of it lies the valley of the Jordan, the most important of the rivers of this mountain system. The next largest is the Orontes (Arab. *El Aasy*), which cuts through the Lebanon at Antakia (Antioch), about lat. $36^{\circ} 7'$. The general geological formation of the Lebanon is carboniferous and mountain limestone, the whiteness of which is said to have given to the range its name, signifying "white." The rock is very porous, and has been worn by the action of air and water into numerous caves and hollows, which once sheltered the persecuted Jews and Christians. Graywacke, slate, basalt, and other igneous rocks, granite, gneiss, dolomite, iron, and coal are also found. Mines of the last two minerals are worked to some extent. The scenery of the mountains when viewed from the sea or plains is in the highest degree picturesque; but on a nearer approach little is presented to interest the traveller except rugged ravines and dangerous precipices. The vegetation is scanty, although here and there appear pleasant groves, of which the famous cedars of Lebanon form the most remarkable part, or good pasture grounds to which the Arabs resort in summer. The lower parts of the range, however, are exceptions to these remarks; they are well watered and cultivated, and their valleys contain orchards, vineyards, mulberry plantations, and grain fields. Olives are also produced, and on the E. side are scrub oaks. The habitable regions of the Lebanon are

chiefly in the possession of the Maronites and Druses. (See PALESTINE, and PHœNICIA.)

LE BAS, PHILIPPE, a French historian and archæologist, born in Paris, June 17, 1794. At the age of 16 he entered the navy, which he left 8 years later for the army. He shared in the campaigns of 1813-'14, and then leaving the service was employed for 6 years in the office of a magistrate. In 1820 he was chosen by Queen Hortense to act as tutor to Prince Louis Napoleon, now Napoleon III., with whom he remained until Oct. 1, 1827. After holding professorships at Paris successively of history and of the Greek language and literature, he was commissioned in 1842 by the French government to undertake a tour of archæological investigation in Greece and Asia Minor, during which he made many valuable discoveries. He is the author of a great number of books on very varied subjects, embracing essays on classical inscriptions, editions of ancient authors, travels, ancient and mediæval history, politics, instruction in German, and translations from German and English. His best known works are his *Explication des inscriptions Grecques et Latines recueillies en Grèce* (1835-'7), and *Voyage archéologique en Grèce et en Asie Mineure* (1847 et seq., still unfinished).

LE BRUN, CHARLES, a French painter, born in Paris, March 22, 1619, died there, Feb. 12, 1690. He studied in the school of Simon Vouet, and at the age of 15 produced a picture of "Diomedes devoured by his own Horses." He afterward studied under Nicolas Poussin in Rome, and for 6 years he devoted himself to the study of the antique and of the old masters, and returned to Paris in 1648. At the recommendation of Colbert, Louis XIV. appointed him his first painter, and conferred upon him the direction of the manufactory of Gobelins tapestry. He painted a grand series of pictures, now at Versailles, illustrating the military triumphs and public works of the reign of Louis XIV., executed in a half classical, half allegorical style, the monarch being represented in a Roman toga with the flowing peruke of the 17th century, and with other incongruities and anachronisms. For the Louvre he painted a series entitled the "Battles of Alexander," which are considered among his finest works, and are well known through the spirited engravings of Gérard Audran. Another of his pictures, "Mary Magdalen washing the Feet of the Saviour in the House of Simon the Pharisee," was so highly esteemed, that in 1815 the emperor of Russia accepted it in exchange for the celebrated "Marriage at Cana," by Paul Veronese, now in the Louvre. He remained in favor with Louis XIV. until his death.

LEBRUN, CHARLES FRANÇOIS, duke of Piacenza, a French statesman and author, born in St. Sauveur-Lendelin, Normandy, March 19, 1739, died near Dourdan, June 16, 1824. He was fortunate in early life in securing the protection of Chancellor Maupeou. After the downfall of his patron he occupied himself

with prose translations of Tasso's *Gerusalemme liberata*, Homer's *Iliad*, and other works. A letter advocating political and social reforms, published by him in 1789 under the title of *La voix du citoyen*, brought him into considerable notice, and he was elected a deputy to the states-general. As a member of the constituent assembly he opposed the issuing of assignats and the establishment of lotteries. He subsequently became president of the directory of Seine-et-Oise, was twice imprisoned during the reign of terror, entered the council of the ancients in 1795, and after the 18th Brumaire was appointed by Bonaparte 8d consul. He owed this elevation to his integrity of character, as well as to his abilities as a financier, which had been advantageously displayed while he was a legislator. Napoleon wished also to afford a proof of his moderation by selecting for so high an office a man of aristocratic connections and predilections. Lebrun rendered important services to the country in the adjustment of its finances and the establishment of the court of accounts, and after the coronation of the emperor was created arch-treasurer and duke of Piacenza. He was also at different times governor-general of Genoa and of Holland. After the abdication of Napoleon he adhered to the Bourbons; but having accepted office under the emperor during the Hundred Days, he was subsequently excluded from the chamber of peers until 1819. His latter years were passed in retirement, during which he finished a translation of the *Odyssey*.

LEBRUN, PIERRE ANTOINE, a French poet, born in Paris, Nov. 29, 1785. At an early age he wrote a tragedy entitled *Coriolan*, and other poetical compositions, which secured for him the patronage of François de Neufchâteau, one of the ministers of the directory. On the battle of Austerlitz he wrote a poem, for which he received a pension of 1,200 francs from the government. After the fall of the empire, he celebrated the glories of Napoleon in a series of poems. In 1828 he succeeded his patron, Count Neufchâteau, as a member of the French academy. From 1831 to 1848 he officiated as director of the royal printing establishment. For some time he was under Louis Philippe a member of the chamber of peers, and since 1853 he has been a member of the imperial senate. The publication of his complete works was commenced in 1844. They include a number of dramas, of which his *Marie Stuart* is based upon Schiller's tragedy of that name.

LEBRUN, PONCE DENIS ÉCOUGHARD, a lyric poet, sometimes called the "French Pindar," born in Paris, Aug. 11, 1729, died there, Sept. 2, 1807. He was brought up in the family of the prince de Conti, and as early as his 12th year he began to write verses. By the advice of L. Racine he founded his style upon classic models, and his odes and epigrams soon brought him into notice. His early life was not fortunate, his wife, a beautiful woman, celebrated in many of his poems under the name of "Fanny," hav-

ing procured a legal separation after a stormy union of 14 years, and his little property having been dissipated by the insolvency of the prince de Guéméné. He avenged himself on his enemies by stinging epigrams and passionate lyrics. Upon the appointment of Calonne as comptroller-general of finance, he received a pension of 2,000 livres, and his muse was energetically employed in celebrating the virtues of the king. Upon the downfall of the monarchy he sang the praises of the republic with no less enthusiasm. He subsequently ingratiated himself with the first consul, and received a pension of 6,000 francs, on which he subsisted comfortably until the close of his life. His literary remains include 140 odes of all kinds, 600 epigrams, 4 books of elegies and 2 of poetical epistles, and a mass of miscellaneous pieces.

LECLERC, JOSEPH VICTOR, a French writer and philologist, born in Paris, Dec. 2, 1789. After distinguishing himself as a teacher in various schools, he became in 1824 professor of Latin eloquence and in 1832 dean of the faculty of letters of Paris, which position he still holds; he is also a member of the academy of inscriptions and belles-lettres, and ordinary councillor of the board of public instruction. He has edited the works of many old French writers, and commented on the *Fabliaux* and other literary remains of the middle ages. He has also translated or edited several classic authors. Among his principal works are: the *Éloge de Montaigne* (Paris, 1812); *Les pensées de Platon*, in Greek and French with a commentary (1818); *Nouvelle rhétorique* (1823); and *Des journaux chez les Romains* (1838). For many years past M. Leclerc has been the editor-in-chief of the great *Histoire littéraire de la France*, of which the 23d volume, bringing the history down to the 18th century, appeared in 1856.

LECOMPTON, a town of Kansas and capital of the territory, situated on the Kansas river, about midway between Topeka and Lawrence, and 60 m. W. from Westport, Mo. It is the seat of a U. S. land office, and \$50,000 was appropriated by congress to erect the government buildings in it.

LE CONTE, JOHN, an American naturalist, born near Shrewsbury, N. J., Feb. 22, 1784. He entered the corps of U. S. engineers in 1818, and was early employed in various important surveys and fortifications. He always manifested a taste for the natural sciences, to which he has contributed many important papers in the departments of botany and zoology. His principal publications are: "Monographs of the North American Species of Utricularia, Gratiola, and Ruellia" (in the "Annals of the New York Lyceum of Natural History," vol. i.); "Observations of the North American Species of Viola" (ibid., vol. ii.); "Descriptions of the Species of North American Tortoises" (ibid., vol. iii.); "A Monography of North American Histeroides" (Boston "Journal of Natural History," vol. v.); "Descriptions of Three New Species of Arvicola, with Remarks upon other

North American Rodents" ("Proceedings of the Academy of Natural Sciences of Philadelphia," vol. vi.)—JOHN L., M.D., an American naturalist, son of the preceding, born in New York, May 13, 1825. He was graduated at the New York college of physicians and surgeons in 1846. During his studies at this institution he made several scientific journeys, to Lake Superior and the upper Mississippi in 1844, to the Rocky mountains in 1845, and to Lake Superior again in 1846. In 1848 he made a third journey to the shores of this lake in company with Agassiz and a number of others, and contributed the account of the *coleoptera* to the volume in which the results of the expedition were given to the world. In the following year he visited California, where he remained until 1851, and explored the Colorado river. He has contributed many papers, chiefly on coleopterous insects, to the transactions of various American learned societies, and to the Smithsonian "Contributions to Knowledge." His principal published works are: "Catalogue of Geodaphagous Coleoptera of the United States" (in the "Annals of the New York Society of Natural History," vol. iv.); "On the Pselaphidæ of the United States" (Boston "Journal of Natural History," vol. vi.); "On the Classification of the Carabidæ of the United States" ("Transactions of the American Philosophical Society," vol. x.); "Attempt to Classify the Longicornia of the United States" ("Journal of the Academy of Natural Sciences of Philadelphia," new series, vols. i. and ii.); "Synopsis of the Melolonthidæ of the United States" (ibid., vol. iii.); "Coleoptera of the Regions adjacent to the Boundary Line between the United States and Mexico" (ibid., vol. iv.); "Revision of the Elateridæ of the United States" ("Transactions of the American Philosophical Society," vol. x.); "Revision of Cicindelæ of the United States" (ibid., vol. xi.); "Revision of the Buprestidæ of the United States" (ibid., vol. xi.); "Report on the Coleopterous Insects of the 47th Parallel" ("U. S. Pacific Railroad Explorations and Surveys," vol. xi.).

LE CONTE, JOHN, M.D., an American physician and naturalist, born in Liberty co., Ga., Dec. 4, 1818. On his father's side he is a descendant of a French Huguenot who emigrated from Rouen near the close of the 17th century to New Rochelle, N. Y. Through his mother he descends from the New England Puritans who planted the Dorchester colony in South Carolina, a portion of whom subsequently established the Midway settlement in Liberty co., Ga. His grandfather removed to Georgia prior to the revolution. His father, Lewis Le Conte, jr., was a graduate of Columbia college, N. Y., and was through life a diligent and enthusiastic student of the natural sciences. After receiving his preparatory education near home, the son entered, in Jan. 1835, Franklin college, Athens, Ga. (Georgia university), and was graduated with high honors in 1838. In 1841 he received the degree of M.D. from the college of

physicians and surgeons in New York city, and in the following year established himself as a practitioner in Savannah, Ga. He contributed largely to medical periodical literature from 1842 to 1846. In the autumn of the latter year he was elected to the chair of natural philosophy in Franklin college, his *alma mater*, which position he held for 9 years. During this period he continued a frequent contributor to the leading scientific journals of the country on questions of physical science. He resigned his chair in 1855 to become lecturer on chemistry in the college of physicians and surgeons in New York city. In 1856 he accepted a call to the South Carolina college at Columbia, where he had been unanimously elected to fill the chair, then first created, of natural and mechanical philosophy, which office he still holds (1860). His numerous papers in periodicals embrace a great variety of important subjects in medicine and natural science.—JOSEPH, M.D., brother of the preceding, born in Liberty co., Ga., Feb. 26, 1823. After a preparatory education in his native county, he entered Franklin college, Ga., in 1838, was graduated with distinction in 1841, and in 1845 was graduated as M.D. in the college of physicians and surgeons, New York. He removed in 1848 to Macon, Ga., where he practised his profession. In 1850 he went to Cambridge, Mass., to complete under Agassiz a course of studies long before undertaken in natural history and geology. He remained 18 months under that distinguished savant, whom he accompanied in 1851 on an exploring expedition to the reefs, keys, and peninsula of Florida, assisting him in the observations which resulted in the discoveries made concerning the recency and the coral origin of those regions. After being graduated at the Lawrence scientific school in Cambridge, he returned to Georgia, and was elected to the chair of natural sciences in Oglethorpe university. He resigned this office after one year to accept the chair of natural history and geology in Franklin college, which he held for 4 years. In 1856 he was elected to the professorship of chemistry and geometry in the South Carolina college, which he now holds. He is an occasional contributor and a frequent lecturer on scientific subjects. Among his more important papers are those "On the Agency of the Gulf Stream in the Formation of the Peninsula and the Keys of Florida," "On the Correlation of Physical, Chemical, and Vital Forces, and the Conservation of Forces in Vital Phenomena," and "On the Formation of Continents and Ocean Bottoms," all of which were read before the American association for the advancement of science.

LEDA, in Greek mythology, the daughter of King Thestius or Glaucus. She was wife of Tyndareus, by whom she was at first mother of Timandra and Philonos. Her great beauty attracted the love of Jupiter, who under the form of a swan surprised her in the bath. In time she produced two eggs, from which were hatch-

ed Castor and Clytemnestra, of mortal nature, being begotten by Tyndareus, and Pollux and Helen, who were children of Jupiter and immortal. There are many versions of this fable of Leda and the swan, some reversing the origin of the children, and others reducing their number; also of the subsequent history of Leda. One account states that she was after death deified as Nemesis, while another declares that Nemesis was the mother and Leda only the nurse or guardian of the eggs. Mythologists have conjectured an identity between Leda and Leto or Latona.

LEDEBOUR, KARL FRIEDRICH VON, a German botanist and traveller, born in Stralsund, July 8, 1785, died in Munich, July 4, 1851. He was graduated at Stockholm as doctor of philosophy at an early age, and appointed in 1805 teacher and director of the botanic garden at Greifswalde. In 1811 he became professor of natural history at the university of Dorpat, in Russia. In 1826 he explored the Altai mountains, and the result of his investigations is embodied in his *Reise durch das Altaigebirge und die Daongarische Kirgisensteppes* (2 vols., Berlin, 1829-'30), and in his important botanical work, *Flora Altaica* (4 vols., Berlin, 1829-'34). In the preparation of the latter work, as well as in that of *Icones Plantarum Novarum Floram Rossicam illustrantes* (5 vols. fol., with 500 colored plates, Riga, 1829-'34), he was assisted by his travelling companions Meyer and Bunge. He regarded his *Flora Rossica* (3 vols., Stuttgart, 1842-'51), as the greatest scientific achievement of his life. He resided successively in Odessa and Heidelberg, and in Munich from 1848 to the time of his death.

LEDRU-ROLLIN, ALEXANDRE AUGUSTE, a French jurist and politician, born in Paris, Feb. 2, 1808. The son of a wealthy physician, he received a liberal education, studied law, and was admitted to the bar in 1830. A paper on martial law, which had been proclaimed at Paris by the government in consequence of the republican insurrection of 1832, gave evidence of his ability as a lawyer. Two years later, his *Mémoire sur les événements de la rue Transnonain* produced a deep sensation, and thenceforth he was employed as counsel by most of the opposition journals and republican conspirators who were prosecuted under Louis Philippe. In the numerous trials in which he thus became engaged, he gained a certain amount of popularity by his boldness and a fervid though not always classical eloquence. In 1837 he assumed the editorship of the *Journal du Palais*, a law periodical of high standing; he reprinted the volumes previously published (27 vols. 8vo., 1791-1837), and continued it for 10 years. He also superintended the publication of a work entitled *Jurisprudence Française, ou Répertoire du Journal du Palais* (8 vols. 4to., 1848-'8), and added to it a remarkable introduction. In 1844-'6 appeared his *Jurisprudences administratives en matière contentieuse de 1789 à 1831* (9 vols. 8vo.). About the same time he was the

chief editor of the daily law newspaper, *Le droit*. In 1838 he bought the place of attorney at the court of cassation, but disposed of it in 1846 in order to devote more time to politics. In 1841 he had been elected deputy by the department of Sarthe, by a nearly unanimous vote, to succeed Étienne Garnier-Pagès, who had just died. He made a bold confession of his republican creed, which was hailed with enthusiasm by his constituency, but caused him to be prosecuted by the government; he was sentenced to 4 months' imprisonment and a fine of 8,000 francs; on a new trial, however, he was acquitted. He spoke often in the chamber of deputies, but exerted little influence upon the members. Nor did he find hearty support among the opposition press; he consequently established, under the editorship of Flocon, a journal of his own, *La réforme*, which advocated not only political but social reforms. In 1845 he issued a socialist manifesto, which secured him a considerable party in the lower ranks of society, while it estranged from him the middle classes. His uncompromising support of the doctrine of universal suffrage displeased also the monarchic opposition party, headed by Odilon-Barrot and others. He took a leading part in all the republican demonstrations in the provinces during the year 1847; he was the orator of the political banquets at Lille, Châlons-sur-Saône, and Dijon; and when the revolution, for which his violent attacks upon the government had contributed to pave the way, broke out, he became for a short time its acknowledged leader; it was he who chiefly prevented the regency of the duchess of Orleans from being accepted by the chamber of deputies, and secured the powerful help of Lamartine. On the organization of the provisional government, he was elected by acclamation one of its members. His position was extremely embarrassing; he was associated with men whose principles were entirely discordant, some entertaining moderate opinions, others on the contrary anxious to bring about a radical change in the social system. Unwilling to go as far as these socialistic revolutionists, he gradually lost his popularity among the lower classes, while he became more than ever the bugbear of the *bourgeoisie*. Their distrust was deepened into hatred when, as minister of the interior, he issued revolutionary circulars and sent special commissioners to various parts of France to further the democratic organization of the departments. He was held responsible also for the publication of the *Bulletins de la république*, which were supposed at the time to be from the pen of George Sand. Nevertheless he evinced great personal zeal and courage in maintaining tranquillity in Paris; his timely precautions defeated the insurrectionary attempt of April 16; he protected the *Presses* and Émile de Girardin against a mob, and reconciled the democrats of Paris to the return of the army to the capital. But his efforts to prevent an open rupture between the opposing parties nearly lost him his seat at the ensuing elections, and

he owed his return to the constituent assembly solely to his name being associated with those of more popular members of the provisional government. On the formation of the executive commission by the assembly, he was the last on the list, and received but 458 votes out of about 800, and even this through the influence of Lamartine. The insurrection of May 15 increased the distrust of all parties toward him. He aided in defeating the object of the insurgents; but when Louis Blanc and Caussidière were accused before the assembly, he courageously defended them. When, in consequence of the insurrection of June 24, the executive power devolved on Gen. Cavaignac, Ledru-Rollin breathed more freely; and resuming his seat in the assembly, he neglected no opportunity of vindicating his own conduct and opinions, and in the parliamentary struggle that followed displayed more than his wonted eloquence, winning the suffrages of even his bitterest opponents. His speeches against the state of siege, his explanations of the insurrection of June, and his protest against the sending of a French army to Italy were particularly admired as efforts of oratory. In the presidential election of Dec. 1848, he presented himself as the democratic candidate, but received only 370,119 votes, while Louis Napoleon Bonaparte obtained more than 5,000,000, and Cavaignac nearly 1,500,000. The standing he held in the assembly, his denunciations of the reactionary tendencies of the majority and the government, and his eloquent appeals in behalf of a truly republican system, somewhat revived his popularity during the first part of 1849. To strengthen this returning favor he assisted at banquets in Le Mans, Châteauroux, and Moulins, where his democratic addresses were hailed with unbounded enthusiasm. A brutal attack upon his person which took place in the last of the above named cities, and of which he himself gave an account in the assembly, also had the effect of gaining him much sympathy; and in the elections for the legislative assembly he was chosen by 5 departments at once, Seine, Allier, Var, Saône-et-Loire, and Hérault, while 7 others gave him a very heavy vote. This encouraged him to a still more hearty opposition to the government, and especially to present himself as the defender of the Roman republic, which had been crushed by the arms of France. On June 11 he concluded his protest against the French expedition in these words: "The constitution is violated; we will defend it by every possible means, and if need be by the force of arms;" and at the same time moved the impeachment of the president and his cabinet. On June 13 he attempted an insurrectionary demonstration; at the head of a few deputies, some artillerymen of the national guard under Guinard, and a few hundred citizens, he went to the *conservatoire des arts et métiers*; but here, before they had time to take any decisive measures, the insurgents were surrounded by troops. Some of them escaped through an upper window. Ledru-Rollin, after

remaining concealed for about 8 weeks in the neighborhood of Paris, escaped to Belgium, and then repaired to England, whence he directed a solemn protest against the decree summoning him before the high court of justice. He was sentenced by default to transportation for life. Since that period he has resided in England, where he supports himself partly by the remnants of his property and partly by his pen. Beside a pamphlet, *Le 13 juin*, 1848, an apology for his conduct on that day, he has published *De la décadence de l'Angleterre* (2 vols. 8vo., Paris, 1850), and *La loi Anglaise* (2 vols. 8vo.). He has also been one of the principal contributors to *La voix d'un proscrit*. He associated himself for awhile with Kossuth, Mazzini, Ruge, and other leading revolutionists, in the hope of concentrating the efforts of the European democracy. In 1857 he was accused, in connection with Mazzini, of a plot against the life of Napoleon III., and was a second time sentenced to transportation. He has refused to avail himself of the last amnesty proclaimed by the emperor of the French.

LEDYARD, JOHN, an American traveller, born in Groton, Conn., in 1751, died in Cairo, Egypt, Jan. 17, 1789. He lost his father in early childhood, and after an ineffectual attempt to pursue the study of the law, at his mother's request he entered Dartmouth college in 1772, with a view of fitting himself for missionary duty among the Indians. The restraints of this mode of life proving irksome, he absented himself at one time from college for several months, during which he visited the Indians of the Six Nations; and finally, abandoning the idea of becoming a missionary, he embarked on the Connecticut river in a canoe of his own fashioning, and floated down to Hartford. After a brief experience as a theological student, impelled by a restless spirit of adventure, he shipped at New London as a common sailor in a vessel bound for the Mediterranean, and at Gibraltar enlisted in a British regiment, but was discharged at the request of his captain. Returning to New London at the end of a year, he embarked soon after at New York for England, and arrived in London just as Capt. Cook was about to sail on his 3d and last voyage around the world. The nature of the expedition aroused Ledyard's enthusiasm for travel, and having procured an introduction to Cook, he so favorably impressed the great navigator that he took him into the service, and promoted him to be a corporal of marines. Of this voyage he kept a private journal, which in accordance with a general order of the government was taken from him on the return of the expedition to England. Subsequently he wrote out from recollection, assisted by a brief sketch issued under the sanction of the admiralty, an account of the expedition, which was published in Hartford in 1783. During the two years succeeding his return to England he remained in the British naval service, but steadily refused to take arms against his native country. In Dec. 1782, being in a

British man-of-war off Long island, he found means to escape, and revisited his friends after an absence of 8 years. Having spent many months in fruitless endeavors to fit out an expedition to the N. W. coast, which he was the first of his countrymen to propose, he embarked for Europe in June, 1784, in the hope of finding there the means of carrying his project into effect. He remained for some months at L'Orient, in France, where flattering hopes of receiving command of a ship destined for an exploring expedition were held out to him; but upon the failure of the negotiations he repaired in the spring of 1785 to Paris. He was kindly received by Jefferson, then minister to France from the United States, Lafayette, and others, and found in Paul Jones a ready coöperator in his plans of maritime exploration. Various circumstances prevented the consummation of their project, and after wasting many months in unavailing efforts to overcome obstacles, Ledyard determined to carry out his original design by a journey through northern Europe and Asia, and across Behring's straits to the western hemisphere. An application to Catharine II. of Russia for permission to pass through her dominions, which was preferred through Mr. Jefferson, having remained 5 months unanswered, he went to London, where, through the influence of Sir James Hall, he was offered a free passage in a ship just equipped to sail for the Pacific ocean. He actually embarked in her, but was not out of sight of land before the vessel was brought back by order of government, and the voyage broken up. Undiscouraged by these disappointments, and supplied with a small sum of money by Sir Joseph Banks and others, he departed on his long overland journey in the latter part of 1786. Arriving at Stockholm, he attempted to cross the gulf of Bothnia on the ice to Abo in Finland, but was met by open water in the middle. He immediately altered his course, and in the dead of winter walked around the whole coast of the gulf, arriving in St. Petersburg in the latter part of March without money, shoes, or stockings. This journey of upward of 1,400 miles was accomplished in less than 7 weeks. After a delay of several weeks he procured his passport from the empress, and received permission to accompany Dr. Brown, a Scotchman in the Russian service, as far as Barnaul in southern Siberia, a distance of about 3,000 miles. Here he parted with his companion, and proceeded to Irkootsk, whence he sailed in a small boat 1,400 miles down the river Lena to Yakootsk. Permission to proceed to Okhotsk on the sea of that name being refused, on the ground that the season was too far advanced, it being then the latter part of September, he accompanied a Capt. Billings, in the Russian service, back to Irkootsk, where on Feb. 24, 1788, he was arrested by order of the empress. Accompanied by two guards, he was conducted with all speed to the frontiers of Poland, and there dismissed, with an intimation that he would be hanged if he reëntered Russia. The

reason for this summary expulsion of Ledyard from the Russian dominions has never been satisfactorily explained. Mr. Sparks, in his "Life of John Ledyard" (Sparks's "American Biography," second series), conjectures that the Russian American company, then recently formed, and whose factories and forts were building in Irkootsk, their head-quarters, were apprehensive that he might publish facts in relation to their manner of trading with the natives which would prove to the disadvantage of the company; hence an order for his arrest as a spy was procured, and he was hurried out of the country. Ledyard found his way back to London in the spring, to use his own words, "disappointed, ragged, and penniless, but with a whole heart," and was cordially received by Sir Joseph Banks and others who had befriended him. Undaunted by previous adversities, he eagerly accepted an offer made to him by the association for promoting the discovery of the inland parts of Africa, to undertake an expedition into the interior of that continent; and when asked how soon he would be ready to set out, replied: "To-morrow morning." He departed from England in the latter part of June, intending to cross the African continent in a westerly direction from Sennaar, and had proceeded as far as Cairo, when he was attacked by a bilious disorder which put an end to his life. His death was considered a great loss to the society under whose auspices he had embarked, and who from the tenor of his first despatches from Egypt, and from his previous labors, had been impressed with his fitness for the part of a geographical pioneer. For capacity of endurance, resolution, and physical vigor, he was one of the most remarkable of modern travellers; and had he possessed means equal to his zeal, his name would doubtless have been associated with important discoveries, as it now is with wonderful and romantic but unprofitable adventures. Many extracts from his journals and his private correspondence with Jefferson and others are given in Sparks's memoir.—WILLIAM, an American revolutionary soldier, a relative of the preceding, born in Groton, Conn., about 1750, killed at the capture of Fort Griswold, Sept. 7, 1781. He held the commission of colonel in the militia of Connecticut, and during the marauding expedition of Arnold along the coast of that state in Sept. 1781, he was in command of Forts Trumbull and Griswold, which protected New London. Throwing himself into the latter work with 157 militia hastily collected, he refused a demand for its surrender, and resisted for nearly an hour the attack of a British force numbering 800 men, led by Lieut. Col. Eyre, who received a mortal wound in the onset. His successor, Major Montgomery, having been killed while mounting the parapet, the command devolved upon Major Bromfield, a tory, who effected an entrance into the fort after nearly 200 of his men had been disabled, including 48 killed, the Americans having lost about a dozen killed. To Bromfield's inquiry: "Who com-

mands this garrison?" Ledyard replied: "I did, sir, but you do now," at the same time handing him his sword. Bromfield immediately plunged it through the body of Ledyard to the hilt, killing him upon the spot. A massacre of the Americans ensued, which was not stopped until more than 100 of them were killed and wounded. A monument has been erected near the spot to commemorate this event.

LEE, in nautical language, a place sheltered from the wind, or the side of any thing opposite to that against which the wind blows. Thus to be "under the lee of the land" is to be protected by a bluff or an elevated coast from the force of the wind blowing seaward; but a "lee shore" is a shore on the lee side of a vessel, and on which therefore it is liable to be driven by a storm. "To leeward" is the direction toward which the wind blows; its opposite is "to windward." Leeway is the deviation of a ship's course from the course in which she is steered, when by the action of wind or current she is driven sideways as well as forward; it may therefore be defined as the angle between the line of the ship's keel and the line which she actually describes through the water.

LEE, the name of counties in 4 of the United States. I. A S. W. co. of Va., bordering on Tenn. and Ky., and traversed by Powell's river; area, 512 sq. m.; pop. in 1850, 10,267, of whom 787 were slaves. Powell's mountain lies on its E. boundary and Cumberland mountain on the N. W., and it contains iron ore, limestone, and saltpetre. The soil in the valleys is very fertile. The productions in 1850 were 485,725 bushels of Indian corn, 20,248 of wheat, 107,080 of oats, and 5,181 lbs. of tobacco. There were 54 grist mills, 14 saw mills, 7 tanneries, 2 iron forges, 25 churches, and 550 pupils attending public schools. Capital, Jonesville. II. A S. W. co. of Ga., bounded E. by Flint river; area, 600 sq. m.; pop. in 1859, 6,679, of whom 4,587 were slaves. It has a nearly level surface, wooded with pine, oak, and hickory, and a fertile soil. The productions in 1850 were 297,614 bushels of Indian corn, 21,210 of oats, 71,998 of sweet potatoes, 10,010 lbs. of rice, and 9,342 bales of cotton. There were 5 grist mills, 4 saw mills, 9 churches, and 187 pupils attending public schools. The south-western Georgia railroad passes through the county. Capital, Starkville. III. A N. co. of Ill., drained by Rock and Green rivers and Bureau creek; area, 720 sq. m.; pop. in 1855, 11,681. The surface is chiefly an undulating prairie diversified by tracts of woodland. The soil is very fertile. The productions in 1850 were 232,010 bushels of Indian corn, 97,588 of wheat, 99,562 of oats, 8,661 tons of hay, and 12,125 lbs. of wool. There were 8 grist mills, 6 saw mills, 6 churches, and 1,518 pupils attending public schools. The Illinois central and Fulton and Iowa railroads meet at Dixon, the capital. IV. A S. E. co. of Iowa, bounded N. E. by Skunk river, S. E. by the Mississippi, separating it from Illinois, and S. W. by the Des Moines, which divides it from Mis-

souri; area, 476 sq. m.; pop. in 1859, 81,242. Coal and limestone are abundant. The surface is diversified by woods and undulating prairies, and the soil is extremely and uniformly fertile. The productions in 1859 were 50,171 bushels of wheat, 808,680 of Indian corn, 8,200 of oats, 52,819 of potatoes, 23,081 tons of hay, 291,569 lbs. of butter, 111,376 of cheese, and 29,349 of wool. The Keokuk, Fort Des Moines, and Minnesota, and the Keokuk, Mount Pleasant, and Muscatine railroads pass through the county. Capitals, Keokuk and Fort Madison.

LEE, the name of a family of Virginia, several of whose members hold a prominent position in the history of the American revolution. The Lees were an old cavalier family of distinction in England. Richard Lee emigrated to Virginia in the reign of Charles I., bringing with him a numerous household, and settled in the county of Northumberland, between the Rappahannock and Potomac rivers, a region known then and now by the name of the "Northern Neck." This gentleman, the first of a long line of eminent men of his name in Virginia, was a devoted adherent of the Stuarts, and, in conjunction with the royal governor Sir William Berkeley, placed the colony in that attitude of resistance to Cromwell which caused the protector to send a fleet for its reduction under the commonwealth. The party of Lee and Berkeley displayed such determination, however, that the commander of the squadron was compelled to ratify a treaty with the rebellious colony, which was styled an "independent dominion." It is said that Richard Lee soon afterward hired a ship, and visited Charles II. in Flanders, offering to erect his standard in Virginia if assured of adequate support. The plan was not then carried out, but it has been stated that on the death of Cromwell, Charles II., by the exertions of Lee and Berkeley, was proclaimed in Virginia "king of England, France, Scotland, Ireland, and Virginia," nearly two years before his triumphal entry into London. The king exhibited his gratitude for this espousal of his cause, it is also said, by ordering the arms of Virginia to be quartered on those of Great Britain, with the motto: *En dat Virginia quartam*. Richard, the son of Richard Lee, was a member of the council; and Thomas, third son of the second Richard, succeeded his father, and became president. He died at the moment when his commission of governor of the colony had just been made out. He had married Hannah, daughter of Col. Philip Ludwell, an associate in the council; and from this union sprung 5 sons who rose to distinction, of whom the following are the principal. I. RICHARD HENRY, an American statesman, born at Stratford, Westmoreland co., Va., Jan. 20, 1792, died at Chantilly in the same county, June 19, 1794. After a course of private tuition at Stratford, he was sent to Wakefield academy, Yorkshire, England, where he became a proficient in Latin and Greek, and laid the foundation of that extensive knowl-

edge of the classics which afterward added so much to the effect of his oratory. Leaving school at about the age of 18, he made a tour through England, visited London, and returned in his 20th year to Virginia. His father had died two years before, and the young man found himself in possession of a competent estate. He resisted, however, every temptation to indolence, and applied himself with ardor to study in the diverse departments of law, politics, theology, science, history, and belles-lettres. He became fond of poetry and pored over Homer, Virgil, and Milton, but above all, the plays of Shakespeare, of which he was passionately fond. He passed his time thus at Stratford until his 28d year, when Braddock came to Virginia, on his ill-fated expedition against Fort Duquesne. The youths of the colony were filled with military ardor, and Lee raised a company of volunteers in Westmoreland, was chosen captain, and marched to Alexandria, where he offered his services to Braddock. The general however declined them with an ill-concealed expression of contempt for "provincials," whose services it had been well for him to have accepted, and Lee was compelled to march home again. In his 25th year he was appointed a justice of the peace, an office at that time of great responsibility and importance, from the extensive jurisdiction possessed by the county courts both in law and equity. The commission of so young a man was a strong evidence of public respect. That he did not disappoint the good opinion of his talents is shown by the fact that a number of his brother magistrates petitioned the governor and council that Mr. Lee's commission might be antedated in such a manner as to give him legal precedence, and enable him to act as president of the court. He was soon after chosen a member of the house of burgesses from Westmoreland, and took his seat in that body for one or two sessions, but he did not speak. This diffidence finally wore away in some measure, and he made a brief but striking speech strongly opposing the institution of slavery, and advocating the imposition of a tax so heavy as to amount to a prohibition of further importations. The brevity of this speech, its balanced style, and the timidity with which it is said to have been delivered, seem to show that it was previously written out, and indicate the painful diffidence with which the afterward celebrated parliamentary leader commenced his career. The time was however near at hand when the oppressions of the home government were to spur all classes of men into activity. The act declaratory of the right to tax the colonies passed the British parliament in 1764, and this was followed in the next year by the stamp act. Lee took in the former year an unhappy, almost a fatal step, the effects of which clung to him in a measure throughout life, and dimmed the light of his greatest public services. In a thoughtless moment, and at the instigation of a friend, he wrote to England making application for the post of collector under the

proposed stamp act. That this step was the mere result of hasty and momentary impulse is abundantly proved by the whole tenor of his subsequent career. He soon found an opportunity to explain all. The small tory party, exasperated by the energy with which he opposed the government, denounced him as a popular demagogue, bent only on revenging his disappointment in procuring the collectorship. The people of his county treated this accusation with contempt; but to satisfy the inhabitants of the colony at large, who did not know him, he published in the "Virginia Gazette" a statement of the facts. He had written to England by the advice of a friend, who no more than himself, "nor perhaps a single person in this country, had at that time reflected the least on the nature and tendency of such an act." Reflection had opened his eyes, and he had soon determined to exert every faculty he possessed in opposition to the measure. There can be no doubt of Lee's sincerity in this statement. The application would seem to have been simply the impulsive act of an ambitious young man, at a period when it was regarded as an honor to hold office under government. The immediate and active steps which he took against the authority of parliament appear to be conclusive of his real sentiments. He joined heart and hand with the opponents of the proposed tax; and when a special committee was appointed by the burgesses to draught an address to the king, a memorial to the lords, and a remonstrance to the commons against taxation without representation, Lee was placed upon the committee, and deputed by his associates to prepare two of the three papers. His literary and political acquirements well fitted him for the task, and the papers proved genuine and eloquent utterances of the spirit of resistance. From this moment Lee's career was an unbroken series of services to the cause of liberty. He was absent from Williamsburg when Patrick Henry introduced, in the ensuing year, 1765, his celebrated resolutions against the stamp act; but he warmly concurred in them, and originated an association in Westmoreland in accordance with their spirit. The articles of this association, which were written by Lee, and are still preserved in his own handwriting, go beyond Henry's resolutions, and indicate in a very striking manner the advance of public opinion from May, 1765, to Feb. 1766. Roused by the attempt to reduce the people to "abject and detestable slavery" by destroying the constitution, "we who have subscribed this paper," it is declared, "have associated, and do bind ourselves to each other, to God, and our country, by the firmest ties which religion and virtue can frame, to stand by, and with ourselves and fortunes to support, maintain, and defend each other in the observation and execution of these following articles." It is then declared that a trial by peers, and no taxation without representation, are fundamental portions of the constitution. If any one oppose

these principles, he will be regarded as a public enemy, "and we will go to any extremity, not only to prevent the success of such an attempt, but to stigmatize and punish the offenders." These noble words follow: "As the stamp act does absolutely direct the property of the people to be taken from them without their consent, . . . and in many cases deprives the British American subject of his trial by jury, we do determine, at every hazard, and paying no regard to danger or to death, to exert every faculty to prevent the execution of the said stamp act." If any "abandoned wretch" attempted to introduce stamped paper, the subscribers bound themselves to meet immediately, and deal with the offender in a summary manner. Considering the dangerous aspect of the times, the resolute tone and menace of these articles reflect high honor upon the courage and patriotism of Lee. That the association was in earnest is shown by the prompt arrest of a person who had accepted the place of collector. Lee and his friends proceeded to his house, burned his commission and supply of stamps, and compelled him to take an oath not to offend in future. At the winter session of the burgesses in 1766, Lee openly took his stand with the extreme party for reform, at the head of which stood Patrick Henry, by making a motion that the offices of speaker of the burgesses and treasurer of the colony should thenceforth be separate. It is difficult at this distance of time to imagine the profound sensation and the bitter resistance which this proposition aroused. The explanation may however be given in a few words. The death of Speaker Robinson, who also held the post of treasurer, had exposed an enormous deficit in the public accounts. This arose from the fact that Mr. Robinson, a gentleman of great wealth and the most amiable disposition, had lent to prominent members of the house, who were his friends, large amounts in government bills returned to the treasury, and directed by law to be burned. This had long been suspected, and as early as 1768 Lee had moved that a committee should be appointed to inquire into the state of the treasury. The speaker had "fixed his eyes with a dark and terrible frown" upon the youthful reformer, and the recipients of the loans had "turned their faces from him with haughty and disdainful airs;" but he had persevered. Nothing came of the motion, however, and the subject slept until 1766, when, as has been seen, Lee renewed his motion. It was powerfully opposed by the "aristocratic" party, many of whom had the strongest reasons for desiring its defeat; and by others, like Edmund Pendleton, who had been strongly attached to the deceased speaker. Henry, however, came to Lee's assistance, and their united eloquence carried the motion. Mr. Robinson's ample estate, upon which he had relied to make good the deficit, satisfied the public claim, and the colony lost nothing; but a fruitful engine of corruption was broken to pieces by the success of the

measure. Having thus formally taken his stand with the extreme leaders, Lee always afterward adhered to them. In 1767 he spoke with great ability against the acts levying duties upon tea and other commodities, and for quartering British troops upon the colonies. In 1768 he wrote from Chantilly, where he was then residing, not far from Stratford, to John Dickinson of Pennsylvania, suggesting a plan of private correspondence between the friends of liberty; and this scheme was enlarged and perfected by the appointment in 1773 of a committee of correspondence, to communicate with all the colonies. Lee was one of the 5 or 6 burgesses who in private meeting devised this plan, and is said to have originated the idea. The house promptly appointed the committee, and Lee was placed upon it. The great value of such a body was immediately shown. Acting under instructions from the house, the committee wrote to the sister colonies proposing a general congress. The proposition was almost universally acceded to; and the "first congress" met at Philadelphia, Sept. 5, 1774. Lee was one of the delegates from Virginia, and his voice was the second which was heard upon the floor. Patrick Henry preceded him, in a wonderful speech, of which the tradition only remains; and little more has been retained of Lee's. It is said, however, that the congress was even more impressed by his comprehensive views and political knowledge than by the "fire and splendor" of his eloquence, of which great accounts had reached them. He immediately took the prominent position which his great talents and zeal entitled him to, and was placed upon all the more important committees—those to prepare addresses to the king, the people of England, and the colonies; to state the rights and grievances of the colonies; and to carry out the resolutions of non-intercourse with Great Britain. As chairman of the first named committee, Lee reported the papers which Lord Chatham commended so highly. Mr. Jay wrote the address to the people of England; that to the king was probably Lee's; but that Lee wrote the memorial to the people of British America is undisputed. This is one of the most masterly state papers of the period. It has been justly said to have "the double merit of including all the qualities which a public writing ought to possess, and of excluding all that it ought not." It was in speaking of this memorial and the addresses to the king and people of England that Chatham said: "When your lordships look at the papers transmitted to us from America, when you consider their decency, firmness, and wisdom, you cannot but respect their cause, and wish to make it your own. For myself, I must declare and avow that in all my reading and observation, and it has been my favorite study—I have read Thucydides, and admired the master states of the world—that for solidity of reasoning, force of sagacity, and wisdom of conclusion, under such complication of circumstances, no nation or body of men can stand in

preference to the general congress at Philadelphia." It might have been added that the papers in question possessed as much of eloquence as of "decency, firmness, and wisdom." Lee's memorial declares in the second paragraph with a solemn earnestness that "in every case of opposition by the people to their rulers or of one state to another, duty to Almighty God, the Creator of all, requires that a true and impartial judgment be formed of the measures leading to such opposition; . . . that, neither affection on the one hand, nor resentment on the other, being permitted to give a wrong bias to reason, it may be enabled to take a dispassionate view of all circumstances, and to settle the public conduct on the solid foundations of wisdom and justice." The equally solemn conclusion is: "We think ourselves bound in duty to observe to you that the schemes agitated against these colonies have been so conducted, as to render it prudent that you should extend your views to mournful events, and be in all respects prepared for every contingency." On the adjournment of congress, Lee returned to Virginia with a reputation increased and consolidated by the stamp of high respect and confidence placed upon his character and public services by his great associates of the other colonies. He was thenceforth regarded as one of the acknowledged leaders in the struggle for liberty. In the spring of 1775 he was unanimously elected by his neighbors of Westmoreland a delegate to the convention to meet at Richmond in March, and duly took his seat in the body. The shadows of great events began to appear. It was but a month before the battle of Lexington. Patrick Henry was profoundly impressed with the importance of the crisis, and moved the prompt embodiment of the militia. He enforced the proposed measure by that celebrated speech in which he uttered the prophetic declaration that the next breeze which swept from the north would bring to Virginia the clash of arms. Lee followed him, and powerfully urged the propriety of the policy, declaring that even were the colonies overmatched, the race was not always to the swift, nor the battle to the strong. In spite of great opposition, the resolutions of Henry were carried, and Lee was placed upon the committee to prepare a plan of defence. The convention, which had already passed a vote of thanks to himself and his associated delegates, then appointed him to the second congress. He accordingly proceeded to Philadelphia in May, and was placed upon the committees to prepare munitions of war, to encourage the manufacture of saltpetre and arms, and to devise means for the prompt transmission of intelligence between the colonies. He served during the session upon a great number of other committees, and must have been one of the most active members of the body. As chairman of the committee appointed for the purpose, he drew up the commission and instructions of Gen. Washington, who had just been appointed commander-in-chief of the armies of America. Lee's greatest

public act at this time, however, was the preparation of the address to the inhabitants of Great Britain. The solemn and lofty tone of this address places it in the first rank of American state papers. After a recital of the wrongs inflicted upon the colonies, the writer asks: "And shall the descendants of Britons tamely submit to this? No, sirs! we never will, while we revere the memory of our gallant and virtuous ancestors. . . . Admit that your fleets could destroy our towns, and ravage our sea coasts; these are inconsiderable objects, things of no moment, to men whose bosoms glow with the ardor of liberty. . . . Your ministers (equal foes to British and American freedom) have added to their former oppressions an attempt to reduce us by the sword to a base and abject submission. On the sword, therefore, we are compelled to rely for protection. Of this at least we are assured, that our struggle will be glorious, our success certain; since even in death we shall find that freedom which in life you forbid us to enjoy." Congress adjourned in August, but reassembled in September, and continued its session into the year 1776. At the end of spring the necessity of dissolving all ties with the mother country became obvious. The people were in open arms against the crown; the country was carrying on a war; and congress still hesitated. There was "a poorness of spirit and languor" in its proceedings, wrote Gen. Charles Lee to R. H. Lee, in May; and its "pulse was low." The body was aroused on June 7 by Richard Henry Lee. In May the Virginia house of burgesses had directed her delegates to propose to declare the colonies independent; and at the request of his associates Lee accordingly moved "that these united colonies are and of right ought to be free and independent states; that they are absolved from all allegiance to the British crown; and that all political connection between them and the state of Great Britain is and ought to be totally dissolved." Lee's speech upon introducing the resolutions is said to have been one of the greatest that he ever delivered. They were seconded by John Adams, and a fiery debate immediately sprang up as to the propriety of the resolutions at that time, which lasted from the 7th to the 10th of June. On that day it was resolved that the subject should be postponed until the first Monday in July, and meanwhile, as the resolutions might be agreed to, that a committee should be appointed to draft a declaration of independence. Of this committee Lee, by established parliamentary usage, would have been the chairman; but on the evening of the 10th he received sudden intelligence of the dangerous illness of his wife, and returned immediately to Virginia. On the next day, the 11th, the committee was appointed, with Jefferson as chairman. By this simple incident the glory of the authorship of the declaration of American independence was transferred from Richard Henry Lee to Thomas Jefferson. In August Lee returned to his seat,

and continued in the performance of his arduous public duties until June, 1777. During this time, indeed, he labored so uninterruptedly as seriously to injure his health. From the moment of his entrance into congress to the middle of the year 1777 he had served upon about 100 important committees, generally acting as chairman, and performing the greater portion of the labor of all. The gentleman in whose house he lodged in Philadelphia declared that "there was a constant procession of members repairing to his chamber to consult about their reports;" and Dr. Rush said of him that his activity so greatly surpassed his physical strength, that "his mind was like a sword which was too large for its scabbard." On June 5 it was ordered by congress, "that Richard Henry Lee have leave of absence, his health and private affairs requiring his return to Virginia." The private affair was a vindication of his character and public action, from charges brought against him in the Virginia assembly, the effect of which had been to induce that body to leave him out in their recent appointment of delegates to the next congress. The indignation of Lee's friends was great. His brother, Francis Lightfoot Lee, and Mann Page, jr., then in congress, taking fire at the condemnation of their associate "in his absence, without opportunity of defence," wrote to the speaker of the house, tendering a resignation of their seats. The people of Westmoreland, ever true to Lee, had already elected him a member of the assembly, and he promptly made his appearance before that body and demanded an inquiry into his conduct. It was granted; the senate united with the house, witnesses were examined, and Lee was heard in his defence. The charges were, that he had demanded of his tenants payment of their rent in produce instead of money, with a design to depreciate the paper currency of the country; that he had favored New England to the injury of Virginia; and that, as a member of the secret committee in congress, he had opposed the publication of their proceedings from a desire to conceal the embezzlement of the public money. These charges were fully refuted. As to the main imputation, that he designed injury to the currency by receiving produce in place of money for rent, it was shown that the proposition was made to his tenants in 1775, when the non-intercourse associations had ruined the sale of produce, when scarcely any paper money had been issued, and when it was a great favor and convenience to the tenants, for whose relief the plan was devised. Lee's speech upon this occasion is represented to have been full of noble eloquence, and to have affected his listeners profoundly. Without any display of passion or unbecoming anger, he plainly stated that certain evil-disposed persons hated him for that very zeal which good patriots had commended in him; and that these enemies, in his absence, had deliberately planned his destruction. He is said to have shed tears during his speech. A gentleman by no means

friendly to him said of it: "Certainly no defence was ever made with more graceful eloquence, more manly firmness, equalness of temper, serenity, calmness, and judgment, than this very accomplished speaker displayed on this occasion." The result was a resolution of thanks to Richard Henry Lee "for the faithful services he has rendered his country, in the discharge of his duty as one of the delegates of this state in general congress." The resolution was announced by the venerable George Wythe, the speaker, who with tears flowing down his cheeks said: "It is with peculiar pleasure that I obey this command of the house, because it gives me an opportunity, while I am performing an act of duty to them, to perform an act of justice to myself. Serving with you in congress, and attentively observing your conduct there, I thought that you manifested in the American cause a zeal truly patriotic; and, as far as I could judge, exerted the abilities for which you are confessedly distinguished to promote the good and prosperity of your own country in particular, and of the United States in general." Lee replied in a few words, which were listened to in the midst of a profound silence, many members being greatly affected. When George Mason, one of the recently appointed delegates, soon afterward resigned, Lee was chosen in his place; and thus his vindication was formally recognized as complete. Such is a brief relation of an event which enlisted the deepest feelings of the country at the time, and which still remains a vivid tradition in the popular mind. The arraignment, as it were, of so old and distinguished a public servant, the noble and affecting defence which he made before his peers, and the deep emotion of those who listened to his vindication, form altogether a great picture in the history of that period. The motive of the charges it is difficult at the present day to arrive at. Lee's prominent part in the exposure of Speaker Robinson's deficit, and the consequent hatred of the influential members who were involved in it, are said to have laid the foundation of a silent but bitter and profound hostility toward him; and the old application for a collectorship under the stamp act, never allowed to sleep, may have had its influence. Unpublished documents may some day clear up this obscure subject. Lee returned to congress, and in 1778 served upon 37 committees, though laboring under serious ill health. He continued to sit until 1780. During this and the three succeeding years he remained in Virginia, and as county lieutenant of Westmoreland actively exerted himself in repelling the enemy, who were making incursions on the banks of the Potomac. He also sat in the assembly, and took a prominent part in the debates. In 1784 he resumed his seat in congress, and was elected president of that body. In 1786 and 1787 he sat in the assembly; was again elected to congress, and took his seat in the latter year; and when the federal constitution was adopted, was chosen one of the first two senators for Virginia.

He was not a member of the Virginia convention to decide upon the adoption of the constitution, and was strongly opposed to that instrument, regarding it as a consolidation of political powers which would tend to destroy the independence of the state governments. Nothing, he said, could have induced him to accept the appointment of senator, except his reverence for the liberties of the land, and "a thorough conviction of the danger these will be exposed to by the unamended state of the new constitution." In these views Lee coincided, as is well known, with Jefferson, Henry, Mason, and other leaders. He exerted himself to carry the proposed amendments, and like his great associates lived to form a more favorable opinion of the instrument. He became a strong supporter of the administration of Washington, and fully approved of his course in the Geneset affair, and of his neutrality policy. The last letter which he wrote upon political affairs was a long and earnest one to Washington, warmly approving his measures. In 1792 he finally retired from public service, received a vote of thanks from the Virginia assembly, and returned to Westmoreland. His last days were harassed by ill health, but retirement was delightful to him after his long and arduous services, and his family "almost idolized him." He had married early in life Miss Aylett, by whom he had two sons and two daughters; and after her death, Mrs. Pinkard, who is said to have been "every way worthy of him." He was a devoted member of the Episcopal church, and was twice thanked by conventions of that denomination for the interest which he had taken in its affairs. His charity to the poor was extremely liberal, and no doubt largely contributed to his popularity in Westmoreland. This popularity never failed him, and he never suffered a political defeat in the county.—Lee's personal appearance was a valuable assistance to his oratory. It was eminently noble and engaging. His stature was tall, and the carriage of his body graceful and courtly. His countenance was of the Roman model, with a tall, narrow forehead, the head "leaning persuasively forward." By an accident resulting from the bursting of a gun, in shooting swans on the Potomac, he had lost the 4 fingers of his left hand, and always wore upon it a black silk bandage; but in spite of this misfortune his gesture was so graceful that he was thought to have practised it before a mirror. Among the great names of the period, he seems to have most resembled Edmund Pendleton; and these two leaders will descend to posterity as the truthful types of a race of men, no less distinguished for the splendor, grace, and power of their eloquence, than for self-sacrificing devotion to their country. Lee's disposition was gentle and amiable. There are many proofs of this fact. He no doubt possessed that pride of race and sentiment of class which then characterized every man of ancient ancestry, and his scholarly habits probably made him appear exclusive and aristocratic in his feelings. There is suffi-

cient proof, however, that he possessed a warm and kindly heart. The well authenticated instances of his open-handed charity, and the warm love which his brothers felt for him, indicate the amiability of his temper; and the many expressions of cordial affection in the letters addressed to him by his contemporaries, show that he had conciliated strong friendships. This latter test seems to establish clearly that a noble intellect was added in the man to an excellent heart.—His "Life and Correspondence" was published by his great-grandson, R. H. Lee (2 vols. 8vo., Philadelphia, 1825). II. FRANCIS LIGHTFOOT, one of the signers of the declaration of independence, born at Stratford, Westmoreland co., Va., Oct. 14, 1734, died in Richmond in 1797. Owing to the death of his father, he was not, like his brothers, sent abroad to complete his education; but under the direction of the Rev. Mr. Craig, a Scottish clergyman, who acted as private tutor at Stratford, he acquired a competent knowledge of the classics, and a great taste for reading and study. His father's library was extensive and valuable, especially for its fine editions of the British classics, and these volumes were ardently read by the young man. His father had left him an independent estate; and finding himself exempt from any care upon that score, he entered with zest into those social occupations and enjoyments which were then, as at present, a marked feature in the country life of Virginia. He is said to have been a favorite with ladies, and this was probably the result, in a measure, of a certain engaging gentleness and modesty which he always retained, to his great prejudice on the stormy arenas of debate, but to his advantage in social circles. From this round of enjoyments he was aroused by the struggle in the house of burgesses against parliament, and in 1765 took his seat there as member from Loudon county, where his estate was situated. He proved a useful member, but did not distinguish himself as a speaker. Diffidence seems to have been a family trait with the Lees. Richard Henry overcame it, but his younger brother never succeeded in doing so. He continued to sit until 1772, when, his term having expired, he left the house, was married to Rebecca, daughter of Col. John Tayloe of Richmond, and settled at "Monocan" in that county. He now united with his brothers in those measures of resistance against England which characterized Virginia at the period, and in Aug. 1775, upon the resignation of Col. Bland, he was chosen by the house of burgesses a delegate to the general congress. He was successively reelected in 1776, 1777, and 1778. During this whole period he seldom if ever appeared in debate, but acted upon many important committees, and frequently sat as chairman of the committee of the whole. When the declaration of independence was adopted, he signed that instrument. His chief services in congress were the assistance he rendered in framing the old articles of confederation, and the stand which he took in

favor of making the right to the northern fisheries and to the navigation of the Mississippi indispensable grounds in the conclusion of the treaty with England. These rights were finally guaranteed, and proved to be of primary importance. The gratitude of the New Englanders to the Lees appears in the correspondence of the period. Aspersions have been cast upon the "Lees of Virginia," and the family represented as hostile to Gen. Washington. The journals of congress sufficiently refute these charges. Richard Henry Lee advocated the scheme of investing Washington with larger powers, and Francis Lightfoot, the only one of the family at that time in congress, voted for a confirmation of the sentence of the court martial against Gen. Charles Lee after the battle of Monmouth, for which reason the latter would never afterward speak to him. He subsequently approved of and supported the federal constitution, on the avowed ground that "Gen. Washington was for it." In the spring of 1779 he retired from congress, and returned to plantation life. He was again called to represent his county in the senate of Virginia, but soon afterward finally abandoned the public service. His love of ease and fondness for social enjoyment rendered a life in the country more agreeable to him than any other, and he resolutely adhered to his determination not again to embark upon the sea of politics. The latter years of his life form an agreeable picture. His wife had borne him no children, but he was the centre of a large circle of friends, who greatly valued him for the goodness of his heart and the charms of his conversation. His "gay good humor and pleasing wit" made him a favorite with all, and his plain and easy manners rendered him approachable by persons of every class. Thus, in his quiet retirement, tranquilly engaged in agricultural pursuits, of which he was very fond, and spending his leisure moments in reading, writing, and conversation, passed his latter days. A severe pleurisy finally seized him, and he died within a few days of the death of his wife. III. ARTHUR, an American statesman, born in Westmoreland co., Va., Dec. 20, 1740, died in Middlesex co., Dec. 12, 1792. He was the youngest of the 5 brothers. In his 11th year his father died, and the youth was left to the care of his eldest brother, the head of the family. After a brief course of tuition under a private teacher in Westmoreland, he was sent to Eton in England, where he formed intimate friendships with many youths who afterward became famous in public affairs, and applied himself assiduously to study. His father had designed him for the medical profession, which was then regarded as one of the few appropriate pursuits for the younger sons of gentlemen of position; and from Eton Arthur passed to the university of Edinburgh. He went through the course of general science and polite learning prescribed at the institution, and then commenced the study of medicine. His success was gratifying. The university conferred upon him the degree of M.D. and a diploma approving

him a "general scholar," at that time esteemed a great honor. He also gained a gold medal for the best treatise "on some botanical subject," the subject of his paper being the character and uses of Peruvian bark. A pleasing incident of his residence at Edinburgh was the cordial friendship which he formed with the well known earl of Buchan, which continued unbroken throughout the earl's life. Leaving the university, he travelled through Germany and Holland, and finally returned to Williamsburg, the capital of Virginia, where he commenced the practice of his profession. He soon acquired reputation, but the threatening aspect of affairs drew him strongly toward political subjects. His brothers were already prominent in politics, and he determined to abandon his profession, return to England, and there embark in the struggle. In pursuance of this design, about 1766 he proceeded to London, where, in order to support himself, he immediately began the study of the law, which presented far greater allurements to his active mind than the practice of physic. He plunged with ardor into the angry current of newspaper debate. With a young student like himself he formed an intimate connection; this was William (afterward Sir William) Jones, and the correspondence between the friends was long and confidential. Lee continued the study of law from 1766 to 1770, when he commenced the practice, and continued in successful and lucrative employment at the bar until 1776, when he went to reside as secret agent of the American congress in Paris. We have referred to his political activity during these years. He exerted himself in the cause of his native country with extraordinary vigor. His letters, under the signatures of "Junius Americanus" and "Monitor," became widely popular, and procured him the acquaintance and friendship of many of the most distinguished friends of American liberty. His opposition to the act declaratory of the right of parliament to tax the colonies, and to the subsequent stamp act, was warm and persevering; and such was the eloquence of one of his pamphlets, entitled "An Appeal to the English Nation," that it was long regarded as the work of Lord Chatham. As a member of a society of gentlemen of the opposition who styled themselves "supporters of the bill of rights," he drew up a preamble and resolutions setting forth the principles upon which the club was founded, and these papers were commented upon and praised by "Junius," who declared that Lee was "plainly a man of abilities, though a little unreasonable." In order to vote in municipal elections, he purchased the freedom of the city of London, and exerted himself actively in the opposition. By his influence, the complaints of America were introduced into Wilkes's Middlesex petition; and he obtained the passage of a resolution by the "supporters of the bill of rights" that the members of the club would support no man for parliament who would not give pledges in favor of permitting America to tax herself. About this period Lee

was elected a fellow of the royal society, an honor which he held until the commencement of the war. He then resigned it on the ground that he could not consent to continue his connection with an English institution requiring pecuniary as well as literary contributions from its members, when England was at war with his native country. Lee's activity in the assertion of American rights soon brought his name prominently before the people of the colonies; and in 1770 he was appointed by the assembly of Massachusetts agent for that colony in case of the absence or death of Dr. Franklin, then holding that position in London. Between Franklin and himself a strong intimacy had sprung up, and the agent and his alternate consulted and acted in unison. The statement of his appointment is made by Lee in a MS. entitled "Memoirs of the American Revolution," which he commenced in his latter years, but did not live to finish. When Franklin left England in 1774, Lee became sole agent for Massachusetts, and continued as such until he went to Paris. In 1774 he presented the addresses of congress to the people of England and to the king. Lord Dartmouth, to whom the petition to the king was presented, returned that "no answer could be given," whereupon Lee expressed to him his "sorrow that his majesty had adopted a measure which would occasion so much bloodshed." In Nov. 1775, congress appointed a committee of secret correspondence with the friends of the colonies in England and other countries, and Lee was chosen agent for the purpose in London. He applied himself to the duties of his position with great activity; and in 1776, by order of the committee, proceeded to Paris, to open friendly negotiations with the French government. His labors met with fair success. The count de Vergennes presented a memorial to the king, suggesting that it would be sound policy "to facilitate to the colonies the means of procuring, in the way of commerce, the articles and even the money which they needed; but without departing from neutrality, and without giving them direct succors." Through the French ambassador at the English court, Lee finally obtained the assurance that the government would secretly furnish to the colonies £200,000 worth of arms and ammunition, to be transported from Holland to the West Indies. In Sept. 1776, congress proceeded to establish diplomatic intercourse with foreign nations; and Lee, Silas Deane, and afterward Dr. Franklin, were appointed commissioners to France. Lee had already accomplished two important objects. He had set on foot a private correspondence with the Spanish government, with the design of prevailing upon that court to unite with France in supplying the United States with money and arms; and had actually procured for the state of Virginia, from the royal arsenal of France, warlike stores of the value of nearly £260,000. The commissioners met in Paris in December, and decided that it was important for one of their number to

proceed to Madrid. Lee was chosen, and set out in Feb. 1777. Soon after his departure, Franklin received from congress the appointment of commissioner to Spain, but declined it, and in May Lee was chosen in his place. As soon as the appointment became known in London, the English government, who were well acquainted with Lee's character, and no doubt divined the objects which he had in view, instructed their minister at Madrid to protest against his reception. Lee was accordingly met at Burgos by a messenger, directing him not to proceed further. He returned an animated protest against this order, and the Spanish court finally withdrew it, permitting him to repair to the capital. Here he exerted himself with his accustomed activity, and presented to the government an eloquent memoir on "the present state of the dispute between America and Great Britain," the object of which was to establish the propriety of formally receiving a commissioner from the United States, and opening diplomatic intercourse with that country. He also drew up the plan of a treaty, and placed himself in communication with leading statesmen, persistently urging the adoption of a policy favorable to the cause of America. The government assured him of the good will of the king and the people, but adhered to a course of secrecy and caution. Ambiguous promises were plentifully made; but the only tangible success which Lee achieved was permission to make contracts for arms and ammunition with Spanish merchants. His residence at Madrid was of no slight importance, however, to the American cause. He impressed upon the minds of the statesmen of that country a high idea of the prospects and resources of America, and induced the court to instruct the Spanish minister at Paris to keep up a close and confidential intercourse with the American commissioners; and this intercourse finally enabled him to obtain a large and important loan. He returned to Paris, and found that his associates had during his absence opened negotiations with the Prussian minister. William Lee, brother of Arthur, had just been appointed commissioner to the court of Berlin; but as he already filled the post of representative of the United States in Holland, where his services were needed, it was resolved that Arthur Lee should, without waiting to hear from congress, take his commission and instructions, and proceed immediately to Berlin. He accordingly left Paris in June, 1777, and repaired to the court of Frederic the Great. The obstacles before him were serious and discouraging. Prussia was not bound in any way to America, and was under treaty obligations with England. The objects of the commissioners were the establishment of commercial intercourse between Prussia and the United States; the prevention of assistance from Prussia to England in procuring German auxiliaries; the prohibition of the passage of such through the dominions of Frederic; and authority to purchase warlike stores from subjects of Prussia. In all these designs Lee

fully succeeded. Frederic refused to receive him officially, and thus recognize the independence of the United States; but he was permitted to reside at Berlin as a private person, to carry on a secret correspondence with Baron Schulenberg, the minister of state, and to urge the claims of America as effectually as if he were her formally recognized representative. That his presence in Berlin speedily became known, and was regarded with suspicion and apprehension by the English envoy, is proved by an incident which occurred soon after his arrival. In his absence from the room which he occupied his door was opened by means of a false key, and all his papers were carried off. The servant of the English envoy lived at the same hotel, and Lee immediately addressed a communication to the minister, stating his suspicions, and complaining of the robbery. A note was returned by the king himself, declaring that the police would investigate the matter; and immediately afterward the papers were returned in the same mysterious manner. The affair was traced so clearly to the envoy that, at the king's request, he was recalled by his court. In his note on this occasion, Frederic tells Lee that he may speak without reserve to Schulenberg, and "assures him by the present of an inviolable secrecy, and that profound silence shall be observed with regard to those things that he shall communicate in this manner." When Lee left Berlin he was desired to keep the Prussian court well informed of the progress of the war in America, and assured that Prussia "would not be the last power to acknowledge the independency" of the United States. Thus the American commissioner had met with excellent success in his mission. He had accomplished every aim, with the exception of the formal recognition of his diplomatic position, and secured results of the first importance to America. On his return to Paris, a new field for his energetic exertions presented itself. Private letters from England informed him that some American prisoners there had been treated with great cruelty, and Lee set about correcting this wrong with his accustomed vigor. He immediately brought the matter to the knowledge of his colleagues; and it was determined to address a memorial to Lord North, protesting against this harshness. The paper was drafted by Lee, and he also drew up a letter to Lord Shelburne, and despatched both papers to England. A memorial on the subject was also presented to the French court, aiming to secure the interposition of that government, nearly at the same moment when the American congress published its manifesto, proclaiming and justifying its determination to retaliate these cruelties. When the action of congress became known to the commissioners, they promptly announced it to the French and Spanish courts; but the whole subject was ere long overshadowed by the stirring intelligence of the surrender of Burgoyne at Saratoga. Lee despatched the good news to his hundreds of correspondents in

Spain, Prussia, and other countries, and applied himself with renewed and ardent vigor to the task of inducing the governments of the continent to espouse the cause of America. The consequences of the triumph at Saratoga soon displayed themselves. The tone of the French court suddenly changed; and negotiations were at once commenced for the formation of a treaty of commerce and alliance. The progress of the negotiation was retarded by a dispute upon some points which Lee objected to. The first project of the treaty did not contain a recognition of the "sovereign" character of the United States; and the importance of this recognition was strongly pressed by Lee upon his colleagues. He also objected to those articles in which it was stipulated that no duties should be charged by the respective governments on any merchandise exported to the French West Indies which yielded molasses, or on the molasses exported thence to the United States. Lee opposed these articles as far too favorable to France, and declared that they gave her the right "to tie both of our hands," with the privilege in return on our part "of tying one of her fingers." It was finally determined that the decision should be left to congress, and the treaty was signed with this understanding by the commissioners. It was received in America "with the liveliest emotions of joy and gratitude;" but when its details came to be coolly considered, the objectionable articles were expunged, in accordance with the views of Lee. The treaty was nevertheless ratified by the French court, and the vexed questions were left open for subsequent negotiation. Soon after the signing of the treaty by the commissioners, Deane, between whom and Lee strong dissensions had occurred, was recalled, and John Adams was appointed in his place. It was through the exertions of Samuel Adams that Lee's early appointment of secret agent for the Massachusetts assembly had been conferred; and between himself and John Adams commenced a warm friendship never afterward interrupted. This was a matter of some importance to him, inasmuch as the relations between Lee and Franklin were by no means amicable, and indeed soon became openly inimical. During the years 1778 and 1779 Lee continued in active employment, urging upon Spain and Holland the interests of America, and in corresponding with the court of Prussia. He also acted as agent for Virginia in negotiating supplies of arms and stores. But a singular reward for his long devotion to the cause of America was about to be bestowed upon him. In the latter part of 1779 it became expedient to appoint a minister plenipotentiary to the court of Spain, and one or more commissioners to negotiate the proposed treaty of peace with England. Lee was nominated, but left out of both appointments, producing a strong effect upon the public mind, and even in shaping the action of congress. This affront was due to the machinations of his enemies. His colleague Deane on returning to

the United States had published an address, in which he spoke of Lee in the grossest terms, and charged him with obstructing the alliance with France and disclosing the secrets of congress to British noblemen. The subordinate agents of America in Europe, employed to conduct the commercial details of public affairs, united also to attack Lee, whose vigilant eyes had detected and exposed their peculations. Through their correspondents in America they disseminated vague calumnies against him, and so persevering were their assaults that they ended by producing a strong effect upon the public mind, and even in shaping the action of congress. When Lee heard of his rejection by that body, he immediately resigned all his appointments, and in Aug. 1780, sailed for America, to demand an inquiry into his official conduct. He was received at Boston with indications of the highest esteem and respect; and these evidences of public regard were displayed everywhere on his journey to Philadelphia. He had prepared an elaborate report of his entire official proceedings as the agent of the United States, exposing the calumnies circulated against him, and now demanded of congress an opportunity to vindicate himself. His opponents, however, remained silent. It was no part of their plan to make an open accusation against him. The revulsion in Lee's favor seems to have been complete, for congress declared that no charge had ever been entertained against him, and that they had never intended to fix censure upon any portion of his public conduct. As a mark of their confidence, he was requested to lay before them his views, and the information which he possessed, upon foreign affairs. This was done, and Lee added a strict account of all the moneys received or disbursed by him for congress or the state of Virginia; and further published "Extracts from a Letter to Congress, in answer to a Libel by Silas Deane." He then returned to his native state, but was not permitted to remain in retirement. In the spring of 1781 he was elected from the county of Prince William a delegate to the general assembly. He was a landholder in the county, but did not reside there, and an election under these circumstances has always indicated, in Virginia, extended public confidence. The assembly appointed him a delegate to congress, and in that body he served from Feb. 1782, until 1785. Like his brothers, with the single exception of Richard Henry, he was an indifferent speaker, but took a large share in the business of the body. In 1784 he was appointed by congress one of the commissioners to conclude a treaty with the Indians on the N. W. frontier, and prepared a valuable account of the character of the country through which he passed. Lafayette accompanied the expedition, and assisted it by his name and advice. Lee remained with his associates at Fort Stanwix throughout the winter, and treaties were concluded to the satisfaction of congress and the country. On his return he was appointed to the board of treasury with Samuel Osgood and

Walter Livingston, in which he continued from 1784 to 1789. In 1786 he was chosen by the general assembly of Virginia one of the commissioners to revise the laws of the commonwealth, and aided greatly in that task. When the board of treasury was dissolved in 1789, he retired finally from public employment, and, purchasing an estate in Middlesex county, applied himself to agricultural pursuits. He continued however to take an interest in politics, and "solemnly investigated" the character of the new federal constitution. He regarded the original instrument with jealousy and dislike, as too strongly tending toward consolidation; but the subsequent amendments greatly changed his opinion of it. During his latter years he carried on an extensive and interesting correspondence with many of the distinguished personages with whom his official career had thrown him in contact. Among these were Burke, Col. Barré, Wyndham, Sir William Jones, the marquis of Lansdowne, and the earl of Buchan; and on the continent, the baron de Breteuil, the abbé Raynal, the duke de Rochefoucauld, and others. He also corresponded with many persons of literary and political eminence in the United States. This correspondence has been published, and will be found highly interesting, and strongly indicative of the respect and regard of the writers for Lee. He was devoted to the improvement of the grounds around his hospitable mansion, and in planting an orchard contracted a pleurisy which proved fatal. He died in the 52d year of his age.—The career of Arthur Lee, though undistinguished by any connection with great and prominent events, such as catch the public eye, was one of the most important and useful to his country which the history of that day records. At a time when the new-born republic was struggling for existence, and carrying on a war against a powerful country with which the nations of Europe were at peace, and to which they were bound by treaties, he represented his country with a zeal and efficiency which accomplished the greatest and most valuable results. His mind seems to have burned with a sleepless ardor, and he never rested in his attempts to conciliate the courts of Europe in favor of America, and to induce them to furnish her with material aid. He commenced at London by uniting all the elements of the opposition against the ministry, and urging the cause of the colonies with tongue and pen. Thence he passed to France, and matched his strength against Vergennes and Turgot, the ablest of the statesmen of France, and destined afterward to give so much trouble to Jefferson. From France he went to Spain, and, in spite of the opposition of the British minister, extorted from that court every thing but an acknowledgment of American independence. We next find him in Berlin, conciliating Frederic the Great, and promptly succeeding as before. His negotiations and correspondence for nearly 15 years were unceasing, and undoubtedly proved of the utmost value to

America. The transient cloud which rested upon his name, from the machinations of those whose peculations of the public money he had exposed, soon passed away without effort upon his part; and when he retired from public affairs, he carried with him the respect and confidence of the best and most celebrated men of his epoch. It is obvious that to accomplish the important ends above referred to, he must have possessed conspicuous talents for diplomacy. The accounts which remain of him justify this surmise. Though at times melancholy, and prone to jealousy and discontent, he was a man of ardent impulses and the most polite and engaging manners. That the charms of his address were great is shown by the prominent position which he occupied in the polite circles of London and Paris. His face was striking and handsome, his eyes blue and brilliant, and his person pleasing. He was a thorough scholar, read with ease the Greek and Latin classics, and spoke and wrote French, Spanish, and Italian with force and eloquence. His acquirements, exclusive of his medical knowledge, seem to have been extensive, and were used with readiness and effect. With a disposition so impulsive and even affectionate as he possessed, when nothing occurred to arouse his discontent, or plunge him into melancholy, it is singular that he never married. He made, in explanation of this fact, the rather romantic statement, that "an Emma, an Eloise, or a Constantia would alone answer the high enthusiastic ideas I possess of wedded love." The "tempest of his fortune," he declared, had borne him away from those whom he might have loved under other circumstances. Devotion to his country had thus deprived him of domestic happiness. A high and honorable fame, however, came to him in place of it. He has been justly styled "the scholar, the writer, the philosopher, and negotiator," and in all these capacities he labored faithfully for the public good.—His "Life and Correspondence" was published by his grand nephew, R. H. Lee (2 vols. 8vo., Boston, 1829).

LEE, ALFRED, an American clergyman, bishop of the Protestant Episcopal church in Delaware, born in Cambridge, Mass., Sept. 9, 1807. He was graduated at Harvard college in 1827, subsequently studied for the ministry in the general theological seminary in New York, was consecrated bishop of Delaware in Oct. 1841, and is at present rector of St. Andrew's church, Wilmington. He is the author of a "Life of the Apostle Peter, in a Series of Practical Discourses" (12mo., New York, 1852), and "Life of St. John" (1854). He has received the honorary degree of S.T.D. from Trinity college, Hartford.

LEE, ANN, the founder of the sect of Shakers in America, born in Manchester, England, Feb. 29, 1736, died in Watervliet, N. Y., Sept. 8, 1784. She was the daughter of a blacksmith who was too poor to afford his children even the rudiments of an education, and during her youth and childhood was employed in a cot-

ton factory, and afterward as a cutter of hatters' fur. Although strongly impressed from an early age with the sinfulness of sensual indulgence, she yielded to the solicitations of her friends and was married to Abraham Stanley, a blacksmith, by whom she had 4 children who died in infancy. In 1758, with several members of her family, she united herself to a society of Shakers, then recently formed in Manchester, under the auspices of persons who had formerly been Quakers; and for 9 years she was deeply exercised in mind; at times the subject of such inward suffering, that she became emaciated and helpless as an infant, while at other times her spiritual joy was unbounded. She communicated to the society the divine manifestations which she claimed to have received, and gradually came to be regarded as an inspired teacher. About 1770 she began to deliver her "testimony against all lustful gratifications as the source and foundation of human corruption and misery;" but having been subjected to abuse and violence from her peculiarity of manner and the novelty of the doctrines she preached, she was at length confined in prison by the authorities of Manchester for several weeks. During this imprisonment, Christ, she said, revealed to her in a vision the most astonishing views and divine manifestations of truth; and after her release she was regarded by her sect as "a mother in spiritual things," and was always called by them "Mother Ann." In 1774 Ann Lee, with others of her sect, including her husband and a brother and niece, emigrated to New York, for the purpose of establishing there the "church of Christ's second appearing." The company separated for a time in order to seek employment and the means of subsistence; but about 1776 they were reunited in the present town of Watervliet, near Albany, where Ann Lee, who had previously formally dissolved her connection with her husband, became their recognized head. In 1780, during a religious revival in New Lebanon and several adjoining towns, the company first brought itself into notice, and under the influence of Ann Lee many persons were converted to the doctrines of the Shakers. In this movement originated the flourishing society at New Lebanon. The Shakers seem however to have incurred the suspicion of the local authorities with regard to their friendliness to the patriotic cause, and Ann and others were imprisoned for several months for refusing to take the oath of allegiance to the state of New York, it being contrary to their faith. They were released without a trial by order of Gov. George Clinton in the latter part of 1780. In 1781-'8 Ann Lee and the elders of the society at Watervliet made a missionary journey through New England, in the course of which societies were founded in Harvard, Mass., and other places. She died about a year after her return to Watervliet.

LEE, CHARLES, a major-general in the American revolutionary army, born in Dernhall, Cheshire, England, in 1781, died in Philadelphia,

Oct. 2, 1782. He was the youngest son of John Lee, colonel of the 44th regiment in the British service, and is said to have held a commission in the army when 11 years of age. He received a tolerable education, and early prepared himself for the profession to which his own inclination as well as that of his parents directed him, by studying the science of war. At 20 years of age he became a lieutenant in the 44th regiment, and in 1784 accompanied the troops sent to America, where during the next 6 years he saw considerable service. The 44th was one of the two European regiments which followed Braddock in his expedition to Fort Duquesne, and at the disastrous battle of Monongahela Lee received his first practical experience of warfare. He found his way in safety to Philadelphia with the remnant of the British army, participated in the various indecisive movements of the campaigns of 1756 and 1757 as captain of a company of grenadiers, and in 1758 was present in the assault on Ticonderoga, where he was severely wounded by a musket shot. He subsequently traversed a large portion of the western frontier, and after the reduction of Fort Niagara and Montreal in 1760 returned to England, where by the aid of influential friends and family connections he was promoted to a majority in the 108th regiment of foot. This regiment was disbanded in 1763, and Lee continued a major on half pay until 1772, when he was made a lieutenant-colonel on half pay, which was the highest rank he ever attained in the British service. In 1762 he accompanied the British army sent to Portugal to protect the frontiers of that country from the incursions of the Spaniards, and while in the brigade of Gen. Burgoyne distinguished himself by a brilliant night attack upon a Spanish post near the old Moorish castle of Villa Velha, which the commander-in-chief, Count de la Lippe, described as "a very gallant action." But notwithstanding this testimonial to his bravery, and others equally complimentary from the king of Portugal and influential friends, his promotion lagged. Various reasons have been assigned for this, the most probable being the freedom with which he discussed ministerial plans respecting America, and in general his severe strictures upon persons in authority. He was by nature impulsive, restless, opinionated, and overbearing, and his unhappy temper interfered, not on this occasion merely, but on many subsequent ones, with the advancement to which his talents in reality entitled him. The Mohawks, into whose tribe he was adopted during his residence in America, aptly named him Ounewaterika, or "Boiling Water." Wearied with the inactive life of a half pay officer, he visited the continent with recommendations from his former commander, was well received by Frederic the Great, and at Warsaw was appointed by King Stanislas Augustus, one of his aides-de-camp, an office of honor, however, rather than employment. In the latter part of 1766 he returned to England, bearing a letter

of recommendation from Stanislas Augustus to George III., and made urgent attempts to obtain promotion, or at least a military command. His meddling disposition again interfered with his advancement; and in consequence of some sarcasms directed against the military character of Gen. Townshend and Lord George Sackville, he found the door of promotion shut against him. The disappointment attending the ill success of this attempt rankled in his breast, and affected his whole subsequent career. Returning to Poland in 1769, he was raised to the rank of major-general in the Polish service, subsequently served for a short time in the Russian army in a campaign against the Turks on the Pruth, and for a year or two pursued a restless, wandering life through southern Europe. In Italy he fought a duel with a foreign officer, in which the latter was killed; and in the course of his life he became involved in many similar affairs, from which his courage and address generally enabled him to escape unharmed. In 1778 he was again in England with a temper soured by 10 years' unavailing struggle for preferment, venting his spleen against the ministry in equibs and newspaper articles full of irony and sarcasm, and systematically opposing every project emanating from government. He had some reputation as a political writer, and, according to Mr. Thomas Rodney of Delaware, confessed to that gentleman in 1778 that he was the author of the letters of Junius. Upon this statement and other circumstances an attempt was subsequently made by Dr. Thomas Girdlestone to prove that Lee and Junius were identical. It has been supposed by some that his vanity induced him to claim the letters as his own. Mr. Sparks, a writer disposed to take a not unfavorable view of Lee's character, says: "Rodney's veracity is not to be questioned. He may have misunderstood Gen. Lee's meaning, or have drawn a false inference from language that was left purposely ambiguous. Gen. Lee's vanity might, perhaps, carry him so far." The threatening aspect of affairs in America meanwhile suggested to him a sphere of action in which his hatred of ministerial oppression might find a wider sympathy than at home; and in the summer of 1778 he left England for ever, arriving in New York in October of the same year. His reputation as a caustic writer on the liberal side in politics, and to a certain degree as a general of European experience and renown, caused his arrival in the country to be hailed as an acquisition to the patriotic cause. During 1778-'4 he travelled extensively through the colonies, cultivating the acquaintance of prominent whigs, vigorously upholding with pen and tongue the claims of the people, and expressing both in his correspondence and conversation great enthusiasm for freedom. Writing to Gates, an old fellow campaigner in America, under date of May 6, 1774, he says: "For my own part, I am determined (at least I think I am) not to be slack in whatever mode

my service is required." In the same year he wrote his "Strictures on a Pamphlet entitled 'A Friendly Address to all Reasonable Americans,'" in reply to Dr. Myles Cooper, a tory clergyman of New York; this was one of the ablest of his literary performances, and was widely circulated, and read with avidity by all classes. The freedom with which he avowed his sentiments did not fail to arouse the suspicions of the British ministry; and his presence in Boston during the summer of 1774, where he associated with the leading patriots, induced Lord Dartmouth to warn Gen. Gage to "have an attention to his conduct, and to take every legal method to prevent his effecting any of those dangerous purposes he is said to have in view." He was present at Philadelphia during the session of the first continental congress, animating its members by his own zeal; and about the same time, as if to identify himself completely with the colonists in their impending struggle with the mother country, he purchased an estate of 2,400 acres in Berkeley co., Va., in the neighborhood of his friend Gates. Congress having determined after the combats at Lexington and Concord to organize a continental army, Lee was, on June 17, 1775, appointed the 2d major-general, ranking after Gen. Artemas Ward, then first in command of the New England troops encamped around Boston. Though disappointed in not receiving a higher command, to which in the opinion of many his efforts in behalf of the colonies as well as his military talents and experience entitled him, he accepted the appointment, first, however, in a letter to the British secretary at war, resigning his commission in his majesty's service, and declaring his readiness to serve the king whenever called upon "to act against the enemies of his country or in defence of his just rights and dignity." Although he was accustomed to refer to this act of his life as one which involved the confiscation of his property in England, it is proper to remark that after a conference with a committee appointed at his own request, in which he unfolded his pecuniary circumstances, congress undertook to indemnify him for any loss he might sustain by entering into their service, and subsequently advanced him \$30,000 for that purpose. Early in July, in company with Washington, he arrived at the camp at Cambridge, and formally entered the service, "a soldier of fortune," says Irving, "indifferent to the ties of home and country, drawing his sword without enthusiasm, more through resentment against a government which had disappointed him, than zeal for liberty or for colonial rights." During the summer and autumn he held command of the left wing of the American army posted on Winter hill, sustaining his reputation as a military authority, although his manners were far from agreeable, and the opinion began to gain strength that personal ambition was his main incentive in embarking in the cause of the colonies. In Nov. 1775, he visited Newport, R. I., for the purpose of erecting works

of defence, gratifying his hatred of tories while there by making them take a "tremendous oath" to support the authority of congress; and in Feb. 1776, he was sent on a similar mission to New York, whence in March he departed for Virginia to take command of the southern department. After organizing the military defence of that colony, he marched in the latter part of May toward Charleston to meet the forces which it was apprehended were to be landed from the British fleet under Sir Peter Parker. He arrived in the city June 4, and at once reported it "utterly defenceless." The fort then building on Sullivan's island he particularly objected to, predicting that it could not hold out half an hour, and calling it a "slaughter pen;" and he endeavored, though unsuccessfully, to persuade Gov. Rutledge to abandon it. During the memorable defence of the work by Col. Moultrie, June 28, he took no measures to support the garrison, and instead of supplying them with ammunition, when their stock was exhausted, counselled them to spike their guns and retreat. Nevertheless, much of the credit of the successful defence of Charleston was ascribed to him, and he returned to the North in the autumn with an enhanced military reputation, and an exaggerated notion of his own importance to the American cause. He was now, by the resignation of Gen. Ward, first major-general, occupying the second rank in the army; and many persons, contrasting his presumed successes in the South with the recent defeat on Long Island, began to consider him the main hope of the army. On Oct. 14 he joined the camp on Harlem heights, and with his customary good fortune received the credit of advising the evacuation of New York island and the retrograde movement by which the plans of Howe for surrounding the American army were defeated, although the chief features of the plan had been determined upon a month previous. His division covered the retreat of the American army over King's bridge; and after the passage of Washington into New Jersey, he was left in Westchester county, in the neighborhood of New York, in command of a force of 7,000 men. From that day, says a recent biographer, "he seems to have been governed by one purpose, and animated by one spirit—a spirit of any thing but patriotism—a purpose to gratify his own personal ambition at any cost." The possession of a separate command flattered his vanity, and, impressed with the idea of attacking New York, or assailing the rear of the enemy, or performing some other exploit equally brilliant, he lingered week after week in Westchester, notwithstanding urgent appeals from Washington to join him in New Jersey; and after crossing the Hudson at Haverstraw, Dec. 2-4, he pursued his march southward with equal dilatoriness. Being "in hopes to reconquer the Jerseys," he moved in a road about 20 miles west of the British army, and, disregarding the directions of Washington, awaited the opportunity which he expected would soon present itself to make

an independent demonstration on the enemy's flank. On the morning of Dec. 18, while quartered with his aids and a small guard at White's tavern, Baskingridge, about 8 miles from his army, which was left under the command of Gen. Sullivan, he was surprised and captured by a party of British light horse under Col. Harcourt, who had received intelligence of his movements from a tory of the neighborhood. After a brief resistance Lee surrendered himself, according to the British accounts, in the most cowardly manner, and was hastily mounted behind one of the troopers, and carried away at full speed to the British camp at New Brunswick, whence about 8 hours afterward the booming of cannon proclaimed the exultation of the enemy at the capture of the "American Palladium," as Lee was styled by them. Notwithstanding the unfavorable suspicions which the circumstances attending his capture have provoked, there seems no reason to believe that he was then acting a treacherous part, or that he was guilty of any graver offence than negligence or disobedience of orders. The Americans sincerely deplored his loss, and upon learning that he was regarded by his captors as amenable to British military law as a deserter, congress at once adopted retaliatory measures, and ordered 5 Hessian field officers and Lieut. Col. Campbell to be taken into close custody, to await the fate of Lee. In consequence of the firm stand taken by congress, Gen. Howe advised the British ministry to countermand their first instructions, that Lee should be sent to England for trial, and to allow him to be considered a prisoner of war. A reluctant consent having been obtained, he was, in Dec. 1777, put upon parole, and treated with the consideration usually bestowed upon prisoners of rank. During the period that his fate was involved in uncertainty, his enthusiasm for the colonial cause seems to have yielded to solicitude for his personal safety; and the evidence is now strong that for the purpose of securing this end he was willing to betray his adopted country. From a recently discovered document in Lee's handwriting, indorsed by Henry Strachey, secretary to the royal commissioners, Lord and Sir William Howe, as "Mr. Lee's Plan," it appears that on March 29, 1777, he submitted to the British commander a project for the conquest of America, the chief feature of which was the concentration of forces at Annapolis and Alexandria for the purpose of cutting off communication between the northern and southern states; the result of which would be, that while the advance of Burgoyne from the north would give sufficient occupation to New England and New York, Howe could overwhelm the American army in New Jersey, thus "unhinging and dissolving the whole system of defence." Upon this document, the authenticity of which is deemed incontrovertible, an elaborate paper, entitled the "Treason of Charles Lee," was read before the New York historical society by George H. Moore in June, 1858. The mysterious expedition of the Howes

with the British fleet southward in the summer of 1777, it is supposed, may be explained by a reference to this plan; and Lee's request to congress, during his captivity, to be permitted to communicate to a committee of their body matters of interest to the public and to himself, may be in like manner referred to his desire to be of service to the crown in reopening negotiations with congress. In May, 1778, he was exchanged for Gen. Prescott, and joined the American camp at Valley Forge, where he received the command of a division. In the general council of officers held in the succeeding month he strongly opposed the project of attacking the British army on their march from Philadelphia through New Jersey; and he subsequently commanded the advance at the battle of Monmouth, June 28, after formally resigning the post to Lafayette. His wilful conduct on this occasion in ordering a retreat by which the day was nearly lost, against the express command of Washington, who was hurrying forward to his support with the main body of the American army, was the occasion of an outbreak of anger on the part of the commander-in-chief which was long remembered by those who witnessed it. Some, who had noted his opposition to any project for attacking the enemy, were led to suspect that he was secretly aiding them by endeavoring to procure a defeat of the Americans. It appeared afterward that his division, consisting largely of militia, had been unexpectedly attacked by the whole rear guard of the British army, and that some little confusion at first prevailed in the American ranks; but after putting the most favorable construction upon his conduct, it is impossible to absolve him from the charge of irresolution and negligence unworthy of a commanding officer. Such was substantially the verdict of the court martial convened to examine into his conduct at Monmouth, who also found him guilty of writing disrespectful letters to the commander-in-chief, and sentenced him to suspension from any command in the army for one year. He was not prepared for this sentence, having expected from the ingenuity and ability of his defence to be triumphantly acquitted; and during the delay of congress to affirm it, his naturally irascible temper betrayed him into frequent acts of imprudence, which only increased the feeling of suspicion and dislike with which he was beginning to be regarded. For the disparaging manner in which he spoke of Washington he was challenged by Col. Laurens, one of the latter's aids, and was wounded in the side by a pistol ball in the duel which ensued. Congress having ratified his sentence, he retired to his estate in Virginia, where he wrote for the "Maryland Journal" his "Queries, Political and Military," the drift of which was to cast a slur upon the character and military conduct of Washington. He inhabited a house rudely and hastily constructed, without partitions, and almost without the necessary furniture, where, surrounded by his dogs, of which he was im-

moderately fond, and his books, he lived "more like a hermit than a citizen of the world." The divisions of the apartments were marked by lines of chalk, which he claimed was an improvement upon walls. The term of his suspension had just expired when a rumor reached him that congress designed to deprive him of his commission. In a sudden fit of anger he despatched to the president of that body an insulting note, the result of which was his immediate dismissal from the service. He continued to reside on his estate; but he soon wearied of the life of a planter, and in the autumn of 1782 visited Baltimore and Philadelphia with a view of negotiating for the sale of his estate. In the latter place he was attacked by a fever of which he died within 5 days, exclaiming in the delirium of his last moments: "Stand by me, my brave grenadiers." With characteristic eccentricity he directed in his will that his body should not be interred in any church or church yard, or within a mile of any Presbyterian or Anabaptist church. He was, however, buried in the cemetery of Christ church, whither his remains were attended by a large concourse, including many whom his wayward conduct had not entirely alienated, and who gratefully remembered his early efforts for colonial freedom, and his occasional generous acts and impulses. His memoirs have been written by Edward Langworthy, by his kinsman Sir Henry Bunbury, and by Jared Sparks (Sparks's "American Biography"); and a volume entitled "Memoirs of the Life and Treason of Charles Lee," by George H. Moore of New York, has recently (1860) been announced.

LEE, ELIZA BUCKMINSTER, an American authoress, born in Portsmouth, N. H., about the beginning of the present century. She is a daughter of the Rev. Dr. Joseph Buckminster, an eminent Congregational divine, for many years settled at Portsmouth, from whom as well as from her brother, the Rev. Joseph Stevens Buckminster, she acquired a classical education and a fondness for literary pursuits. She was married to Mr. Thomas Lee of Boston, in which city and its vicinity the greater part of her life has been passed. Her career as an authoress commenced with the publication of "Sketches of a New England Village" (1837), followed by "Delusion." In 1842 appeared her "Life of Jean Paul Richter" (12mo., New York), translated from the German, and in 1845 she published "Walt and Vult, or the Twins," from Richter's *Fliegelfahre*. Her remaining works are: "Naomi, or Boston Two Hundred Years Ago" (16mo., Boston, 1848), one of her best original tales; "Memoir of Rev. Dr. Buckminster and Joseph Stevens Buckminster" (12mo., 1849); "Florence, the Parish Orphan" (16mo., 1850); "Parthenia, or the Last Days of Paganism" (12mo., 1858); and "The Bare-Footed Maiden," a translation from Auerbach.

LEE, EZRA, an American revolutionary soldier, born in Connecticut in 1749, died in Lyme, Conn., in 1821. In Aug. 1776, he volunteered

on the hazardous enterprise of affixing Buh-nell's infernal machine to the British ship Eagle, then lying in New York harbor; but the attempt, owing to the thickness of her copper sheathing, was only partially successful. He landed safely after remaining several hours in the water, and received the congratulations of Washington. He served with credit at Monmouth and in other battles of the revolution.

LEE, HANNAH F. (SAWYER), an American authoress, born in Newburyport, Mass. She is the daughter of a physician of eminence in her native place, and for many years has resided in Boston. Her first known publication was the appendix to Miss Hannah Adama's memoir of herself, which was succeeded by "Grace Seymour," a novel, and "Three Experiments of Living," published in 1838. The subject of the latter work was suggested by the commercial disasters of the time; it has gone through upward of 80 editions in the United States, beside many in Europe, and is esteemed the authoress's best work. Her remaining works are: "The Old Painters," a series of sketches combining fiction and fact, illustrating the history of painting; "Eleanor Fulton," a sequel to "Three Experiments of Living;" "Rich Enough;" "Luther and his Times;" "Cranmer and his Times;" "The Huguenots in France and America;" "The World before You;" "Stories from Life" (1849); "History of Sculpture and Sculptors" (1854), &c.

LEE, HENRY, an American soldier, and governor of Virginia, born in Westmoreland co., Va., Jan. 29, 1756, died at Cumberland island, Ga., March 25, 1816. His father was Henry Lee, first cousin of Richard Henry and Arthur Lee; his mother Mary Bland, daughter of Col. Bland of Jordans, in Prince George co., Va. He received his early education from a private tutor, and was afterward sent to Princeton college, then presided over by Dr. Witherspoon. While at college Dr. Shippen predicted his future distinction. He graduated in 1774, in his 18th year, and returning home took charge of all the private affairs of his father, who was then engaged in negotiating a treaty with some Indian tribes on behalf of the colony. This charge he executed with great prudence, industry, and ability for one so young. In 1776, when 20 years of age, he was appointed, on the nomination of Patrick Henry, captain of a company of cavalry in Col. Theodorick Bland's "Virginia regiment," and in Sept. 1777, marched with his regiment to join the main army. He soon distinguished himself by the excellent discipline which he introduced into his company, the care which he took of his men and horses, and by skirmishing, foraging, and procuring information of the movements of the enemy. He was enabled by his strict discipline to move with celerity and effect, and seems at once to have adopted that rapid and daring system of tactics which made "Lee's legion" afterward so efficient in the South. It is certain that his vigilance and zeal secured for him the respect and

confidence of Washington, who selected Capt. Lee's company for his body guard at the battle of Germantown. The enemy seem also to have formed a high opinion of his abilities, and of the importance of taking him prisoner. In Jan. 1778, it was discovered that Capt. Lee, with only 10 men, was at a stone house not far from the British lines. A design was immediately formed to capture him; and 200 troopers were detached to make a circuit and fall upon him by surprise. The troopers approached without his knowledge, seized 4 of his patrols who were prowling in search of forage, and attacked him before he was aware of their vicinity. He made a desperate defence, and the enemy were forced to retire with a loss of 4 killed, and one officer and 8 privates wounded. Of his own men, beside the patrols and the quartermaster sergeant, who were made prisoners, he had but 2 wounded. Washington wrote him a letter complimenting him upon his gallantry on this occasion, and he was soon afterward raised to the rank of major, with the command of an independent partisan corps of 2 companies of cavalry, subsequently enlarged to 8, and a body of infantry. He continued in active service, and on July 19, 1779, at the head of a body of 300 men, surprised the British garrison at Paulus Hook, took 160 prisoners, and effected his retreat with the loss of only 2 men killed and 8 wounded. For the "prudence, address, and bravery" which he displayed in this affair, congress voted him a gold medal. In Jan. 1781, he marched his legion to the South, and joined the army of Greene, with the rank of lieutenant-colonel. In the great retreat of Greene before Lord Cornwallis, Lee's legion formed the rear guard of the American army, the post of greatest danger. The pursuit was hot, and at one time the rear guard came in contact with the troopers of Tarleton. Lee charged Tarleton, killed 18 of his men, and took one captain and several privates prisoners. When Greene had effected his retreat, he despatched Lee and Col. Pickens into North Carolina, to watch and harass the movements of Cornwallis. On their march they fell in with a couple of messengers from Col. Pyle, commander of a body of 400 Tories, to Cornwallis. The messengers, supposing from the accoutrements of the troopers that Lee was Tarleton, communicated to him the substance of their instructions, which embraced full information of Pyle's intended movements. Lee did not undeceive them, personated Tarleton throughout, and despatched one of the messengers back to Pyle, directing him to post himself with his force at a place which he indicated. The Tories accordingly took their position, and the troopers came up with them, and charged and defeated them, killing 90, and taking others prisoners. At the battle of Guilford Court House Lee performed very important services, and greatly distinguished himself. On the morning of the day of battle he encountered Tarleton's celebrated troop of cavalry, and drove them back with considerable loss. In the main

engagement he was stationed with his legion on the left wing of Greene's army; and although the body of militia, which composed the principal force attached to his position, abandoned him at the very commencement of the action, Lee obstinately held his ground, and kept the enemy at bay until he received the order to fall back upon the main body, whose retreat he covered. It was by the advice of Lee that Greene came to his celebrated and daring decision not to follow Cornwallis into Virginia, but to leave that province to its fate, and march southward, with the view of ending the conflict in South Carolina and Georgia. The praise or blame attached to this extreme step must therefore be shared between the two commanders. The result is known, and fully vindicated the expediency of the movement, cruel as it appeared to Virginia in her prostrate condition. In pursuance of his plan of operations, Greene detached Lee with his legion to join the body of partisans under Marion, and fall upon the lesser posts of the enemy. By a series of vigorous operations, Forts Watson, Motte, and Granby were speedily compelled to surrender; and Lee was then ordered to join Pickens, and assist him in the attack upon Augusta. On his way he surprised and took Fort Galphin. The defences of Augusta consisted of Fort Cornwallis and Fort Grierson. The latter was taken by assault, and the former at the end of a siege of 16 days. Col. Brown, its commander, was particularly obnoxious to the Americans, and his life was only preserved by the interposition of Lee. That officer marched with his prisoners to rejoin the army of Greene, which had sat down before Fort Ninety-Six. Lee was intrusted with an important position when the attempt was made to take the place by storm. He led the assault with his habitual daring, and was completely successful; but the other division failed in its object, and the advance of Lord Rawdon compelled Greene to abandon the siege. His gallantry at the battle of Eutaw contributed largely to the result of that action. His legion covered the right flank, and when the militia gave ground before the enemy, he obstinately maintained his position unsupported. His order to Capt. Rudolph, of the infantry corps attached to his legion, to turn the enemy's flank, and give them a raking fire, resulted in the retreat of the left wing of the British forces, which were completely broken, and driven from the field. The charge upon the enemy's right was not so fortunate, and the Americans were compelled to retire. It is more than probable that Lee's impetuous charge alone saved the army from defeat. The revolutionary struggle was now drawing to a close. Greene had rightly supposed that the main army under Washington was more than a match for the force of Cornwallis. In October, soon after the battle of Eutaw, Lee was sent on a special mission to Washington, with the request from Greene that he would prevail on the count de Grasse to afford naval assistance in the proposed siege of

Charleston; and he arrived at Yorktown about the period of the surrender of Cornwallis. Lee's relations with Greene have been misrepresented by the partisan adherents of that great and excellent man. Lee fancied that he had been injured by the neglect of Greene to speak of him in his general reports as his services deserved; and a correspondence ensued upon the subject in 1782. The general declared that Lee's wish to retire originated, he believed, in "distress" rather than the injuries which his health had undergone, and combated his resolution in a tone of affectionate remonstrance. He had been under obligations to Lee, he said, which he could "never cancel." As to his military services, Greene wrote: "I believe that few officers, either in Europe or America, are held in so high a point of estimation as you are. . . . Every body knows I have the highest opinion of you as an officer, and you know I love you as a friend. No man in the progress of the campaign had equal merit with yourself." The friendly relations afterward subsisting between these two eminent men, and the manner in which Lee speaks of Greene in his memoirs of the southern campaign, show that this temporary misunderstanding did not continue. Finding his services no longer necessary, however, Lee retired from the army, and returned to Virginia. He settled down at Stratford, the old family mansion in Westmoreland, and was soon afterward married to his cousin Matilda, daughter of Philip Ludwell Lee. Upon the death of this lady, he married Ann, daughter of Charles Carter. In 1786 he was appointed by the Virginia assembly one of the delegates to congress, in which body he remained until the federal constitution went into operation. In 1788 he was a member of the Virginia convention to decide upon the adoption of the proposed instrument, and took a prominent position among the advocates of the measure. He subsequently served in the Virginia house of delegates, and in 1792 was elected governor of the commonwealth for the term of three years. In 1794 occurred the whiskey insurrection in Pennsylvania. Every peaceable attempt to suppress the outbreak having failed, the president ordered a military force to be raised, which he placed under the command of Lee. The advance of the well known partisan of the revolution at the head of 15,000 men speedily terminated all resistance, and Lee soon returned to Virginia. In 1799 he again served in congress; and when intelligence was received of the death of Washington he was appointed by the house to pronounce a eulogium. The resolutions which he drew up on this occasion, and which were presented, during his temporary absence, by his friend Judge Marshall, contained the words now so celebrated: "First in war, first in peace, and first in the hearts of his countrymen." On the election of Jefferson to the presidency in 1801, he retired from public affairs, and established himself as a country gentleman in Virginia. The remainder of his life was not, how-

ever, to be tranquil. The profuse hospitality and free mode of living then the fashion plunged him into pecuniary trouble, and terminated in the ruin of his estate. He was even arrested for debt, and, if the statement of some persons be credited, lodged in the gaol of Spottsylvania. The more probable account is, that he was confined within "the limits" of that county only. Here, in the year 1809, he wrote his "Memoirs of the War in the Southern Department of the United States," which deservedly ranks among the most valuable and interesting works of a similar description which have ever been written. It seems to have been largely based upon communications from his brother officers, is written with candor and impartiality, and possesses the charm peculiar to writers who have witnessed with their own eyes the scenes which they describe. No subsequent traces of the life of Lee remain, up to the year 1814. He seems to have been harassed by pecuniary trouble, but not to have discarded his habits of free living. In 1814 he was in Baltimore when the riots connected with the "Federal Republican" newspaper took place, and exposed himself by the part which he took in them to serious injury. The printing office of the journal was destroyed by the mob, and an attack upon the dwelling of the editor followed. Lee was a personal friend of this gentleman, and with characteristic impetuosity offered to aid him in defending his house. The result was that two of the assailants were killed, and a number wounded; which so inflamed the rage of the crowd, that but for the arrival of the city military, Lee and his friends would in all probability have been torn to pieces. They were conducted by the military to the city gaol for safety; but during the night the mob reassembled in greater force, broke open the gaol, and either killed or shockingly maimed all its inmates. From the injuries which he received on this occasion Lee never recovered. He made a voyage to the West India islands for the restoration of his health, but all his hopes failed. Finding his strength giving way, he returned to the United States in 1818, and in that year died at Cumberland island, Georgia.—In person Lee was above the medium height, well proportioned, and pleasing. His complexion was dark; his manner the frank and open address of a soldier. Self-esteem, based upon the conscious possession of commanding talents, was a marked trait of his character; and in this doubtless originated his misunderstanding with Greene. The opinion formed by that great soldier of his military genius has been stated: "No man in the progress of the southern campaign had equal merit with Lee;" and if the conspicuous services of Morgan, Marion, Sumter, Pickens, and Washington be recalled, the extent of this commendation will be understood. Greene was eminently just and impartial to all his officers, and thus his estimate of Lee's abilities is conclusive. The "love and thanks" expressed in a letter to Lee from Gen. Washington in 1789, exhibit the affection

which his generous qualities had inspired in the bosom of the chief; and in Virginia he is still known by the name of "Legion Harry," in allusion to the rapid and daring movements of his partisan corps in the campaign of the Carolinas.

LEE, JESSE, an American clergyman, born in Virginia in 1758, died in Sept. 1816. He became a preacher among the Methodists in 1783, and a travelling companion of Bishop Asbury. His "Notes" have been the basis of much of the history of early Methodism in America. He was chaplain to congress during 6 successive terms. He is best known as the apostle of Methodism in New England.

LEE, LEROY MADISON, D.D., an American clergyman, born in Petersburg, Va., April 30, 1808. He studied law, but entered the ministry of the Methodist Episcopal church in 1828. He has published several sermons, "Letters to a Young Convert," "Life and Times of Jesse Lee," a small volume on confirmation, and another on perseverance. In 1836 he became editor of the "Richmond Christian Advocate," and, having resigned the post in the following year on account of ill health, was reelected in 1839, and continued till Dec. 1858.

LEE, LUTHER, D.D., an American clergyman and author, born in Schoharie, N. Y., in 1800. Having acquired an education mainly by his unaided exertions, he joined the Methodist Episcopal church in 1821, and soon began to preach. In 1827 he joined the Genesee conference, became a travelling preacher, engaged in several public discussions on theological questions, and was a prominent lecturer on temperance. In 1836 he began to preach against slavery, and during the two years that he was thus engaged he was mobbed several times. In 1841 he edited the "New England Christian Advocate," an anti-slavery journal published at Lowell, Mass. Soon after he issued a paper named the "Sword of Truth," and in the autumn of 1842 he joined the Rev. Orange Scott and others in seceding from the Methodist church, and began with them a weekly journal styled the "True Wesleyan." When, in 1843, the "Wesleyan Methodist Connection" was organized, he became pastor of the Wesleyan church in Syracuse, N. Y. In 1844, at the first Wesleyan Methodist general conference, he was chosen president, and elected to be editor of the "True Wesleyan," which had become the organ of the new body, and was thenceforward to be published in New York. In that city he resided till 1852, when he resigned the editorship, and removed to Syracuse, again to take charge of the Wesleyan church there. In 1854-'5 he edited a periodical entitled "The Evangelical Pulpit." In 1856 he was elected president and professor of theology of Michigan Union college, at Leoni, Mich.; but he resigned in 1857, and removed to Felicity, O., where he remained two years. He then became pastor of a church in Chagrin Falls, O., where he has since resided. In 1859 he received from Middlebury college, Vt., the degree of D.D. Dr.

Lee is the author of "Universalism Examined and Exposed" (1836); "The Immortality of the Soul;" "Revival Manual" (1850); "Ecclesiastical Manual, or Scriptural Church Government Stated and Defended" (1850); "Slavery Examined in the Light of the Bible" (1855); and "Elements of Theology, or an Exposition of the Divine Origin, Doctrines, Morals, and Institutions of Christianity" (1856).

LEE, MARY E., an American authoress, born in Charleston, S. C., March 23, 1813, died there, Sept. 28, 1849. She early indicated literary tastes, and became familiar with the French, German, and Italian languages, from which she translated freely for the magazines. She also wrote original pieces in prose and verse for the "Southern Review" and other periodicals. A volume of "Tales from History" from her pen, designed for the young, was published by the Massachusetts library association. She was afflicted by disease through life, lost the use of her right hand by paralysis, and continued to write with her left hand during the progress of the malady. A selection from her poems was published after her death, with a memoir by Samuel Gilman, D.D.

LEE, NATHANIEL, an English dramatic poet, born in Hatfield, Hertfordshire, about 1657, killed in London in 1690. He was educated at Trinity college, Cambridge, and on leaving the university tried to push his fortunes at court; but not being successful, he began to write for the stage. From 1675 to 1681 he produced a new play every year. In 1684 he became insane and was confined in Bedlam for 4 years, when, having recovered his reason, he was liberated and resumed his former occupation. He is said to have lost his life in a nocturnal riot. He was an admirer and imitator of Dryden, whom he assisted in writing "Ædipus" and the "Duke of Guise." He was the author of 11 tragedies, 2 of which, "Theodosius" and "Alexander the Great," were long popular on the stage.

LEE, MRS. R. BOWDICH, an English authoress, born about 1800, died in 1856. During a residence at Cape Coast Colony in Africa, whither her first husband, Mr. T. E. Bowdich, had been sent on a mission of pacification to the Ashantees, she collected the materials for an interesting work on the aborigines of that country, which appeared in 1825 under the title of "Stories of Strange Lands." Another work of the same character, entitled "The African Wanderers" (3d ed. 1854), has been highly esteemed for the charm of its narrative and the exactness of its descriptions. Subsequently Mrs. Bowdich resided for many years in Paris, where she married her second husband, Mr. Lee. While there she enjoyed the friendship of Cuvier, of whom she wrote a memoir, and of other eminent authors and naturalists. Her remaining works are for the most part popular treatises on subjects connected with natural history. Among them are: "Elements of Natural History—Zoology;" "Taxidermy;" "Beauties, Uses, &c., of Trees, Plants, and Flowers;" "Familiar Natu-

ral History," &c. Some of these have passed through repeated editions.

LEE, SAMUEL, the first minister of Bristol, R. I., born in London, England, in 1625, died in St. Malo, France, in Dec. 1691. He was graduated at Oxford in 1648, subsequently took orders, and was preferred by Cromwell to a church near Bishopsgate, London, from which, being a non-conformist, he was ejected in 1662. For a number of years he preached in Oxfordshire, and between 1678 and 1686 he was minister of an Independent church at Newington Green near London. In the latter year, apprehending that he might be disturbed in the discharge of his duties, he emigrated to New England, and upon the formation of a church in Bristol, R. I., became its first minister. After the revolution of 1688 he prepared to return to England, and on the voyage thither was captured by a French privateer and taken into St. Malo, where he died soon after. He was a man of learning, and at one time made a special study of the astrological art; but becoming convinced of the sinfulness of this pursuit, he burned his collection relating to the subject. He is the author of "Orbis Miraculum, or the Temple of Solomon portrayed by Scripture Light" (fol., London, 1659), and of a number of occasional sermons.

LEE, SAMUEL, D.D., an English clergyman and scholar, born in Longnor, Shropshire, May 14, 1783, died in Barley, Hertfordshire, Dec. 16, 1852. He was the son of poor parents, was educated at the charity school of his native village, and at the age of 12 was apprenticed to a carpenter. While laboring at his craft he mastered the Latin, Greek, Hebrew, Chaldaic, and Syriac languages. He subsequently acquired a knowledge of Arabic, Persian, French, German, and Italian, with the assistance of Archdeacon Corbett, who in 1810 procured his appointment to the mastership of a foundation school at Shrewsbury. He entered Queen's college, Cambridge, in 1813, was graduated in due course, took orders, and in 1819 became professor of Arabic at his university. In 1831 he was elected regius professor of Hebrew in the university of Cambridge, which in 1833 conferred on him the degree of D.D., an honor received by him more than 10 years before from the German university of Halle. His chief publications were: "Hebrew Grammar" (1830); "The Travels of Ibn Batuta," translated from the Arabic (1833); a translation of Job (1837); and a "Hebrew and English Lexicon" (1840).

LEE, SOPHIA, an English authoress, born in London in May, 1750, died at Clifton, near Bristol, March 13, 1824. Her father, a man of acquirements and amiable character, who had been attracted to the stage by the genius of Garrick, gave every attention to the education of his children, and upon the death of his wife found a ready and competent assistant in his eldest daughter, Sophia. The latter made her first appearance before the public in 1780 as the author of a comedy entitled "The Chapter of Accidents," which was brought out at the Haymar-

ket theatre with great success. In the succeeding year her father died, and Miss Lee removed with her sisters to Bath, where she devoted the profits of her play to the establishment of a young ladies' seminary, over which she and her sister Harriet presided for many years. In 1785 she published the "Recess," a historical tale of a rather sombre character, which attained considerable popularity, and which was followed by "Almeyda," a tragedy, performed with moderate success; the "Life of a Lover," a novel in 6 vols.; and an unsuccessful comedy, the "Assignation." She also furnished the "Young Lady's Tale" and the "Clergyman's Tale" to the series of "Canterbury Tales," written by her sister Harriet and herself, which are considered her best productions. In 1803 she gave up her seminary, and passed the remainder of her life in retirement. Her conversational powers were remarkable.—HARRIET, sister of the preceding, born in London in 1756, died at Clifton, Aug. 1, 1851. Her first appearance as an authoress took place in 1786, when she published the "Errors of Innocence," a novel in 5 vols., succeeded by several others now forgotten. In 1797 appeared the first volume of her "Canterbury Tales," followed at intervals of a few years by 4 others under the same title, the contents of which were for the most part of her own composition. They enjoyed a great popularity in the early part of the century; and a new edition was published in New York in 1856-'7 (3 vols. 12mo.). One of the most remarkable is "The German's Tale—Kruitznar," from which Lord Byron borrowed not merely the plot and the machinery down to the most trivial incidents, but in some instances the language, of his "Werner." She also produced two dramas, the "New Peerage" and the "Three Strangers," the latter of which failed at Covent Garden in 1835.

LEE, THOMAS, an American judge and politician, born in Charleston, S. C., Dec. 1, 1769, died Oct. 23, 1839. He was educated in his native city, and became a student of law at the age of 16. He was elected at an early age to the legislature as a member of the republican party, and served for several years. In 1794 he became a state solicitor, and in 1804 one of the associate judges of the state. The latter office he resigned in consequence of ill health, and was shortly after made comptroller-general of the state, in which position he remained till 1816. In the following year he became president of the state bank of Charleston; in 1822 he represented St. Philip's and St. Michael's in the state legislature, where he spoke with great effect; and in 1823 was appointed by President Monroe judge of the U. S. district court for South Carolina, which office he held till the close of his life. He presided in this court in the period of nullification, when the Bond case came up for the recovery of duties under the tariff; and he ruled out the defence offered by Mr. McDuffie under the state ordinance by which the tariff had been vetoed in South Caro-

lina, and thus defeated the attempt to bring the case before a jury. He was one of the leaders of the union party in this conflict, and an able writer in its defence. He was also active in the temperance reform and in benevolent enterprises.

LEECH, a red-blooded, footless, smooth-bodied, abranchiate annelid, of the family *Hirudineæ*, and genus *sanguisuga* (Sav.) or *hirudo* (Linn.). The body is soft, retractile, composed of numerous segments, with a sucker at the posterior extremity, serving both to attach and to move the animal. The muscular system is well developed, closely embracing the viscera; the sucker has both circular and radiating fibres. The nervous system consists of a large anterior cerebral ganglion, and a chain of ventral ganglia connected by two contiguous cords; the ganglia are fewer than the segments, the first and last being the largest, the former sending filaments to the lips and the latter to the sucker; there is also a splanchnic system of small anterior ganglia which send filaments to the parts about the mouth and to the intestinal canal. The sense of touch is particularly developed at the anterior extremity. There are 10 eye specks symmetrically arranged upon the neck, each a transparent cylindrical body bulging out under the skin like a cornea, enveloped in a layer of black pigment, receiving a filament from the cephalic ganglion, according to Wagner having a lens and a vitreous body (though this is denied by others), and constituting light-perceiving if not light-refracting organs. The flattened body tapers toward each end, the mouth being at the anterior extremity and provided with a sucking apparatus; at the base of the pharynx are 8 fleshy swellings, the projecting border of which is edged with bicuspid teeth, causing wounds shaped like a 3-rayed star. The intestinal canal is straight, but deeply constricted in many places, each such portion sending off short caeca on each side; the anal opening is on the back directly above the posterior sucker. There are salivary glands around the commencement of the intestine, and a glandular hepatic organ envelopes a great part of this canal. The blood contains colorless granulated globules; there is a central contractile vessel, and a circulation and oscillation in longitudinal and lateral vessels. Respiration is effected by means of 17 pairs of internal branchiæ or aquiferous canals without ciliated epithelium, opening upon the ventral surface of the body, and surrounded by a net-work of blood vessels. Reproduction is effected by sexual organs, and the two sexes are united in the same individual, they being true hermaphrodites; the eggs, from 6 to 15, are contained in a cocoon surrounded by a thick spongy substance said to be ejected from the mouth, deposited near the edge of the water, and hatched by the heat of the sun; the young leave the egg without undergoing any metamorphosis. The leech inhabits the water principally, and swims with a vertical undulating motion; out of the water it moves by the

diaks or suckers, fastening itself first by one and then by the other, alternately stretching and contracting the body; it is torpid in winter, biding in the mud; it can live a long time in sphagnum moss or in moist earth, and can thus be transported for long distances. Leeches live at the expense of other animals, whose blood they suck; they attach themselves to fishes, batrachians, invertebrates, and to mammals and men that venture into the fresh waters inhabited by them. Many species are used for medical purposes, of which the most common are the gray and the green leeches of Europe (*S. medicinalis* and *officinalis*, Say.), generally considered varieties of one species; both have 6 longitudinal ferruginous stripes on the back, the 4 lateral ones interrupted by black spots; the back varies from blackish to grayish green; the under parts in the first variety are greenish with black spots and edgings, in the second yellowish green without spots; the length varies from 2 to 4 inches. They formerly inhabited in great numbers the marshes and streams of most countries of Europe; but of late years the demand for medical purposes has exhausted most of the localities in central and southern Europe; the Swedish leeches are now generally considered the best. There are many American species, of which the *hirudo decora* (Say) is extensively used in the interior of the middle states; the color is deep greenish above with 8 rows of square spots, the central brownish orange, and the lateral black; the under parts are spotted with black; it varies in length from 3 to 5 inches; it is especially abundant in Pennsylvania, and several hundred thousand are employed annually.—Leeches afford the least painful and in many cases the only practicable means of local depletion, and are precious instruments in the hands of the physician. They will generally bite eagerly, and will draw from $\frac{1}{2}$ of an ounce to an ounce of blood, according to the vigor and size of the animal and the vascularity of the part to which it is applied; when full they drop off, though they will sometimes continue to draw after their tails are cut off; the application of a little salt will make them drop at any time; bathing the part with warm water will increase the quantity of blood lost. When gorged with blood, digestion may not be completed for many months; hence it is customary to strip them by drawing the body between the fingers from the tail to the head, the little that remains serving to keep them in good condition for a long time, if they be kept in clean and frequently changed water. Full leeches are liable to disease and to induce it in others, and should be kept by themselves, not to be used until they have regained their activity; as they often change the slimy coat on their skin, they require moss and roots to draw themselves through in order to keep healthy. In the rare cases in which leech bites bleed too long, the flow may be arrested by pressure, alum solution, caustic, or a superficial suture. The application of leeches requires some skill and attention, and

is often usefully placed in the hands of special practitioners, both male and female.—The horse leech (*hamopsis*, Sav.) is a larger species, differing principally by the oval and slightly toothed jaws; it will not attack man, and it is doubtful if it attaches itself to horses and other animals; it devours other worms, swallowing them whole. The leech family is a large one, and can be studied only in special treatises, of which a long list is given in the chapter on annelids in Siebold's "Comparative Anatomy."

LEECH, JOHN, an English humorous artist, born in London about 1816. He was educated at the Charterhouse, and soon after the establishment of "Punch" brought himself into notice by his humorous illustrations for that serial. Several thousand sketches, illustrating the politics, fashions, and follies of the day, testify to the industry of his pencil and the fertility of his invention; and the greater part of these, though hastily thrown off, have artistic merit as well as humor, the drawing and expression being in most cases excellent. The social extravagances of England have never found a more apt or kindly delineator; but in sporting scenes, particularly those in which the horse is introduced, he is preëminent. He has been connected with "Punch" almost ever since its establishment, and has from time to time published collections of his pictorial contributions to its columns, of which 8 volumes have appeared, entitled "Pictures of Life and Character, from the Portfolio of Mr. Punch," each containing 500 woodcuts. He has also illustrated several of Albert Smith's novels, the "Comic History of England," &c., and has published under his own name "The Rising Generation, a Series of Twelve Drawings on Stone" (1848), and other works.

LEEDS, an E. co. of Canada West, on the N. bank of the river St. Lawrence; area, 805 sq. m.; pop. in 1851, 80,280. It has a rough, hilly surface, diversified by a number of small lakes in which rise Cataragui and Rideau rivers. The soil is generally fertile. Wheat, oats, potatoes, Indian corn, peas, buckwheat, and rye are the principal productions. Capital, Brockville.

LEEDS, a municipal and parliamentary borough of the W. riding of Yorkshire, England, situated on both sides, but chiefly on the left, of the navigable river Aire, 24 m. W. S. W. from York and 206 m. by railway N. N. W. from London; pop. in 1851, 172,270; in 1858, estimated at 191,693. Its site was probably at one time a Roman station; it was subsequently occupied by the Northmen, and in succession by the Saxons and Normans. The name *Loidis* (Leeds) is Saxon. As a manufacturing town it dates back only to the 16th century. The principal and best part of Leeds stands on the slope of a hill N. of the Aire. Most of the town is irregularly built, with narrow and crooked streets; but in the centre and W. the streets are wide and handsome, being lined with modern buildings. Two stone bridges and 4 of iron cross the river, on the S. side of which are the

extensive suburbs of Holbeck and Hunslet. The streets are well paved and the sidewalks flagged and lighted with gas, and an abundant supply of water is conveyed from the Harewood hills, 5 or 6 miles distant. There are many handsome public buildings. Many new buildings have been erected within the last few years, as a Roman Catholic church, a market hall, and especially the town hall, completed in 1858. Improvements are in steady progress. The largest buildings are the cloth halls, in which the cloth markets are held, the commercial buildings, 3 market houses, the corn exchange, the court house, the town hall, the stock exchange, the gaol, the cavalry barracks, &c., and the places of public amusement. Many of the churches are large and elegant buildings. In 1851 there were 187 places of worship, of which 86 belonged to the church of England. The total number of sittings provided was 76,488. In the same year Leeds had 371 day schools, of which 76 were public with 13,176 scholars, and 295 private with 8,658 scholars. Included among these is the Leeds free grammar school, founded in 1552 and endowed with an income of about £2,000 per annum; in 1851 it had 169 scholars. The number of Sunday schools was 147, with 28,761 scholars. The industrial school at Burmantofts, opened in 1848, is a large and very complete establishment, the buildings forming a capacious and ornamental Elizabethan pile, and the grounds covering 6 acres. Leeds possesses an excellent library founded by Dr. Priestley in 1768; the library and museum of the literary and philosophical society; a mechanics' institution with 2,000 members and 8,000 volumes; a school of design, a medical school, &c. The charitable institutions are: the Leeds infirmary with 150 beds, the house of recovery for fever patients, a dispensary, an eye and ear infirmary, a lying-in hospital, and several almshouses for the poor and aged. Leeds is particularly distinguished for its musical festivals. Mr. Robert Baker, one of the inspectors of factories, estimates the increase of population in Leeds at 12 per cent. from 1851 to 1858. The number of inhabited houses in Leeds proper in 1851 was 21,061, and in 1858 23,518. The woollen manufacture in 1858 employed 10,193 persons, who received £370,995 in wages; the number of firms engaged in them was 128. There were 953 power looms and 16 rag machines; nominal horse power 2,924. The worsted trade in 1855 employed 9 mills, with 9,716 spindles, 655 power looms, and 1,077 persons; in 1858, 4 mills, 120 horse power, with 10,000 spindles, and only 540 persons. The flax manufacture consumes annually 12,000 tons of flax, and employs 32 firms, 1,818 horse power, 9,020 persons of all ages, 149,454 spindles, 352 power looms, and 340 hand looms. Dyeing, iron and machine making, the manufacture of paper, tobacco, pottery, oil, and chemicals, and coal mining, form also important branches of industry. The coal and iron miners are estimated at 2,000, and nearly 700,000 tons of coal are consumed by 256 en-

gines of 5,540 horse power. There is also a large silk manufactory employing 550 persons. Nearly $\frac{1}{2}$ of the whole population, or about 46,000, half of whom are females, were employed in the various manufactories in 1858, receiving £1,752,689 in wages. Notwithstanding this increased prosperity, there is still much pauperism, and 17,487 poor were relieved in 1857. No other town in England is so admirably situated for trade, being placed in the heart of the inland navigation of the country. It communicates with the sea eastward by means of the Aire and Calder navigation to the Humber, and westward by the Leeds and Liverpool canal to the Mersey. The warehouses of the Aire and Calder company are of great dimensions, and there are convenient docks. Leeds is also the centre of a net-work of railroads converging to it from all parts of the country, and placing it in connection with every important town of the kingdom. The borough, which is divided into 13 wards, is governed by 16 aldermen and 48 councillors, one of whom is mayor; it sends two members to parliament. About 2 m. from Leeds are the ruins of Kirkstall abbey.

LEEMANS, CONRADUS, a Dutch archaeologist, born in Zalt Boemel, Gelderland, April 28, 1809. He studied theology and archaeology at the university of Leyden, and in 1829 went to Paris, where he remained two years. He returned to his country to take part in the war against Belgium, and after its conclusion made a visit to England. He has officiated since 1839 as director of the museum of Leyden. Having long studied Egyptian antiquities, he published in 1835 a critical edition of the *Hieroglyphica* of Horapollon, and began the publication of a great work on the Egyptian antiquities of the museum of Leyden, which was concluded in 1854. He has also published various other works of a similar character.

LEES, FREDERIC RICHARD, an English temperance orator, born at Meanwood Hall, near Leeds, Yorkshire, March 15, 1815. He was educated for the law, but abandoned it in consequence of ill health and distaste. When 19 years old he connected himself with the temperance cause, and in the following year with the total abstinence movement, and has ever since been its most prominent advocate. His first appearance as a public debater on this question was at a great meeting in Leeds in 1836. From 1837 to 1840 he held various discussions with the Owenites, and published in 1838-'9 the "Metaphysics of Owenism Dissected." From 1841 to 1844 he gained several prizes for essays on temperance; and in 1856 he gained £100, offered by the United Kingdom alliance for an argument for the legislative prohibition of the liquor traffic. In 1843 he held a discussion with Mr. Jefferson, a surgeon, in which he explained the bearing of the discoveries of Liebig on the temperance question. In 1845 he started "The Truth Seeker in Literature, Philosophy, and Religion," a magazine devoted to free and catholic inquiry, and to transcendental and spiritual

philosophy, which continued through 6 volumes. In 1848 he held discussions with several of the physicians of Newcastle, and was presented with a public testimonial. In 1853 he visited the world's temperance convention in New York as the representative of the British temperance associations of the north of England, and in 1856 and 1857 he attended the international congress of benevolence at Brussels and Frankfort, as a representative of the United Kingdom alliance. In 1842 the university of Giessen conferred upon him the degree of Ph.D. In 1860 he received a public testimonial of 1,000 guineas from the friends of temperance in Great Britain. Mr. Lees contributed a number of articles on the wines of Scripture to Kitto's "Cyclopædia of Biblical Literature," and is the author of a "History of Alcohol" (1848), and of a "Treatise on Logic, or the Method, Means, and Matter of Argument."

LEESER, ISAAC, an American rabbi and religious writer, born in Neukirch, Westphalia, in 1806. In 1825 he emigrated to the United States, where for a short time he devoted himself to commerce. In 1829 he became rabbi of the principal synagogue of Philadelphia, and has since acquired an extensive reputation by his contributions to literature, referring principally to Jewish history and theology. Since 1848 he has edited "The Jewish Advocate" (or "Occident"), a journal devoted to the interests of his creed. Among his works are: "The Jews and the Mosaic Law" (1833); "Discourses, Argumentative and Devotional" (1836-'40); "Portuguese Form of Prayers" (1837); a "Descriptive Geography of Palestine;" and a translation of the Hebrew "Holy Scriptures" according to Jewish authorities (1856).

LEEUEWARDEN, a town of Holland, capital of the province of Friesland, situated in a fertile plain on the Ee, 10 m. from the sea, and 70 m. N. E. from Amsterdam; pop. about 27,000. It is well built, intersected by numerous canals, and connected by others with Harlingen, Groningen, and Delfzyl. The principal buildings are the ancient palace of the princes of Orange, the government house, the old Landhuis, &c. It has a society for Frisian history, antiquities, and language, a natural history society, and also various manufactures.

LEEUEWENHOECK, or LEUEWENHOEK, ANTONIUS VAN, a Dutch naturalist, born in Delft, Oct. 24, 1632, died there, Aug. 26, 1723. He had no learned education, and in early life was engaged in mercantile pursuits. He applied himself during his spare moments to science, and attained the reputation of making the best microscopes in Europe. By his applications of the microscope, and by the researches in physiology to which these applications conducted him, he attracted the attention of the royal society of London; and the greater part of his writings, containing accounts of his discoveries, were published in the English "Philosophical Transactions." He made many remarkable investigations, and anticipated in his physiological dis-

coveries much which has been confirmed in modern times. His assertions with regard to the circulation of the blood, the nature of the brain and nerves, and the structure of the crystalline lens, agree very nearly with the results of modern experiment. His industry as well as his ingenuity was very great, but he formed many fanciful and erroneous theories, being often led astray by preconceived opinions. His investigation of the spermatric animalcules, which he claimed to have discovered in 1677, excited the curiosity of many naturalists, and they were afterward made the subject of much research and of many books by Buffon, Needham, Spallanzani, Prevost, Dumas, Wagner, and others. Leewenhoeck's life was passed in scientific research and in manufacturing optical instruments in his native city. He was visited by Queen Mary, and was invited to visit the czar Peter when that sovereign was in Delft. His writings were collected and published separately in Dutch at Delft and Leyden. They also appeared in Latin (Delft, 1695), and a selection of his works, containing his microscopical discoveries in many departments of nature, translated into English by Samuel Hoole, was published in London, 1798-1801.

LEEWARD. See LEE.

LEEWARD ISLANDS, a name applied to certain of the West India islands which, in sailing from Spain to Carthage or Porto Bello, lie to leeward, while a cluster to the S. of them are called Windward islands. The Leeward group comprises the British islands Dominica, Montserrat, Antigua, St. Christopher, Anguilla, and the Virgin group, the French islands Guadeloupe and Marie Galante, with the Danish and Swedish and most of the Dutch possessions in these waters.

LEFEBVRE, FRANÇOIS JOSEPH, a French marshal, born in Ruffach, Oct. 25, 1755, died in Paris, Sept. 14, 1820. He was the son of an Alsatian miller, enlisted in 1778 as a private soldier in the French army, was a sergeant at the commencement of the revolution, was rapidly promoted to the rank of general of division, and distinguished himself on many occasions by his bravery, especially at the battle of Fleurus (1794). On June 4, 1796, he led the van of Kléber's army in the attack on the Austrian position at Altenkirchen, and on March 20, 1799, at the battle of Stockach, maintained his ground for several hours with 8,000 men against a force of 86,000 Austrians. Having aided Bonaparte to overturn the directory, he was appointed to the command of the military in and around Paris, became a senator, and in 1804 was made a marshal of France. In 1806 he accompanied Napoleon against Prussia, and in the battle of Jena commanded the foot guards. He was next placed in command of the forces sent to reduce Dantzic, which surrendered May 24, 1807, after a siege of 51 days; and on the 28th he received the title of duke of Dantzic. He subsequently served in the Peninsula, was present in 1809 at the battles of Eckmühl and Wagram, and par-

ticipated in the Russian expedition as commander of the imperial brigade. On the downfall of the emperor, Louis XVIII. created him chevalier of St. Louis and a peer of France; but having retained his seat in the imperial senate during the Hundred Days, he was excluded on the second restoration from the chamber of peers. His rank was restored to him in 1819.

LE FORT, FRANÇOIS, a Russian general of Swiss origin, born in Geneva in 1656, died in Moscow, March 1, 1699. He early became a cadet of the Swiss guards in the French service, entered the army of Holland in 1674, and soon after went to Russia, where he received a captain's commission from the czar Alexia, and fought under Romadanoffski against the Turks and Tartars. After the death of Fedor III. in 1682, and the joint accession of the half brothers Ivan and Peter, he espoused the interests of the latter, took an active part in the movement which raised him to supreme authority in 1689, by removing his sister Sophia from the court, and at once became his chief minister. Peter intrusted to him the reorganization of the army after the European model, and appointed him general admiral, in which capacity he vigorously seconded the czar's efforts for the creation of a navy. In celebration of the first success of the new army and navy in the taking of Azof in 1696, a magnificent triumphal entry was prepared for the troops, in which Le Fort, borne on a chariot in the form of a marine shell, held the place of honor, the czar walking behind him. Le Fort also exercised great influence in ameliorating the laws of Russia, secured religious toleration for foreigners, and was either the originator or most efficient promoter of many of the grand improvements which distinguished the reign of Peter the Great.

LEGACY (Lat. *legatum*, from *legare*, to bequeath), a gift of any personal property by will. In Rome the general law determined uniformly who should succeed to the political, social, and personal rights of one who had died; but a member of the *populus* might get a special law passed by the *comitia curiata* authorizing an alteration of the usual rules for the distribution of property. A testament was, therefore, nothing else than a private law, and hence *legare*, from *lex*, came to be used as the appropriate word for making testamentary dispositions. The peculiar feature of the testament was the institution of an heir, that is, of a person who was to succeed to the *persona* of the testator. A legacy was an injunction to this heir to give or pay over to a third person a part of the inheritance. The word was never applied, as in the English law, to a direct bequest; and if there was no heir, the legacy necessarily failed. In our law, a legacy is a gift or bequest of goods or chattels by testament. The probate of a will or testament concerns only the personalty; and as no testamentary disposition of such property can be administered without the interposition of a representative of the deceased, the court, if no executor was appointed by the will,

or if he who was appointed declines to accept the trust, will itself assume the nomination of an administrator. In him all the personal property is vested, and it is his office to estimate the assets and pay the debts of the deceased, and to divide the surplus, if any, according to his will, or according to the general statutes of distribution. A legatee acquires indeed, under the testament itself, an inchoate right to the legacy; but this is perfected only by the assent of the executor, or other representative of the testator.—Legacies are said in law to be general, specific, or demonstrative. The two former of these must be nicely distinguished from each other (though in fact it is not always easy to do so), because upon a deficiency of assets general legacies must abate for the payment of debts, while specific legacies are subject to abatement only when all other funds are insufficient; on the other hand, specific legacies are, from their nature, liable to ademption, while general legacies are not. A legacy is general when it does not bequeath a particular thing or part of the testator's personal estate by distinguishing it from all others of the same kind; thus, the gift of a horse or of a diamond ring, without indicating any particular horse or ring, is a general legacy. So bequests of money for a ring or to purchase government securities, or of an annuity to be purchased out of or charged to the personal estate, or of so much money to be paid in cash, have been construed to be general legacies. A legacy is specific when it refers by particular description to a certain chattel, and shows an intention that the legatee shall have the very thing, and not merely an equivalent value. For example, the gift of "my East India bonds," or of "a sum of money now in the hands of A," or of "the money due on B's note," is a specific legacy. In the construction of wills the presumption both at law and in equity is in favor of general legacies, but clear evidence of a testator's intention will support a specific gift. Demonstrative legacies partake in some respects of the qualities of both those just mentioned, and may be defined to be those which in their nature are general, but are to be satisfied, according to the will, out of a particular fund; thus, "1,000 dollars out of my bank stock." This kind of legacy possesses the better qualities of both the others. It is so far general that it is not adeemed by mere change in the fund out of which it is to be satisfied, and so far specific that it does not abate with general legacies for the payment of debts. It has already been mentioned that specific legacies may be adeemed; that is, if the subject of a specific legacy recited in the will be not in existence at the time of the testator's death, then the bequest entirely fails. Thus, if a debt specifically bequeathed be received or discharged by the testator, it will be adeemed, for there remains nothing for the will to operate upon. So the legacy of goods in a particular place is adeemed by their removal. But a specific gift is not adeemed by the testator's pledge of the subject of it, and the legatee will be

entitled to have it redeemed by the executor, and, if the latter fails to do so, to receive compensation out of the general assets. The plain rule in respect to ademption is to inquire whether the thing given existed *in specie* at the decease of the testator. This is the rule laid down by Lord Thurlow, who adds that any discussion of the particular motives and intentions of the testator is entirely foreign to the matter, as indeed it would only tend to produce uncertainty and confusion. This is certainly true when the subject of the gift has been destroyed by the testator's own act, though it would be otherwise perhaps if the character of the thing were changed by operation of law. A demonstrative legacy is not adeemed by a failure of the particular fund upon which it was charged. The value is the principal thing; the particular fund designated is only accessory and of secondary importance, and if it no longer exist, the bequest must be satisfied out of the general assets.—A legacy lapses if the legatee die before the testator, or, if after his death, yet before the contingency happened upon which the legacy was to vest. The general and well established rule of the common law is, that unless the legatee survive the testator, the legacy is extinguished. Statutes in many of our states have changed this rule, and extend the benefit of legacies frequently to the lineal descendants of legatees. The consequences of lapse may always be avoided by special provisions in the will; but not only must the testator express clearly his wish in this respect, but must also substitute in some way a person capable of taking instead of the deceased legatee. The second class of cases under the head of lapse comprises those in which the legatee dies after the testator. The general rule of the law is, that when a legacy is given without specifying any time for its payment, it is due on the death of the testator, although not payable until after one year. This year being intended only for the convenience and safety of the executor, it is not permitted to prevent the vesting of the legacy; and if the legatee die within the year, the bequest goes to his representatives. But if the testator have made any conditions of future payment, the courts examine into his intentions in order to determine whether the interest in the legacy be vested or contingent. In this respect, and concerning familiar cases, two very well settled rules are found in practice. First, if a legacy be "payable" or "to be paid" at any certain time, as "when the legatee arrives at the age of 21," it confers a vested interest immediately on the testator's death, and is transmissible to personal representatives. Secondly, if a gift of property be to the legatee "at 21" (and not merely payable at that age), or when, or if, any determinate thing shall happen, then the time becomes an essential element, and the legacy is contingent; if then the legatee die before the precedent condition be performed, the legacy lapses and fails entirely. With respect to the vesting of legacies charged

upon real estate, the general rule seems to be that when the gift is immediate, but the payment postponed, it is contingent, and will fail if the legatee die before the time of payment arrives; but when the payment is postponed merely in regard to the convenience and circumstances of the person and estate charged with the legacy, and not on account of the age, condition, or circumstances of the legatee, it will be vested, and must be paid although the legatee should die before the time of payment.—Finally, legacies may be lost not only by ademption and lapse, but also by abatement. In the administration of the estate by the executor, legacies must be applied to the payment of debts, if other property is insufficient. General legacies are to be applied before specific, the whole if all be needed, or *pro rata* if the aggregate thus obtained will suffice. But general legacies given for any valuable consideration, as for the relinquishment of dower by the widow, or for a debt actually due, will receive consideration and indulgence before all others. The same remark is true when it is the declared or evident intention of the testator to prefer one legatee to another. Specific legacies suffer abatement only after complete exhaustion of general and residuary legacies. In England, those to whom specific and demonstrative legacies are given can compel the devisees of land not charged to contribute with them *pro rata* toward the payment of debts. This rule is not admitted in the United States, though general residuary devisees of land have been charged in the marshalling of assets for contribution to payment of debts before specific legatees.—On the testator's death the entire personal property vests in the executor, who holds it in trust for the payment of debts and other claims. No legacy can be received by the legatee without the assent of the personal representative, though if he withholds this improperly he may be compelled in a court of equity to give it. Probably, under the usual statutes in force in this country, this assent cannot be given until the receipt of letters testamentary from a probate court or other competent jurisdiction in the premises. Statutes generally direct that legacies shall not be paid until a year has elapsed from the time of issuing the letters of administration. If however the will directs the bequest to be paid earlier, the administrator must comply, and may take for his security a bond of indemnification in case of failure of assets. Legacies are then payable at the end of a year. From this time therefore interest is in general to be computed, if at all; but that will depend upon the general rules of law, founded upon the intention of the testator and the equity of the case. Thus, if the legacy be the only provision for the support of a child, interest will be allowed upon it from the death of the testator, and not merely from the expiration of a year after it. So, when a legacy is given to a widow in lieu of her dower, or is given in satisfaction of a debt, or is charged on real property, and no time is fixed

for the payment, interest will be allowed. Payment must be made to the party who is entitled to receive it, and such a one may recover his legacy from the executor though he have even honestly paid it already to the wrong person.—At common law a father is not entitled to receive testamentary gifts bequeathed to his children. In New York and some other states this matter is made the subject of legislative provisions. Legacies less in amount than \$50 may be paid to the father, and his receipt will protect the executor. If the amount be greater than \$50, the executor must pay to the child's general guardian, or, if there is none, must invest the legacy in permanent funds, under the direction of the surrogate, for the infant's benefit. At common law a bequest to a married woman must be paid to the husband. This may be changed by statutes, as it is by many late married woman's acts, under which wives may take, not only by bequest, but also by devise and gift, and hold the property so received to their sole and separate use.

LEGARÉ, HUGH SWINTON, an American statesman and man of letters, born in Charleston, S. C., Jan. 2, 1797, died in Boston, June 20, 1843. On the father's side he was of French Huguenot stock; on the mother's Scottish. Inoculated with small pox when a child, according to the medical practice of that day, the disease fastened on his lower limbs, showing itself in imposthumes, which finally impaired the growth and integrity of the joints and tendons, and crippled for a time the development in those parts. His physical infirmities, which kept his childhood weak, were probably favorable to the development of his intellect. Books were his only refuge. His early education, as soon as he became sufficiently strong, was conducted in Charleston, at first under the care of Mr. Ward, an English teacher; and at the age of 9 he was confided to the care of the Rev. Dr. Gallaher, a Catholic priest, of great reputation in that day and place as a classical scholar and teacher. He was transferred from the school of Dr. Gallaher at about the age of 11 or 12 to the college of Charleston, where he remained but a short time, and probably learned little. We find him next at the school of Dr. Moses Waddell, in Abbeville district, a classical teacher of high rank and a rigid disciplinarian. He entered the South Carolina college at the age of 14. Here he devoted himself mainly to classical literature and philosophy, and practised in the debating societies with passionate eagerness. To the exact sciences he did not much incline, but his college term of 4 years was one of incessant toil and exercise, though the results do not seem to have satisfied himself. "I learned nothing at college," he said on one occasion. "It was by the midnight lamp in solitary studies, after I had left college, that I acquired all that I know, first recovering what I had lost." Moderately acquainted with Latin and Greek, Legaré had revelled in poetry, philosophy, and history; and these provinces he

continued to explore, as more than any other calculated to conduct him to eloquence. This was his earliest ideal. And these studies led him to the modern languages, the French, Spanish, Italian, Portuguese, German, Dutch, and even the Romaic and Provençal; all of which he acquired, more or less thoroughly, in the course of a few years. Nor in these studies did he neglect the classics. Greek and Latin, indeed, were arbitrarily enforced in his severe self-discipline, as paramount objects; and the modern languages, however diligently urged, were kept, as it were, tributary to the superior claims of the former. His studies in the classics, however, were pursued with reference to their literature, rather than in the desire to master mere philological niceties. His acquaintance with Greek literature, in which he exercised himself daily, was scarcely equalled in this country. He was very familiar with the Latin, but did not regard its literature with any peculiar admiration, except the orators. He spoke and wrote in French as freely as in English. From the writings of Dante down to the period of Alfieri he was familiar with Italian letters, and could appreciate the music and the arts of Italy as an exponent of its genius, equally rich and pure with its tongue. Roman jurisprudence was also a favorite study. In English literature, he read particularly the old masters; Milton's prose and verse were his especial favorites. Of German he afterward acquired a thorough knowledge. The physical obstacles to his becoming an orator were far from inconsiderable. He practised gesticulation, in correspondence with voice, in order to overcome whatever embarrassments of action and manner might arise from his imperfections of person, and with the further view to grace, propriety, and impressiveness. His habit was to declaim in solitude by the sea shore, in the forest, in hollow vaults, and great halls, in various attitudes, climbing hills while he spoke, and sometimes prostrate upon the earth. He acquired, through this training, the happiest mastery over his voice; it became true and flexible, and, under his perfect command, was capable of the most delicate variations. He was graduated at the South Carolina college in Dec. 1814, with its highest honors, and returned to Charleston. The law had been already decided upon as his profession, and for 3 years he devoted himself to a course of legal study. In 1818 he embarked from Charleston for France. Thence he proceeded to Edinburgh, and entered the classes of civil law, natural philosophy, mathematics, and chemistry, over which presided Irving, Playfair, Leslie, and Dr. Murray. But his chief study here was the civil law, giving 8 hours a day to the lectures and 8 or 10 to Heineccius, Cujas, and Terrasson. Finishing his winter course in Edinburgh, he proceeded to London, where he passed a portion of the summer; returned again to France, and occupied the autumn in seeing that country, Belgium, Holland, the Rhine, and the Alps. Disturbances in Germany, with probably some diminution of his

resources, defeated his plan of going to Göttingen, or seeing any part of Germany at this period. He returned to Charleston after an absence of two years. At home, a large portion of his time was now devoted to retrieving the plantation affairs of his widowed mother, which needed active and vigilant supervision. He thus became for two years a cotton planter on John's island, but not to the neglect of his legal studies. Meanwhile, he was elected to the lower house of the general assembly of South Carolina for its biennial term from 1820 to 1822. Here he proved equally his working talent and his eloquence. In 1822 he removed to Charleston, and engaged for the first time in the active duties of his profession. But the very reputation which he had already won as a man of letters was a barrier to his success as a practitioner. He got little practice, except that which was thrown into his hands by such men as Petigru, Mitchell, King, and others, the leaders of the Charleston bar, and he had the mortification of feeling that he made no progress in the one profession to which, over all, he had dedicated his life. In 1824 he was chosen from the city a representative in the legislature of the state, and thus continued until 1830, when he was elected the attorney-general. Here began a perilous period in the domestic history of the state, and one which threatened the confederacy. It was the opening of the great question of nullification. Mr. Legaré resisted the doctrine, and, though from his habits not prepared to lead, was yet an active, eloquent, and ready speaker on the side of the union party. Pending this conflict, and at a period when no one anticipated its result, the "Southern Review," a quarterly magazine, was established, ostensibly under the supervision of Stephen Elliott. Legaré was his coadjutor, and the writer upon whom he mostly relied. He wrote the initial article of the first number, on "Classical Literature," and continued to write in each successive number one, two, three, and sometimes more articles, on some of his favorite subjects. On certain occasions, when the usual contributors failed, he has been known to furnish one half of the contents of the "Review." It was suspended after the 8th volume, Legaré having been the editor after the death of Elliott. Meanwhile, Legaré maintained his position as attorney-general, with a degree of successful ability that somewhat surprised those who had thought lightly of his legal endowments and attainments. A case which carried him before the supreme court at Washington enabled him to exhibit some portion of his vast resources, and his argument was considered an extraordinary success. Mr. Livingston, secretary of state, and at that time one of the greatest of our civilians, bestowed upon him the most flattering compliments and attentions, and in 1832 tendered him the office of chargé d'affaires at Brussels. This appointment was accepted; and now, with every facility for acquisition, Legaré devoted himself to letters once more, perfecting his knowledge of German, Low

Dutch, Romaic, &c., and dedicating himself anew to ancient jurisprudence, the Roman and civil and international law. Nor was he neglectful of statesmanship. His correspondence and public despatches are sufficient proof not only of his perfect adequacy to his situation and his vigilance, but of his deeper insight into the principles which govern or should govern states and communities, than is commonly the case even with the diplomatic veteran. He was invited home by friends, who desired the re-establishment of the "Southern Review," and wished him to take charge of it; but he declined the invitation. The state of South Carolina would have placed him at the head of her college; so, too, would the state of Kentucky. He declined all such overtures. In the autumn of 1836 he made a tour among the seats of learning in northern Germany, and then returned home. In his published remains, the "Diary of Brussels," &c., will afford some idea equally of his travels, studies, and experiences. Almost immediately after his arrival at Charleston, he was elected to the lower house in congress, taking his seat in the extra session of 1836, called to deliberate on the financial embarrassments of the country. In the debates which followed he greatly increased his reputation by his brilliancy, his wide grasp of the subject, and the logical fitness and force of his arguments. But his course in relation to the sub-treasury project did not please his constituency, and he was thrown out at the next election. This defeat forced him back upon his profession, to which he now addressed himself with more determined purpose than ever. He was soon employed in some cases of singular magnitude, then pending in the courts of South Carolina. In the case of "Pell and Wife vs. the Executors of Ball," he achieved a great triumph, at once of argument and eloquence, which was everywhere acknowledged. The reputation of a great lawyer, however slowly acquired, in his native city, could no longer be denied him. In the presidential canvass of 1840 he again took part in politics in favor of Gen. Harrison. About this time, also, he began a series of brilliant papers in the "New York Review" on "Demosthenes," "The Athenian Democracy," "The Origin, History, and Influence of the Roman Law," &c. While thus engaged, he was appointed by President Tyler attorney-general of the United States. Mr. W. O. Preston, his eulogist, speaking of him during his term of office, remarks: "His practice as attorney-general was attended with the most conspicuous success. Many of the judges expressed their great admiration of his efforts during the first term, and the whole bench awarded to him the palm of exalted merit. His official opinions, delivered on questions arising in the administration of government, were formed with laborious deliberation, clearly and ably argued, and have been sustained without exception. On the very important question whether, upon the expiration of the compromise act, there was any law for the fur-

ther collection of revenue, he differed from a great majority of the bar, and from most of the leading politicians in congress, of both parties—it is supposed, too, from a majority of the cabinet; but his opinion has been ascertained to be correct." His office gave him ample employment, and sufficiently tasked his vast legal resources, but always to the increase of his reputation. He gave important aid in the conduct of the Ashburton treaty, and the president confided to him the care of the state department when vacated by the withdrawal of Mr. Webster. While thus employed he lost his brother and one of his sisters; and these events greatly saddened a mind naturally grave and earnest, and peculiarly susceptible to serious impressions. He had, a year previous, suffered severely from an attack of visceral derangement. A second attack of the same malady proved fatal. Accompanying the president to Boston, in June, 1848, in order to take part in the Bunker hill celebration of that year, he was seized so severely on the 16th that he was unable to join in the ceremonies of the next day. He was removed to the residence of his friend Mr. Ticknor, where he died. His remains, temporarily deposited in a vault at the Mt. Auburn cemetery, were in 1859 brought home by his friends and admirers to Charleston, and interred at Magnolia cemetery, where a handsome monument has been raised to his memory by voluntary contributions. He was never married. A biography, with selections from his writings, including reviews, orations, public despatches, and the "Diary of Brussels," was published at Charleston in 1848, in 2 vols. 8vo.

LEGARÉ (BULLEN), MARY SWINTON, an American artist, sister of the preceding, born in Charleston, S. C., about 1800. Among her best works are a "Spanish Pointer," nearly of life size, and the "Dogs of St. Bernard." In 1849 she emigrated to Lee co., Iowa, and established at West Point an institution called "Legaré college" for the liberal education of women, to the support of which she for many years devoted her time and means.

LEGATE (Lat. *legatus*, from *lego*, to charge, to depute), in ancient Rome, the title of various officers of high rank. It designated the chief assistants of proconsuls or other governors of provinces, the military officers next in rank to the commander-in-chief, and under the empire the administrators of provinces the government of which was specially reserved to the emperors; these were called *legati Cæsariæ*. The term is now used to designate a papal ambassador or deputy of the highest rank, those of lower rank, or *legati missi*, being generally called apostolic nuncios. Legates *a latere* are sent by the papal see on important missions to great foreign courts, or as governors of the chief pontifical provinces, which are hence called legations (It. *legazioni*), those not governed by cardinals being called delegations (*delegazioni*). Legates *nati* or *ex officio* hold their titular dignity as incident and annexed to offices of high rank depending

upon papal appointment. Formerly this title exempted its possessors from the authority of the legates *a latere*, and was borne by the archbishops of Canterbury.

LEGENDRE, ADRIEN MARIE, a French mathematician, born at Toulouse in 1752, died in Paris, Jan. 10, 1833. He evinced an early taste for mathematics, and through the influence of D'Alembert was appointed in 1774 to a chair in the military school at Paris. In 1782 he gained prizes for two remarkable papers from the academies of science at Paris and Berlin. In 1783 he succeeded D'Alembert at the French academy, and in 1787 was appointed by the government, with Cassini and Mechain, to connect the observatories of Greenwich and Paris by a series of triangles. He presented in 1791 a report of their joint labors, with a description of a new instrument which he had invented and successfully used [for measuring angles. In 1794 he published his *Éléments de géométrie*, upon which his popularity principally rests. It has been several times printed in English, the best translation being that of Sir David Brewster. The same year he published a *Mémoire sur les transcendentes elliptiques*. Upon the organization of the French institute in 1795, he was appointed one of its members. In 1798 appeared his *Essai sur les nombres*, reprinted with additions in 1830, under the title of *Théorie des nombres* (2 vols. 8vo.), and in 1805 a *Nouvelle méthode pour déterminer l'orbite des comètes*. These were followed by his *Exercices de calcul intégral sur divers ordres de transcendentes et sur les quadratures* (3 vols. 4to., 1807-'19), in which he attempted to collect all that is most remarkable in the theory of transcendents and integrals. This subject was enlarged, completed, and reduced to a more digested system in his *Traité des fonctions elliptiques et des intégrales Eulériennes, avec des tables pour en faciliter le calcul numérique* (3 vols. 4to., Paris, 1827-'32). Legendre was appointed in 1808 councillor for life of the university, and in 1816 examiner of candidates for the polytechnic school.

LEGGETT, WILLIAM, an American author and journalist, born in New York in 1802, died May 29, 1839. He was educated at the college in Georgetown, D. C., and in 1819 accompanied his father to Illinois. In 1822 he entered the navy as midshipman, but resigned his warrant in 1826. He had in the previous year published a volume of poems, entitled "*Leisure Hours at Sea*," by a Midshipman of the U. S. Navy" (18mo., New York). In 1828 he became editor of the "*Critic*," a weekly literary journal, which was soon united with the "*New York Mirror*." He subsequently collected in a volume some of his contributions to these and other publications, under the title of "*Tales by a Country Schoolmaster*," followed by one entitled "*Sketches at Sea*." In the summer of 1829 he became one of the editors of the New York "*Evening Post*," to which journal he was attached until Dec. 1836. At the outset he stipulated with his principal, Mr. William C. Bryant,

that he should not be required to write on political subjects, as he had no taste for or fixed opinions upon them; but before a year had passed he appeared to have found his true vocation in discussing them. Having retired from the "*Post*," he commenced a weekly journal called the "*Plaindealer*," which attained a large circulation, but was discontinued in less than a year through the failure of its publisher; after which Mr. Leggett, his health being greatly enfeebled, ceased literary labor, and lived in retirement at New Rochelle. In May, 1839, he was appointed by President Van Buren diplomatic agent to Guatemala, but died suddenly while preparing for his departure. Soon after his death a collection of his "*Political Writings*," with a memoir, was published by his friend Theodore Sedgwick (2 vols. 12mo., New York, 1840). Mr. Leggett was remarkable among the journalists of his day as an unflinching advocate of freedom of opinion for his political opponents as well as for the men of his own party. Mr. Bryant, who has written a poem in his memory, describes him as a person fond of study, one delighting to trace principles to their remotest consequences, and greatly gifted with moral courage, having no fear of public opinion as regarded the expression of his own convictions.

LEGH, THOMAS, an English traveller and author, born at Lyme Park in 1792, died in May, 1857. In 1812, with a view of exploring the monumental antiquities of Greece and Egypt, he visited the islands of the archipelago, and thence sailed for Egypt. He ascended the Nile with the determination of penetrating into Nubia, and with a single companion reached Ibrim in that country. Here the absence of objects of antiquarian interest, and the hostility of the Mamelukes, who had been incensed by the cruelties and oppressions of Mehemet Ali, brought the expedition to a termination, and after some romantic and hazardous adventures the travellers found their way back to Cairo. In 1816 appeared Mr. Legh's "*Narrative of a Journey in Egypt and the Country beyond the Cataracts*" (4to., London), a work containing within a comparatively small compass much information, new at the time of its publication, particularly with respect to the ancient Ethiopian monuments.

LEGHORN (It. *Livorno*), a maritime city of Tuscany, on the W. coast of Italy, in lat. 43° 38' N., long. 10° 19' E., 9½ m. by railway S. by W. from Pisa and 54 m. W. by S. from Florence; pop. about 80,000, including nearly 8,000 Jews, also Greeks and Armenians, Turks, Moors, Germans, English, &c. It gives its name to a department, which includes the island of Gorgona; area, 38 sq. m.; pop. in 1858, 91,741. The town is of comparatively modern origin, and possesses few remarkable buildings or objects of art. The cathedral is interesting in consequence of the façade having been designed by Inigo Jones. There are 6 parish churches, and places of worship for members of the church of England, Scotch Presbyterians, Greeks, and Armenians. The Jews have a richly ornamented synagogue.

The palazzo Lardarel, lately built by the count of that name, contains a gallery of pictures and statues. There is another palace, formerly the residence of the grand dukes of Tuscany. In the *piazza delle Due Principi*, a large new square, is a statue of the grand duke Ferdinand III., and near the quay is one dedicated to Ferdinand I. There are 8 hospitals, 2 *monti di pietà* (public pawn offices), a free library, an observatory, and a citadel. The English cemetery contains the tombs of Smollett and Francis Horner. The monastery of Monte Nero is upon a hill near the town. The 3 lazarettoes of San Rocco, San Jacopo, and San Leopoldo, the first for those who arrive with a clean bill of health (*patente netta*), the 2d for those with a doubtful (*tocca*), and the 3d for vessels with a foul bill (*patente brutta*), are well managed establishments. The town possesses various educational, scientific, and charitable institutions. Many of the private houses are elegant, and the vicinity is covered with villas of the wealthy citizens. The town has been greatly enlarged of late years by throwing down many of the old fortifications and including two large suburbs within the walls. It resembles an English town more than any other in Italy, and its commercial and manufacturing importance is constantly increasing. As a Mediterranean seaport it ranks after Marseilles, Genoa, Trieste, and Smyrna. The accommodation for shipping having become insufficient for large vessels, which are obliged to discharge their cargoes in the roads, the government has undertaken the enlargement of the port. Being a free port, Leghorn is perhaps better supplied with French and English manufactures than any other town on the continent. The average annual imports and exports amount in the aggregate to \$30,000,000, and 10,000 vessels annually enter and leave the port. From 1850 to 1860 about 30 vessels have been annually built in Leghorn. The chief manufactures are corals, silk, wool, cotton, straw and felt hats, alabaster, porcelain, pottery, leather, tobacco, &c. There are salt works and many dyeing establishments, and admirably organized distilleries of oil and *rosoglio* (a kind of liqueur). In the year ending Sept. 30, 1858, 30 American vessels entered and cleared the port of Leghorn, with cargoes valued at \$500,000. There are over 30 foreign consuls resident there, and the great concourse of sailors and strangers of all nations imparts to the town a very interesting and animated appearance. The natural insalubrity of the site has been remedied by effective draining. Good water is brought to the town by means of a fine aqueduct, which was erected in 1792. In the summer season Leghorn is a favorite resort of the fashionable world of Florence, Rome, Bologna, Sienna, and other cities, the influx of visitors frequently amounting to 20,000 persons. —Leghorn is first mentioned as a village in the 11th century, but became important only after the destruction of the port of Pisa, and particularly in the 15th and 16th centuries under the rule of the Medici. The grand duke Cosmo I.

made it a free port and granted many privileges to the town, which continued to improve under his successor Ferdinand I. In 1808 Napoleon annexed it to his empire, and it became the capital of the French department of the Mediterranean. It was taken by the Austrians under Gen. Aspre in 1849, and for a long time subsequently was occupied by an Austrian garrison. In March, 1860, it was annexed with the whole of Tuscany to Sardinia.

LEHIGH, an E. co. of Penn., lying chiefly in the Kittatinny valley, bounded N. W. by Blue mountain and S. E. by South mountain, and drained by Lehigh river; area, 389 sq. m.; pop. in 1850, 82,479. It abounds in iron ore, limestone, and clay slate, and has an undulating surface and a fertile soil. The productions in 1850 were 397,048 bushels of Indian corn, 261,301 of wheat, 327,505 of rye, 289,669 of oats, 30,332 tons of hay, 838,816 lbs. of butter, and 21,920 of wood. There were 67 grist mills, 17 saw mills, 9 iron mines, 28 tanneries, 6 newspaper offices, 39 churches, and 7,888 pupils attending public schools. Capital, Allentown.

LEHIGH, a river of Penn., rising near Wilkesbarre, Luzerne co., toward the N. E. part of the state, and uniting with the Delaware at Easton after a S. S. E. course of about 90 m. In its upper course it is a rapid and picturesque mountain stream, broken by several falls. It passes through a rich coal region, for the products of which it serves as an outlet, having been rendered navigable by a series of extensive improvements as far as Whitehaven, 84 m. from its mouth. It breaks through the Blue Ridge 12 m. below Mauch Chunk.

LEIBNITZ, GOTTFRIED WILHELM, a German philosopher, born in Leipsic, July 3, 1646, died in Hanover, Nov. 14, 1716. His father, a professor in the university, died when he was 6 years old. He enjoyed by the care of his mother the best privileges of education which Germany then afforded, but declares that he was for the most part self-taught, and relates that he would withdraw from school to shut himself up whole days in his father's library. At the Nicolai gymnasium in Leipsic he incurred the remonstrances of his masters by learning Latin and reading the classics in advance of the regular course. Before he was 12, he says, he "understood the Latin authors very well, had begun to lisp Greek, and wrote verses with singular success." He was already studying the greatest modern as well as ancient philosophers, was comparing Bacon and Descartes with Aristotle and Plato, and his encyclopædic mind was aiming to grasp the unity of all the sciences. At the age of 15 he entered the university of Leipsic, applied himself chiefly to mathematics, philosophy, and law, continued his studies for a short time at Jena, returned to Leipsic, and produced remarkable theses on occasion of receiving his degrees. His treatise *De Principio Individui*, his academic exercise on becoming bachelor of philosophy, is perhaps the most extraordinary demonstration of erudition and power of thought

ever achieved by a youth of 17. It was the fruit of severe boyish deliberation whether or not he should give up the substantial forms of the schoolmen, prefigured his future philosophy by its vivid statement of individuality as the fundamental principle of ontology, and was the last noticeable work written in the sense and style of scholasticism. In it he declares for nominalism. His 3 theses on becoming bachelor and licentiate of law were published, and he wished to crown his studies in jurisprudence with the degree of doctor; but this was refused him on pretence of his youth by the superiors of the college, whose ill will he had in some way incurred. He therefore left his native city, never to return. At the university of Altdorf he maintained his thesis for the doctorate with so brilliant success (1666) that a professorship was immediately offered him, which he declined. He fell in with a society of Rosicrucians and alchemists at Nuremberg, became their secretary, recorded their experiments, and explored the hermetic authors for revelations concerning the philosopher's stone, but was soon ready for more hopeful labors. In 1667 he met the baron of Boyneburg, ex-chancellor of the elector of Mentz, who was captivated by his genius, and invited him to Frankfort, where he immediately composed his *Nova Methodus Docenda Docendæque Jurisprudentiæ* (1667), in which he shows his admiration of the Roman law and proposes the registry of all its enactments in chronological order. In the following year appeared his *Corporis Juris Reconcinnandi Ratio*, in which the arrangement of Justinian is disapproved, and all law is reduced to 9 heads: general principles of rights and actions, rights of persons, judgments, real rights, contracts, successions, crimes, public rights, and sacred rights. In the treatment of these departments he proposes to retain the texts of the *Corpus Juris Civilis*, but to follow the method of the Pandects rather than of the Institutes. The versatile genius and various pursuits of Leibnitz soon withdrew him from the science of philosophical jurisprudence. "He did but pass over that kingdom," says Lermnier, "and he reformed and enlarged it." In 1669 he produced, at the instance of Boyneburg, an anonymous treatise in favor of the claims of the prince of Neuburg to the vacant throne of Poland, in reward for which he was made councillor of the elector of Mentz. This office, which he retained 3 years, furnished him leisure to prosecute vast studies in politics, physics, and philosophy. He meditated a new and more comprehensive edition of the cyclopædia of Alsted, a favorite project, which he never executed; extended his fame as a philosopher by republishing and annotating the *Antibarbarus Philosophus* of Nizolius (1670), in which he ranks Aristotle above Descartes; wrote a theological argument in defence of the Trinity, *Sacrosancta Trinitas* (1671), aimed against the Polish Socinian Wissowatius, who had procured the erection of a temple to the harmony of the 3 Chris-

tian confessions; addressed to the academy of sciences of Paris and to the royal society of London two remarkable memoirs on the laws of motion; and entered into correspondence with Spinoza by sending him an account of the progress of optics. One of his projects at this time was for a reunion of the Lutheran and Roman Catholic churches, concerning which he had a long correspondence with Bossuet. In 1672 he was sent by Boyneburg to accompany his son to Paris, then the residence of the most learned men of the age under the patronage of Louis XIV. Associated with Cassini, Huyghens, and others, he devoted himself especially to mathematics and physics, and established a European reputation by bold and striking thoughts in all departments of learning. To Colbert he presented a new arithmetical machine, an improvement on that of Pascal, which was favorably noticed by the academy of sciences. To the French monarch he addressed a memorial for an expedition to Egypt, an eminent instance of political foresight. "The conquest of Egypt," he says, "will give supremacy on the sea, the commerce with India, predominance in Christendom, and even an empire in the Orient on the ruins of the Ottoman power." The political importance destined to Egypt by its geographical position, thus discerned by a philosopher, has been equally appreciated by the two greatest conquerors of ancient and modern times, Alexander the Great and Napoleon. Another of his suggestions to Louis XIV. was for the publication of a general repertory of human knowledge in the form of a dictionary, thus presenting all the results of scientific labor in their mutual dependencies. He proposed illustrated treatises on natural history, and states that his own preference would have been to study the laws established by God in nature rather than the laws and customs created by men for themselves. An offer of admission as a pensioner into the academy of sciences was made to him, and was declined on account of the condition that he should become a Catholic. In 1673 he visited England, became personally acquainted with Newton, Boyle, Oldenburg, Wallis, and Collins, and was elected a member of the royal society. The death of Boyneburg, soon followed by that of the elector of Mentz (1674), left him without a patron, and he determined to return to Germany. At Paris he received from the duke of Brunswick-Lüneburg an appointment as councillor, with a pension and with permission to prolong his absence at pleasure. He remained in France till 1676, again visited London, passed through Holland, met with Spinoza at the Hague, and on his arrival in Hanover, the residence of the duke of Brunswick, became his librarian, and was partially occupied for 6 years in arranging and enriching his library. At the congress of Nimeguen (1677) there was a dispute about the right of precedence between the princes who were electors and those who were not. Leibnitz maintained the cause of the latter in a treatise containing

the ultramontane rather than Protestant declaration that all the states of Christendom should form but a single body, having the pope for their spiritual and the emperor for their temporal head. This idea of a grand theocracy appears prominently in several of his writings, alike in his views of society and of nature. Theology he defined as the jurisprudence of the kingdom of God, as law and politics transferred to a higher and absolute sphere. He was one of the founders in 1682 of the *Acta Eruditorum* of Leipsic, to which he furnished numerous articles. Employed to write the history of the house of Brunswick, he explored the principal libraries and archives of Germany and Italy for materials, returning to Hanover in 1690. The fruits of his researches were the *Codex Juris Gentium Diplomaticus* (2 vols., 1693-1700), a collection of treaties and public documents, with a preface which is one of his masterpieces; *Scriptores Rerum Brunsvicensium Illustrationi Inservientes* (3 vols., 1707-'11); *Accessiones Historice* (2 vols., 1698-1700); and the *Annales Imperii Occidentis Brunsvicensis* (first published by Pertz, 2 vols., 1843-'5). His *Protogea* (first published entire in 1749), a dissertation on the state of the globe before the creation of man, was intended as an introduction to the last work, and was the first important contribution to the science of geology, which he called natural geography. His hypothesis supposes the prominence of fire in the formation of the earth, the gradual congelation after igneous fusion, the introduction of a vast body of water to cover the surface, and the origin of mountains and valleys by the subsidence of certain portions of the earth breaking in upon vast vaulted caverns. He also explains fossils, which had previously been esteemed freaks of nature, as remnants of real but extinct species. Through his influence the academy of sciences of Berlin was founded in 1701, of which he was the first president. His first memoir was on a species of binary arithmetic, invented by him, in which the only figures employed were 0 and 1. He soon after attempted to form a universal alphabet, the elements of which were to be very simple, like algebraic signs, instead of syllables and words, and were directly to represent ideas. This favorite but futile scheme was the subject of long continued meditations. To Frederic Augustus, king of Poland and elector of Saxony, he addressed a series of precepts for the advancement of sciences, with a curious preamble. After noticing the confusion of investigations and theories and the animosity of scholars in his time, he adds: "I fear that after the curiosity of men shall be exhausted with no considerable profit to their happiness, they will become disgusted with the sciences, and by a fatal despair fall back into barbarism, to which this horrible and daily increasing mass of books may much contribute. For the disorder will finally be almost insurmountable; the multitude of writers will expose them all to the danger of general oblivion; and to be an author

will perhaps become as disgraceful as it once was honorable; or rather, people will amuse themselves with little ephemeral books, which may have currency for a few years and divert the reader a few moments from ennui, without any design of advancing knowledge or benefiting posterity." To this period belong his most important philosophical labors. In 1704 he composed his examination of Locke, *Nouveaux essais sur l'entendement humain*; he revealed the great variety of his learning in the first volume of the *Miscellanea Berolinensia* (1710); was a frequent contributor to the *Journal de Trévoux* and the *Journal des sçavants*; and published in 1710 in French his *Théodicée*, the noblest monument of his genius, in which he grapples with the leading problems of philosophy and faith, and which is hardly surpassed as an example at once of metaphysical power and universal erudition. During the latter years of his life he enjoyed the highest personal distinction. A councillor and official historiographer at Hanover, a baron and aulic councillor with a pension at Vienna, he was consulted by Peter the Great at Torgau in 1711, and rewarded by him with the title of councillor of state and a pension of 1,000 rubles. He had for many years corresponded with the most illustrious persons in Europe on almost all public and scientific questions. He united the leading thinkers of Christendom by an interchange of ideas, and from his time the history of philosophy involves more than in any former period the general history of the human mind. To no single person is the civilized world more indebted for the literary commerce between all its parts. The rich materials scattered through his letters prove that his amusements must have consisted only in change of objects, not in suspension of intellectual labor. To Spinoza he wrote, suggesting new methods of manufacturing lenses; to Magliabecchi at Florence, urging him in elegant Latin verses to publish his bibliographical discoveries; to the elector of Saxony, on the culture of the silkworm; to Grimaldi, the Jesuit missionary in China, to impart his researches in Chinese philosophy, and to prevail on the emperor to introduce his new binary arithmetic, suggesting that the latter may even be a key to the book *Ye-kin*, supposed to contain the mysteries of Fo; to Bossuet and Mme. Brinon concerning the union of the Protestant and Catholic churches, and to Von Spanheim on the union of the Lutheran and Reformed; to Père Des Bosses on transubstantiation, and to Dr. Samuel Clarke on time and space; to Remond de Montmort on Plato, and to Franke on popular education; to the queen of Prussia, his pupil, on free will and predestination; to the electress Sophia, her mother, on English politics; and to the cabinet of Peter the Great on the Slavic and oriental languages. A controversy with Newton concerning the discovery of the differential calculus embittered the latter years of his life. There is little doubt that Newton's method of fluxions and Leibnitz's

method of infinitesimals, which differ only in the mode of notation, were both independent and original discoveries. But the priority of publication belongs to Leibnitz, who gave a summary of the principles of the differential calculus in the *Acta Eruditorum* in 1684. Sir David Brewster's account of this matter, in his "Life of Newton," is, according to the German authorities Gerhart and Guhrauer, very incomplete, ignoring some important documents, particularly a letter of Leibnitz to Oldenburg dated Aug. 27, 1676. The royal society of London appointed a commission to examine the question, whose report, *Commercium Epistolicum* (1712), was in favor of Newton. This is admitted not to have been impartial, and its deficiencies are shown in a revised edition by Biot and Lefort (1856).—The principal metaphysical speculations of Leibnitz are contained in his *Theodicæe*, *Nouveaux essais*, *Système nouveau de la nature* (1695), *De Ipsa Natura* (1698), the fragment on *Monadologie* (1714), and in portions of his correspondence. He was too much occupied with all the learning of Europe to give a complete and systematic development of his opinions either in this or any other department. His mind was nurtured in the controversy between the principles of Descartes and Locke, the ultimate tendencies of each of which he was able to perceive, and between which he wished to establish a position. He controverted Locke's rejection of innate ideas, by maintaining that, though no ideas be innate, there is yet an innate faculty for forming ideas independent of and superior to sensation. To the old axiom of sensualism, *Nihil est in intellectu, quod non fuerit prius in sensu*, he made the revolutionary addition, *nisi ipse intellectus*. The mind he compares not to a *tabula rasa*, a blank tablet, but to a block of marble that has certain characteristic veins in it; affirms it to contain potentially in itself the general notions of things, which are unfolded as occasions invite, the germs of our ideas and of the eternal truths which are derived from them. Those necessary truths, which take their origin not from experience, but primarily from the thinking soul, are the elements of all knowledge. Thus, unlike that of Locke, the starting point of his philosophy is not the products of sensation, but the laws of the understanding; and he creates not a system of empiricism, but a system of rationalism. He departs almost equally from the results of Cartesianism as developed by Malebranche and Spinoza. In Descartes the prominence of the idea of the infinite or absolute tends to cast finite nature into the shade. This tendency appears more decidedly in Malebranche, who denied second causes, and limited all real agency to the Supreme Being, and in Spinoza, who affirmed all thought and substance to be alike parts and modifications of the one sole Existence. Thus the idea of cause was banished from the universe of created things, and all phenomena were regarded only as modes of the divine action. To avoid this result, to vindicate the no-

tion of causality, was the object which Leibnitz had in view in declaring all matter to be necessarily active. He affirmed that one body cannot receive the power of acting from any other, but that the whole force is preëxistent in itself. He thus substituted in the study of nature the notion of force for that of mode, the form of dynamics for the form of abstract geometry. This principle is the key to his peculiar system. He begins with maintaining that the pure *a priori* conceptions of the reason are full and adequate expressions of objective realities. Logical truth is equivalent to actual truth; rational possibility is necessarily reality; ideas are identical with things. He introduces the two test principles of contradiction and sufficient reason, the former applying to the realm of necessary ideas, the latter to that of contingent facts. Whatsoever abstract conception involves no contradiction with the reason itself is absolutely true. But to determine what ideas are valid in any world of contingent phenomena, in any particular circumstances, there is needed the second principle. For every actual truth a sufficient reason must be rendered, showing that it is that which is best adapted to bring about the intended result. Thus every thing must be judged by its final cause. The Cartesian doctrine, that substance consists essentially in extension, does not explain the constant movements and developments of nature. Unless, therefore, every phenomenon be regarded as a direct product of the divine mind, Leibnitz maintains that some inherent, causative, initiative power must be attributed to matter. This power cannot reside in masses as such, since they are infinitely divisible, and may therefore be reduced to a zero of extension, till they lose every material property. Hence his doctrine of monads, as the simple active elements of things, the veritable, living atoms of nature, the immaterial, indivisible, and final forces of the universe, uninfluenced from without, but continually changing by an inward principle. All monads contain an inward energy by virtue of which they develop themselves spontaneously; they are all different from each other, each having peculiar attributes; all are, properly speaking, souls, being endowed with perception, though those which compose material objects do not possess apperception or consciousness; all are independent of each other, each having its own means of development, and forming a microcosm or living image of the whole universe. In every monad might be read the world's history from beginning to end, each of them being a kind of deity (*parvus in suo genere deus*). God is the absolute, original monad, from which all the rest are generated; the primitive and necessary substance, in which the detail of changes exists eminently. Hence follows another doctrine of Leibnitz's philosophy, that of preëstablished harmony. The dualism of Descartes is rendered unnecessary by the reduction of mind and matter to the same essence, the former being represented by conscious, and the latter by unconscious monads. But these

two classes of monads are wholly unlike, and exert no influence on each other. To explain their relation, therefore, Leibnitz reverts to the original constitution of things as perfected by God himself, who, he maintains, has so harmonized all the monads of which the universe is composed, that they work in complete unison in order to accomplish the end for which they were intended. This harmony is not only pre-established by a divine decree, but is produced by virtue of the very nature of monads. In one view, every volition of a rational agent finds in the constant procession of physical forces a concurrent event by which it is executed; and in another view, the monads of the human system and of the outward universe are so accommodated to each other, each being a representative of all the rest and a mirror of all things, that each feels all that passes in every other, and all conspire together in every act, more or less effectively in proportion to their nearness to the prime agent. Hence the harmony between all the parts of matter, between the future and the past, between divine decrees and human actions, between the reign of efficient and that of final causes. The transition from these principles to Leibnitz's doctrine of optimism is easy. Evil is a necessary condition of finite being. The existing universe is one of innumerable possible universes, each of which would have had a different measure of good and evil. The present was made actual, because it presented to the Divine Intelligence the smallest degree of the latter and the largest of the former. Metaphysical evil consists simply in limitation, and moral evil is permitted only for the sake of a greater ultimate good. It follows that he maintained the doctrine of philosophical necessity as the only kind of liberty consistent with the preestablished order of the universe. The want of a logical and connected statement of the philosophy of Leibnitz was supplied by his disciple Wolf.—Leibnitz was of medium stature, of a spare but vigorous frame, was accustomed to eat much and drink little, regulated his meals by his pursuits and not by time, usually studied far into the night, sometimes sat by his desk almost without rising for months, sleeping in his chair, liked to converse with all sorts of people, and was never married. He wrote very little in his native language, his important treatises being either in Latin or French. His philosophical works were edited by Erdmann (Berlin, 1840); his historical works by Pertz (Hanover, 1843); his mathematical works by Gerhardt (Berlin, 1849-'50). A complete edition of all his writings is now (1860) in progress in Paris, under the care of Count Foucher de Careil, who has already published as preparatory studies two series of *Lettres et opuscules* (1854-'7). The best biography is by Guhrauer (2 vols., Breslau, 1842; with additions, 1846). This is the basis of the "Life of Leibnitz," by J. M. Mackie (Boston, 1845).—Compare Schelling, *Leibnis als Denker*; Hartenstein, *De Materia apud Leibnits Notitione*; Helferich, *Spinosa*

und Leibniz, oder das Wesen des Idealismus und Realismus; Feuerbach, *Darstellung, Entwicklung und Kritik der Leibnizischen Philosophie* (Anspach, 1837); and Zimmermann, *Leibnis und Herbart, eine Vergleichung ihrer Monadologie* (Vienna, 1849).

LEICESTER (anc. *Rata*), a manufacturing town and the capital of Leicestershire, England, situated near the centre of the co., on the right bank of the Soar, which is here crossed by three ancient bridges and a handsome modern one, 102 m. by railway N. N. W. from London; pop. in 1851, 60,642. The staple manufacture is cotton and worsted hosiery. It is the centre of a great agricultural and wool raising district, and fairs are held for horses, cattle, and sheep 12 times a year. Under the Romans as well as under the Saxons Leicester was a place of importance; and numerous vestiges of those ancient times are still in existence. In 1851 some handsome tessellated pavements and other Roman remains were discovered. The name Leicester is derived from the river Leire (now Soar). Leicester had formerly a mint in which were produced a succession of coins from the time of the Saxon Athelstan to Henry II. The borough is governed by 14 aldermen and 43 councillors, one of whom is mayor; it returns two members to the imperial parliament.

LEICESTER, EARL OF. See DUDLEY, ROBERT.

LEICESTER OF HOLKHAM, THOMAS WILLIAM COKE, earl of, an English agriculturist, born May 4, 1752, died June 30, 1842. He was regarded, after the death of the duke of Bedford, as the first agriculturist in the kingdom. His estate of Holkham, in Norfolk, the rental of which he raised in the period of some 60 years that it was in his possession from £2,000 to above £20,000, was the pride of the county. His annual sheep shearing, at which he entertained hundreds of guests for several days, was reckoned the greatest agricultural festival in the world. His methods of cultivation were based upon scientific principles. He introduced choice breeds of cattle and the rotation of crops, and recommended the extensive planting of turnips. He represented the county of Norfolk in parliament, with a brief interval from 1776 to 1832. An intense hatred of toryism constituted almost the whole of his political system, but he spoke little except when agricultural measures were before the house. In 1837 he was created earl of Leicester of Holkham. Sixty years before he had been twice offered a peerage; but he refused to accept any thing but the earldom of Leicester, which had been held by his maternal great-uncle, whose estates he inherited, but not his title, which had meantime been given to another person. As this earldom was still held by Marquis Townshend, the title was varied for Mr. Coke by the addition of the name of his own estate.

LEICESTERSHIRE, an inland central county of England, bounded by the counties of Nottingham, Lincoln, Rutland, Northampton, Warwick,

and Derby; length 44 m., breadth 40 m.; area, 808 sq. m.; pop. in 1851, 280,508. The surface consists almost entirely of gently rising hills, but nowhere presents any bold features. The county is chiefly included in the basin of the Trent, the principal tributary of which in Leicestershire is the Soar (anc. *Leire*). The Avon, a tributary of the Severn, forms the S. boundary for nearly 8 m.; and the Welland, which falls into the Wash, for about 17 m., separating Leicestershire from Northamptonshire. The E. portion of the county belongs to the lias formation, and the W. to the sandstone. Coal exists to a considerable extent in the west. Limestone, gypsum, slate, whetstones, and clay are also found. The climate is mild and genial. The soil is loamy, and varies in fertility. The best soils are generally kept in pasture, for which the county is preëminent. The principal crop is barley; but wheat, oats, and beans are extensively cultivated. Leicestershire has long been famous as a hunting county, Melton-Mowbray being the head-quarters of the sportsmen during the season. The chief towns are Leicester (the county town), Ashby-de-la-Zouch, Bosworth, Market-Harborough, Lutterworth, Melton-Mowbray, Mount Sorrel, Whitwick, and Castle Donnington. Leicestershire formerly returned only 2 members to parliament. By the reform act it was divided, and now returns 4 members, beside 2 for the borough of Leicester.

LEIDY, JOSEPH, an American naturalist and physiologist, born in Philadelphia, Sept. 9, 1828. He was graduated M.D. at the university of Pennsylvania in 1844, and in 1858 was elected to the chair of anatomy in that institution, which he still occupies. Dr. Leidy has cultivated the sciences of comparative anatomy and vertebrate palæontology, to both of which he has contributed many valuable memoirs, chiefly published in the "Proceedings of the Academy of Natural Sciences," the "Transactions of the American Philosophical Society," and the "Smithsonian Contributions to Knowledge."

LEIGH, BENJAMIN WATKINS, an American lawyer and statesman, born in Chesterfield co., Va., June 18, 1781, died Feb. 2, 1849. He studied at William and Mary college, and as soon as he became of age was admitted to the bar. He practised successfully in Petersburg, Va., and was soon elected to the legislature from Dinwiddie co., presenting in that body a series of well known resolutions asserting the right of the legislature to instruct the U. S. senators from Virginia. In 1818 he removed to Richmond, where he at once took a high place at the bar. He was one of the commissioners appointed to revise the statutes of Virginia, and reported the arguments and decisions in the court of appeals. In 1822 he was sent as commissioner to Kentucky, and, in concert with Mr. Clay on the part of that state, adjusted an agreement concerning the "occupying claimants law," which threatened to annul the Virginia titles to lands in Kentucky. He was a member of the convention of 1829-'30, in which he held

a prominent position, and in 1835 was elected to the U. S. senate, where he took an active and eloquent part in debate; but finding that his views were not those of the majority of his constituents, he resigned in 1837 and passed the rest of his life in retirement.

LEIGHTON, ROBERT, a Scottish prelate, born in Edinburgh in 1611, died in London, June 26, 1684. He was educated at the university of Edinburgh, and in 1641 became pastor of a Presbyterian church near that city. He held aloof from the political controversies which then engrossed many of the clergy, and when questioned by the presbytery "if he preached to the times," he replied: "Since all my brethren preach to the times, suffer one poor priest at least to preach on eternity." He soon resigned his pastoral charge, and in 1658 was elected principal of the university of Edinburgh. On the accession of Charles II. an attempt was made to establish episcopacy in Scotland. Leighton was favorably disposed toward the system, though his father had been savagely persecuted by Laud for his opposition to it; and, in the hope of moderating the violent dissensions of the time, he reluctantly consented to accept a bishopric, choosing that of Dumblane as being one of the poorest in revenue. In 1670, on the resignation of Sharpe, he was transferred to the archbishopric of Glasgow; but finding himself unequal to the difficulties of his new dignity, he resigned it in 1674, and retiring to England, spent his remaining days in that country. He left various works, the best known of which is his "Practical Commentary on the First Epistle General of St. Peter." A complete edition of his writings appeared in 1808 (6 vols. 8vo., London).

LEININGEN, KARL, prince of, half brother of Queen Victoria, born April 12, 1804, died Nov. 8, 1856. He was the only son of Prince Emil of Leiningen and the princess Victorie Marie Louise of Saxe-Coburg, afterward the wife of the duke of Kent. He inherited the possessions of his father in 1814, and held a high rank in the Bavarian army. He had a mania for building, and established manufactures which helped to improve the condition of the poor. The eldest of his two sons by his marriage with the countess of Kletelsburg, Prince ERNST, born in 1830, distinguished himself in the naval operations during the Crimean war, obtained a lieutenancy in the British navy in April, 1856, and soon afterward was appointed 2d lieutenant of her majesty's steam frigate *Magicienne*. Count KARL, a member of another branch of the Leiningen family, born in 1819, served as general in the Hungarian war, and was executed at Arad, Oct. 6, 1849.

LEINSTER, one of the 4 provinces of Ireland, constituting the S. E. part of the island, between lat. 52° 7' and 54° 6' N. and long. 6° and 8° 3' W., bounded N. by Ulster, E. by St. George's channel, S. by the Irish sea, and W. by Connaught; length N. and S. 150 m.; area, 7,619 sq. m.; pop in 1841, 1,978,781; in 1851, 1,672,174. It is divided into 12 counties, viz., Carlow,

Dublin, Kildare, Kilkenny, King's, Longford, Louth, Meath, Queen's, Westmeath, Wexford, and Wicklow, beside the cities of Dublin and Kilkenny, and the town of Drogheda, which are counties in themselves. The coast is generally low, but in some places bold and rocky. The best harbors are at Dublin, Drogheda, Dundalk, and Carlingford. There are no large lakes. The province contains 6 navigable rivers, the Shannon, Barrow, Nore, Boyne, Liffey, and Slaney. The surface is partly level and partly rolling, being on the whole the least broken portion of Ireland. There are 3 or 4 mountain groups occupying parts of Wicklow, Dublin, Carlow, Wexford, King's, and Queen's counties, and a few hills in Westmeath, Louth, and Kilkenny. Elsewhere are large peat fields, the principal of which is the great bog of Allen. The soil, resting on limestone and clay slate, is the best in the kingdom; 4,037,717 acres are arable, 1,705,684 having been under crops in 1855, and the rest devoted to pasturage. The produce was estimated in 1855 at 634,988 quarters of wheat, 2,619,153 of oats, 477,650 of barley, 89,160 of bere, 13,763 of rye, and 1,181,637 tons of potatoes. The breadth of flax cultivated has fluctuated from 741 acres in 1849 to 4,869 in 1851, and 2,142 in 1855. The Kilkenny coal field, between the Barrow and Nore, is the most extensively worked in Ireland, and also produces excellent ironstone. Wicklow has 5 copper and 4 lead mines, yielding silver, and in Croghan there is a gold mine, now abandoned. From 80,000 to 100,000 tons of sulphur are procured in Wicklow. At the time of the Anglo-Norman invasion in the 12th century Leinster was divided into two kingdoms, Meath in the N. and Legania or Leinster proper in the S.

LEIPSIQ (Ger. *Leipzig*), a German commercial and university city, in the kingdom of Saxony, beautifully situated in an extensive and fertile valley, watered by the Pleisse, here joined by the Elster and other small rivers, within a few miles of the Prussian frontier, 129 m. by railway from Berlin, and about 60 from Dresden; pop. in 1858, 74,209, including the military; pop. of the district of the same name, of which Leipsic is the capital, 484,225. Most of the ancient fortifications, excepting the castle or citadel of Pleissenburg, have been converted into public walks and partly laid out as gardens. The streets of Leipsic, though well paved and lighted with gas, are generally narrow, and the public buildings are of comparatively little architectural interest. The most fashionable public square is the Augustusplatz; and the most picturesque from the quaintness of its buildings, particularly of the town hall (*Rathhaus*), is the Marktplatz. The allied sovereigns met in this square after the battle of Leipsic, previous to which Napoleon had resided there in the *Königshaus*, so called from having formerly served as an electoral and royal residence. Near the square stands Auerbach's cellar, made famous by Goethe's "*Faust*," and still much frequented by the students. The principal Protestant churches are those of St.

Nicholas, St. Thomas, and St. Paul's or university church. A new Roman Catholic church was completed in 1847, and a synagogue commenced in 1858. Leipsic contains monuments of Gellert; of Prince Poniatowski, who was drowned in the Elster at the close of the great battle in 1813; of Hahnemann, of Bach, and of other eminent persons. Among the principal public buildings are the observatory, which occupies the tower of the citadel of Pleissenburg, the general exchange and book exchange, the Saxon-Bavarian railway depot, the post office, the custom house, finished in 1853, and the new warehouses. Leipsic takes a foremost position in Germany, in the history of the reformation as well as of literature. The 300th anniversary of the formal introduction of Protestantism in the town was celebrated there with great rejoicing in 1839, and the 400th of the discovery of the art of printing in 1840. The university is one of the oldest in Germany. The 450th anniversary of its foundation was celebrated Dec. 2, 1859. Prominent among the university buildings is the *Augusteum*, 300 feet long and 3 stories high, containing a great hall, lecture room, museums of natural history, and a library with 160,000 vols. and 2,500 MSS. The use of the German language as a medium of public learned instruction was first introduced in Leipsic (1688) by Thomasius, the teacher of Leibnitz, who was a native of the city. An English writer says of the university: "This is one of the few scholastic establishments on the continent which has retained its own landed estates, most of the others having been stripped within the last 50 years, and being now supported by annual grants. In other respects, also, it resembles our English universities; commons being kept for students who demand it on the plea of poverty." The property of the institution is very considerable; and the endowment for stipends, free board, &c., amounts to over \$500,000, nearly 200 poor students being sometimes supported by the university. Philology was long the great speciality of the university, although many of its leading members have been eminent in other branches, as Wunderlich in medicine, Wachsmuth and Fläthe in history, Drobisch in mathematics, Naumann in mineralogy, Pöppig in zoology, Seyffarth, Fleischer, and Brockhaus in oriental learning, Erdmann in chemistry, and Mettenius in botany. But many of the most learned men have been compelled to retire, chiefly for political reasons, as Von der Pfordten, Harless, Weber, Moritz Haupt, Mommsen, and Jahn; while J. F. J. Hermann, the principal recent promoter of the study of philology in Leipsic, died in 1848. The university has suffered from these losses, and the attendance of students has diminished from 1,800 in the early part of this century to about 800 in 1860. Leipsic possesses also many excellent colleges and schools, a town library with a remarkable collection of oriental MSS. and Turkish works, and a considerable number of societies and journals for the promotion of sci-

ence, letters, and art. A conservatory of music was founded by Mendelssohn-Bartholdy in 1843, and a professorship of music was established in the university in 1860. Few towns are more devoted to the cultivation of music and the drama. The charitable and religious associations are numerous, and a new poorhouse was built in 1853. The annual commercial fairs of Leipsic are the most important in Europe, and are attended by persons of almost all nations, but chiefly by Germans, Poles, Russians, and the Slavi generally. The number of visitors is generally about 60,000, and the transactions amount to \$60,000,000 annually. Notwithstanding the commercial magnitude of its fairs, Leipsic is still more extensively known by the book trade of which it is the centre. (See BOOKSELLING.) In 1853 there were in Leipsic 178 booksellers, employing 227 assistants and 107 apprentices, beside which there were resident agents of 2,054 German publishing houses. The principal publishing houses are those of Brockhaus and Tauchnitz.—Leipsic is first mentioned as a town in the beginning of the 11th century, and its commercial importance began as early as the 13th. It suffered much during the 30 years' war, and the great victory of Gustavus Adolphus over Tilly (Sept. 7, 1631) was gained in its vicinity at Breitenfeld. On Oct. 16-19, 1813, was fought the memorable battle of Leipsic, called by the Germans the great *Völkerschlacht*, which precipitated the downfall of the emperor Napoleon, already weakened in his resources by the disasters of the Russian campaign. On the 16th the main army of the allied troops of Russia, Prussia, and Austria, about 160,000 strong, under Prince Schwartzberg, attacked the French stationed in and around Leipsic, and from 9 o'clock in the morning until noon a series of villages on the south of the city occupied by the French were furiously but unsuccessfully assaulted. Napoleon, assuming the offensive, then adopted his favorite measure of a grand attack on the enemy's centre, and a powerful column of the old and young guards, preceded by a train of artillery, pierced the allied army. Schwartzberg ordered up his reserves, and Napoleon doing the same, a general engagement ensued along the whole line of attack, distinguished by frequent charges of immense bodies of cavalry. At one time Murat at the head of the cuirassiers of the old guard nearly succeeded in capturing the emperor of Russia and the king of Prussia; but the Cossacks of the imperial guard and the Austrian reserves coming up to the front at all points, the French were checked, and at nightfall both armies remained nearly in the position they had occupied in the morning. The only decided success of the French was on the western side of Leipsic, where Gen. Bertrand drove back the Austrians under Gyulai, and preserved a line of retreat through Lindenau in case of disaster. During the engagement between the main armies Blücher arrived from Halle with the army of Silesia, about 60,000 strong, and after an obstinate conflict drove

Marmont out of the village of Möckern. On the 17th both armies by tacit agreement rested, and Napoleon, conscious of his weakness, made an ineffectual attempt to procure an armistice. The 18th found his forces, about 160,000 in number, arranged in a semicircle around the north, east, and south of the city; while to oppose him Schwartzberg, strengthened by the arrival of the Russian reserves under Benning and Bernadotte's army of the north, brought into the field 800,000 men and nearly 1,400 cannons. Against these odds the French fought with heroic courage, and their artillery, amounting to 800 pieces, was played with a rapidity and effect which for a long time kept their assailants in check. Gradually their circle of defence was narrowed, and at a critical period of the day they were weakened by the defection of large bodies of Saxon and Würtemberg troops, who immediately turned their guns against their former comrades. The allies having at length penetrated into the suburb of Schönhofeld, Napoleon became convinced that the city was no longer tenable, and, taking advantage of a cessation of hostilities at nightfall, commenced a retreat. Amid a scene of fearful confusion the French filed off through Lindenau. Early on the morning of the 19th the allies forced an entrance into the city, and a terrible conflict ensued with the French rear guard, who were encumbered with immense trains of baggage and artillery and crowds of wounded. In the height of the mêlée the bridge of Lindenau, the only outlet of retreat over the river Elster, was prematurely blown up, leaving 15,000 soldiers, beside 23,000 sick and wounded in the hands of the allies. Marshal Macdonald by great exertions succeeded in swimming his horse across the river, but Prince Poniatowski in attempting the passage was drowned. The total loss of the French during the 3 days of fighting was 60,000; that of the allies 50,000. At 2 P. M. on the 19th the carnage ceased, and Napoleon was in full retreat toward the Rhine.

LEISLER, JACOB, an American political adventurer, born in Frankfort-on-the-Main, Germany, executed in New York, May 16, 1691. He came to America in 1660 as a private soldier in the service of the Dutch West India company. Leaving the army soon after his arrival, he engaged in the Indian trade, and became, for that day, a comparatively wealthy man. In 1674 he was appointed a commissioner of the forced loan imposed by Colve. While on a voyage to Europe in 1678 he was captured by Moorish pirates, and was compelled to pay a ransom of 2,050 pieces of eight to obtain his freedom. Previous to this voyage he was a resident of Albany, and had been involved in the ecclesiastical difficulties of that city in 1676, in which he suffered both in character and purse, having been mulcted in the entire cost of the litigation which was instituted by him and Jacob Milborne, who afterward became his son-in-law as well as his secretary and fellow sufferer. Under Dongan's administration in 1683 he was appointed one

of the judges, or "commissioners" as they were styled, of the court of admiralty. In 1688 Gov. Dongan was succeeded by Lieut. Gov. Francis Nicholson, who was in command of the colony when Jacob Leisler, supported by the mass of the lower orders of the inhabitants, seized the fort and the public funds on the last of May, 1689, for "the preservation of the Protestant religion." On June 2 Leisler with his own train band of 49 men took possession of the fort, and resolved, as he expressed it himself, not to leave until he had brought all the train bands fully to join with him. On the next day he declared for the prince of Orange. A committee of safety was then formed, who on June 8 commissioned Leisler as "captain of the fort." In this capacity he at once began to repair the fort, and strengthened it with a "battery" of 6 guns beyond its walls, which was the origin of that public park still known as the Battery. Nicholson and the council of the province, with the authorities of the city, headed by Stephanus van Cortlandt the mayor, attempted by pacific means to prevent the uprising, but without effect. Becoming finally alarmed for their own safety, the lieutenant-governor sailed for England, and the mayor with the other officials retired to Albany. On Aug. 16 the committee of safety appointed Leisler "commander-in-chief of the province," with the full power of a governor in all matters civil and military. He now attempted to reduce Albany and the northern parts of the colony, which from the first had refused to recognize his authority, notwithstanding that that city as well as the whole province had acknowledged William and Mary immediately on the arrival of the news of the great revolution in England in the preceding June. Milborne was despatched in November, 1689, with an armed force, to Albany to assist in its defence against some Indian hostilities which were threatened, but directed by Leisler to withhold it unless his own authority was recognized. This was refused, and Milborne returned unsuccessful. In December arrived a despatch from William and Mary directed "to Francis Nicholson, Esq., or in his absence to such as for the time being takes care for preserving the peace and administering the laws in his majesty's province of New York." This Leisler construed as an appointment of himself as the king's lieutenant-governor. He therefore dissolved the committee of safety, swore in a council, and assumed the style of a royal lieutenant-governor and commander-in-chief. After the massacre at Schenectady (Feb. 1690) he engaged with great vigor in the expeditions against the French, and equipped and despatched against Quebec the first fleet of men-of-war that was ever sent forth from the port of New York. A few months later Major Ingoldsby arrived with the news of Slougher's appointment as governor, and demanded possession of the fort, which Leisler refused. On Slougher's own demand immediately upon his arrival in March, 1691, he likewise refused to surrender

it, until he was convinced of Slougher's identity, and the latter had sworn in his council. Leisler was immediately imprisoned, charged with treason and murder, and shortly after tried and condemned to death. His son-in-law and secretary Milborne was also condemned on the same charges. These trials were manifestly unjust; the judges were the personal and political enemies of the prisoners, and so gross were the acts of some of the parties that Slougher hesitated at signing the death warrants, and it is said that he finally did so when under the influence of wine. By the laws of England and of New York Leisler was a traitor, but his crime was that of a weak and ignorant man intoxicated with unexpected success and power.

LEITH, a seaport town of Edinburghshire, Scotland, situated on the Water of Leith at its confluence with the frith of Forth, lat. 55° 58' N., long. 8° 10' W., almost adjoining Edinburgh; pop. in 1851, 80,919. Until the passing of the burgh reform act of 1833, it was dependent upon and governed by the city of Edinburgh, of which it forms the port. The town is built on the low ground adjoining the frith. The more ancient streets and lanes are narrow and tortuous, but those of the modern part of the town are commodious and well built. The harbor, originally a difficult one, on account of the sands brought down by the river accumulating within it, is now one of the most commodious on the E. coast; and its piers, docks, and other works which have been constructed within the past 50 years, afford excellent accommodation for shipping. A large portion of the trade of this port is with the Hanse towns, Holland, Denmark, and the Russian Baltic ports. The shipping registered in the port of Leith, Dec. 31, 1857, consisted of 149 sailing vessels, tonnage 20,507, and 89 steam vessels, tonnage 7,367. In the coasting trade during the year then ending there entered the port with cargoes 1,580 vessels, tonnage 233,218; the clearances coastwise were 1,237, tonnage 225,136. In the colonial trade the entrances were 22, tonnage 9,051, and the clearances 29, tonnage 13,537. The entrances from foreign countries numbered 1,219, tonnage 161,423, and the clearances 424, tonnage 74,886. Of the entrances 851, tonnage 86,217, and of the clearances 200, tonnage 23,060, were foreign vessels. The customs revenue for 1856 amounted to £493,817, and for 1857 to £486,646. The municipality is governed by a provost, 4 bailies, and 10 councillors; and conjointly with Portobello and Musselburgh, it constitutes a parliamentary burgh, which sends one member to the imperial parliament.

LEITRIM, a maritime county of the province of Connaught, Ireland; area, 618 sq. m.; pop. in 1851, 111,915. Lough Allen divides the county into two very nearly equal parts, that lying S. being chiefly an undulating plain, bounded on the W. by the Shannon, and that lying N. hilly with intermediate valleys traversed by fertilizing streams. Loughs Macnean (4 by 2 m.) and Melvin (8 by 2 m.) separate the N. E. part of

the county from Fermanagh, and the river Duff separates it from Sligo. The coast for the most part is a rocky bluff rising above a rough stony beach, and exposed to the whole swell of the Atlantic. It has no port or harbor; there are salmon fisheries at the mouths of the rivers. The principal streams are the Shannon, Rinn, and Bonnet. The surface is diversified, and in the valleys and plains the soil is extremely fertile. It is chiefly underlaid with limestone, with sections in the hilly portions of millstone grit, sandstone, conglomerate, and graywacke, and near Lough Allen is an extensive coal formation. Lead, copper, and manganese are found, and fullers' earth, potters' clay, steatite, and marls are abundant. The climate is raw and damp, but more genial in the S. than in the N. The principal crops are potatoes, oats, and hay; the county generally is more adapted to grazing than tillage. Turf fuel is everywhere abundant. The manufactures produced are linens and woollens for domestic use, and a coarse pottery. The principal towns are Carrick-on-Shannon (the county town), Manor-Hamilton, and Mohill. The county sends two members to parliament.

LEKAIN, HENRI LOUIS CAIN, a French tragedian, born in Paris, April 14, 1738, died Feb. 8, 1778. He was the son of a goldsmith in very moderate circumstances, and after studying at the Mazarin college, where he imbibed a taste for the dramatic art, he was placed at his father's trade. His performance as a member of a private dramatic association attracted the notice of Voltaire, who aided him liberally with money and advice, and procured for him permission to appear on the stage at the *théâtre Français*, where he met with both warm applause and bitter opposition. He persevered, corrected his faults, and after 17 months obtained a regular engagement at that theatre. From this period he constantly improved, and secured such popularity that his death was looked on by the patrons of the drama as a public calamity. His fame has scarcely been equalled by that of Talma or Rachel. He was peculiarly great in most of Voltaire's tragedies. His *Mémoires* were published by his son in 1801, and reprinted at Paris in 1825 under the supervision of Talma.

LELAND, CHARLES GODFREY, an American author, born in Philadelphia, Aug. 15, 1824. He was graduated at Princeton college, N. J., in 1846, and subsequently studied at the universities of Heidelberg, Munich, and Paris, devoting himself more particularly to the modern languages, æsthetics, history, and philosophy. He was residing in the last named city during the revolutionary outbreaks in Feb. 1848, and was one of the American deputation sent to congratulate the provisional government. He returned to Philadelphia in the same year, studied law with John Cadwallader, Esq., and was admitted to the bar; but he soon relinquished that profession for the pursuit of literature. He has since been connected as editor or contributor with a number of periodicals, including the "Knickerbocker Magazine," for which he began

to write while a student in college, "Sartain's Magazine," the "International Magazine," "Graham's Magazine," the "Philadelphia Bulletin," &c. His published works consist of the "Poetry and Mystery of Dreams" (Philadelphia, 1855), in the preparation of which he consulted the works of Artemidorus, Nicephorus of Constantinople, and other authors, ancient and modern, who have written on oneirology and the related mental phenomena; and "Meister Karl's Sketch Book" (12mo., 1856), a collection of miscellanies and sketches of foreign travel, many of which first appeared in the "Knickerbocker" and elsewhere. In 1856 appeared his "Pictures of Travel," a translation of Heine's *Reisebilder*. He at present resides in New York.

LELAND, JOHN, D.D., an English Presbyterian divine, born in Wigan, Lancashire, in 1691, died in Dublin, Jan. 16, 1766. Though engaged through life in polemical warfare, he was remarkable for charity and candor. His principal works are: "The Divine Authority of the Old and New Testament" (3 vols. 8vo., 1789-'40); "View of the Principal Deistical Writers that have appeared in England in the Past and Present Century" (1754); and "The Advantage and Necessity of the Christian Revelation" (2 vols. 4to., 1764).

LELAND, JOHN, an American clergyman, born in Grafton, Mass., May 14, 1754, died in North Adams, Mass., Jan. 14, 1841. He was baptized in 1774, a few months later was licensed as a Baptist preacher, and in 1775 removed to Virginia, where until 1791, with the exception of occasional visits to the North, he was actively employed in discharging the duties of his office. In Feb. 1792, he settled in Cheshire, in western Massachusetts, where he resided for the most part until his death. He was one of the most prolific writers of his denomination, and during his long ministry preached many thousand original sermons, and baptized more persons probably than any one of his contemporaries. His literary productions, consisting of occasional sermons, addresses, and essays on a variety of subjects, together with his autobiography and additional notices of his life by Miss L. F. Green, were published in 1 vol. 8vo. in 1845. He was a man of much eccentricity of character and native shrewdness, and throughout his life took the warmest interest in politics. In the latter part of 1801 he went to Washington to present to Mr. Jefferson a mammoth cheese weighing 1,450 pounds, as a testimonial of the esteem and confidence of the people of Cheshire in the new chief magistrate. He was firmly attached to the democratic party, and sometimes manifested his predilections in his pulpit discourses.

LELEGES, an ancient people, who appear in the early traditions of the western coast of Asia Minor, of the islands of the Ægean sea, and of various countries of Hellas and Peloponnesus, but whose history is involved in great obscurity. They are mentioned in Homer as the allies of the Trojans; Herodotus identifies them with the Carians; and Pausanias regards them as a

part of the latter people. They seem to have been of Pelasgian race, and to have become connected with the Carians after an emigration from the continent of Greece to the islands, whence they followed them to Asia Minor.

LELEWEL, JOACHIM, a Polish historian and statesman, born in Warsaw, March 20, 1786. He studied history at Wilna, and, having distinguished himself by a dissertation, was appointed professor of history at the classical school of Kremenetz in Volhynia, under the direction of its founder, Thaddeus Czacki. He subsequently received the same position at the university of Wilna, which under the curatorship of Prince Adam Czartoryski had become the foremost seat of learning in the Polish provinces. By a number of critical treatises, which embraced the most varied topics of ancient, mediæval, and in part of modern history, he rapidly rose to the first rank among Polish historians, his works being especially admired for diligent research, while his patriotic spirit, democratic tendencies, and bold language made him the favorite lecturer of the university. The last named characteristic, however, caused his removal from it in 1822, followed by a most rigorous persecution of the patriotic students by the new curator. He then returned to his native city, and continued his literary labors until 1830, when he was elected a member of the diet by a town of Podlachia. He spoke boldly against the measures of the government, but on the outbreak of the revolution of Nov. 29 was prevented by attendance on his dying father from an active participation in the first conflict. He was, however, one of the principal promoters and acknowledged leaders of the movement, and was a member of the various revolutionary governments which succeeded each other before the events of Aug. 15, 1831, which he was accused of having brought about by his course as president of the democratic club. After the fall of Warsaw in the following month, he hastened to Paris, where he was placed at the head of a national committee by the democratic Polish emigrants. The revolutionary activity of the committee drew upon Lelewel not only the enmity of the continental governments, but also severe attacks from the aristocratic and military fractions of the Polish refugees, headed by Czartoryski, Bem, and others, who expected an intervention in favor of Poland less from the nations than from the constitutional governments of Europe. The committee was dissolved, Lelewel removed from Paris by order of the government of Louis Philippe, and finally, after the failure of several Polish conspiracies in various countries, he was banished from France. He repaired to Brussels, where he lectured on history at the new university, and where he has since resided, living a life of self-imposed poverty, which, together with an almost marvellous literary activity, has won him the admiration even of his enemies. Among the most important of his numerous works, in Polish, French, and German, are: a "History of Poland" for youth (Warsaw, 1829);

"Treatises on Geographical and Historical Subjects" (Leipsic, 1836); "Numismatics of the Middle Ages" (Paris, 1836); "Numismatical Studies" (Brussels, 1840); "Poland Regenerated" (Brussels, 1843); "Poland in the Middle Ages" (Posen, 1846-'51); "Geography of the Arabs" (Paris, 1851); and "Geography of the Middle Ages," with an atlas engraved by himself (Brussels, 1852), the greatest and most admired of his publications.

LELY, SIR PETER, a portrait painter of the time of Charles II. of England, born at Soest, Westphalia, in 1617, died in England in 1680. His family name was originally Van Der Faes, but his father assumed the name of Lely. He was instructed in painting by Peter Grebber of Haarlem, and at 20 years of age had acquired some reputation for his landscapes and portraits. Visiting England in 1641, he determined to follow the example of Vandyke, and thenceforth devoted himself almost exclusively to portrait painting, in which he soon surpassed all his contemporaries. The prince of Orange introduced him in 1643 to the notice of Charles I., who sat to him for his portrait, after which he was employed by other members of the royal family, and persons of distinction. During the commonwealth he remained in England, and is said to have painted the portrait of Cromwell, who warned him that unless he made a true likeness, with all the roughnesses, pimples, and warts as he saw them, he should not receive a farthing for the picture. At the restoration, however, his pencil found its most congenial employment; and as court painter to Charles II., who made him a knight, he gained great wealth and distinction. He excelled in female portraits, and his celebrated series of the "Beauties of the Court of Charles II.," preserved at Hampton Court, which are well known through the engravings attached to Mrs. Jameson's work bearing the same title, afford the best illustration of his graceful and sprightly pencil. His portraits of men are much inferior. His coloring was clear and warm, his drawing good, and his arrangement of draperies and costume in excellent taste. The attitudes and expression of his female portraits sometimes border on the voluptuous, but the grossness is generally redeemed by a high-bred and aristocratic bearing which seems perfectly unstudied. Sir Peter was noted also for the delicate painting of the hands in his female portraits, as in that of Nell Gwynn, one of the most favorable specimens of his style. The landscapes in his portrait pieces were generally executed by other hands. He occasionally painted historical pictures, of which the best known is "Susannah and the Elders," at Burleigh house.

LEMAIRE, NICOLAS ÉLOI, a French classical scholar, born in Triancourt, Meuse, Dec. 1, 1767, died Oct. 8, 1822. He completed his studies in the college of St. Barbe in Paris, and became professor of rhetoric in 1790. Embracing the extreme revolutionary opinions, he was a deputy judge in 1793. Under the consulate he trav-

elled in Italy, and delivered brilliant Latin improvisations in several cities. He at length overcame the prejudices of Napoleon, and obtained in 1811 the chair of Latin poetry in the faculty of letters, where his lectures attracted distinguished audiences. Under the restoration he began his most important work, the *Bibliotheca Classica Latina* (154 vols., Paris, 1818 *et seq.*), which he left unfinished at his death. It embraces 18 poets and 16 prose writers. Lemaître is the author also of several original Latin poems.

LEMAÎTRE, FRÉDÉRIC, a French actor, born in Havre in July, 1798. He comes of a family of artists, his grandfather having been a musician and his father an architect. At an early age he prepared himself for the theatrical profession, enjoying the instruction of M. Lapont at the *conservatoire* of Paris. In 1822 he failed in a competition for prizes offered to the pupils of that institution; only a single vote was recorded in his favor, but that was given by Talma. In 1823 he made his début at the *Ambigu comique*, but his reputation was not firmly established till 1834 by his personification of Robert Macaire, at the *Folies dramatiques*, in the play of that name, of which he was one of the authors. His rendering of Alexandre Dumas' *Kean*, and particularly of Victor Hugo's *Ruy Blas* (1836), and of Balzac's *Vautrin* (1840) added to his fame, although not even his acting could save the latter play from being withdrawn on account of its reflections upon Louis Philippe. In 1842 he played for some time at the *théâtre Français*, but his genius was not suited to those classic boards. He has since performed alternately at the Porte St. Martin, the Gaité, the Variétés, the Odéon, and the Ambigu Comique. In these theatres, where the modern French drama is flourishing, he has been so successful in amusing the audiences in his comic and moving them in his tragic parts, that he has often been called the Talma of the boulevards. Among his most popular performances, beside Robert Macaire, are Don César de Bazan and Toussaint L'Ouverture. More recently he has won great applause in *Le vieux caporal* (1853), *Henri III.* (1856), and *Le maître d'école* (1859). He has shared in the authorship of various plays.

LEMAN, LAC. See GENEVA, LAKE OF.

LEMBERG, or LEOPOL (Pol. *Lwów*), the capital of Austrian Galicia, situated on the small river Peltew, a tributary of the Bug, about 200 m. E. from Cracow and 400 m. E. N. E. from Vienna; pop. 75,000, over $\frac{1}{2}$ of whom are Jews. The city proper is small, but the 4 suburbs are extensive and contain many handsome houses; and the lofty towers of the cathedral and the 23 other churches, as well as the massiveness of other public edifices, give to the city an imposing appearance. The university of Lemberg was founded in 1784; the average annual attendance of students is now about 1,000. The city possesses also an institute, established by Ossolinski, rich in Slavic antiquities and in ancient Polish literature. It is the seat of the governor

of Galicia (in 1860, Count Goluchowski), of Roman Catholic, United Greek, and Armenian archbishops, and of Protestant superintendents. Some manufactures are carried on, but it is chiefly as a commercial town, with large annual fairs, and as one of the principal corn markets of Austria, that Lemberg is important. The city was founded in the 13th century, taken by Casimir I. of Poland in 1840, besieged in 1648 by the revolted Cossacks under Chmielnicki, who withdrew on receiving a large ransom, and captured by the Turks in 1672, when it ceased to be of importance as a fortress. After having been more than 4 centuries in the possession of Poland, it came to Austria at the first partition of that country in 1772. It was bombarded by the Austrians during the outbreak of Nov. 2, 1848.

LE MICHAUD. See ARÇON, JEAN CLAUDE ÉLÉONORE D'.

LEMMING, a small rodent of the sub-family *arvicolina* or field mice, and the genus *myodes* (Pallas); authors have also referred it to *georchus* (Ill.), *lemmus* (Zinck), and *hypudaeus* (Ill.). The lemmings may be distinguished from the arvicolae by the hairy soles, very short tail, long sickle-shaped claws for digging, and small size or absence of the ears; the last lower molar has 4 or 5 triangular prisms alternating with each other. The species are confined to the arctic regions of both hemispheres, and are the most northern form of rodent known; of the North American species none have been found within the United States; they live in the thick mosses and sphagnum swamps in the vicinity of the arctic circle. The Norway lemming (*M. lemmus*, Pall.) has a stout body 5 inches long, a short and broad head, short and robust legs, and coarse bristly hair; the whiskers are in 5 horizontal series; the fore feet are provided with very long, stout, and fossorial claws, the 3d the longest, and the thumb rudimentary; the hind feet short and broad, well armed with claws; the short tail is densely coated with hair. The dentition consists of incisors $\frac{1}{2}$ - $\frac{1}{2}$, molars $\frac{3}{4}$ - $\frac{3}{4}$; the skull is massive and broad, the orbits very large, the temporal fossae small, and the zygoma high; the incisors are thick, large, and much rounded anteriorly. The color above is yellowish and reddish with black markings, and yellowish white below. Its natural habitat is the mountainous regions of Lapland and Norway, from which it descends at irregular intervals in immense troops, which devour every green thing in their course, and commit as great devastations as the migratory locusts; it has been supposed that an unusual multiplication of these animals and an actual or anticipated scarcity of food impel them to these migrations. They move chiefly by night or early in the morning, proceeding obstinately in a direct line, swimming rivers, crossing mountains, and permitting nothing but an absolutely insurmountable obstacle to alter their straight course; many are destroyed by fire and water, by each other, and by rapacious beasts and birds. They are

not disposed to live in society, but dwell in a scattered manner in holes in the ground; they lay up no regular provision for the winter's use; they produce 5 or 6 young at a time, and it is said several times a year; the flesh, which tastes like that of the squirrels, is eaten in Lapland. The food consists of plants, seeds, roots, and any vegetable matter that comes in their way.—The best known American species is the Hudson's Bay lemming (*M. torquatus*, Keys. and Blas., or *M. Hudsonius*, Wagner), a circumpolar animal, coming down as far as Labrador and more southward on the Pacific coast. There are no external ears, and the 2 middle claws of the fore feet are remarkably large; the color above is a mixed reddish brown and pale yellow, palest on the sides, beneath whitish, whiskers black, and sometimes with a whitish collar edged with brown on both sides; the color is white in winter, with a few black hairs interspersed. The length is about 5½ inches; the thumb is rudimentary on the fore feet, and the 2 middle toes appear to have double nails, as the callous end projects under the nail. It is an inoffensive animal, living in burrows in the ground or under stones, feeding on roots and similar substances. Back's or the tawny lemming (*M. Obensis*, Brants) is rather smaller, of a brownish yellow mixed with black hairs, brighter on the sides, and rusty below, throat white. It resembles in appearance and probably in habits the Norway lemming, and lives in the high northern latitudes of America, burrowing under the thick mosses of those regions.—For details on the lemmings, see Sir John Richardson's *Fauna Boreali-Americana*.

LEMNOS (now *Stalimni*, *Stalimene*, or *Limna*), a Turkish island in the Grecian archipelago, situated about 40 m. S. E. from the Dardanelles, in lat. 40° N., long. 25° E.; length 22 m., breadth 20 m.; area, about 150 sq. m.; pop. 10,000. Lemnos may be said to have been formed by the union of two peninsulas, the bay of Paradise N. and that of Sant' Antonio S. almost dividing it into two parts. The surface is in general hilly, and the soil light. A considerable portion of the islanders are engaged in fishing. The capital, *Stalimni* (anc. *Myrina*), stands on the W. coast, and is the residence of a Greek bishop and of the Turkish governor. According to Pliny, Lemnos once contained a labyrinth sustained by 150 columns, and the gates of which could be opened by a child. This island has been famous from remote antiquity for a species of earth termed *terra Lemnia*, thought by the ancients to possess extraordinary medicinal virtues. In antiquity Lemnos was sacred to Vulcan, whose workshop is placed there by some of the poets. The most ancient inhabitants are said to have been Thracians, who were succeeded by the fabulous Minyæ, and subsequently by Pelasgians. It was conquered by Darius, but delivered by Miltiades, and made an Athenian dependency.

LEMOINE D'IBERVILLE. See *IBERVILLE*.

LEMON (*citrus limonum*, Kisso), a well known

fruit, native of Asia, and long cultivated in various countries, both in the open air and under the protection of glass structures. According to Loudon, 28 varieties are enumerated by Dr. Sickler as growing in Italy; according to Ville Hervé, 11 sorts were known among the French, and 12 sorts in the London nurseries. The varieties of the lemon are to be distinguished chiefly by their size and form, and they may be classified as egg-shaped with blunt nipples, and oblong lemons with large nipples. The most valued of the egg-shaped are the thin-rinded lemons, such as the Poncine, incomparable, Naples, and the sweet lemon; and of the oblong sorts may be mentioned the imperial, the Gaëta, the large fruit, and the wax. There is also a distinct race, which comprehends the *perettes* or little pears; they are very small-fruited, of a pale greenish yellow, and the rind is more delicately perfumed than that of the common lemons. The lemon, like the orange, though commonly seen as a low bush in our greenhouses, grows under congenial circumstances to the size of a respectable tree; even in England instances are on record of large trees of considerable age. In a properly constructed conservatory the lemon grows with great luxuriance, and produces the most delicious fruit, possessing a freshness and grateful acidity not to be found in those that are imported. For beauty few shrubs or trees can rival it, in its large pale-green foliage, in its wide and loosely hanging branches, in the profusion of its showy and highly fragrant flowers, and in its fine fruit hanging in all stages of growth and degrees of ripeness. The leaves of the lemon are liable to become infested with a black sooty substance, arising from a sort of leaf fungus known as the *fumago foliorum* (Link); and when this appears it should be carefully washed off. Several sorts of cocci or scale insects attack the stems and branches, but not more than other hard-wooded plants. Trained to the back wall of the greenhouse, the lemon will grow luxuriantly, and soon become a beautiful object. The use of the fruit is too well known to require further mention. The lemon is readily produced from seeds, but where finer and choicer sorts are needed, they are to be propagated by grafting or budding them upon seedling plants, thus also hastening most materially their production of flowers and fruit. Cuttings also will grow if properly treated in the manner required by similar woody plants. Like the rest of the *citrus* family, the lemon requires a season of temporary repose, when the soil may be kept rather dry and warm. Indeed, according to Dr. Lindley, the temperature of the soil rises to 85° F., and never falls below 58°, in those places where the orange tree is found in perfection; and the lemon must require a similar temperature. It has been observed, especially in pot culture, that a certain sweet substance known as honey-dew, which sometimes exudes from the foliage, originates from over watering, and that this, together with a pale and yellow as-

pect, which the leaves sometimes assume, seems to come from excess of moisture at the roots. The obvious remedy is to keep the plants rather dryer for a time.

LEMON, MARK, an English author, born in London, Nov. 20, 1809. He early entered upon a literary career as a writer for the stage, and has produced, either singly or in copartnership with others, upward of 60 plays, farces, melodramas, and other species of dramatic composition. Of these, the best known probably is the popular play entitled the "Serious Family." Upon the establishment of "Punch" in 1841 he became its joint editor and a regular contributor, and two years later he was appointed sole editor, a position which he has continued to fill down to the present time. In this capacity he has displayed a tact and an abundance of resources which have materially aided in sustaining the literary reputation of the work. He has also been a busy writer for a variety of periodicals, and some of his contributions to the "Illuminated Magazine" have been republished under the title of "Prose and Verse." He is now literary editor of the "Illustrated London News." He possesses considerable ability as an actor, and as a member of the late guild of literature and art has frequently participated in the dramatic performances produced under its auspices.

LE MONNIER, PIERRE CHARLES, a French astronomer, born in Paris, Nov. 23, 1715, died in Héric, near Bayeux, May 31, 1799. The son of a noted savant, he made astronomical observations at the age of 16, and before he was 21 years old he was received into the academy of sciences, having already presented to that body an elaborate map of the moon. In 1736 he accompanied Maupertuis to Tornea for the measurement of a degree in Lapland; and on his return, by introducing superior instruments and the methods of Flamsteed, he caused great improvements in practical astronomy. In 1742 the king gave him apartments at the Capuchins, rue St. Honoré, which he occupied till the revolution. In 1748 he went to Scotland to observe the solar eclipse, which was there almost annular, and succeeded in measuring the diameter of the moon on the disc of the sun. The results of his observations are contained in the memoirs of the academy, to nearly every volume of which he furnished one or more papers for more than 50 years. He also produced various independent works on astronomical subjects.

LEMMA, a river of San Salvador, and the largest stream of Central America, falling into the Pacific. It rises in the lake of Guija, in the N. W. corner of San Salvador, flows nearly due E. through a broad and fertile valley for a distance of nearly 150 miles, and then, turning abruptly to the S., breaks through the volcanic coast range of mountains, and falls into the Pacific in lat. 13° 12' N., long. 88° 41' W. For a considerable part of its course it is navigable. Mr. Squier crossed it 150 miles above its mouth, where it was a large and rapid stream, 130

yards broad and 10 feet deep. He crossed it also 50 miles above its mouth, where it was 250 yards broad and 15 feet deep. It drains a wide expanse of country, has numerous large tributaries, and as a consequence is subject to sudden floods, at which times the water rises on the lower portions of the stream to from 20 to 35 feet, completely submerging the neighboring country. The mouth of the river, which is broad and open, is obstructed by a bar, with only 6 feet of water; but the estero of Jaltepeque approaches to within a league of the river, with which it is connected by a natural channel, navigable by small boats during the rainy season.

LEMPRIERE, JOHN, D.D., an English classical scholar and author, born in Jersey about 1760, died Feb. 1, 1824. He was educated at Westminster school and at Pembroke college, Oxford, where he was graduated in 1792. He is well known as the author of a *Bibliotheca Classica*, or "Classical Dictionary," first published in 1788 in 8vo., and afterward enlarged to 4to. This, though a work of little original research, was the chief book of reference to the English classical scholar on ancient mythology, biography, and geography until the appearance (1842-'53) of the elaborate dictionaries edited by Dr. William Smith. He also published a "Universal Biography" (4to., London, 1808), and commenced a translation of Herodotus, of which he published one volume in 1792.

LEMUR, the name applied to many animals of the order *quadrumana* or monkeys, of the families *galeopithecidae* and *lemuridae*, all of the old world. The *galeopithecidae* or flying lemurs, elevated into the order *ptenopleura* or *dermoptera* by some authors, evidently form the connecting link between the monkeys and the bats. The single genus *galeopithecus* (Pall.) has, according to Owen, the following dental formula: incisors $\frac{3}{3}$, canines $\frac{1}{1}$, premolars $\frac{4}{4}$, and molars $\frac{3}{3}$; the feet are all 5-toed, without opposable thumbs, united by a small membrane, armed with claws, and adapted for climbing; the body is surrounded by a hairy lateral membrane, extending from the sides of the neck to the base of the feet, embracing the wrists, and continued between the legs, involving the tail as in many bats; this membrane, like that of the flying squirrel, serves as a parachute to sustain the animal in its astonishing leaps from tree to tree. The edges of the lower incisors are serrated like the teeth of a comb; the eyes are large and prominent, the ears moderate; there are 2 pairs of pectoral mammae. They are nocturnal animals, passing the day suspended from trees by the hind legs; they are very active at night, climbing with facility, and springing from tree to tree for a distance of 100 yards; the females carry the young in the fold of abdominal integument, when travelling among the trees; their food consists principally of fruits, insects, small birds, and eggs. Though the name *galeopithecus* signifies cat-monkey, their movements on the ground are rather

awkward. The largest species (*G. variegatus*, Geoffr.) is about the size of a cat, but slimmer; the color varies from light gray to russet, spotted and striped with black and light colors. All the species live in the East Indian archipelago. Though emitting a disagreeable odor, the flesh is considered palatable by the natives.—In the true lemurs (or *prosimia*, as they are sometimes called) the upper incisors are 4, mostly in pairs, separate from the canines, and the lower 4 or 2; the feet are 5-toed, with opposable thumbs on the hind ones, and the 4th finger the longest; the hind feet the longest, with the nail of the 2d finger incurved, the other nails flat. The name *lemur*, which signifies ghost or spectre, was given to them by Linnaeus from their nocturnal habits. More than 80 species are known, divided into 5 principal genera, inhabiting chiefly Madagascar, a few living in Africa and the warm regions of Asia and its archipelago. Though classed with the *quadrumana*, they come nearer to the *insectivora* in the 2-horned uterus, the permanent separation of the lower jaw at the symphysis, and the openness of the orbits behind. The head is rounded, and the snout so elongated and pointed that they are often called fox-nosed monkeys; the legs are tolerably long, the eyes large and in the front of the head, the ears small, the fur soft, and the tail generally long and bushy. They are very pretty animals, with habits like those of the preceding family, and are gentle and playful in captivity; a single young one is produced at a birth, which the mother carries about for a long time, concealed in her long hair or coiled round her body, tending it with great care. The largest species is the indri (*Lichanotus brevicaudatus*, Illig.), about the size of a large cat, the tail being a mere rudiment; the dental formula is: incisors $\frac{3}{2}$, canines $\frac{1}{1}$, molars $\frac{3}{2}$ = 30; the color is black, with white throat, buttocks, and heels; they are tamed by the natives of Madagascar, and being very agile are trained like dogs for the chase. The long-tailed lemur (*L. longicaudatus*, Geoffr.) has a woolly fur of a ruddy brown color, grayish on the belly; found in the eastern parts of Madagascar.—The genus *lemur* (Linn.) has incisors $\frac{3}{2}$, canines $\frac{1}{1}$, and molars $\frac{3}{2}$ = 36; the eyes are lateral; the tail long and hairy throughout. The ring-tailed lemur (*L. catta*, Linn.) is one of the most elegant species, of a delicate gray color, ruddy on the back, white below and on the cheeks, and the tail ringed with black and white; it is about 19 inches long, of which the tail is 7; it is a gentle and confiding animal, and received its specific name from its occasionally making a sound like the purring of a cat; a common name is *macoco*. The vari (*L. macaco*, Linn.) is varied by large white and black spots. The red lemur (*L. ruber*, Péron) is of a reddish chestnut color, with head, fore hands, tail, and belly black, and a white spot on the nape, being one of the few animals in which the lower parts are darker colored than the upper; it is easily tamed, gentle, agile, but sleepy during the day; the body is about 13

inches, and the tail about 1½ feet long. The mongous (*L. mongos*, Linn.) is olive brown, with black hands and face; the *L. albifrons* (Geoffr.) has a white forehead. The name of mongous is popularly applied to all lemurs of an olive brown color; the term *maki* is also synonymous with *lemur*, most of the species living in Madagascar. The genus *stenops* (Illig.), comprising the slow lemurs, will be noticed under *LORI*, the common name.—The African lemurs or galagos (*otolicnus*, Illig.) have the nails and teeth of the preceding genus, but the tarsi are elongated, the ears large and naked, the eyes large, and the tail long and tufted; they are insectivorous and frugivorous, nocturnal, and as agile as monkeys or squirrels, making great jumps; when sleeping they are said to close the ears like bats; the flesh is eaten by the natives of Senegal. The *O. galago* (Wagn.) is about 7 inches long, and the tail about 9; it is of a grayish color, pale yellow on the legs, and the tail brown. The *O. crassicaudatus* (Wagn.) is as large as a rabbit, inhabiting southeastern Africa. The dwarf lemur (*O. pusillus*, Geoffr.), with more hairy ears, facial whiskers, and broader upper incisors (*microcebus*, Geoffr.), sometimes called the Madagascar rat, is 10 or 11 inches long and 6 inches high; the color is grayish fawn above and white below. In the genus *tarsius* (Storr) there are only 2 lower incisors, and the molars have several acute tubercles like the insectivora; the eyes are very large, the ears ample and somewhat naked, the tarsus much elongated, and the tail much longer than the body and tufted at the tip. The spectral lemur (*T. spectrum*, Geoffr.) is of a grayish brown color, living in the forests of the Indian archipelago, its long tarsi enabling it to leap like a frog; the size is small.—The lemurs are very interesting as supplying transition forms between monkeys, bats, insectivora, and rodents.

LEMURES, or *LARVÆ*, in Roman mythology, malignant spirits who were thought to haunt the earth by night and to possess great power for evil over the living. They were the spirits of bad men, and were held in much dread, while the lares or souls of the virtuous were supposed to exercise over mankind a kindly influence. According to some writers, however, the term *lemures* applied to all spectres of the dead, both lares and larvæ. To propitiate the latter, the Romans annually celebrated a festival in the month of May, called the *lemuria* or *lemuralia*.

LENA, a river of eastern Siberia, rising on the W. of Lake Baikal, near Irkutsk. Its direction is at first N. and then E. N. E. until it reaches Yakootsk, about lat. 62° N., long. 129° 44' E., where it resumes a northerly course, and preserves it until it discharges its waters through numerous mouths into the Arctic ocean. Its length is about 2,400 m., and it lies wholly within the Russian dominions. The Vitim, Aldan, and Vilooi are its most important tributaries. It discharges a vast volume of water, and at the distance of 800 m. from its mouth is 5 or 6 m. wide. It is navigable

through the greater part of its course, but the surrounding country is bleak and desolate.

LENAPES. See DELAWARES.

LENAWEE, a S. E. co. of Mich., bordering on Ohio, and drained by Raisin and Macon rivers and several other streams; area, 735 sq. m.; pop. in 1850, 26,372. It has a rolling surface, well wooded in some places, and a fertile soil consisting chiefly of a black sandy loam. Iron ore is found. The productions in 1850 were 399,676 bushels of Indian corn, 315,210 of wheat, 176,627 of oats, 126,089 of potatoes, 25,648 tons of hay, and 187,570 lbs. of wool. There were 17 grist mills, 22 saw mills, 7 iron foundries, 5 newspaper offices, 48 churches, and 8,059 pupils attending public schools. The Michigan southern and northern Indiana railroad passes through Adrian, the capital, which is also the terminus of the Detroit, Monroe, and Adrian, and the Jackson branch railroads.

LENCAS, a tribe of Indians occupying the high plateaus of Otoro and Jutibucat, to the S. W. of the city of Comayagua, Honduras. They speak dialects of a language which seems to have been widely diffused through the central portions of Honduras, and which the Spaniards, following the designation of their Mexican auxiliaries, vaguely denominated Chontal, a word which signifies simply foreign or barbarous. At present the Lencas occupy the mountain towns of Opatora, Guajiquero, Lauteroque, Jutibucat, Yamalauguira, &c., and number from 85,000 to 40,000. They are industrious, frugal, and thrifty, peaceable but brave, devotedly attached to their mountain homes, and altogether good citizens of the state.

L'ENCLOS, NIXON, or ANNE DE, a French lady of pleasure, born in Paris, May 15, 1615, died there, Oct. 17, 1705. Her father, a gentleman of Touraine, and a highly accomplished man, educated her in the philosophy of the time, and in fact trained her by precept and example to a life of pleasure. She was skilled in accomplishments, and when an orphan at the age of 15 manifested precocious shrewdness in managing her property, which she so disposed of as to speedily double its value. Being beautiful, witty, and fond of cultivated society, she soon became popular in Paris, where she fixed her residence, her love being sought by many of the most eminent men of the age. She was remarkable for being neither avaricious nor extravagant, and, with a constant succession of lovers, appears to have never depended on them for pecuniary aid. "It required," says Voltaire, "great ingenuity and much love on her part to induce her to accept presents." Few minds of the age were freer from hypocrisy or untruthfulness than Ninon's, and the most characteristic anecdotes in relation to her are those which reflect credit on her integrity. Distinguished and modest women courted her society, and Mme. de Lafayette, Mme. de Sully, and Mme. Scarron (afterward De Maintenon) were among her friends and visitors. Christina of Sweden during her residence in France

was warmly attached to her, and wished her to take a place in her little court, but Ninon preferred independence. She was regarded as a model of refinement and elegance in her manners. Although she led a life of pleasure far into old age, she preserved her beauty and fascination almost to the last, and is said to have had lovers for three generations in the family of Sévigné. In the works of St. Évremond, who was one of her lovers, are some letters by her which are the only authentic pieces from her pen, though *La coquette vengée* (Paris, 1649) and other works are attributed to her. The great Condé, La Rochefoucauld, Coligni, Villars, D'Albret, and D'Estrées were among her most favored admirers, and the most eminent poets sang her charms. She had two sons. One, the chevalier de la Boissière, whose paternity could not be determined, rose to distinction in the navy. The other, who received from his father, the marquis of Gersay, the name of Villiers, was the victim of an unhallowed passion for his mother; he had been reared in ignorance of his birth, and at the age of 19 (his mother being then 56), on learning the secret from her lips while urging his love, he blew out his brains. This event, however, made no change in the life of Ninon, who always seemed dead to the instincts of maternal tenderness.

LENNEP, JAN VAN, a Dutch poet and novelist, born in Amsterdam, March 25, 1802. He is the son of a noted scholar and poet, was educated at Leyden, and has produced his literary works while sustaining a high reputation and a large practice at the bar. He is called by his countrymen the Walter Scott of Holland, and he has been reproached for making the English writers too exclusively his models. His first publication was a collection of poems (1830), embodying some of the national traditions. After the Belgian revolution he produced two political comedies, the "Frontier Village," and the "Village beyond the Frontier," with the greatest success. He is the author of more than 50 romances, among the principal of which are: "Our Ancestors," a series of stories relating to the history of Holland; the "Rose of Dekama," translated into English by Woodley (London, 1847); and the "Adopted Son," translated by Hoskins (New York, 1847). He has translated into the Dutch language several of the dramas of Shakespeare, and some of the poems of Southey and Tennyson. He has written also a history of northern Holland for children, a description of the old castles of Holland, and numerous operas and comedies. He is preparing a complete edition of the Dutch poet Vondel. An elegant edition of his dramatic works was published in Amsterdam in 1852-'5.

LENNOX, a co. of Canada West, bordering on the bay of Quinte on the N. W. shore of Lake Ontario, and drained by Salmon and Napanee rivers; area, 170 sq. m.; pop. in 1851, 7,955. Its S. and S. W. coast is indented by numerous inlets. The surface is diversified, and the soil, resting on beds of limestone, is very fertile.

Indian corn, wheat, oats, rye, buckwheat, potatoes, and peas are the chief productions. Capital, Kingston.

LENNOX. See DUMBARTONSHIRE.

LENNOX, CHARLOTTE, an English authoress, born in the city of New York in 1720, died in England, Jan. 4, 1804. Her father, Col. Ramsay, who was lieutenant-governor of the colony of New York at the time of her birth, sent her to be educated in England, where she passed the remainder of her life. She married, and, having become a widow in straitened circumstances, was obliged to resort to her pen for the means of subsistence. Her chief work, entitled "Shakespeare Illustrated" (3 vols. 12mo.), is a collection of the novels and histories from which Shakespeare is supposed to have derived the plots of some of his chief plays, with critical remarks. Among her other works are translations of "Sully's Memoirs" and "Binney's Greek Theatre," "The Female Quixote," and a variety of plays, novels, and miscellanies. She enjoyed the friendship of Dr. Johnson and Richardson, the former of whom ranked her as equal if not superior in talent to Miss Burney or Hannah More, and assisted her in drawing up proposals for an edition of her works in 3 vols. 4to., which however seems never to have been published. She died impoverished.

LENOIR, an E. co. of N. C., traversed by Neuse river; area, 390 sq. m.; pop. in 1850, 7,828, of whom 4,116 were slaves. The surface is undulating, and the soil very fertile near the streams. The productions in 1850 were 322,584 bushels of Indian corn, 92,548 of sweet potatoes, and 185 bales of cotton. There were 13 tar and turpentine factories, 28 grist mills, 11 saw mills, 14 churches, and 200 pupils attending public schools. The North Carolina railroad passes through the county. Capital, Kingston.

LENORMAND, MARIE ANNE ADELAÏDE, a famous French fortune-teller, born in Alençon, May 27, 1772, died in Paris, June 25, 1843. She was of a respectable family, but owing to the death of her father received a very incomplete education, and was for some time a seamstress. At the age of 21 she went to Paris, and entered a linen shop as saleswoman. In 1798 she formed a partnership with a Mme. Gilbert and a baker's boy named Flammernion for the purpose of carrying on the trade of fortune-telling. Having been complained of to the police, Mlle. Lenormand was arrested and imprisoned for several months. After obtaining her freedom she opened in the rue Honoré-Chevalier a "cabinet of divination," which she subsequently removed to the rue de Tournon. Her popularity was remarkable; during 40 years she was constantly visited by persons of all ranks. The court itself contributed much to bring her into vogue, and her ignorance and commonplace manner of divining did not injure her credit in the least. After the fall of the empire Mlle. Lenormand went to Aix la Chapelle, to the congress of the allied sovereigns, where she attracted much at-

tention, especially from the emperor Alexander. She was arrested in 1809 in consequence of "indiscreet revelations," and again in 1821 for some political offence contained in a book published by her under the title of *La sibylle au congrès d'Aix la Chapelle*. About 1880 she sank into obscurity, and finally died at the age of 71, after predicting in one of her books that she should live to the age of 125. She became rich by her calling. She published during her life many pamphlets, and a few books, of no value with the exception of her *Souvenirs de la Belgique, cent jours d'infortune* (1822), and the *Mémoires historiques et secrets de l'impératrice Joséphine*, &c. (8 vols. 8vo., Paris, 1829).

LENOX, the shire town of Berkshire co., Mass., on the Housatonic river, 6 m. S. from Pittsfield, and 157 m. W. from Boston; pop. in 1855, 1,921. The town abounds in marble of excellent quality, which has been employed in the construction of public buildings in Washington and elsewhere, and also in iron ore. At Lenox Furnace are extensive iron works, and a manufactory of window glass. The village of Lenox is situated on the summit of a range of hills, has a number of elegant dwelling houses, 3 churches (Congregational, Episcopal, and Methodist), an academy, a court house, county house, and gaol. In beauty of natural scenery Lenox is not surpassed by any town in western Massachusetts, and has of late years become a favorite summer resort. It has at different times been the residence of well known American authors, including Dr. William E. Channing, Miss Catharine M. Sedgwick, and Nathaniel Hawthorne. It was settled in 1750, and incorporated in 1767, receiving the family name of the duke of Richmond.

LENS (Lat., a lentil), a transparent body used for refracting light. A convex lens is usually of the form of two segments of spheres, united by their bases; a concave lens, on the contrary, has a concavity on either side, into which part of a sphere will fit. Concave lenses are used in spectacles for the relief of near-sighted persons, and in the eyepiece of opera glasses and spy glasses of low power. Convex lenses are used singly as magnifiers. They cause the rays of light which pass through them to converge toward the central line, at right angles to their surfaces; so that to an eye in the right position, rays from different parts of an object make a greater angle than if they had not come through the lens. Convex lenses are also used in combination in telescopes and microscopes, in which the image formed by one lens is looked at under the magnifying power of a second. The image is formed by a convex lens, by means of its power to make the rays of light converge, which brings all the light that emanated from each point of the object again to a point in the air on the opposite of the lens. These points of the image have nearly the same relative position as the corresponding points in the object, and may be rendered visible by being received upon smoke or vapor, or, as in the camera obscura

and magic lantern, upon a sheet. The image in the clear air can be seen by an eye placed in a line prolonged from the object through the image. If the image be formed by a single convex lens, it will, on being magnified, be found to have two principal imperfections, arising from spherical and from chromatic aberration. Spherical aberration arises from the fact that a lens whose surfaces are portions of a sphere cannot bring the rays of light from a point, a fixed star for example, to a perfect point. The true surface for an aplanatic (Gr. *απλανης*, unerring) lens is formed by hand polishing with rouge; but this labor is rendered less by making the surfaces of the two sides parts of different spheres, having the right proportion to each other. Chromatic aberration arises from the fact that the lens decomposes the light, refracting the different colors unequally, so that if it were aplanatic for each color, it would form a series of images, one behind the other, neither of which could be seen, except as surrounded by a fringe of complementary color. To remedy this defect, a concave lens is employed. If this were of the same kind of glass, it would diminish the magnifying power in the same proportion that it diminished the chromatic effect. But by taking a different kind of glass, having a greater power of separating colors than the convex lens has, a compound achromatic lens is formed, having a greater focal length than the convex lens; that is, the concave lens neutralizes only part of the magnifying, but nearly all of the chromatic effect of the convex lens. The word aplanatic has been also applied to various other varieties of lenses.

LENT (Lat. *Quadragesima*), a fast of 40 days, which immediately precedes Easter. The origin of the word is uncertain; some derive it from the Saxon *lencen*, implying spring, or the season when the days "lengthen;" others from the German *leinen*, to thaw. The object of the fast has also been disputed, but it is generally regarded as a preparation for Easter, and a time specially set apart for repentance over the sins of the past year; while the number of 40 days devoted to it is thought to have reference to the Saviour's 40 days' fast in the wilderness, to the 40 days of the deluge, the 40 years' wanderings of the Jews, the 40 days granted to the Ninevites for repentance, or the time spent in fasting by Moses and Elias. St. Jerome speaks of the fast as a memorial of the Saviour's passion. According to the same writer, as well as St. Leo, St. Augustine, and most of the fathers of the 4th and 5th centuries, it was instituted by the apostles, although Protestants commonly hold that it was not established until the 2d or 3d century. It seems to have been made obligatory at least as early as A. D. 250. At first there was great diversity in the time and manner of its observance. Its duration was soon fixed by the church at 36 days, to which 4 were subsequently added. The first day of Lent is called Ash Wednesday, from a custom which still prevails in the Roman Catholic

church of sprinkling the head or forehead with ashes. (See ASH WEDNESDAY.) It is the 46th day before Easter, the 6 Sundays which intervene between it and that festival not being counted as part of Lent nor observed as fast days. In the Roman Catholic church the nature of the fast is prescribed by rule. Only one meal a day is allowed, and at this the use of flesh meat is prohibited, the precept of fasting always implying that of abstinence from flesh. A slight refecton, however, may be taken morning and evening, the quantity of food not to exceed 2 ounces in the former case, and 8 ounces in the latter. But considerable modifications of these rules are made in countries where the climate or habits of the people render their observance injurious to health, and dispensations are also frequently granted in favor of particular persons. In the United States the use of flesh meat is allowed several times a week at the discretion of the bishops. In the Greek church the rules are stricter, and there are 4 lenten fasts in the year. The Protestant denominations which recognize the season of Lent leave the manner of observance to individual judgment. —A curious old English custom followed in Lent was that of pelting a puppet called a Jack o' Lent, the origin of which is not explained. Ben Jonson alludes to it in his "Tale of a Tub":

—on an Ash Wednesday,
When thou didst stand six weeks the Jack o' Lent
For boys to hurl three throws a penny at thee.

In a ballad called "Lenton Stuff," found in a MS. in the Ashmolean museum, occur the following verses:

Then Jake à Lent comes justlynge in,
With the hodgepoece of a herynge,
And saythe, repent yowe of yower syn,
For shame, syra, love yower swerynge:
And to Palme Sonday doethe he ryde,
With sprots and herryngs by hye syde,
And makes an end of Lenton tyde!

The 4th Sunday of Lent is often termed Mid-Lent Sunday or Passion Sunday; it was formerly known as "Carl Sunday," and on that day beans or peas called "carlings" used to be given away or eaten. Thus an English translator (1607) gives the following passage from the *Quadragesimale Spirituale* (Paris, 1565): "After the sallad (eaten in Lent at the first service) we eat fried beanes, by which we understand confession. When we would have beanes well sooden, we lay them in steepe, for otherwise they will never seeth kindly. Therefore, if we purpose to mend our faults, it is not sufficient barely to confess them at all adventure, but we must let our confession lie in steepe in the water of meditation." In his "Colin Clout" Skelton writes:

—In holy Lenton Season,
Ye will neither Beanes nor Peason,
But ye look to be let loose
To a pigge or to a goose.

Lent is preceded in some countries by the dissipation of the carnival. (See CARNIVAL.) The day before Ash Wednesday is called Shrove Tuesday, because the faithful used then to con-

fess and be shaven, in preparation for the fast. (See HOLY WEEK, and GOOD FRIDAY.)

LENTIL (Lat. *lens*), an esculent seed belonging to a plant (*erum lens*, Linn.) of the natural order *leguminosæ* or pea family, and used for food from the earliest times. It is mentioned in Gen. xxv. 84, and in other parts of the Old Testament. The lentils of Egypt used to be held in much esteem. It was a preparation of this diet which Esau exchanged for his birth-right, under the name of "red pottage;" and according to Dr. Shaw, in his "Travels in Barbary," the lentils were dressed in the same manner as beans, dissolving into a mass and making a pottage of a chocolate color. In Egypt and Syria the parched seeds are exposed for sale in the shops, and they are esteemed the best food to carry upon long journeys. On the continent of Europe its use is very common, especially by the Roman Catholics during Lent. In France and Italy there are at least 3 varieties known in agriculture. Large quantities of lentils are imported into London from Hamburg to be used as an ingredient in soups and sauces, being much prized by cooks. The cultivation of the lentil is very similar to that of the pea, requiring a dry, warm, sandy soil; and though ripening sooner it must be sown later, and at the rate of about a bushel and a half to the acre. The straw is considered delicate and nutritious, and is fed to lambs and calves. Like other legumes, the lentil contains a great amount of nutriment, Einhoff finding in 3,840 parts 1,260 of starch and 1,433 of matter analogous to animal matter. The lentil is seldom seen in American cultivation, and would probably be found inferior to many sorts of garden and field beans (species of *phaseolus*), which our hot summers permit us to raise.

LENTULUS, the name of a patrician family, long prominent in ancient Roman history. —PUBLIUS LENTULUS SURA (killed Dec. 5, 63 B. C.), the chief associate of Catiline, was quæstor in 81, prætor in 75, consul in 71, and in the following year was ejected from the senate for his infamous life. Joining the conspiracy of Catiline, he became prætor again in 68, was left in command of the conspirators in the city when Catiline departed to Etruria, was detected and proved guilty by Cicero through the Allobroges, and was strangled in the Capitoline prison.

LEO, the name of 12 popes, of whom the following are the most important. I. LEO I., saint, surnamed the Great, born in Rome about 390, died April 11, 461. He succeeded Sixtus III. in 440, and marked his accession to the pontificate by several important reforms. He extended to subdeacons the obligation of celibacy, enacted penal laws against married monks, and procured from the emperor Valentinian III. an edict confirming all the previous ordinances passed against the Manichæans. His energetic measures toward these heretics were followed by similar contests with the Pelagians and Priscillianists, and with the famous Entyches, whose opinions were condemned by the council of

Chalcedon in 451, at which the legates of Pope Leo presided. In the mean time Attila the Hun had invaded Italy and dispersed the emperor's legions, and was rapidly drawing near Rome, when Leo, at the request of the senate, went out to meet him. Struck with awe at the venerable aspect of the pontiff, or according to the legend terrified by an apparition of St. Peter and St. Paul, the barbarian yielded to Leo's prayers and agreed to retire beyond the Danube. When, 3 years afterward (455), Genseric led his Vandals into Italy, the pope again became a mediator, and wrung from the conqueror a promise that Rome should be spared from the flames and the lives of its inhabitants preserved. The rest of Leo's pontificate was passed in the peaceful prosecution of those ecclesiastical reforms which have won for him the surname of Great. He was a voluminous writer, and the first pope whose letters have been preserved to our time. They may be found in the collection of Labbe, and have also been published separately under various titles. II. LEO X. (GIOVANNI DE' MEDICI), born in Florence, Dec. 11, 1475, died in Rome, Dec. 1, 1521. He was the second son of Lorenzo de' Medici, surnamed the Magnificent, and of his wife Clarice Orsino. His father destined him from childhood for the church, and made such use of his influence that Giovanni was in possession of two benefices before he was 8 years old, and was made a cardinal at the age of 13, under condition however that he should not enter the sacred college nor assume the insignia of his rank for the space of 8 years. He had already laid the foundation of a liberal education under the tutorship of Politian, Demetrius Chalcondyles, and Bernardo da Bibbiena, and now repaired to Pisa to study theology and canon law. In March, 1492, having been invested with his dignity as a prince of the church, he removed to Rome. Within 3 weeks he was summoned back to Florence by the death of his father. The young cardinal proved a worthy successor of Lorenzo in the patronage of men of learning, and his tutor Chalcondyles was one of the first to experience his liberality. On the accession of Alexander VI. to the pontificate in the same year, he deemed it prudent again to retire from Rome, and spent the two following years at Florence; but the indignation of his townsmen at the part played by the Medici on the invasion of Italy by Charles VIII. of France, obliged him in 1494 to escape to Bologna, whence, after sharing with his brothers in 3 unsuccessful attempts to restore his family to their ancient place, he made a tour with 11 companions through Germany, Flanders, and France. Under Pope Julius II., who came to the throne in 1503, he was appointed to the chief direction of the papal troops in the war with the French in Italy, and was taken prisoner at the battle of Ravenna, April 11, 1512, but soon afterward made his escape. On the death of Julius II. in Feb. 1513, he returned to Rome, and on March 11 was elected pope, taking the name of

Leo X. He had yet received only deacon's orders; he was raised to the priesthood March 15, consecrated bishop on the 17th, and crowned on the 19th. He began his pontificate by pardoning the authors of a conspiracy against his family in Florence, and showing particular favor to certain persons who had been among the enemies of the Medici. He appointed as his secretaries the scholars Bembo and Sadoleti, who had only their merit to recommend them, and the flattering prospects of his reign at once drew to Rome a multitude of men of letters and science, in his patronage of whom consists his best title to greatness. He was not long in unveiling the main features of his policy. To compose the mutual dissensions of the Christian princes and unite them against the Turks, and to drive from Italy the French and Spaniards who, masters or claimants of its N. and S. extremities, kept the central states in continual warfare, were the principal objects of his reign. At his accession the French king Louis XII., in alliance with the Venetians, was preparing to enforce his pretensions to the duchy of Milan. The pope entered into a confederacy with Henry VIII. of England, the emperor Maximilian, and Ferdinand of Aragon, and enlisted a force of Swiss mercenaries, who defeated the invaders at Novara, June 6, 1513. The French monarch was forced to abandon his claims and seek a reconciliation with the holy see, and in the following year he made a secret treaty with Leo by which he engaged to favor the papal designs for expelling the Spaniards from Naples. In return the pontiff relaxed for a time his opposition to the Milan project; and although on the renewal of the war by Louis' successor Francis I. he again brought his troops into the field, he acted mostly on the defensive, and after the famous French victory of Melegnano (Marignan), Sept. 13, 1515, and the subsequent occupation of Milan, proposed an accommodation. He had a personal interview with the king at Bologna, at which were arranged the terms of a concordat whereby the "pragmatic sanction," guaranteeing the liberties of the Gallican church, was abolished, the payment of annates secured to the pope, and the right of nomination to benefices reserved by the king. The holy see, however, was obliged to give up the cities of Parma and Piacenza. At peace with foreign powers, Leo had now leisure to attend to the advancement of his family. The duke of Urbino, who, beside violating his feudal obligations, had been guilty of the murder of the cardinal of Pavia with his own hand, was summoned to appear at Rome, and failing to obey was excommunicated (1516) and stripped of his possessions, with which the pope's nephew Lorenzo de' Medici was immediately invested. On Lorenzo's death without male heirs soon afterward, the duchy was annexed to the Papal States. Meanwhile a conspiracy against the pontiff's life was detected in the sacred college, and a cardinal and two subordinate confederates were executed. Scarcely had Leo passed this danger to his per-

son when his spiritual supremacy was attacked by the great religious revolution under Luther. For a particular account of this movement, see LUTHER, and REFORMATION; its immediate occasion was the publication by the pope of an indulgence to all persons who, among other conditions, should contribute money for the completion of the church of St. Peter at Rome, an object which had occupied his attention during his whole pontificate. The conduct of Leo toward Luther has not received the general commendation of either party. The Protestants blame his obstinate refusal of plans for a peaceful settlement of disputed points, and he has been charged by some Catholic writers with a leniency but for which the reformation might have been checked at the outset. He found fresh cause for anxiety in the menacing attitude of the Turks, against whom he endeavored to form a general offensive league, but succeeded only in bringing about a defensive one (1518). In furtherance of this league he published a general truce for 5 years throughout Christendom, threatening with excommunication any sovereign who should break it. Nevertheless he seized Perugia and other small Italian states, made an attempt on Ferrara, prosecuted his plans against Naples, and renewed his efforts against the French, whom he expelled from Milan, Parma, and Piacenza. Eight days after receiving intelligence of these successes he died so suddenly that he is said not to have received the last sacraments of the church. A post-mortem examination is said to have revealed traces of poison, how or by whom administered was never ascertained. The character of Leo has been judged with more prejudice and discrepancy than that of almost any other person known in history. He has been accused of political insincerity, of adding treachery to injustice in his annexation of neighboring states, of an inordinate anxiety for the aggrandizement of his family, and of many failings which, however readily pardoned in a great prince, become odious in a Christian priest. But whatever estimate we form of his character, due allowance must be made for the violent spirit of partisanship in which the contemporary biographies of him were written. While his foreign policy was liberal and enlightened, he governed his own subjects with wisdom and justice, and his reign was long gratefully remembered by the Romans as an era of happiness and prosperity. Engaging and affable in manners, gay or dignified as occasion demanded, and gifted with great powers of conversation, he charmed all with whom he came in contact. His private life both before and after his elevation to the throne was chaste and decorous. He was generous to excess, magnificent in his tastes, passionately fond of the chase, but temperate in the pleasures of the table. Though not a profound scholar, and accused, but apparently with injustice, of neglecting the studies best fitted to his station, he was well versed in the lighter branches of literature and a proficient in the art of music. He delighted above all things

in the society of artists, poets, and learned men. He corresponded with Erasmus; patronized Ariosto and Sanazzaro; founded the Greek institute; established a Greek press; offered rewards for the discovery of ancient manuscripts; published at his own cost Pagnini's version of the Scriptures; increased the Vatican library; and employed Michel Angelo and Raphael in the execution of some of their greatest works. His munificence might well entitle the reign of Leo X. to rank as the golden age of Italian art and letters. "Happy is it for the world," says Roscoe, "when the pursuits of such individuals, instead of being devoted, through blind ambition, to the subjugation or destruction of the human race, are directed toward those beneficent and generous ends, which, amid all his avocations, Leo the Tenth appears to have kept continually in view." See Audin, *Histoire de Léon X.* (2 vols. 8vo., Paris, 1844), and Roscoe's "Life and Pontificate of Leo X." (6th ed. revised, 2 vols. 8vo., London, 1853). III. LEO XII. (ANNIBALE DELLA GENGA), born in the territory of Spoleto, Aug. 2, 1760, died Feb. 10, 1829. Before his elevation to the pontificate he was papal nuncio at several German courts, and was sent to France on a special mission by Pius VII., whom he succeeded in the papacy Sept. 27, 1823. He governed the church with a firmness which involved him in disputes with France and Austria, and administered the affairs of his temporal dominions to the great benefit and satisfaction of his subjects. He exerted himself to suppress brigandage and mendicity, promote education and literature, and suppress secret societies. He published a jubilee for the year 1825, and in a circular letter to the Christian nations warmly attacked Bible societies. He was succeeded by Pius VIII.

LEO I., FLAVIUS, surnamed the Thracian, and the Great, a Byzantine emperor, born in the country of the Bessi, in Thrace, about A. D. 400, died in Jan. 474. At the death of Marcian in 457 he was only a military tribune; but being proclaimed emperor by the soldiers, the choice was confirmed by the senate, and he was crowned by the patriarch Anatolius, this being the first instance of a prince receiving his crown from the hands of a bishop. He continued the measures of his predecessor against the Eutychians in Alexandria, successfully encountering the opposition of his minister, the Arian chief Aspar, by whose influence he had been raised to the throne. In 466 the Huns invaded Dacia and threatened the eastern empire, but were defeated by the generals of Leo, their principal chief Dengizic, a son of Attila, being killed. In 468 he concerted with Anthemius, the emperor of the West, an expedition against Genseric, king of the Vandals in Africa. Under the command of Basiliscus more than 1,000 ships, each with 100 men, came to land near Carthage, but were attacked by night with fire ships, and the whole fleet was destroyed or dispersed. This disastrous result was charged upon Aspar, who with one of his sons escaped from a popular

tumult only to be assassinated by a band of the emperor's body guard within the precincts of the palace. The Arian followers of Aspar encouraged the intrigues of Ricimer in the West, and incited the Goths to invade Thrace, and for two years to threaten Constantinople. Among the extraordinary events of this reign were the destruction of Antioch by an earthquake (458), a conflagration in Constantinople (465), immense and destructive inundations (469), and an eruption of Vesuvius (572), which, according to all the historians, was not only felt at Constantinople, but caused showers of ashes which covered the roofs of houses with a coat 3 inches thick.

LEO III., FLAVIUS, surnamed the Isaurian, a Byzantine emperor, born in Isauria about 680, raised to the throne in 717, died June 18, 741. The son of a farmer who emigrated from Asia Minor to Thrace, he joined the army under Justinian II., was rapidly promoted, and in 713 was appointed by Anastasius II. to the supreme command of the troops in Asia, where he held the field against the Arabs. When in 716 the crown was seized by Theodosius III., Leo declared him a usurper, outwitted and avoided the Arab general Muslima, marched upon Constantinople, forced him to resign (March, 717), and became himself master of the empire. The Saracens, against whom he had warred in Asia, and who were ardent to revenge the trick by which he had foiled them, immediately appeared under the caliph Solyman with an immense army and fleet before Constantinople. This siege, the third by the Saracens, lasted two years (718-720), successively under Solyman and Omar II.; and so powerful were the Mohammedan armaments that the provinces expected the downfall of Leo, the western kingdoms heard that a caliph had ascended the Byzantine throne, and two schemes of rebellion were plotted, which were quickly suppressed when the triumph of the emperor was known. The Arab fleet was routed in two engagements, was partially consumed by the Greek fire, and few of the ships regained the harbors of Syria. In 726 Leo promulgated an edict for the removal of images from all the churches of the empire, in order perhaps to make Jews and Mohammedans more favorably inclined to Christian worship, and thus inaugurated the party of the iconoclasts, and a conflict of 120 years. He was opposed by Germanus, patriarch of Constantinople, John the Damascene, and John Chrysorrhoeas in the East, and by Popes Gregory II. and III. in the West. The iconoclasts were condemned by a council assembled at Rome in 732; an expedition sent by the emperor into Italy (734) to reduce the cities opposed to the edict failed in its object, and the exarchate of Ravenna was transferred from the Greeks to the Lombards. In the East, there was a rebellion in the Peloponnesus and the Cyclades, and a revolt in the capital, the latter of which was quelled only after much bloodshed. The numerous professors in the schools of Constantinople favored the use of images, and the emperor is said to have therefore ordered

the library of St. Sophia to be burned. It is more probable that this library of 86,000 volumes was accidentally destroyed in some conflagration. After the check which his forces experienced in Italy, he transferred Greece and Illyria from the spiritual authority of the popes to that of the patriarchs of Constantinople. The latter years of his reign were occupied with violent wars with the Arabs. An adventurer, who claimed to be Tiberius, a son of Justinian II., was supported by the caliph, and made his entry into Jerusalem in the garb of a Roman emperor. In 739 the Arab general Solymán invaded the Roman territories with 90,000 men, in 3 divisions, but retreated into Syria after the defeat of one of the bodies in a pitched battle in Phrygia. In 740 an earthquake caused calamities throughout the empire, demolishing a part of the walls of Constantinople, and destroying whole towns in Thrace and in Egypt.

LEO V., FLAVIUS, surnamed the Armenian, a Byzantine emperor, reigned from 813 to 820. He was of noble Armenian descent, distinguished himself as a general under Nicephorus I. (802-811), was exiled for treachery, but soon recalled by Michael I., and appointed commander of the troops in Asia. Michael was chiefly unpopular as the husband of the masculine and presuming Procopia, and his downfall and the elevation of Leo had been foretold by an Asiatic prophetess. In 818 Leo and the emperor led an expedition against the Bulgarians, and were defeated in a battle near Adrianople. Michael withdrew to Constantinople, leaving a disaffected army under the command of Leo, who was the secret cause of the defeat, and whose friends now persuaded the soldiers to proclaim him emperor. The rebel army marched toward the capital, and to avoid civil war Michael resigned to the conspirators the keys of the city and the palace, and retired to a convent. The Bulgarians immediately appeared before Constantinople, desolated its suburbs, captured Adrianople, and reduced Thrace to a desert, but suffered a terrible defeat by Leo at Mesembrya in 814. In 815 he invaded their territory, obtained a truce for 30 years, and by his fierce onsets left such an impression on these hereditary enemies of the Byzantine empire that they remained quiet during 74 years. Educated in a camp, he reformed the civil government by introducing into it the strictness of military discipline, and his incessant oversight and formidable punishments improved the administration both in the capital and the provinces. He protected the iconoclasts, and his severity against the advocates of images created numerous enemies. Michael the Stammerer had contributed largely to his elevation, and had been his staunch adherent, but after repeated warnings was found guilty of treason, and was sentenced to death. On the day appointed for his execution a band of priests and chanters was admitted into the palatial chapel to sing matins. A body of conspirators, friends of Michael, mingled with this procession, in the ecclesiastical habit, with

swords under their robes, and at a given signal they rushed upon the emperor, who perished at the altar, after bravely defending himself with the great cross.

LEO VI., FLAVIUS, surnamed the Philosopher, a Byzantine emperor, born in 865, ascended the throne in 886, died in 911. He was associated with his father Basil I. in the government two years before he succeeded him. Narrowly escaping from a false accusation of parricide made by the minister Santabaren and the patriarch Photius, he began his reign by banishing one of them and deposing the other. From 887 to 891 he warred against the Saracens in Asia Minor and Italy. The mismanagement of the prime minister Stylianus, who disregarded the privileges of Bulgarian merchants, occasioned a severe war with that people, which Leo terminated in 894 by involving the Bulgarians by means of intrigues in hostilities with the Hungarians. The inactivity of the emperor exposed him to a series of conspiracies, and invited new attacks by the Saracens, who in 904 captured and plundered Thessalonica. In 911 they defeated the Greek fleet near Samos. Leo combined the legislative and executive powers in his own person, and extinguished the last remains of the authority of the senate. He was excluded from the communion of the faithful on account of his fourth nuptials, the Greek church tolerating only a second marriage. His title of Philosopher he received for having written several works on theological and profane subjects. The "Basilics," or imperial constitutions, being a Greek translation and revision of Justinian's *Corpus Juris*, with the addition of subsequent constitutions, were begun under Basil I., and completed under Leo and Constantine Porphyrogenitus. The principal writings attributed to Leo are 83 orations, chiefly on theological subjects, an important treatise on military tactics, and a work on "Oracles," in which the fates of the empire are foretold by the arts of astrology and divination.

LEO, HEINRICH, a German historian, born in Rudolstadt, March 19, 1799. He was educated at Breslau and Jena, and had begun special researches into the history of the middle ages before receiving the degree of doctor of philosophy in 1820. In 1822 he went to Berlin, where he was an enthusiastic disciple of Hegel. In 1824 he published a remarkable work on the constitution of the Lombard cities. In 1828 he was elected to the professorship of history in the university of Halle, which he still holds. In later life he opposed Hegelianism and political liberalism with the same vigor and zeal that he had displayed as a young man in their defence. Among his more important historical works are: *Handbuch der Geschichte des Mittelalters* (1830); *Geschichte der Italienischen Staaten* (5 vols., 1829-'30); and a work on the history of the Netherlands (2 vols., 1832-'5). His principal controversial writings against liberal tendencies are: *Herr Dr. Diesterweg und die Deutschen Universitäten* (1836); *Sendschreiben an Görres* (1838); and *Die Hegelingen* (1838),

which caused a lively discussion. He has also written a treatise on the natural history of the state (1833), a manual of universal history (6 vols., 1835-'44), several works pertaining to the antiquities and language of the Germans, as *Beowulf* (1839) and *Die Malbergische Glosse* (1842-'5), and *Die Ferienschriften*, containing studies on Celtic antiquities.

LEO AFRICANUS. See AFRICANUS.

LEO ALLATIUS. See ALLATIUS.

LEOBEN, a town of Austria, in the province of Styria, on the Mur; pop. about 2,600. The inhabitants are mostly engaged in mining and forging iron. The preliminary treaty between the French republic and Austria, which terminated Napoleon's 2d Italian campaign, and was followed by the peace of Campo Formio, was concluded here, April 18, 1797.

LEOCHARES, an Athenian sculptor, who flourished about the middle of the 4th century B. C. He was one of the artists employed by Artemisia of Caria on the tomb of her husband Mausolus. He was also one of those engaged by Philip of Macedon to execute memorials of his victory at Chæroneæ; but his *chef d'œuvre* was his bronze statue of the "Abduction of Ganymede by the Bird of Jove," of which the best extant copy is at Rome. His statue of "Zeus Ceraunius" was also very celebrated.

LEON. I. A N. co. of Fla., bordering on Ga., and bounded W. by Ocklockonnee river; area, 700 sq. m.; pop. in 1850, 11,442, of whom 8,203 were slaves, since which its limits have been reduced. It has an undulating surface and productive soil. The productions in 1850 were 83,232 lbs. of rice, 178 hhds. of sugar, 16,107 bales of cotton, and 1,792 galls. of molasses. There were 3 grist mills, 5 saw mills, and 19 churches. Capital, Tallahassee. II. A central co. of Texas, bounded E. by the Trinity and W. by the Navasoto river; area, 1,100 sq. m.; pop. in 1850, 1,946, of whom 621 were slaves. The soil on the uplands is a sandy loam, and in the bottoms a rich black loam producing an average of 800 lbs. of cotton to the acre. The productions in 1850 were 66,545 bushels of Indian corn, 18,039 of sweet potatoes, and 913 bales of cotton. Capital, Leona.

LEON, a city of the republic and capital of the ancient province of Nicaragua; pop. 85,000. It is situated nearly in the centre of the plain of Leon, about midway between Lake Managua and the Pacific ocean, in lat. 12° 25' N., long. 86° 57' W. Next to Guatemala it is the largest and most important city in all Central America. It was founded in 1523 by Hernandez de Cordova on the N. W. shore of Lake Managua, at a point called Moabitá, whence it was removed to its present site, on that of the aboriginal town of Subtiaba, in 1610. On the N. and S. sides of the city are deep ravines, in which are a multitude of springs, forming perennial streams, whence the people draw their principal supply of water. The large *barrio* or ward of Guadalupe is situated to the S. of the city proper, the intervening ravine being spanned

by a high and substantial bridge. During the contests between the aristocratic and republican parties which followed the declaration of independence from Spain in 1823, a large part of the city, including its richest portion, was destroyed by fire. Over 1,000 buildings were burned in a single night, and there are entire squares of ruins that were once palaces. Whole streets, now almost deserted and overgrown with weeds and bushes, are lined with the remains of large and beautiful edifices. Like all other Spanish cities, Leon covers a large area of ground. It is regularly laid out, with squares or *plazas* in each ecclesiastical or municipal district. The houses are rarely of more than one story, but generally have high arched entrances, above which were anciently engraved the arms of the proprietor. The public edifices are among the finest in Spanish America, and the great cathedral of St. Peter ranks second to no similar structure on the continent. It covers an entire square, is of solid masonry throughout, was 37 years in building, was finished in 1743, and is said to have cost \$5,000,000. Its roof is of masonry, supported on massive arches. It is sometimes used as a fortress, and in 1823 30 pieces of artillery were mounted on its roof. Beside the cathedral, Leon has 16 churches, of which La Merced, Recolecton, and Calvario are remarkable for their size and fine façades. There are 2 hospitals and a university, the Tridentine college of San Ramon, founded in 1675. It was once very flourishing, and had numerous students, with professorships of law and medicine. The city is well paved, and on the whole clean, well ventilated, and salubrious. It is the actual seat of the government of the republic, and the president and his cabinet reside here, although the legislature meets in the city of Managua, which is nominally the capital. The view around Leon is one of the finest and most extensive in the world. Not fewer than 13 volcanoes are visible from the roof of the cathedral, comprising the entire volcanic range of the Marabios. Altogether Leon and the surrounding country fully justify the eulogium of the old friar Thomas Gage, who wrote in 1665: "It is very curiously built, for the chief delight of the inhabitants is in their houses, in their gardens, and in the abundance of all things for the life of man; and it is especially from the pleasure of this city that the province of Nicaragua is called Mahomet's paradise."

LEON, an old province of Spain, formerly a kingdom, and now subdivided into the provinces of Leon, Palencia, Zamora, Valladolid, and Salamanca, bounded N. by Asturias, E. by Old Castile, S. by Estremadura, and W. by Portugal and Galicia; area, about 20,000 sq. m.; pop. in 1857, 897,468; pop. of the modern province of Leon, 354,295. The principal rivers are the Douro and its tributaries, with the exception of a small portion in the N. W. part, which is watered by tributaries of the Minho. Several spurs of the Pyrénées extend into the N. part of the province, and at its N. W. angle is the district

of Vierzo, about 40 m. in length and 80 m. in width, which is enclosed by an amphitheatre of mountains. The climate is mild in spring, hot in summer, and excessively cold in winter. Agriculture is very backward, although the wide plains in the central part of the province produce abundance of grain. Leon was anciently a part of the Roman province of *Tarracoenensis*. After the destruction of the Gothic monarchy by the Arabs the foundations of the kingdom of Leon were laid by Pelayo, or Pelaius, though Ordonno II. was the first who assumed the title of king. In the 11th century it was united to Castile, and after a temporary separation was finally annexed to the Castilian monarchy in 1218.—LEON, the capital, is pleasantly situated at the junction of the Torio with the Bernesga; pop. about 6,000. Interiorly it is a gloomy and decayed town. Its cathedral, with a lofty spire, was originally one of the most beautiful Gothic edifices in Europe, and still retains much of its splendor.

LEON, PONS DE. See PONCE DE LEON.

LEONARDO DA PISA. See BONACCI.

LEONARDO DA VINCI. See VINCI.

LEONHARD, KARL CÄSAR VON, a German mineralogist and geologist, born in Rumpelheim, near Hanau, Sept. 12, 1799. He was educated at Marburg and Göttingen, was employed in making several scientific journeys in different parts of Germany, and until 1814 held important offices in the administration of the duchy of Hanau. Retiring from the service of the state to devote himself exclusively to study, he became in 1816 member of the Bavarian academy of sciences, and in 1818 professor of mineralogy and geology in the university of Heidelberg. In this department of science he is the most voluminous German writer.

LEONIDAS, king of Sparta, son of King Anaxandrides, and the 17th of the family of the Agides, killed at the battle of Thermopylæ, 480 B. C. He married Gorgo, daughter of his half brother Cleomenes, whom he succeeded as king in 491. When Athens and Sparta alone, of all the Greek confederacy, resolved to resist the invasion of Xerxes, Leonidas led the Spartan forces, and gained immortal glory, especially by the heroic death of himself and his chosen band. (See GREECE, vol. viii., p. 442.)

LEONINE VERSES, a sort of metrical and rhyming Latin compositions, common in the middle ages. The name is derived probably from Leo or Leoninus, a Benedictine and canon of Paris in the 12th century, who wrote almost exclusively in hexameters and pentameters rhyming at the cæsural pause and at the end, thus:

*Dæmon languebat, monachus tunc esse volebat;
Ast ubi convalluit, manat ut ante fuit.*

He translated nearly the whole of the Old Testament into verses of this kind, but they had been in use long before him. Similar undesignated rhymes are occasionally found in the Latin classic poets, especially Ovid. Commodianus wrote jingling verses in the 3d century A. D., and two centuries later rhyme appears

in the hymns sung in churches. Among the most popular leonine poems were the *Regimen Sanitatis Salernitanum*, produced in the 11th century by the physicians of Salerno, and some of the bacchanalian songs of Walter Mapes in the 12th century. Numerous variations in the fall of the rhymes were admitted. The hexameter couplets usually rhyme at the end, often both at the cæsural pause and at the end; and the reciprocal leonine gives 4 rhymes to each couplet, the two in the middle agreeing with the two at the end.

LEOPARD (*felis leopardus*, Linn.), a carnivorous mammal of Africa and India, often confounded with the African panther (*F. pardus*, Linn.), but of smaller size, paler yellow color, and with more numerous rows of spots. It is very graceful, slender, and active, the body being about 88 inches long, the tail 27, and the height 26 inches; the ground color of the fur is tawny yellow, whitish below, the sides and back with numerous circles formed of from 8 to 5 spots of black; the head, fore quarter, and limbs marked with irregularly shaped spots; the color within the circles being darker renders them more distinct; according to F. Cuvier, 10 of these ringed spots can be counted in a perpendicular line from the back to the under parts. The leopard inhabits thick forests, preying upon antelopes, deer, and mammals of similar size, and even sheep, hares, and wild and domestic fowls; being an excellent climber, it resorts to trees in pursuit of game or for safety; it is taken in traps, or shot from trees into which it has been pursued by dogs. It is frequently seen in captivity, and occasionally breeds in confinement, being gravid 9 weeks, and the young born blind. Of the strength, daring, and ferocity of the leopard several examples are given in Cumming's "Hunter's Life in Africa." This animal is considered by many authorities as the same with the panther, and by equally good ones as distinct. (See PANTHER.)—The hunting leopard of Africa (*felis jubata*, Schreb.), which Wagler has elevated to a genus *cynailurus*, is a very interesting animal, having the colors and appearance of the larger spotted cats, and yet with a form and a susceptibility of being trained like the dog, so much so that Cuvier calls it a canine cat. The color is bright tawny yellow, covered with full, round, black spots equally distributed; there is a mane of longer hair on the neck; the legs are longer than in the leopard, and the claws are not retractile; the length is 3½ feet. With the strength, suppleness, teeth, and powerful jaws of the cats, it wants their sharp claws and ferocious disposition; it is easily tamed, and is trained to chase deer like a hound; the hair has a crispness like that of the dog. This animal, called *heetah* and *guepard*, performs among mammals the part of the falcons among birds; its natural instinct is to pursue game, and the reward of a portion induces it to yield the rest to the master. In Africa the hunting leopard is valued only for the skin, which is worn by per-

sons of distinction and commands a high price. An Asiatic variety (*C. venaticus*, Griff.), which is maneless, has been used from very early periods, especially in the Mogul empire, for hunting purposes; it is said that some of the emperors went to the field accompanied by 1,000 of these leopards; this sport is now confined to India and Persia. The leopards are so tame that they are led in a leash like greyhounds, with eyes covered; on approaching the game, they are unhooded and let free, and very soon pull down the victim, prostrating it by a blow of the paw, and sucking the blood from the throat. The disposition is so gentle that they live amicably with domestic animals and with children, purring when caressed. This animal forms a connecting link between the dogs and cats.

LEOPARDI, GIACOMO, count, an Italian poet, born in Recanati, near Ancona, June 29, 1798, died near Naples, June 14, 1837. He was the son of Count Monaldi Leopardi and the marchioness Adelaide Antici. At the age of 16 he wrote a commentary on Porphyry's "Life of Plotinus," and about the same time a dissertation on the life and writings of the principal rhetoricians of the 2d century, of which Cardinal Mai availed himself in preparing his edition of the "Epistles of Fronto." These and many of his other writings remain unpublished. Leopardi's acquaintance with the classical languages and with the ancient world was so profound that he imposed a hymn to Neptune and two Greek odes of his own composition on the literati of Europe as genuine relics of antiquity. At the age of 20 he was celebrated throughout Italy for the eloquence and energy of his versification. In 1819 his sight was so much impaired by severe studies that he was forbidden to read, and about the same time he went on account of ill health to Rome, where he became acquainted with Niebuhr and Bunsen. As a critic Leopardi ranks with Marini, Mai, and Giordani, the most eminent of modern Italy. Of his poems, *Il labato del villaggio* and *La sera del dì di festa* are particularly remarkable for their truth to nature, and their chaste and beautiful style. The best complete edition of his works is that published at Florence in 1845. His *Saggio sopra gli errori popolari degli antichi*, written in 1815, was edited by Prospero Vane, and published in 1846; and a selection of his correspondence (*Epistolario*) appeared in 1849.

LEOPOLD I. (GEORGES CHRÉTIEN FRÉDÉRIC), king of the Belgians, born in Coburg, Dec. 16, 1790. He is a son of Duke Francis of Saxe-Coburg-Saalfeld, received a brilliant education, entered the military service of Russia, and in 1808 accompanied the emperor Alexander I. to Erfurt with the rank of general. Compelled by the influence of Napoleon in 1810 to relinquish his position in the army of the czar, he devoted himself to the interests of Saxe-Coburg. The principal public achievement under his administration was the boundary treaty concluded with Bavaria in 1811. In Feb. 1818, he re-

joined the emperor Alexander, and took an active part in the battles of Lützen, Bautzen, Leipzig, and Culm. In 1814 he accompanied the allied sovereigns to England, where he made the acquaintance of the princess Charlotte, whom he married, May 2, 1816; she died in Nov. 1817, after having been delivered of a still-born child. On occasion of this marriage Leopold was raised to the rank of a British field marshal, became a member of the privy council, was created duke of Kendal, and a pension of £50,000 was conferred upon him. After the death of his wife he resided at London, and chiefly in his palace of Claremont. On Feb. 3, 1830, the crown of Greece was offered to him, which he finally refused, after having accepted it upon conditions which were not complied with. In June, 1831, he was elected king of the Belgians, and was inaugurated July 21. In 1832 he married the accomplished daughter of Louis Philippe, the princess Louise, who died Oct. 11, 1850. She bore him 8 children: 1, Léopold Louis Philippe Marie Victor, duke of Brabant, presumptive heir to the Belgian crown, born April 9, 1835, married, Aug. 22, 1858, to the archduchess Maria of Austria; 2, Philippe Eugène Ferdinand Marie Clément Baudouin Léopold Georges, count of Flanders, born March 24, 1837; 3, Marie Charlotte Amélie Auguste Victoire Clémentine Léopoldine, born June 7, 1840, married, July 27, 1857, to the archduke Maximilian of Austria. His civil list amounts to 2,751,322 francs; and although his private fortune has been much impaired by the sequestration of his second wife's property, included in Louis Napoleon's confiscation of the Orleans estates in 1852, he is one of the richest men in Europe, and is thought parsimonious. He passes most of his time in retirement with his family at his country seat of Laeken, or upon his extensive domain of Ardenne near Dinant, and is opposed to all pomp or ostentation at his court.—King Leopold has displayed much ability in the discharge of his duties as a constitutional sovereign in the domestic affairs of Belgium, as well as in the relations with foreign countries. On the outbreak of the French revolution of 1848 he offered to retire, if such was the wish of the people—a declaration which had the effect of increasing his popularity. He has also shown much tact in his relations with the French emperor, while his conciliatory disposition and his comprehensive statesmanship, as well as his family connections with most of the European dynasties, have enabled him on several occasions to act as mediator in times of political complication. His relation with the English court is peculiarly intimate, owing to his first marriage with Princess Charlotte, and his relationship with Prince Albert and Victoria, of whom he is the uncle, her mother the duchess of Kent being his sister.

LEOPOLD I., emperor of Germany, born June 9, 1840, died in Vienna, May 5, 1905. He was the 4th son of the emperor Ferdinand III. of the house of Hapsburg, and of Maria Anna

of Spain, and was educated for the church, when the death of his brothers made him heir to the throne of his father. Previous to the death of the latter in 1657, Leopold had been crowned king of Hungary; but the possession of this country could be secured only by decisive victories over the Turks, who held a large part of it, and also regarded themselves as the suzerains of Transylvania. The war having been renewed, Montecuculi won the great battle of St. Gothard on the Raab (Aug. 1, 1664), which was followed, however, by a peace which the Hungarian partisans of the emperor regarded as ignominious. This and many other grievances led to a conspiracy headed by Peter Zrinyi, Frangepan, and other Hungarian magnates, which being discovered was punished by the execution of the principal leaders at Neustadt near Vienna (1671). This was followed by the great insurrection under Tokölyi, and in 1683 by the Turkish invasion of Austria under Kara Mustapha. Leopold fled from Vienna, but John Sobieski's great victory saved his capital and thrones, for which services he was hardly deemed worthy of a friendly salute by the proud and imbecile though honest emperor. Sobieski, Louis of Baden, and afterward Prince Eugene, continued the work of deliverance from the Turks. Buda was retaken after a memorable siege in 1686, and the victories at Zálánkemén (1691) and Zenta (1697) led to the peace of Carlovitz (1699), which also secured the possession of Transylvania. But neither the wholesale executions of Hungarian patriots by the so called "bloody tribunal" of Caraffa at Eperies, nor the acquiescence of the diet of Presburg in the proposition to make the male line of the Hapsburgs hereditary in Hungary (1687), could make peace permanent in that long distracted country; and Leopold, who also had to wage three protracted wars against Louis XIV., the first two of which were terminated by the treaties of Nimeguen (1678) and Ryswick (1697), bequeathed to his eldest son and successor Joseph I. not only the war of the Spanish succession, commenced in 1701, but also the great Hungarian insurrection under Francis Rákóczy. Both of these, though the battle of Blenheim (1704) had inaugurated before his death the series of Marlborough's and Eugene's victories over the French, were brought to a close only under his younger son Charles VI. In the German empire the long reign of Leopold witnessed the growing power of the house of Brandenburg under Frederic William, the great elector, whose son assumed the royal title under the name of Frederic I. in 1701. The house of Hapsburg, however, consolidated itself under Leopold, who became the heir of the Tyrol line of the family.

LEOPOLD II., emperor of Germany, of the house of Hapsburg, born May 5, 1747, died March 1, 1792. He was the 3d son of the emperor Francis I. and Maria Theresa, and on the death of his father in 1765 succeeded him on the throne of Tuscany, which he had received in exchange for Lorraine. Mild, humane, and

well educated, though of very dissolute habits, Leopold ruled his grand duchy in the spirit of his age, and a series of liberal reforms had made it almost a model of a monarchical state, when the death of his brother Joseph II. in 1790 called him to the greater cares of the vast Austrian dominions and soon after of the German empire. Joseph's violent reforms and ambition had given rise to disaffection in almost all his provinces, a revolution in Belgium, a similar movement in Hungary, a dangerous war with Turkey, and menaces of another on the part of Prussia, seconded by Holland and England; while the gathering revolutionary tempest in France threatened not only all Leopold's monarchical interests, but also the personal safety of his sister Marie Antoinette. He hastened to make terms with Frederic William II. at Reichenbach (July 27, 1790), was unanimously elected German emperor, pacified Hungary by taking the royal oath to observe strictly the constitution and by various concessions, proclaimed a full amnesty and restored all their ancient privileges to the Belgians, gave Tuscany to his son Ferdinand, concluded a peace with Turkey at Sistova (Aug. 4, 1791), concerted with Frederic William, Frederic Augustus of Saxony, and others, at Pilnitz, preliminary measures for meeting the aggressions of the French revolution, and finally made a formal defensive and offensive alliance with Prussia (Feb. 1792), when he died suddenly of dysentery. Of his 16 children his eldest son Francis succeeded him on the throne of Austria, as well as in the German empire, as the last of its elective rulers.

LEOPOLD II., late grand duke of Tuscany, born in Florence, Oct. 3, 1797. He was educated at Würzburg, Germany, where he studied German and particularly Italian literature, with so much success that at a later period of his life he was able to prepare an excellent edition of the works of Lorenzo de' Medici (Florence, 1825). He succeeded his father Ferdinand III. in 1824, and although subservient to the Austrian policy in Italy, he was personally esteemed on account of his amiable disposition. In 1847 and 1848 he evinced his readiness to adapt himself to the demands of the people for more liberal institutions, but the events of Feb. 1849 compelled him to resort to flight. He was, however, speedily reinstated in his position by the Austrians. On occasion of the French-Sardinian war against Austria in 1859, he abandoned the country, after a revolutionary movement in the capital (April 27), and resigned his throne in favor of his son Ferdinand IV. (July 21, 1859). The annexation of Tuscany to Sardinia was finally accomplished in March, 1860.

LEOSTHENES, an Athenian general, who commanded the confederated Greek forces in the Lamian war, 323 B. C. He probably acquired his high military reputation as a leader of mercenaries in the Persian service. He collected and led back to Greece those Hellenic soldiers who had been warring against the Macedonians, and had been disbanded by com-

mand of Alexander. On the death of that conqueror, the Athenians resolved to make one bold effort to recover their freedom, and expel the Macedonians from Greece, and Leosthenes was appointed to conduct the war. Having worsted the Boeotians, who adhered to the foreigner, Leosthenes defeated Antipater and the Macedonians near Thermopylae, and compelled them to seek refuge in the town of Lamia; but while pressing the siege of this place he received a wound in the head, which occasioned his death. The loss of their leader spread consternation among the confederates, and was probably the principal cause of their overthrow.

LE PAGE, MARIE ANNE. See BOCCAGE.

LEPANTO (Gr. *Nepactos*; anc. *Naupactus*), a seaport town of Greece in the government of Ætolia, on the N. coast of the gulf of the same name, 12 m. N. E. from Patras; pop. 2,000. It is built on a hill, and is commanded by a castle. The neighboring country produces grain, rice, wine, tobacco, and olive oil, and leather is manufactured and exported. Lepanto was long in possession of the Venetians, by whom it was fortified, and under whom it sustained a siege by the Turks in 1475 which lasted 4 months, when the besiegers withdrew with the loss of 30,000 men. It was ceded to the Turks in 1697. —The gulf of Lepanto is 75 m. in length from E. to W., and lies between the N. coast of the Morea or Peloponnesus and the mainland of Greece. At its W. end is the gulf of Patras, which is connected with it by a strait somewhat more than a mile in width, called the strait of Lepanto, and sometimes the Little Dardanelles. Toward the middle the gulf of Lepanto attains the width of 12 m. It is surrounded by lofty and picturesque mountains, and the scenery is said to equal that of the lakes of Switzerland and northern Italy in romantic beauty. This gulf was the scene of one of the greatest and most important naval battles ever fought. In 1571 war existed between the Turkish sultan Selim II. and Philip II. of Spain, Pope Pius V., and the Venetian republic. The three Christian powers fitted out a great armada, of which the command was given to Don John of Austria, natural son of the emperor Charles V., who, though only 24 years of age, had already won a high reputation in the war with the Barbary corsairs and with the insurgent Moriscos of Granada. The allied fleet assembled at Messina in Sicily; it consisted of 300 vessels, of which 200 were "royal galleys" of large size, manned by 50,000 seamen, and 20,000 Spanish and 9,000 Italian soldiers, comprising many cavaliers of rank and distinction. On Sept. 16 this formidable armament sailed from Messina, and at sunrise on Sunday, Oct. 7, 1571, reached the entrance of the gulf of Lepanto, where they came in sight of the Turkish fleet, consisting of 250 royal galleys of the largest size, beside many smaller vessels, the whole carrying 120,000 men. The Christian fleet extended on a front of 3 miles, the right commanded by the Genoese admiral Doria, the left

wing by the Venetian admiral Barbarigo, and the centre by Don John in person, supported on the one side by Colonna, the papal captain-general, and on the other by the Venetian captain-general Sebastian Veneiro. The centre of the Turkish fleet was commanded by Ali Pasha, the right wing by Mohammed Sirocco, the viceroy of Egypt, and the left by Uluch Ali, dey of Algiers. The last two were commanders of great experience and reputation. Before the battle began Don John embarked in a light galley and passed rapidly through his fleet, saying to his followers: "You have come to fight the battle of the cross—to conquer or to die. But whether you are to die or conquer, do your duty this day, and you will secure a glorious immortality." The action began about noon, and lasted upward of 4 hours. It resulted in the total defeat of the Turks, of whose entire fleet not more than 46 galleys escaped, while 130 were taken and 80 burned or sunk. Their loss in men was about 25,000 killed and 5,000 taken prisoners. More than 12,000 Christian captives who had been chained to the oars on the Turkish galleys were also set free. Ali Pasha, the Turkish commander-in-chief, was killed in the action. The loss of the allies was 1,000 Romans, 2,000 Spaniards, and 4,600 Venetians. Among the Spaniards engaged in the battle was Cervantes, the future author of "Don Quixote," then a young man 24 years of age, who was serving in the fleet as a common soldier. He received two wounds in the breast and another in the left hand, of which he lost the use. This victory caused a profound sensation throughout Christendom, as it was the first effective blow given to the power of the Turks, who had hitherto been thought invincible by sea. The news was received in Spain and Italy with extraordinary manifestations of enthusiasm. The pope on hearing the tidings burst into tears, exclaiming: "There was a man sent from God, and his name was John." The Turks themselves were so disheartened by this defeat, that the decline of their power dates from the battle of Lepanto.

LEPATERIQUE MOUNTAINS, a high range extending parallel to the Pacific, about 40 m. inland, through the republic of Honduras; average altitude 5,000 feet. It gives its name to a large Indian town, situated on a table-land or shelf, on its S. flank. The highest part of the range is called Cerro de Uli, and is 7,500 feet in height, with a truncated or level summit, on which the fruits and grains of the temperate zone are produced in abundance.

L'ÉPÉE, C. M., abbé de. See ÉPÉE.

LEPIDOPTERA, an order of insects. See BUTTERFLY, and MOTH.

LEPIDOSIREN, a vertebrated animal, possessing characters of both fishes and reptiles, and alternately referred by naturalists to one or the other of these classes. This animal was discovered by Dr. Natterer in the river Amazon in 1837, and was referred by him and Fitzinger to this genus, considered by them as belonging

to the fish-like or perennibranchiate reptiles. Prof. Owen ("Linnean Transactions," vol. xviii., and "Proceedings of the Linnean Society," April 2, 1839) had recorded this same paradoxical animal, in his MS. catalogue of the museum of the college of surgeons (1837), as a new genus of abdominal malacopterygian fishes, under the name of *protopterus*; he afterward made this family of *sirenidae* the type of a distinct order of fishes, the *protopteri* (the *sirenoides* of Müller); he referred it to fishes on account of its scaly covering and of its nostrils not communicating with the mouth, and to the abdominal malacopterygians from its soft and rudimentary fins indicating a transition from the abdominal to the apodal families, and for various other anatomical reasons. The skeleton is partly osseous, partly cartilaginous; the body is fish-like in form, and covered with cycloid scales; the pectorals and ventrals are mere jointed flexible rays; the bodies of the vertebrae remain in the embryonic state of a continuous chondro-gelatinous cord, though many other parts of the skeleton are well ossified. This transitional state between the embryonic condition of ossification of the vertebral centre and that of ordinary bony fishes, was common in the ganoid fishes, not one of which in the silurian or devonian epochs, according to Agassiz, had a vertebral centrum. There are 36 pairs of ribs, encompassing about $\frac{1}{2}$ of the abdominal cavity; immediately in front of the pectorals there is a vertical branchial opening; on the intermaxillary bones are 2 long, slightly curved, slender, acute teeth, on the upper jaw on each side a dental plate divided into 8 cutting lobes, and on the lower jaw a similar single plate whose lobes fit into the intervals of the upper, fitted for minute division of food; the tongue is well developed, the pharynx with a small valve-protected opening, the gullet short and narrow, the stomach thick, simple, and straight, the liver of good size with gall bladder, and the straight intestine with an internal spiral fold; there is neither pancreas nor spleen. The respiratory organs consist of branchiae, with a double elongated air bladder resembling the cellular lungs of a reptile; the branchial sac is large, and the gills are supported on 4 arches on each side, 2 additional arches offering no trace of gills, there being 5 intervals for the passage of water into the pharynx; the nasal cavities open into the mouth (this is denied by Owen), and the laryngeal opening leads to the honey-combed air bladders or lungs, which are behind the kidneys and internal reproductive organs; the kidneys are long and narrow, the ureters and the genital ducts opening into the cloaca; the heart, in a strong pericardium, has a single ventricle, a single imperfectly divided auricle, and an arterial bulb, a large part of the blood in the adult being sent to the air bladders for purification. The eyes are small and adherent to the skin, which passes over them without forming any projection, and the lens is small and spherical; there is no trace of tympanic cavity nor Eustachian

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tube. The scaly covering, soft fin rays, characters of the spinal canal and cord, mucous ducts and lateral line, peculiarities of the cranial and jaw bones, intestinal spiral valve, absence of spleen and pancreas, single auricle, the nasal sacs opening only externally (the last denied by many), and the articulation of the scapular arch to the occiput, prove, according to Owen, that the lepidosiren is a fish, and not a batrachian, forming a connecting link between cartilaginous and soft-rayed fishes, and coming in this class the nearest to the perennibranchiate reptiles. The *L. paradoxa* (Natterer), from the morasses of the river Amazon in Brazil, attains a length of about 3 feet; when the water dries up, they plunge under the mud; the food is said to consist of vegetable matters. The *L. annectens* (Owen), from the river Gambia and also the Mozambique coast, is a smaller species, rarely more than 2 feet long. In the "Proceedings of the Zoological Society of London" for Nov. 11, 1856, Mr. J. E. Gray advocates the batrachian nature of the lepidosiren, 8 specimens of which were brought alive from Africa, enclosed in balls of hardened clay in which they remained torpid during the 8 months of the dry season; they were on exhibition at the crystal palace at Sydenham for a considerable time, and one for several months. From the account there given it appears that this animal can move with considerable rapidity forward and upward by means of its tail, which is surrounded by a membranous expansion like a confluent dorsal and anal fin. The pectoral limbs are elongated and margined behind with a narrow membrane, the ventral having a similar edging in the middle of the outer side; they are very mobile and flexible, and are more used like feet than fins, supporting the body about 2 inches from the bottom, and also serving to direct its motions; the 2 processes on each side over the pectorals, considered as external gills by some, he regards as a portion of the anterior limb, as they possess no peculiar vascular structure; the movements are much more like those of the water salamanders than of eel-shaped fishes. The mucous pores on the head and the lateral line are common to fishes and some batrachians; the small, circular pupil is black, and the narrow iris golden; the mouth is firmly closed by the overhanging upper lip, except in front, where the water is admitted to open external nostrils on the middle of the under side of the upper lip; the lips close behind, so that water cannot pass into the mouth under these circumstances except through the nostrils; the internal openings of the nostrils are just behind the edge of the closed lips, and through them the animal breathes water in the quiescent state, passing it out at the gill aperture in front of the pectorals; it also introduces water to the gills through the widely extended mouth. As if this were not sufficient for respiration, it occasionally rises to the surface and takes in air by the open mouth, and swallows it into the sacculated lungs, a few bubbles generally escap-

ing from the gill aperture. These internal nostrils were noticed by Biscoff in the *L. paradoxica*. It thus appears that the lepidosiren breathes by both gills and lungs, taking in water by the nostrils, and respiring air like batrachians and water like fishes, constituting as near an approach to an amphibious animal as is known to exist; it probably can no more live on air alone than can the *menobranchus* or fish lizard of the North American lakes. They are abundant in the rice fields, which are under water for more than half the year; the natives dig them out of the mud toward the end of the dry season, and consider them a delicacy as food. The mud cocoons in which they were carried to England had each a small opening at the end where the nose of the animal is placed; as developed at the crystal palace, they were very thin and 9 inches long when they left the cocoon, but began to feed at once on worms, small frogs, fish, and raw meat, attacking each other with fury, and one at last killing and half devouring another; in 3 months they attained a length of 18 inches; the movements, as in the *menobranchus*, are generally sluggish, but they are capable of very rapid motion; the food seems to be detected as much by scent as by sight. While in the cocoons they are in a state of hibernation, the blood being sufficiently purified by the arterial trunks distributed to the air bladders. The color of the *L. annectens* is a mixed tint of dark olive green and brown, lighter below, with irregular dark spots as large as the scales chiefly confined to the tail, and the mucous pores and lateral line black. The anus does not open on the median line of the body. With such contradictory opinions as to the position of this animal, possessing characters both of the fish and the batrachian, it would seem to belong to a distinct order, or even a separate class, forming one of the most interesting links between the ichthyoid batrachians and the cartilaginous fishes.

LEPIDOSTEUS, a ganoid fish. See GAR FISH.

LEPIDUS, the cognomen of a distinguished Roman family of the *Æmilian gens*, the most illustrious of whom were the following. I. M. *ÆMILIUS*, died in 152 B. C. He was one of the three persons sent to Egypt by the Romans in 201 B. C. to act as guardians to the infant king Ptolemy V., was elected pontiff in 199, ædile in 192, prætor in 191, and consul in 187. While consul he reduced the Ligurians, and continued the *via Flaminia* from Ariminum to Aquileia. In 180 he became *pontifex maximus*, in 179 censor, and in 175 a second time consul. He was 6 times chosen *princeps senatus*. II. M. *ÆMILIUS PORCINA*, consul in 187, was sent into Spain to conduct the war against the Numantines; but instead of doing so, he attacked the Vacæi, with whom the Romans were at peace, and laid waste their territory. For this aggression he was recalled, deprived of his command, and fined. He was, according to Cicero, the most eloquent orator of his age. III. M. *ÆMILIUS*, prætor in Sicily in 81 B. C., by his exactions

and oppressions rendered himself odious to the inhabitants. When the civil war broke out between Marius and Sylla, he espoused the cause of the latter, but afterward married the daughter of the tribune Saturninus, and deserted to Marius. In 79 he became a candidate for the consulship, and was elected through the instrumentality of Pompey; but having failed in an attempt to effect the legal abrogation of Sylla's laws, he retired into Etruria, raised an army, and advanced against Rome. He was encountered by Pompey and Catulus under the walls of the city, and completely defeated. IV. M. *ÆMILIUS* the triumvir, died in 13 B. C. He was prætor in 49 B. C., and on the outbreak of the civil war between Cæsar and Pompey joined the party of Cæsar, who intrusted him with the government of Rome during his absence from Italy. In 48 B. C. he received the province of Hither Spain, where he distinguished himself by his vanity and avarice. In 47 B. C. Cæsar made him his *magister equitum*, and the next year his colleague in the consulship. Lepidus was in the vicinity of Rome at the head of a considerable force when the dictator was assassinated, and by supporting Antony obtained for himself the office of *pontifex maximus*. He then repaired to his proconsular provinces beyond the Alps, and remained there in a state of armed neutrality till Antony fled to him for protection after his defeat at Mutina. The two generals, now uniting their forces, once more entered Italy, and at Bononia, in 43 B. C., formed in conjunction with Octavius that celebrated coalition termed the triumvirate. In this combination Lepidus was but a cipher, receiving in the division of the empire only the provinces of Spain and Narbonese Gaul, and remaining in Rome as consul while Antony and Octavius marched against Brutus and Cassius. After the battle of Philippi he was deprived of his provinces on an unfounded charge of treasonable conduct, but was to receive Africa on its being disproved; it was not till two years later, however (40 B. C.), that he was allowed to proceed thither. In 36 B. C., being called to Sicily by Octavius to aid him against Sextus Pompey, he attempted to take possession of the island and make himself independent of his colleague; he succeeded in gaining over 8 of the Pompeian legions, which with his own made a powerful army. Octavius, after tampering with his soldiers, ventured personally into his camp, exhorting them to prevent a civil war by coming over to him. Though wounded and obliged to retire, this bold proceeding had the desired effect, the legions gradually deserting Lepidus till he was left powerless, and on his knees begged Octavius for his life. He was at once deprived of all share in the government, and thereafter kept under strict surveillance at Circæii.

LEPRA (Gr. *λεπρος*, scaly), *lepra vulgaris*, a skin disease characterized by circular patches, the centre depressed with the skin sound or nearly so, the circumference slightly elevated and covered with small, dry, shining scales.

Lepra commences with an eruption of small, red, elevated points, each covered with a minute scale; the disease advances at the circumference, the centre gradually becoming sound. The eruption is perfectly dry. The circular patches rarely become more than an inch in diameter. Where the eruption is copious, these patches intersect each other at the circumference, and the circular form is lost, but characteristic segments of a circle can still be traced. The disease commonly commences in the extremities, and often extends over the trunk; the head and face are very rarely affected. When it is very chronic and extensive, the roots of the nails are sometimes affected, and these latter become thickened, curved, and of a dirty yellow color; according to Rayer (*Maladies de la peau*), the matrix of the nails sometimes becomes inflamed and furnishes a sanious discharge. The general health is very slightly affected by the disease, and the patient only suffers from an annoying itching, aggravated by warmth, exercise, or full diet, and chiefly present at the commencement of the complaint or while it is spreading. *Lepra alphoides* is a variety of the disease in which there is less redness of the skin and elevation of the circular margin of the patches, while the scales are smaller and of a more pearly whiteness. In *lepra nigricans* the scales have a dark or blackish color; it is a rare form, and according to Bielt always of syphilitic origin. Lepra is mainly an affection of youth and adult life, but no age is exempt from it. It is unattended with danger to life, but obstinate and uncertain of cure, sometimes disappearing in one place to appear in another, or reappearing directly after remedial means have been discontinued. Its essential causes are unknown.—*Treatment*. Internally the remedy from the use of which benefit is derived in the greatest number of instances is undoubtedly arsenic. Fowler's solution may be given in doses of from 3 to 5 drops 3 times a day, its effects being carefully watched. Bielt in many instances has derived great advantage from the tincture of cantharides, commencing with small doses, which are gradually increased. Externally, alkaline baths (from 4 to 8 ounces of the subcarbonate of potassa to a bath) and vapor baths have been particularly recommended. Tar ointment (1 part to 8 of lard) is of undoubted efficacy. Bielt also recommends the use of an ointment of iodide of sulphur (12 gra. to the ounce of lard), and of calomel ointment (1 dram to the ounce).—Under the name of LEPROSY, during the middle ages, were confounded tubercular elephantiasis, elephantiasis of the Arabs (*Barbados leg*), the scaly diseases of the skin (*lepra and psoriasis*), and other chronic skin diseases which were rendered rife and inveterate by a bad diet and want of cleanliness. The same confusion existed among the ancient Jews and Egyptians, and probably among other eastern nations, from the earliest historical times. The Jews brought the affliction with them into Palestine, and the

stringent provisions of the Mosaic law show how dreadful must have been its ravages and how great the terror which it excited. Regarding it as a disease sent from God, for which no natural remedy could be prescribed, they required that the person supposed to be infected should show himself to the priest; and if in the opinion of the latter the disease was leprosy, he was declared unclean and immediately separated from the rest of the people. So strictly was the rule observed, that even kings afflicted with the disease were expelled from their thrones, and shut out from society. Outside the gates of cities and in secluded districts were usually found leper villages, an institution still existing in the East, where these outcasts of society dragged out their wretched lives, depending upon their own labors and the alms of the charitable for the means of subsistence. Hospitals for their relief or protection seem to have been unknown among any of the nations of antiquity. With the tide of emigration westward during the decline of the Roman empire leprosy was disseminated over Europe, and during the middle ages prevailed to such a frightful extent that from the 6th to the 15th century the efforts of lawgivers were unceasing to arrest its diffusion. Its principal ravages in the West date after the first crusades. The isolation of the infected was still the universal practice, but under the influence of Christianity a more humane spirit presided over the treatment of lepers, and hospitals and asylums on charitable or religious foundations were provided for their reception. In the 13th and 14th centuries these buildings almost literally covered the face of the continent, being numbered by thousands in every country. Every considerable town had one or more of them in its neighborhood, and at one period it is said that scarcely a town or burgh in France was unprovided with such an establishment. Almost from the commencement of the Christian eras pious fraternities are said to have been organized for the care of persons afflicted with leprosy; and Pierre de Belloy, in his *Origine et institution de divers ordres de chevalerie*, mentions an order of St. Lazarus, so called from Lazarus the beggar (Luke xvi. 20), the patron of lepers, which was established as early as A. D. 72. This must not be confounded with the military order of St. Lazarus, established by the crusaders at Jerusalem in the early part of the 12th century, and whose duty it was originally to take charge of lepers and their asylums in the Holy Land. The knights hospitallers of St. Lazarus, after being driven out of Palestine, established themselves in France and instituted a celebrated hospital or leper house outside the gates of Paris. Subsequently, under the protection of several popes, they settled in Sicily and lower Italy; but with the disappearance of the disease they lost their distinctive religious and charitable character, in accordance with which their constitution required the grand master to be a leper. In general, however, hospitals for the

reception of lepers were supported by chance eleemosynary contributions, and in secluded portions of the country the condition of the inmates was scarcely less pitiable than in ancient times. But even under the most favorable circumstances the leper was completely and for ever an outcast from the world, being considered both legally and politically as a dead person. Upon being set apart from his fellow creatures the ceremonial for the burial of the dead was pronounced over him, masses were said for the benefit of his soul, and, to carry out the illusion to the fullest extent, a shovelful of earth was thrown upon his body. His marriage ties were thenceforth dissolved, although he might contract a new marriage with a person similarly afflicted; he was prohibited from entering any church or place where food was prepared, from dipping his hands in any running water, and from taking up food or any other article necessary to him without the assistance of a stick or fork; and was strictly enjoined to wear a peculiar dress by which he could be known at a distance, and to give notice of his approach by ringing a bell. With the progress of civilization, and the improvement of the condition of the poorer classes, leprosy declined rapidly; and except in Norway and a few places in the south, it is now unknown in Europe. The horror which the various forms of the disease formerly inspired has, notwithstanding its disappearance, remained in full force, and the word leper at the present day designates a person whose social and physical condition has reached the lowest pitch of degradation. In the East it still exists in its ancient seats, and sporadic cases are found in the islands of the Indian archipelago, on the coasts of Africa, in the West Indies, and in Canada and elsewhere in America.

LEPSIUS, KARL RICHARD, a German Egyptologist, born in Naumberg on the Saale, Prussian Saxony, Dec. 11, 1811. In 1828 he began the study of languages at the university of Leipsic, and continued it at Göttingen and Berlin, at which latter place he was a pupil of Bopp. In 1833 his essay on the Eugubian tablet obtained for him the degree of doctor from the university of Berlin. In 1834 he published his *Paläographie als Mittel der Sprachforschung*, and in the same year went to Paris, where through his friend Humboldt he became well known to the French literati. In April, 1836, he arrived at Rome, where he became a member of the archaeological institute and formed an intimacy with Bunsen. From this time he began to devote himself to the study of Egyptian antiquities, and in 1837 attracted much attention by his *Lettre à M. Rosellini sur l'alphabet hiéroglyphique*. His residence in Italy was short, but during it he made researches which formed the basis of several works published at a later date. Among these were his *Inscriptiones Umbrae et Osca* (1841), the *Todtenbuch der Aegypter*, the impression of a papyrus in the museum of Turin (Leipsic, 1842), an essay on comparative philology and one on the numerals in the

Indo-Germanic languages, for which he received a prize of 1,200 francs, and two essays on the ancient inhabitants of Italy. In 1838 he left Italy on a mission to England from the archaeological institute of Rome. Here in company with Bunsen he projected a great work on ancient Egypt, the materials for which were partly to be gathered in personal investigations in that country. Through the intervention of Bunsen, Humboldt, and Eichhorn, King Frederic William of Prussia was induced to send an expedition of learned men and artists to Egypt, with Lepsius at its head. The party assembled at Alexandria in the autumn of 1842, and began its researches under protection of the government. Among the discoveries which Lepsius made in Egypt, are monuments of some of the Pharaohs of the old Egyptian monarchy and later Ethiopian dynasty, the remains of the labyrinth, and Lake Moëris. To these may be added the plan of the Memnonium and the tomb of Rhameses or Sesostris. But the most important discoveries claimed were that the Ethiopian civilization was in fact Egyptian, introduced 2,000 years before Christ, that the Ethiopians of Meroë were not a black but a brown Caucasian race, and that a great number of genuine Ethiopian inscriptions are still extant from the Meroitic pyramids down to Philæ. Among the members of this expedition were the two Weidenbachs, the architects Erbkam and Wild, Bonomi, Abeken, and the painter Georgi. Its results gave the most complete satisfaction when in 1845 it returned to Europe. It had previously transmitted a portion, and on returning brought with it the remainder, of a very fine collection of Egyptian antiquities, now in the museum of Berlin. While in Egypt, Lepsius wrote his *Briefe aus Aegypten, Aethiopien und der Halbinsel des Sinai* (Berlin, 1845; translated by Horner, London, 1853), in which his travels and discoveries were described in a spirited manner. Previous to his departure for the East, Lepsius had been elected one of the directors of the archaeological institute, and was also appointed by the king professor at Berlin, where he now resides. Among his principal works are: *Chronologie der Aegypter* (Berlin, 1849); *Ueber den ersten ägyptischen Götterkreis* (1851); *Ueber die 12te ägyptische Königsdynastie* (1853); and *Das Allgemeine linguistische Alphabet* (1855). The first number of his great work, *Die Denkmäler aus Aegypten und Aethiopien*, was published in 1849, and was continued in parts during 10 years, and completed in 1859. Alexander von Humboldt bases all his statements in his *Kosmos* relating to Egyptian chronology and history on manuscript information which he received from Prof. Lepsius in March, 1846, and remarks that "his expedition has resulted in throwing much light upon the whole of antiquity."

LERIDA (Catalan, *Lleyda*), a N. E. province of Spain, bounded N. by the Pyrénées and the republic of Andorra, E. by Barcelona, S. by Tarragona, and W. by Huesca; area, 6,141 sq.

m.; pop. in 1857, 316,868. The surface is mountainous in the N. part, being covered with spurs of the great range which separates it from France, but in the S. there are extensive plains. The principal river is the Segre, an affluent of the Ebro; it traverses the province in a S. S. E. direction, and receives a number of small tributaries. Much of the soil is fertile, producing grain, fruit, and many kinds of garden vegetables. Iron, copper, lead, zinc, coal, granite, marble, jasper, lime, and gypsum are the chief minerals.—**LERIDA** (anc. *Ilerda*), the capital of the preceding province, is situated on the right bank of the Segre, which is here crossed by a stone bridge of 7 arches; pop. 12,236. It is built partly on a hill and partly on the plain at its foot, and is strongly defended by walls, batteries, and a castle. It is an important military post, being regarded as the key of Aragon and Catalonia. The streets are narrow, crooked, and ill paved. The principal buildings are the old and new cathedrals, one or two ancient churches, the bishop's palace, diocesan seminary, town house, theatre, hospitals, &c. The university of Lerida, once an institution of some repute, was suppressed by Philip V. The town has an export trade in silk, hemp, wine, oil, and other produce of the surrounding territory. In ancient times it was the capital of the Ilergetes. It witnessed a victory by Cn. Scipio over the Carthaginian general Hanno in 216 B. C., and the defeat of Pompey's lieutenants Afranius and Petreius by Cæsar in 49 B. C. It was long in possession of the Moors, and was conquered from them by Raymond Berenger of Aragon, who made it the capital. It was taken by the French in 1707 and 1810.

LERMONTOFF, MIHAIL, a Russian poet, born in 1811, killed in a duel in the Caucasus in 1841. He was of noble birth, and in early manhood became an officer of the imperial guards. The death of Pushkin, the Russian Byron, in a duel in 1837, seems to have been his first incentive to poetical composition; but his poem commemorating this event, and which contained some insinuations with regard to the treatment of Pushkin by the imperial court, proved so distasteful to the emperor Nicholas, that he sent Lermontoff to serve in the army of the Caucasus, where he remained until his death. During this brief period he composed the greater part of his poems, the romantic fancy evinced in which, as well as their vivid descriptions of mountain scenery, have gained for the author the next place in the Byronic school of Russian poetry after Pushkin, and the title of the poet of the Caucasus. Among his chief productions in this department of literature are: "The Novice, or the Young Circassian," illustrating the strong love of the Circassians for their native mountains; "Valerik;" "Hadj-Abrek," a drama; "Ismail Bey;" "The Demon," published in Berlin in 1857; and the "Song of the Czar Ivan Vasilievitch." Most of these were collected at St. Petersburg after his death. A 3d edition of them was published there in 1852, and in the

same year a German translation by Bodenstedt appeared in Berlin. The poem on the death of Pushkin, after circulating extensively in manuscript, was first published in 1856 in the "Polar Star," a Russian periodical printed in London. During his residence in the Caucasus Lermontoff also wrote a remarkable novel entitled "A Hero of our Time," by which he is perhaps better known than by any of his metrical works. The hero, Pechorin, a misanthropical officer in the army of the Caucasus, who while yet in the bloom of manhood has lost all freshness of feeling and enthusiasm, and encounters dangers only for the excitement they yield, was very generally considered a portrait of the author himself. The plot is repulsive, and a duel fought on a precipitous rock whence the wounded party must fall, is described with morbid minuteness. A fellow officer, deeming himself portrayed in the character of Pechorin, challenged the author, and a duel similar to that described in the novel ensued, in which Lermontoff was killed. The work has been rendered into several languages. Two English translations have appeared, the best being by Mme. Pulszky.

LERO (anc. *Leros*), a small island of the Grecian archipelago, belonging to the Sporades, 85 m. S. from Samos; length N. and S. about 6 m.; average breadth 4 m.; pop. about 2,000. The soil is fertile, and the surface mountainous. The principal place is a town of the same name on the E. coast. The earliest inhabitants of the island were a colony of Milesians. Strabo describes the Lerians as dishonest. They possessed a celebrated temple of Diana.

LEROUX, PIERRE, a French philosopher and socialist, born in Rennes in 1798. After studying several years in the college of his native town and in the polytechnic school, the support of his family fell to him, and he became a compositor in a printing office in Paris. This function he soon changed for that of proof-reader, and in 1824 he was selected to be one of the editors of the *Globe*, a philosophical and literary journal, the organ of the *doctrinaire* party. The revolution of 1830 dispersed the editorial corps, most of its members being raised to official positions, and Leroux, who had zealously embraced Saint-Simonism, effected the transformation of the *Globe* into the organ of his new doctrines. He belonged to the community of the rue Monsigny till Nov. 1831, when he led the opposition to Enfantin on the question of the emancipation of woman, and separated from him with a majority of the members. With Jean Reynaud he edited for 8 years (1832-'5) the *Revue encyclopédique*, which they made the organ of their Neo-Saint-Simonism, but which failed of success. They began in 1834 the *Encyclopédie nouvelle*, a collection of remarkable disquisitions in development of Saint-Simonian doctrines, which still remains incomplete. He furnished numerous philosophical articles to the *Revue des deux mondes* during the first 6 or 7 years of the reign of Louis Philippe. Having found in George Sand a disciple who could give

a charm to his theories not only for thinkers but for the people, he established with her and with Viardot the *Revue indépendante*. In 1840 appeared his most important work, *De l'humanité, de son principe et de son avenir*, in which he opposes to psychology and eclecticism the study of the human mind in history, develops a principle akin to that which is termed tradition in other systems, and recognizes the constant progress of man and nature toward perfection. In 1845 he founded a printing establishment at Boussac, in Creuse, and two journals and numerous pamphlets from its presses were distributed through the neighboring departments. The establishment was organized according to his principles of association. There were popular manifestations in his favor, and he made his appearance in Paris in the garb of a peasant of Creuse. He returned in time to proclaim the republic at Boussac after the revolution of 1848, and was chosen mayor of his commune. Elected to the national assembly, he voted constantly with the radical party, and spoke on the organization of labor and the political and social emancipation of woman. But the arena of practical politics was unsuited to his mind. He left France after the *coup d'état* of Dec. 2, 1851, and is now (1860) established on a farm on the island of Jersey.—His various works contain a complete philosophy of life, embracing on the one side religious and metaphysical doctrines that incline to mysticism, and on the other a system of social organization. The principle which underlies all his views, and which he regards as the law of life, is that of the trinity or triad. God is the universal Life, impersonal, and distinct from particular beings, though immanent in each of them, whose attributes of force, love, and intelligence are manifest in the universe as totality, cause, and existence. Humanity is an ideal being composed of a multitude of real beings, each of which is humanity in germ, having the triple attributes of sensation, sentiment, and knowledge. The law of life both in the individual and the species is to make progress through changes, to aspire for the more perfect realization of the ideal type. The mystery of life is aspiration, as its manifestation is communion. A plant is a mineral so far advanced as to change its kingdom or sphere of life; an animal is a plant in like manner transformed; a human being is an animal transformed by reason. Thus more and more perfect creatures succeed each other on the earth. The identity and personality of every human being is judged and preserved in God, who returns it with new conditions of existence to the earth. The individual, the family, and the state are the three manifestations of humanity. To the trinity of sensation, sentiment, and knowledge in the individual, corresponds those of property, family, and state, expressing the spheres of personal action; of child, mother, father, which is the end of the family; and of liberty, fraternity, equality, the law of social life, which in organization renders

human beings respectively citizens, associates, and workers (*fonctionnaires*). The elements of the state are the nation, the commune, the citizen, or in other words, all, some, each one; and the combined action of these three constitutes the sovereignty of the people. The basis of association is the triad. The natural triad is the friendship of three human beings, each representing sensation, sentiment, or knowledge in predominance, and each therefore correcting the tendencies of the others toward excessive development. The organic triad is the association of three such persons, in distinction from friendship, for some common function. The social element is therefore not one individual, but three, or the triad. Every social function corresponds either to sensation, sentiment, or knowledge, that is, belongs to the domain either of industry, art, or science; and society is, therefore, naturally divided into the three equal orders of producers (*industriels*), artists, and savants. The commune is an association of a certain number, occupying a definite portion of territory, forming laboratories of industry, of art, and of science, united and governed by a triple power emanating from the election of the associates. The state is the union of all the communes, secures the rights of all, and expresses the unity of industry, art, and science. All the functions both of the commune and the state are administered by triads elected by all the citizens. Education is under the direction of the commune. Religion is philosophy well understood. Worship is the manifestation of religion in institutions, in social life, in festivals and symbolical ceremonies. Birth, initiation into the triad, marriage, communion, and death are the eminent occasions for ceremonies of worship. Sunday is also to be celebrated as the day consecrated to God, to rest, and to the ideas of the doctrine of humanity. Beside the works which have been mentioned, the principal publications of Leroux are: *D'une religion nationale, ou du culte* (1846); *Discours sur la situation actuelle de la société* (1847); *De l'humanité, solution pacifique du problème du prolétariat* (1848); *Projet d'une constitution démocratique et sociale* (1848); *Du Christianisme et de ses origines démocratiques* (1848); and *Malthus et les économistes, ou y aura-t-il toujours des pauvres?* (1848). Several of these are reproductions from periodicals. Though knowing nothing of the German language, he also with the aid of a friend made a very successful translation of Goethe's *Werther* (1848), with a preface by George Sand.

LEROY D'ÉTIOLLES, JEAN JACQUES JOSEPH, a French surgeon, born in Paris, April 5, 1798. He was educated at the imperial lycéum, subsequently studied medicine, and in 1822, before receiving his degree of doctor, presented to the academy of surgery a set of instruments invented by himself for the operation of lithotomy. The invention was claimed by Civinle and Amussat; but after a thorough examination of the case by committees of the institute and the academy of sciences, the merit of priority was

awarded to Leroy d'Étiolles. In 1831 the academy awarded him a prize of 6,000 francs for a forceps used in the performance of the operation; but so bitter was the feeling against him that he was accused of having borrowed the instrument from an old Arabic author. His inventive faculty has been employed in the production of a variety of other surgical instruments and appliances, and also in the construction of a new species of bomb and other engines of war. He has published a translation of Cooper's "Dictionary of Surgery," *Histoire de la lithotritie* (8vo., Paris, 1839), *Considérations anatomiques et chirurgicales sur la prostate* (1840), *Urologie* (1845), &c., beside various memoirs.

LEROY DE SAINT-ARNAUD, ARNAUD JACQUES, a French soldier, born in Paris, Aug. 20, 1801 (according to some authorities, in Gascony in 1798), died at sea, Sept. 29, 1854. His family, whose name was simply Leroy, belonged to the middle classes. He was educated at the college of Louis le Grand, and received in 1816 an appointment in the life guard of Louis XVIII., and afterward a sub-lieutenancy in the same regiment, which he was compelled to leave, however, on account of the part which he had taken in the street riots of 1820. Thrown upon his own resources, he was for some time in a very precarious position, and even imprisoned for debt at Ste. Pélagie. He spent some time in England, but, unable to find employment, he returned to Paris, and appeared upon the stage in one of the suburban theatres under the name of Florival. Being again unsuccessful, he sought an asylum in the house of his parents until after the revolution of 1830, when he was reinstated in the army with the rank of lieutenant. He took part in the so-called Vendean war of 1831, and served under Bugeaud. In 1833, when that general was appointed governor of the citadel of Blaye, where the duchess of Berry was detained, Leroy was chosen as the assistant gaoler, although he was characterized in the records of his regiment as being "lazy, dissipated, fond of gambling, and over head and ears in debt." Subsequently he pushed his fortunes in Algeria, both by the good will of Bugeaud and Bedeau and by his personal bravery, which was displayed conspicuously at the taking of Constantine. He succeeded Cavaignac as commander of the military division at Orleansville, where his luxurious style of living became a matter of general notoriety. After his capture of the rebel chieftain Bou-Maza he was made brigadier-general (1847). In Feb. 1848, he came to Paris, married a rich Belgian heiress, and afterward returned to Algeria as commander of the province of Constantine. In 1851 he operated successfully against the unruly Kabyle tribes, after which he was made general of division (July 10) and commandant of one of the military divisions of Paris. The revelations of his reckless administration in Orleansville, which were freely discussed at that time, did not prevent him from becoming a favorite with Louis Napoleon. Made minister of war in Oct. 1851,

he was among the most active in aiding the consummation of the *coup d'état* of Dec. 2. Among its victims was Gen. Leflo, a generous friend of Saint-Arnaud. In order to assure him of his safety, he sent, through his wife, an invitation for Mme. Leflo and her husband for a reception at the ministry to take place on Dec. 8; but on that day Leflo was, with many other African fellow soldiers of Saint-Arnaud, on his way to prison. His salary as minister of war was now raised from 48,000 to 100,000 francs, in addition to his salary of 80,000 francs as senator. A dowry of 300,000 francs was further presented by Louis Napoleon to his daughter, and in 1852 the lucky soldier of fortune received the titles of marshal and of grand equerry of France. In April, 1854, he was invested with the command of the French forces in Turkey, in which capacity he strenuously insisted upon the landing in the Crimea. Although tortured by intense suffering from disease and wounds, he was on the battle field of the Alma for 12 hours. He was compelled to relinquish his command on Sept. 26, after which the cholera was added to his other maladies, and his life ended 3 days afterward. The *Lettres du maréchal de Saint-Arnaud* were published in 2 vols. in Paris in 1855.

LE SAGE, ALAIN RENÉ, a French novelist and dramatist, born in Sarzeau, May 8, 1668, died in Boulogne, Nov. 17, 1747. An only son, and an orphan at 14 years of age, his uncle, to whom he was intrusted, sent him to be educated in the Jesuits' college at Vannes, and meantime dissipated the little property which had been left to him. He became a favorite at the college, after leaving which he seems to have held for several years an office in the collection of the taxes in Brittany. In 1692 he went to Paris to pursue his studies in philosophy and law, made his way into the best society, is said to have been offered the hand and fortune of a lady of quality, which he declined, and in 1694 married the daughter of a citizen. He was admitted an advocate, but preferred to seek resources in literature, and by the advice of his friend Danchet made from a Latin version a translation of the letters of Aristænetus (Paris, 1695), which had little success. There are few traces of him for several years, till the abbé de Lyonne became his patron, gave him a pension of 600 livres, and led him to study and admire Spanish literature. He translated 8 plays (1700-'2) from Roxas and Lope de Vega, none of which were successful, and his *Nouvelles aventures de Don Quichotte* (2 vols., 1704-'6), from Avellaneda's continuation of Cervantes, also passed without notice. In 1707 he translated from Calderon the comedy *Don César Ursin*, which failed at the *théâtre Français*; but a slight piece of his own entitled *Crispin, rival de son maître*, enjoyed a brilliant success, and gave the first proof of his genius. His romance *Le diable boiteux*, a satire, the idea of which was borrowed from the Spanish of Guevara, appeared in the same year, and immediately passed through two editions. He availed himself of his experi-

ence among the farmers of the revenue in his next play, *Turcaret*, to attack the corruptions and ignoble vices of financiers. This powerful body is said to have offered him 100,000 livres to suppress it, and was able to prevent its representation for more than a year. It had a reputation in society before it was produced on the stage, where it was received with the greatest favor, though its excellence consists only in its delineations of manners. His next work was the novel *Gil Blas de Santillane* (2 vols., 1710; vol. iii., 1724; vol. iv., 1735), a series of pictures of all classes and conditions of society and of life in Spain under all its aspects. The hero has all the weaknesses and imperfections incident to human nature, is easily led to evil, profits by experience, triumphs in his turn over the persons who deceived him, is capable of repentance, always cherishes a respect for probity, and always promises himself to become an honest man on the first occasion. Characters with decided weaknesses abound, and a pure ideal devotion and moral dignity is perhaps the only type of human nature that is not represented. The delicate delineations, the nervous and effective style, the skilful blending of the manifold portraits into one comprehensive picture, are among the merits which have made it one of the most popular of novels. Its originality has been several times contested. Voltaire ventured to assert, with no reason at all, that it was taken from the *Marcos de Obregon* of Espinel. The Spanish Jesuit Isla asserted, what there are no facts to confirm, that it was originally written in Spanish, but was denounced and prohibited by the government, when the author fled to France with a single copy, which came after his death into the hands of Le Sage. The Jesuit Llorente in 1822 undertook to prove its Spanish origin from internal evidence. The delay of the comedians of the *théâtre Français* in producing one of his pieces caused Le Sage to abandon them, and to write light farces and comic operas for theatres of secondary rank. Either alone or with several associates he composed more than 100 comic operas, most of which were exceedingly popular. His principal later labors were an imitation of the *Orlando innamorato* of Boiardo (1717-'21); an abridged translation from the Spanish of Aleman of the *Aventures de Guzman d'Alfarache*; the *Aventures de Robert Chevalier, dit de Beauchêne* (1732), from materials furnished by his widow; *Histoire d'Estévanille Gonzales* (1734), a free translation from the Spanish; *Une journée des Parques* (1735); *Le bachelier de Salamanque* (1736); and *Mélange amusant de saillies d'esprit et de traits historiques des plus frappants* (1748). The only complete edition of his works appeared in Paris in 1828, in 12 vols. His *Gil Blas* was translated into English by Smollett; *Le diable boiteux* bears in English the title of the "Devil on Two Sticks," though in the most recent editions it is called "Asmodeus;" and English translations of several of his other works have appeared.

LESBOS. See MITTYLENE.

LESCARBAULT, DR., a French physician and astronomer, born about 1800. Practising his profession from an early age at Orgères, Eure-et-Loir, he was at the same time zealously devoted to astronomical observations. Having become satisfied as early as 1837 that the system of Bode is far from representing accurately the proportions of the distances of the planets from the sun, he concluded that other small planets, beside Ceres, Pallas, Juno, and Vesta, must be in existence. His hopes of discovering a new small planet were strongly confirmed on May 8, 1845, when he witnessed the passage of Mercury over the sun. Depending solely, however, upon the slight income of his profession, he was not able to secure the means requisite for the pursuit of his investigations until 1858, and even then he was compelled to become himself the manufacturer of many of his instruments. His indefatigable labors were at length crowned with success on March 25, 1859, when he made the discovery of a new planet (since named Vulcan), whose diameter he estimated at 980 m. and the inclination of its orbit to the ecliptic at 12°. Its revolution around the sun is performed in 19 days 17 hours, and in its greatest elongation its distance from that body does not exceed 7°. It was only in the latter part of that year, however, that a communication of Leverrier to the academy of sciences on Mercury led him to reveal his discovery to that astronomer, who on Dec. 31 proceeded to Orgères, where, on making inquiries about the character of Dr. Lescarbault, he was told by the people of the village that he was a worthy physician, who wasted too much of his time in looking at the stars. Leverrier, after communicating with him and satisfying himself of the genuineness and accuracy of the discovery, made the public announcement of it in the beginning of 1860, and at the same time bestowed the highest eulogium upon M. Lescarbault, remarking that the delay which he allowed to elapse between his discovery and its revelation "proceeded solely from feelings of modesty and reserve, and from that serenity of mind which is still to be found occasionally in places remote from the excitement of large cities."

LESLEY, JOHN, a Scottish prelate, born Sept. 29, 1527, died in Brussels, May 31, 1596. He was an illegitimate child, his father having been a priest. He was graduated at King's college, Aberdeen; became a canon of the cathedral churches of Aberdeen and Elgin in his 20th year; and, after a long period of study in various continental universities, was in 1554 appointed professor of canon law in the university of Aberdeen. He opposed the introduction of Protestantism into Scotland, and upon the accession of Mary, whom he accompanied from France, he was appointed bishop of Ross. His fidelity to the queen involved him in perilous intrigues and misfortunes. After the imprisonment of Mary in Bolton castle he took part in the negotiations between her and Elizabeth.

He was subsequently examined on suspicion of being implicated in the scheme for marrying Mary to the duke of Norfolk, and in the rising of the earls of Northumberland and Westmoreland, and suffered a long confinement in the tower of London. In 1574 he was permitted to go to France, and for several years was employed in various missions in the interest of Mary and the Catholic cause in Scotland. In 1580 he was appointed suffragan and vicar-general of the diocese of Rouen, and in 1594 bishop of Coutances in Normandy. The troubled state of public affairs in France soon after induced him to seek an asylum in Brussels, where he died. He wrote several works, in English and in Latin, in defence of Mary, queen of Scots; *De Origine, Moribus et Rebus Gestis Scotorum*, in 10 books (4to., Rome, 1578; reprinted in Holland in 1675); and "The History of Scotland from the Death of James I. in 1436 to the Year 1581," in the Scottish tongue (first printed by the Bannatyne club, 4to., Edinburgh, 1880).

LESLIE, CHARLES ROBERT, an English artist, born in London in 1794, during the temporary residence there of his parents, who were Americans, died there, May 5, 1859. His father, a watchmaker of Philadelphia, and a warm personal friend of Franklin, Jefferson, and other distinguished men, went in 1798 to England with the intention of engaging in the exportation of clocks and watches to America. In 1800 young Leslie accompanied the family on their return to Philadelphia, and after the usual term of school education he was apprenticed to a bookseller. He had long shown a predilection for the study of painting, which in a few years he obtained the means of pursuing in London under the auspices of Benjamin West and Washington Allston. He arrived in England in 1813, and, after some attempts at historical painting on a large scale, commenced a class of subjects particularly adapted to display his powers, and in which for many years he had no superior among English artists. The great humorous authors of England became the chief source of his inspiration, and many familiar scenes from Shakespeare, Addison, Sterne, Pope, Goldsmith, Fielding, and Smollett have been illustrated by his pencil. From "Don Quixote," "Gil Blas," and Molière's plays he also drew the subjects of some of his happiest efforts. His "Anne Page and Slender," "Sir Roger de Coverley going to Church," "May Day in the Reign of Queen Elizabeth," and other pictures of the kind exhibited between 1820 and 1825, established his reputation, and within a few years he was elected an associate and a member of the royal academy. In 1833 he accepted the appointment of professor of drawing in the military academy at West Point; but after discharging the duties of the office for a few months he returned to England, where he resided until his death. In 1847 he became professor of painting at the royal academy, and the substance of lectures delivered by him during the 4 years that he held the office has been published under the

title of "A Handbook for Young Painters." He is also the author of a life of Constable the landscape painter. His works cover a period of between 40 and 50 years, and many have been engraved. Beside humorous subjects, he painted history, *genre*, portraits, and ceremonials, among the latter the "Coronation of the Queen" and the "Christening of the Princess Royal." His religious pieces are considered much inferior to his others. His earlier works are elaborately finished, and are distinguished by peculiar excellence in expression and composition, and a genial humor altogether original.—ELIZA, an American authoress, sister of the preceding, born in Philadelphia, Nov. 15, 1787, died in Gloucester, N. J., in 1857. She was the eldest child of her parents, whom she accompanied to England in 1793, and with whom she returned to the United States in 1800, subsequent to which time she resided almost constantly in Philadelphia. Her earliest attempts in literary composition were in verse, but it was not until her 40th year that she appeared before the public as an authoress. Her first work, "Seventy-five Receipts for Pastry, Cakes, and Sweetmeats," was the precursor of a series of treatises on the culinary art which have made Miss Leslie's name widely known. The "Domestic Cookery Book," published in 1837, has gone through 50 or 60 editions, and the "House Book" (1840) and the "Lady's Receipt Book" (1846) have enjoyed a considerable popularity. Shortly after the appearance of her first work she commenced a series of juvenile story books, and in 1831 published the "American Girls' Book," of which an edition is still printed every year. Having obtained from Mr. Godey, editor of the "Lady's Book," a prize for her story of "Mrs. Washington Potts," she was encouraged to write fictions for grown people, and for several years contributed to the magazines and journals, beside editing several annuals. "Amelia, or a Young Lady's Vicissitudes," which first appeared in the "Lady's Book," is her only attempt at novel writing, her remaining works being short tales or sketches. Of these the most popular are the 3 volumes of "Pencil Sketches," of which a new edition was published in 1852. Beside these, several volumes of her fugitive stories, such as "Althea Vernon," "Henrietta Robinson," "Leonilla Lynmore," &c., have appeared from time to time. One of her latest publications is the "Behavior Book," and during the last years of her life she was engaged upon a life of John Fitch, the first American experimenter in steam navigation.

LESLIE, JOHN, a British prelate, born in Balquhain, in the north of Scotland, about 1570, died in Ireland in 1671. He was educated at the universities of Aberdeen and Oxford, and during an extended continental tour became an accomplished linguist. His knowledge of Latin was so remarkable that in Spain it was said of him: *Solus Lesleius Latine loquitur*. Upon returning to England, after an absence of 22 years, he enjoyed the favor of Charles I., who admitted him into his privy council, made him bish-

op of the Orkneys, and in 1683 bishop of Raphoe in Ireland. Here he built a palace of great strength, in which during the civil wars he sustained a siege by the parliamentary troops, being the last to surrender to Cromwell. He remained abroad until after the restoration, when he returned to England, and was appointed to the see of Clogher in Ireland. At the time of his death he was the oldest bishop in the world, having filled that station 50 years.—CHARLES, son of the preceding, a clergyman and theological author, born in Raphoe, co. of Donegal, Ireland, in 1650, died in Glaslough, co. of Monaghan, April 18, 1722. He was educated at Trinity college, Dublin, studied law and then theology, and took orders in 1680. By opposing the intrusion of a Catholic sheriff he involved himself in a conflict with the government of James II., but refused to take the oaths of allegiance to William after the revolution. In 1689 he engaged in a controversy with Bishop Burnet in defence of the doctrine of passive obedience. In 1709, being suspected by the government, he took refuge at the court of the pretender, but the prince forbade him to speak on the subject of religion either to himself or his chaplains. After the failure of the pretender's expedition, Leslie accompanied him to Italy, but was allowed to return to England in 1721. The most important and popular of his works is his "Short and Easy Method with the Deists," many times reprinted. A collection of his theological works has been published in 7 vols. 8vo. (Oxford, 1832).

LESLIE, SIR JOHN, a Scottish mathematician and physicist, born in Largo, Fifeshire, April 16, 1766, died at Coates, Fifeshire, Nov. 8, 1832. He was educated at the university of St. Andrew's and at that of Edinburgh, and while a student in the latter institution was employed by Adam Smith as tutor to his nephew, afterward Lord Reston. In 1788-'9 he was absent in America as tutor to two young Virginians of the Randolph family; and in 1790 he went to London with letters of recommendation from Dr. Smith and others, intending to establish himself there as a lecturer on natural philosophy. Disappointed in this project, he became a contributor to the periodicals, and, among other labors, translated for Murray the bookseller Buffon's "Natural History of Birds," published in 1793 in 9 vols. Subsequently he traversed large portions of the continent in the capacity of travelling tutor to Mr. Thomas Wedgwood, and, after being an unsuccessful candidate for professorships at St. Andrew's and Glasgow, offered himself in 1805 for the chair of mathematics in Edinburgh, vacated by the appointment of Prof. Playfair to be professor of natural philosophy. His election was opposed by a portion of the clergy on the ground that in politics as well as in religion he entertained dangerously liberal opinions; but the town council, with whom the appointment rested, nevertheless conferred the professorship upon him. The case was brought before the general assembly, and after an animated discussion of two days

was dismissed as "vexatious." Prof. Lealie occupied this chair until 1819, when he succeeded Prof. Playfair in that of natural philosophy, which he filled until his death, a few months previous to which he received the honor of knighthood. His scientific publications commenced with an "Essay on the Resolution of Indeterminate Equations," printed in the "Edinburgh Philosophical Transactions" for 1788; and in 1799 he contributed a description of a hygrometer and photometer invented by himself to Nicholson's "Philosophical Journal." His "Experimental Inquiry into the Nature and Propagation of Heat," published in 1804 (8vo.), attracted attention from the many new and important facts in this branch of physical science which it developed, as well as from its evidences of the vigorous and inventive genius of the author, whose occasional tendency to paradox alone impaired the scientific value of the work. It gained him the Rumford medal by the unanimous adjudication of the royal society, and established his reputation on a firm basis. In 1809-'22 appeared his "Course of Mathematics" (2 vols. 8vo.), comprising "Elements of Geometry," "Geometrical Analysis," "Plane Trigonometry," and "Geometry of Curve Lines;" an abridgment of a portion of this work was published in 1828, entitled "Rudiments of Plane Geometry, including Geometrical Analysis and Plane Trigonometry." He also published in 1817 the "Philosophy of Arithmetic," founded upon an article contributed to the "Encyclopædia Britannica." In 1810 he discovered the process of artificial congelation, by which he was enabled to freeze water and even mercury at pleasure, and 3 years later published in connection with the subject "A Short Account of Experiments and Instruments depending on the Relations of Air to Heat and Moisture." He also produced "Elements of Natural Philosophy," vol. i., "Mechanics and Hydrostatics" (1828; 2d ed. enlarged, 1829); and the "Progress of Mathematical and Physical Science during the Eighteenth Century," constituting the 5th dissertation in the 1st volume of the "Encyclopædia Britannica," for which work he wrote many articles on subjects connected with his departments of inquiry. He was a frequent contributor to the "Edinburgh Review" and a variety of scientific journals. As an experimenter he was almost unrivalled, and his apparatus room in Edinburgh contained many instruments of great elegance of form and delicacy of workmanship, invented by himself.

LESPINASSE, JULIE JEANNE ÉLÉONORE, a celebrated French woman, born in Lyons, Nov. 19, 1732, died in Paris, May 28, 1776. She was the illegitimate daughter of the countess d'Albon, and passed the first 15 years of her life in the house of her mother, on whose death in 1748 she accepted a place as governess in the family of her brother-in-law, Vichy-Chamrond, and in 1753 she was engaged as companion by her mother's sister-in-law, the marchioness du Deffand. This lady was D'Alembert's intimate

friend, and her house was a favorite resort of many eminent persons. Julie's remarkable intellectual qualities made a profound impression upon all who were brought in contact with her. Mme. du Deffand's jealousy became excited, and a separation between the two ladies ensued in 1764, Julie taking up her residence in the rue Bellechasse, which was provided with furniture by the munificence of Madame de Luxembourg. To the small annual income which had been bequeathed to her by her mother, a pension was added by the king. Her house soon became a great centre of attraction for the notabilities of Paris. She enlisted the regard of D'Alembert, Marmontel, La Rochefoucauld, and other eminent literary men, while even the fastidious Mme. Geoffrin made an exception in her favor, and not only admitted her to her literary reunions, from which women were generally excluded, but conferred upon her afterward an annuity of 8,000 francs. Without being a person of great learning, she possessed the secret of identifying herself with the thoughts of others, and was as expert in discussing metaphysics and philosophy as she was ready to indulge in humor and pleasantry. With D'Alembert her relation was fraternally intimate and enduring, but the warmth of her affections was reserved for the count de Mora, a Spanish nobleman, whose death plunged her into great affliction. Another object of love however soon presented itself in the person of Col. Guibert, celebrated for his relations with Frederic the Great, but this passion was not reciprocated. The letters of Mlle. Lespinasse, which were published at Paris in 1809, and at the same time in German at Leipsic, are the most interesting of her literary remains. She was an admirer of Richardson and Sterne, and the popularity of Sterne's works in France was in a great measure due to her influence.

LESSEPS, FERDINAND DE, a French diplomatist, born in Versailles in 1805. In 1825 he was attached to the consulate of Lisbon, and in 1828 to that of Tunis. After the taking of Algiers he was charged with the important task of securing the submission of the bey of Constantine, after which (1831) he went to Egypt, where at three different times he was temporary consul-general of Alexandria. He obtained from Ibrahim Pasha, during the occupation of Syria by the latter, protection for the Christians there, and did much toward re-establishing peace between Mehemet Ali and the sultan. He was appointed consul at Malaga in 1839, and at Barcelona in 1842. During the bombardment of the latter city by Espartaco in the same year, he rendered great service to sufferers of all nations. He frequently exposed his life during the fighting to save the lives of others; his energetic remonstrances postponed the bombardment for several days, and when it took place he hired vessels and personally superintended the removal of fugitives. For this he received from the governments of France, Sardinia, the Two Sicilies, Sweden, the Netherlands, and Spain many decorations;

the chamber of commerce at Marseilles sent him a complimentary address, while that of Barcelona placed his bust in its hall. After the revolution of 1848 he was recalled to Paris, but soon left that city for Madrid as minister (April 10, 1848). Having been displaced for Prince Napoleon Joseph Bonaparte in Feb. 1849, he was sent to Switzerland, and in May to Italy, where he was expected to fulfil in concert with MM. D'Harcourt and De Rayvenal the very delicate and difficult task of restoring order in the papal dominions, and preventing liberal excesses from interfering with the establishment of a regular government. His instructions, it is asserted, were far from explicit, and his liberality in stipulating that the Roman people should be free to choose their own government was not agreeable to the authorities at home. He was accordingly recalled in June. In a report from the council of state he was severely blamed, but he defended himself with great ability. In Oct. 1854, he went to Egypt on the invitation of the new viceroy Mohammed Said. Here he thoroughly examined the project of the canal across the isthmus of Suez, and the viceroy granted him a charter for 99 years (Nov. 30, 1854; confirmed Jan. 5, 1856) for the establishment of a stock company for the execution of the canal, to be called *Compagnie universelle du canal maritime de Suez*. The seat of the company is at Alexandria, and the capital 200,000,000 francs, represented by 400,000 shares of 500 francs.

LESSING, GOTTHOLD EPHRAIM, a German critic and author, born in Camenz, Jan. 22, 1729, died in Brunswick, Feb. 15, 1781. His father, a clergyman, desired him to embrace his own profession, and at the age of 17 he went with this intention to the university of Leipsic. Already far advanced in the classics and mathematics, his restless and inquiring disposition soon diverted him from the theology to various studies in literature and philosophy. He acquired a passion for the theatre, cultivated the friendship of actors, became familiar with dramatic literature, and produced some slight dramatic pieces. In 1750 he followed his friend Mylius to Berlin, and there established a quarterly periodical devoted to the drama, which was continued for one year, and published a volume of poems under the title of *Kleinigkeiten*. Until 1760 he lived either in Wittenberg, where he received the degree of master, in Potsdam, in retirement, in Leipsic, or in Berlin, being in the last city intimately associated with Moses Mendelssohn and F. Nicolai. He was constantly prosecuting literary projects during this period, translated from the Spanish Huarte's *Examen de los ingenios*, wrote literary and theatrical criticisms for the journals, published several volumes of minor writings, fables, epigrams, and songs, and completed the tragedy of *Miss Sara Sampson*, which contributed largely to free German literature from the prevalent imitation of that of France, and to give it a new and original character. To the same end he edited with Nicolai and Mendelssohn the

Bibliothek der schönen Wissenschaften, a literary periodical, and founded in conjunction with Nicolai the *Literaturbriefe*. He was the soul of this publication, which by its bold and acute criticism exercised a wide influence on German literature. Lessing was the first to call attention in that journal to the genius of Kant, Hamann, and Winckelmann. At the same time he opposed Klopstock and Wieland, striving to purge religion from sentimentality and literature from frivolity. He began also a tragedy, of which the subject was the story of Virginia, which was completed in 1772 under the title of *Emilia Galotti*, the Roman Virginia being transferred into modern relations. This still remains one of the most admirable tragedies on the German stage. In 1760, after being elected to the Berlin academy of sciences, he went to Breslau as secretary to Gen. von Tauenzien, governor of Silesia. His object was to gain new experience of life in this official relation, and though he employed his pen industriously, he formed a passion for play at faro. The best fruit of his residence in Breslau, which continued till 1765, was his most faultless drama, *Minna von Barnhelm*, in which the victorious career of Frederic the Great of Prussia appears prominently. Returning to Berlin, he published there (1766) his masterpiece, entitled *Laokoon, oder über die Grenzen der Poesie und Malerei*, a work which has exerted a permanent influence upon both literary and artistic criticism. In 1768 he accepted an invitation to become director of a theatre at Hamburg, where he published his *Dramaturgie* (2 vols., 1768), a critical periodical, which played an important part in the strife then prevalent in Germany as to the relative merits of the French and English drama. He became intimate with his subsequent antagonist the pastor Götze, and had an extensive literary correspondence. With I. I. C. Bode he conceived a futile plan of a "bookshop for scholars." He was prosecuting his studies in classical literature and art, and meditating a journey to Italy, when in 1770 he received from Prince Ferdinand of Brunswick the appointment of chief librarian at Wolfenbüttel, "rather that the library might serve him than he the library." He employed himself diligently in exploring the literary treasures in the collection, and discovered the long lost work of Berengarius on the Lord's supper. In 1774 appeared the first of the *Wolfenbüttelsche Fragmente eines Ungenannten*, a manifesto against the historical basis of Christianity, written by the Hamburg professor Reimar, but published and defended by Lessing. His principal opponent was his friend Götze, against whom he directed his admirably satirical *Antigötze*. His love of intellectual independence and impatience of authority appear from his declaration that if truth were offered him with one hand and error with the other, he would prefer error that he might have the pleasure of seeking after truth. He gave his confession of faith in a poetical and dramatic form in his *Nathan der Weise* (1779),

the principal characters in which are a Jew, a Christian, and a Mohammedan, who vie with each other in tolerance, charity, and respect for the universal dogmas of morality. His last literary labor was the *Erziehung des Menschengeschlechts* (1780), an important contribution to the philosophy of history. His later years were engrossed by theological, antiquarian, and literary controversies, in which he took an eager delight as long as the vigor of his mind remained. Exhausted by labor, grieving for the loss of his wife, whom he had married in 1773, and who died in giving birth to his first child, which died with her, his health and spirits began in 1779 slowly to decline, and toward the close of his life he struggled in vain against frequent fits of cheerlessness and somnolency. He was an original and peculiar character, and was better appreciated by the next generation than by his own. Perhaps no one man has done more to confer on German literature its present many-sided character, or to strengthen German criticism by a study of art. "To advance the standard of intellectual culture was his great aim, and to effect this he studied art, theology, antiquities, poetry, the drama, and history; all with the same enthusiasm and for the same purpose." Schlosser, in his "History of the 18th Century," says: "Lessing had this great advantage over others, who, after him, enriched the German language, German literature, and German life from the pure and genuine sources of the ancients, and particularly of the Greeks, that he wrote always simply, soberly, and impressively after their model. He disdained all the miserable means of egotistical souls to procure for himself a name; he neither made parties, cringed about courts, nor revelled in a little brief authority, and was neither the organ of an academy nor university." He has frequently been called the Luther of German literature, of the German drama, and of German art.—The first complete edition of his works appeared in Berlin (80 vols., 1771-'94), and an excellent edition was edited by Lachmann (18 vols., Berlin, 1838-'40). Concerning his life and character, see F. Schlegel, *Lessings Gedanken und Meinungen* (3 vols., Leipsic, 1804); Danzel, *G. E. Lessing, sein Leben und seine Werke* (1st vol., Leipsic, 1850; completed by Guhrauer); and Adolf Stahr, *G. E. Lessings Leben und Werke* (1859). An English translation of his *Laokoon* by E. C. Beasley was published in London in 1853, a translation of his *Erziehung des Menschengeschlechts* in 1858, and a new translation of *Nathan der Weise* by Dr. Reich in 1860. His fables and several of his comedies have also been translated.

LESSING, KARL FRIEDRICH, a German painter, grand-nephew of the preceding, born in Wartenberg, Silesia, Feb. 15, 1808. His father, an officer of the Prussian government, placed him when about 12 years of age in the gymnasium of Breslau, with a view to his studying the natural sciences. Such was his backwardness in the ordinary academic studies, how-

ever, that at the end of two years his teachers advised the father to allow the boy to follow his evident predilection for art, and become a painter. He was accordingly sent about 1822 to the architectural school of Berlin, to fit himself for an architect, his father distrusting his ability to support himself in any other walk of art. The instructions of Professors Rösel and Dähling aroused in the young man, however, an invincible love for painting, and after a severe struggle between duty and inclination, he yielded to the latter, and by the production of his "Churchyard with Gravestones and Ruins" (1825) fixed his profession irrevocably. This picture produced a strong impression, and for a year or two the artist devoted himself to landscape; but coming under the influence of Schadow, he established himself in Düsseldorf, and studied historical painting with an enthusiasm and success which soon caused him to be considered the most promising pupil of the new German school of which that master was an exemplar. Within a few years he produced a number of spirited works, including the cartoon of "The Battle of Iconium;" "The Castle by the Sea;" "The Mourning King and Queen," the head of the king being painted from that of Schadow; "The Robber;" "The Court Yard of the Convent—a Snow Scene," perhaps the most striking of all his landscapes; a "Scene from Leonore," &c. Subsequent to 1832 he entered upon a new style of treatment, substituting for the severe spirit in which his previous works had been conceived, an earnest realism and an affluence of fancy which severed him completely from the school of Schadow, Veit, and their co-religionists. To landscape painting he also gave renewed attention, and some of his most imaginative works in this department of art, including his "Scene in the Eifel," are referred to this period of his life. "The Tyrant Ezzelin in Captivity refusing the Exhortations of the Monks," exhibited in 1838, was his first important historical picture in the new style. It was followed by "Huss before the Council of Constance," the "Seizure of Pope Pascal II.," the "Martyrdom of Huss," now in the city of New York, and many others, under the influence of which the school of Düsseldorf has divested itself of the strictly Catholic spirit by which it was previously characterized, and has adopted a bolder and more dramatic manner, and a greater freedom in the choice of subjects. Lessing however is distinguished from his associates by depth of thought, energy of expression, and vivid dramatic conception, at the same time that his pictures exhibit the hardness of outline and defective coloring peculiar to the Düsseldorf school. He has recently been appointed president of the academy of painting at Carlsruhe.

LESTER, CHARLES EDWARDS, an American author, born in Griswold, Conn., July 15, 1815. He is descended on his father's side from the Lesters or Leicesters of England, and on his mother's from Jonathan Edwards. Before the

completion of his classical studies he was obliged to travel for his health, and passed 3 or 4 years chiefly in the South and West of the United States, being engaged for one year of this time in the study of law in Mississippi. He was admitted to the bar, but after his return home determined to devote himself to the ministry, spent 2 years at the Auburn theological seminary, and was duly ordained. The pulpit however proved not more congenial to his tastes than the bar, and he employed his time chiefly with the pen. In 1840 he visited Great Britain, and soon after was appointed U. S. consul at Genoa, where he remained 6 years. Since his return from Europe he has resided in New York, dividing his attention between literature and the law. Beside contributing largely to the American and European periodical press, he has edited various journals and magazines, and is the author of the "Glory and Shame of England" (2 vols. 12mo., New York, 1841); "Condition and Fate of England" (1842); "The Artist, Merchant, and Statesman" (1846); "Life and Voyages of Americus Vesputius" (8vo., 1846); "Artists of America" (1846); "My Consulship" (2 vols. 12mo., 1851), and other works. He has published translations of Alfieri's "Autobiography" (12mo., New York, 1845), Massimo d'Azeglio's "Challenge of Barletta" (1845), and Macchiavelli's "Florentine Histories" (2 vols. 12mo., 1846).

LESTOCQ, JEAN HERMANN, count, a physician and favorite of Elizabeth, empress of Russia, born in Zell, Hanover, April 29, 1692, died in Livonia, June 12, 1767. He was the son of a French Protestant surgeon who had left his native country on the revocation of the edict of Nantes. He studied medicine, and when 21 years old went to Russia to seek his fortune. He was first employed by Peter the Great, who, being soon disgusted with the shameless laxity of his morals, sent him an exile to Kasan in 1718. Catharine I., on her accession in 1725, recalled him, and appointed him physician in the household of her 2d daughter Elizabeth. He soon gained an influence over the mind of this young princess, and when the imperial title devolved upon Ivan VI., he persuaded her that the only way of saving her own life was to seize upon the crown. She yielded to his suggestions, appealed to the regiment of Preobrajenski, Nov. 25, 1741, made the young czar prisoner, and seated herself on his throne. Lestocq, who had been the most active promoter of the revolution, was appointed privy councillor, which gave him the rank of general, physician in ordinary to her majesty, and president of the medical college. He also received a pension of 7,000 rubles, and the portrait of the empress set with diamonds. His prosperity lasted but a few years. Charged by the chancellor Bestoujeff with treasonable projects, he was arrested with his wife, confined in the citadel of St. Petersburg, tortured, and exiled to Siberia. Peter III., on his accession, gave orders for his recall; but his property was not restored to him.

Catharine II. bestowed upon him a small estate in Livonia, where he lived in poverty.

L'ESTRANGE, SIR ROGER, an English political writer, born at Hunstanton hall, Norfolk-shire, in 1616, died in London, Dec. 11, 1704. He was the youngest son of Sir Hamond L'Estrange. He is believed to have been educated at Cambridge; it is however known that he received a university education previous to attending King Charles in 1639 in his expedition against the Scots. During the civil war he was a zealous royalist, and in 1644, soon after the earl of Manchester had reduced the town of Lynn in Norfolk, L'Estrange received a commission from the king appointing him governor of the place if he could take it. This he attempted to do, but failed through the treachery of two of his associates, and being taken prisoner was sent to London, where he was condemned to death as a traitor. He was however reprieved, and remained a captive 4 years, until in 1648 he escaped and fled to Kent. Here he attempted to raise an insurrection, but failing in this fled to the continent, where he remained until the dissolution of the long parliament (1658), when he returned to England, claiming that he was entitled to the benefit of the act of indemnity. His claim was not allowed; but having the boldness to apply to Cromwell in person, he received his discharge. After the restoration he received the lucrative though unenviable appointment of licenser or censor of the press. In 1668 he started a newspaper called the "Public Intelligencer," in which he warmly supported the crown. After the popish plot he published another newspaper called the "Observer," which was intended to vindicate the measures of the king and court. On the accession of James II. he was knighted, and sat in the parliament of 1685. He lost his office of censor at the revolution, and shortly after his mind failed him. He wrote a great number of political pamphlets, in a coarse, vulgar, and violent style, and made translations from Josephus, Æsop, Cicero, Seneca, Erasmus, &c.

LE SUEUR, a S. E. co. of Minn., bounded W. by St. Peter's river, and drained by Le Sueur river; area, about 500 sq. m.; pop. in 1857, 3,610. It has an undulating surface and fertile soil. Capital, Le Sueur.

LESUEUR, EUSTACHE, a French painter, born in Paris in 1617, died there in 1655. He was a pupil of Vouet, and it is probable that he received advice and encouragement from Poussin on his visit to Paris. He assisted Vouet in some works ordered by Cardinal Richelieu, but he remained unnoticed. Having married in 1642, he was obliged to support his family by designing frontispieces of books, devotional pictures, &c. His masterpiece, "St. Paul healing the Sick by the Imposition of Hands," attracted much attention, and gained for him the surname of the "French Raphael." His grace of touch and composition is conspicuous in a series of 19 pictures which he executed in the drawing room of the Hôtel Lambert, known as *Le salon des Muses*; but the

peculiar character of his genius is still more thoroughly displayed in the 22 pictures representing the "Life and Death of St. Bruno."

LE SUEUR, JEAN FRANÇOIS, a French composer, born in Drucat-Plessiel, near Abbeville, Feb. 15, 1760, died in Paris, Oct. 6, 1837. He was educated in Amiens, where he acquired a considerable knowledge of the theory of music, and at 26 years of age was appointed chapelmaster of Notre Dame in Paris. In 1795 he became one of the inspectors of studies in the *conservatoire de musique*; in 1804, at the suggestion of Paisiello, who was about to return to Italy, chapelmaster to Napoleon, which office he held until the restoration; and in 1814 royal director of music and chapelmaster. He is the author of 5 operas very celebrated in their day: *La caverne* (1793), *Paul et Virginie* (1794), *Télémaque* (1796), *La bardes* (1804), and *La mort d'Adam* (1809). He also wrote other pieces for the stage, and over 80 masses, oratorios, and sacred compositions, beside a highly esteemed work on the music adapted to sacred solemnities.

LESZCZYNSKI. See STANISLAS LESZCZYNSKI. LETCHER, an E. co. of Ky., bordering on Va., bounded S. E. by the Cumberland mountains, and drained by the head waters of the Kentucky river; area, about 300 sq. m.; pop. in 1850, 2,512, of whom 62 were slaves. The surface is mountainous and the soil fertile in the valleys. The productions in 1850 were 86,718 bushels of Indian corn, 8,092 of oats, 3,123 lbs. of tobacco, and 8,370 of wool. There were 8 churches, and 298 pupils attending schools. Capital, Whitesburg.

LETHE, in Grecian mythology, the personification of oblivion. It was also a stream of silver clearness in Hades, from which the shades drank forgetfulness of their earthly life, or at least of all their sorrows. According to Virgil, also, those souls destined to return to new bodies on earth drank of its waters, in order to forget the joys of Elysium.

LETO. See LATONA.

LETRONNE, JEAN ANTOINE, a French archæologist and critic, born in Paris, Jan. 2, 1787, died there, Dec. 14, 1848. His father, an engraver, placed him at an early age in the studio of David, and had him instructed in the ancient languages, intending him for the polytechnic school. But the death of his father obliged him to renounce this purpose. Mentelle, professor of geography, then obtained for him employment, as well as instruction in Latin and mathematics. Such was his industry that from the age of 14 he supported his mother and aided his brother to complete his studies as a painter. As soon as he was able he resumed his own studies, and while yet a youth became well known among the learned by his numerous retranslations of disputed passages in classic writers. From Oct. 1810, to June, 1812, he travelled in France, Italy, and Switzerland, and after his return his edition of the work of Dicuill on the measurement of the earth, and an article on the Pausanias of Clavier, caused him to be chosen

by government to complete the translation of Strabo, begun by Laporte Duthail. In 1816 he became a member of the academy of inscriptions. He was appointed director of the school of charters in 1817, inspector-general of the university in 1819, and professor of history in the college of France in 1831. In 1832 he became keeper of antiquities in the royal library. In 1838 he was appointed administrator of the college of France and professor of archæology, and in 1840 succeeded Daunou as keeper of the archives of the kingdom. He was also a member of the principal literary and scientific societies of Europe. He was distinguished by his refutation of the assertions of Dupuis and others relative to the "zodiacs" discovered at Esneh and Denderah, in which he showed that, instead of belonging to an inconceivably remote antiquity, the zodiacs in question were no older than the days of the Cæsars. His great work, the *Recueil des inscriptions Grecques et Latines de l'Égypte* (2 vols. 4to., Paris, 1842, 1848), was unfinished at the time of his death. Alexander von Humboldt refers in his *Kosmos* to Letronne's labors, who he says proves in his *Statues vocales de Memnon* that earthquakes were by no means so rare as was supposed in the valley of the Nile.

LETTER OF MARQUE. See PRIVATEER.

LETTRES DE CACHET. See CACHET.

LETTUCE (*lactuca sativa*, Lindley), a garden vegetable of the natural order *compositæ*, and probably introduced from India, but its native country is a matter of uncertainty. The lettuce is familiarly known as a salad plant, under many names, as the oak-leaved (*L. quercina*), the prickly (*L. scariola*), and the endive-leaved (*L. intybecca*). The garden or salad lettuces are arranged in two divisions, viz.: the upright, oblong, or Cos lettuces, and the round-headed, spreading, or cabbage lettuces. The different species last mentioned have upright stems or stalks, with sharply defined, lanceolate, or elongated foliage, and may have given rise to the Cos varieties; while the cabbage lettuces may possibly retain the peculiar shape of some original species which we designate as *L. sativa*. The Cos lettuces require to be blanched, bringing the leaves together by means of some soft strings; and when so treated they are considered remarkable for juiciness, crispness, and freedom from bitter flavor. In our market gardens the cabbage or head lettuces are preferred, and the Cos are seldom seen. The generic name *lactuca* is derived from the Latin *lac*, milk, the plants abounding in a milky sap which flows out from them readily when they are wounded or cut. This, in an inspissated form, has properties not dissimilar to opium. Both the wild and cultivated kinds furnish a copious supply, which, when collected as opium is from poppies, produces the narcotic called *lactucarium*. A species native of the Caucasus (*L. altissima*, Bieb.), according to Aubergier, furnishes the best. Its administration in medicine is not followed by those depressing and distract-

ing symptoms which often attend the exhibition of opium. The process of blanching as well as the rapid growth of garden lettuces diminishes their narcotic properties. They may be boiled while tender and succulent for pot herbs.

LEUCADIA. See SANTA MAURA.

LEUCHTENBERG, DUKE OF. See BRAUHARNAIS, EUGÈNE DE.

LEUCIPPUS, a Greek philosopher, who probably lived in the 5th century B. C. Elis, Abdera, and Miletus alike claimed to be his birthplace. He is said to have been the disciple of Pythagoras, Melissus, and Zeno, and the teacher of Democritus, who learned from him the first principles of the atomic theory. No details concerning his life have been preserved.

LEUCOTHEA. See INO.

LEUCTRA, a village of ancient Greece, in the Boeotian territory, between Thespiæ and Platæa, celebrated for a victory obtained in its vicinity in 371 B. C. by the Thebans over the Spartans. (See EPAMINONDAS.) Leuctra had ceased to exist even in the age of Strabo, but its site is still clearly marked by a tumulus which occupies an eminence to the S. of the Thespian vale.

LEURET, FRANÇOIS, a French anatomist, born in Nancy in 1797, died in Paris, Jan. 6, 1851. At the end of a year after commencing his medical studies his father refused to him the means of further support, and François in despair enlisted as a private soldier. His regiment being stationed in France, he attended the lectures of Esquirol. A fellow student procured his discharge from the army, and obtained a situation for him as paid assistant in the insane hospital of Royer-Collard at Charenton. In a few months he was appointed one of the *internes* of that institution, and before receiving his degree published several medical essays, one of which received the approval of the academy of sciences, before which it was read. In 1826 he took his degree and returned to Nancy to practise, but in less than a year he came back to Paris, became the assistant of Esquirol, and was installed as editor of the "Annals of Hygiene and Legal Medicine." In 1831 he published an essay on the cholera of that year. In 1832, in connection with two of his friends, he published a series of observations on the frequency of the pulse in the insane, and another on measurements of the head. In 1834 appeared his "Psychological Fragments," a work which gained for him a high reputation. In 1839 he published "Comparative Anatomy of the Nervous System considered in Connection with Intelligence," and in 1840 a work on the "Moral Treatment of Insanity." These raised him at once to the first rank among modern anatomists and psychologists, and led to his appointment as director-in-chief of the Bicêtre. In his "Indications to be followed in the Moral Treatment of Insanity" (1846), some of his earlier opinions were modified.

LEUTZE, EMANUEL, an American painter, born in Gmünd, Würtemberg, May 24, 1816.

His parents emigrated in his infancy to Philadelphia, where his youth was passed. It was while attending at the sick bed of his father that he first attempted drawing to beguile his leisure moments. The talent thus developed was assiduously cultivated, and he soon acquired facility in taking likenesses, and even projected a plan of publishing in Washington portraits of eminent American statesmen, which, however, met with little encouragement. His first decided success in painting was a picture representing an Indian gazing at the setting sun, which procured him so many orders that in 1841 he was enabled to carry into effect a long cherished desire to study his art abroad. He proceeded at once to Düsseldorf, and became one of the pupils of Lessing, under whom he made rapid progress. His first work in Europe, "Columbus before the Council of Salamanca," was purchased by the Düsseldorf art union; and a subsequent work representing Columbus in chains procured him the medal of the Brussels art exhibition; it afterward became the property of the New York art union. In 1843 he studied the works of Cornelius and Kaulbach at Munich, and finished while there his "Columbus before the Queen." He next visited Venice and Rome, making careful studies of Titian and Michel Angelo, and after a lengthened tour in Italy returned in 1845 to Düsseldorf, where he married and took up his residence. He thenceforth devoted himself principally to historical subjects, in the execution of which he adhered to the manner of the Düsseldorf school. Among his best works, beside those enumerated, are the "Landing of the Norsemen in America," "Cromwell and his Daughter," "The Court of Queen Elizabeth," "Henry VIII. and Anne Boleyn," "The Iconoclast," &c., some of which are of large dimensions. In the United States, where his paintings are widely disseminated, he is best known by a series illustrating striking events in the war of the revolution, of which the most important are, "Washington crossing the Delaware," "Washington at Monmouth," "Washington at the Battle of Monongahela," "News from Lexington," "Sergeant Jasper," and "Washington at Princeton," the last being one of his latest and most popular works. The "Washington crossing the Delaware" has been engraved. In 1859, after an absence of many years, he returned to the United States, where he now resides.

LE VAILLANT, FRANÇOIS, a French traveler, born in Paramaribo, Dutch Guiana, in 1753, died Nov. 22, 1824. His father, a merchant and consul at Paramaribo, returned to Europe when his son was 10 years of age, and finally fixed his residence in Paris. For several years the son studied natural history, and went to the Cape of Good Hope, where he arrived March 29, 1781. After making an expedition into the interior of Africa, penetrating as far N. as the tropic of Capricorn, he returned to Paris in 1785, and published a narrative of his adventures in two successive works: *Voyage dans*

l'intérieur de l'Afrique, de 1781 à 1783 (Paris, 1790), and *Second voyage dans l'intérieur de l'Afrique* (Paris, 1796). His African adventures were greatly though unjustly discredited. Though not concerned in politics, he was arrested as *suspect* in 1793, and owed his escape from death to the downfall of Robespierre. He passed the remainder of his life on a small estate in Champagne, occupied principally with hunting and writing. He published during this time 12 volumes, mostly folio, on the birds of Africa, in magnificent style with costly illustrations. A part of his valuable collection of animal specimens was purchased by the French government, and the rest was sold in Holland.

LEVANT, a term used by the seafaring and commercial people of the countries bordering on the Mediterranean to designate the portion of that sea which washes the shores of Asia Minor and Syria, and the harbors of Smyrna, Alexandretta, Beyrout, Acre, &c., which in the local dialect are called *Scale di Levante*. The heterogeneous population of those parts, who speak in their intercourse with Europeans the language known as the *lingua Franca*, are styled Levantines. The term *Levante*, which in Italian signifies "the East," was first used by the Venetians and Genoese.

LEVEE (Fr.), an embankment raised on the margin of a river to prevent inundation. That part of Louisiana which lies on the lower Mississippi was subject in a state of nature to the annual overflow of the river, by which immense damage was done to the land. To guard against these inundations, levees of earth have been thrown up for hundreds of miles along the river banks, to a height sometimes of 15 feet, with a breadth of 80 feet at the base. In front of New Orleans the levee is very broad, and serves as a wharf, steamboats and other vessels being moored to it. Breaches sometimes occur in the levees, when the water rushes through and does great mischief; these breaches are called crevasses.

LEVEL, a term applied to a surface which is everywhere perpendicular to the plumb line. The apparent level at a place is a plane touching a level surface at that place. There are various ways of determining level surfaces and level lines for practical purposes. The most simple is by means of a plumb line. The next to this is the use of a tube turned up at each end and filled with water, the two surfaces of the water in the ends of the tube taking naturally the same level. The most convenient means of finding a level is the spirit level, consisting of a bubble of air in a vial of alcohol. The vial, if we may call it so, is laid upon its side, and its inner upper surface is very slightly concave. The bubble seeks the highest part of the concavity, and the instrument is level when this is found in the centre. In determining the level of mountains, the barometer is frequently used, and with proper precautions gives accurate results; the mercury falling when carried higher, as it then has a less depth of air above it. The temperature of boiling water also affords a rough

means of estimating differences of level, inasmuch as it varies with barometric pressure.

LEVER. See MECHANICS.

LEVER, CHARLES JAMES, an Irish novelist, born in Dublin, Aug. 31, 1806. He was educated at Trinity college, Dublin, subsequently studied in Göttingen, and was admitted to practice as a physician. During the prevalence of the cholera in Ireland in 1832 he held the appointment of medical officer of a district comprehending Londonderry and other places, and effected many remarkable cures. He was afterward for 8 years physician to the British embassy at Brussels, where he wrote his "Confessions of Harry Lorrequer," originally published in parts, which made a favorable impression by its vivacity and humor, and happy pictures of Irish people and manners. It was the precursor of a long line of novels distinguished chiefly by the same characteristics, including "Charles O'Malley," "Jack Hinton," "Tom Burke," "Our Mess," "The O'Donoghue," "Roland Cashel," "The Knight of Gwynne," "The Daltons," &c. In many of these the incidents and characters are connected with the military profession, and the favorite type of a hero is a young dragoon or guardsman full of animal spirits and love of adventure, not a few of whose exploits are said to be founded on the personal experience of the author, who in his youth was noted for his daring spirit and his skill in riding and breaking horses. In 1842, while living near Dublin engaged in writing novels, he assumed for a time the direction of the "Dublin University Magazine," to which, as well as to other periodicals, many of his minor anonymous works have been contributed. Among the best of these are "Maurice Tiernay," "Con Cregan," "Diary of Horace Templeton," &c. Since 1845 he has resided with his family in Florence. He has not for many years practised his profession. His last work is "One of Them," now publishing monthly.

LEVERETT, FREDERICK PERCIVAL, an American classical scholar, born in Boston in 1808, died there in 1836. He was a descendant of Sir John Leverett, one of the governors of the colony of Massachusetts, and others of his ancestry were distinguished in colonial history. Entering Harvard college at the age of 14, he was graduated with honors in 1821, and was immediately afterward, when 18 years of age, appointed an usher in the public Latin school of Boston, an institution then as now preëminent for the thoroughness of its classical training. He was successively advanced to the positions of sub-master and of principal; but finding his health inadequate to the discharge of his duties, he resigned his mastership and opened a private classical school, which proved highly successful. The comparative leisure which he thenceforth enjoyed enabled him to give more attention to literary pursuits, and he published editions of Cæsar's "Commentaries," Juvenal, and the *Viri Romæ*, to be used as text books in schools, and also a "New Latin Tutor."

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The chief work of his life, however, and that to which he devoted the most time and thought, was the preparation of his "Lexicon of the Latin Language, compiled from the Lexicons of Facciolati and Forcellini, Scheller, Lünemann and Freund," which appeared in Boston in 1837, and which for nearly 20 years remained the standard work of its class in the United States. His health failed rapidly toward the completion of his labors on this work, and the last sheet went to press on the morning of his death. He had already collected materials for a Greek lexicon of similar plan and size.

LEVERETT, SIR JOHN, governor of the colony of Massachusetts, born in England in 1616, died in Boston, Mass., March 16, 1679. At the age of 17 he emigrated to America with his father, and settled in Boston. He returned to England in 1644 for the purpose of taking part in the struggle between the parliament and the king, and as commander of a company of foot soldiers gained military distinction and the friendship of Cromwell. He subsequently resided some years at the court of the protector, as agent of Massachusetts. On his return to America he held successively some of the most important civil and military offices in the gift of the colony, and finally in 1673 was elected governor. His administration is important in colonial history as the era of the war with King Philip, which Gov. Leverett's skill and energy were instrumental in conducting to a fortunate issue. Two years previous to his death he was knighted by Charles II. in acknowledgment of his services to the New England colonies during this contest. He died in office.—JOHN, grandson of the preceding, born in Boston in 1662, died May 3, 1724. He was an eminent lawyer and judge, speaker of the colonial legislature, and president of Harvard college from Jan. 1707, until his decease. He was a man of unusual attainments, and received the honor, then rarely bestowed upon colonial subjects, of membership in the royal society.

LEVERRIER, URBAIN JEAN JOSEPH, a French astronomer, born in St. Lô, March 11, 1811. He studied successively at the college of St. Lô, at Caen, and at the college of Louis le Grand in Paris. In 1831 he was admitted to the polytechnic school, where he was graduated. He then obtained a place in the tobacco bureau, and as his new occupation required some knowledge of chemistry, he pursued that science at leisure, and published in 1837 two memoirs on the combinations of phosphorus with hydrogen and oxygen. He devoted himself, however, principally to mathematics, and soon obtained a minor appointment in the polytechnic school. From this time he studied continually the highest problems in speculative astronomy, investigating especially the irregularities manifested in the course of the heavenly bodies. Two memoirs on this subject, supporting the observations of Lagrange, and asserting that the masses of the planets Jupiter, Saturn, and Uranus were sufficient to insure the stability of the

solar system, were submitted in 1839 to the academy of sciences. These and some other writings attracted the friendship of Arago, who induced him to study closely the orbit of Mercury and its perturbations. In 1844 he presented to the academy a theory of the periodical comet of 1770, and a paper on that of 1843. These contributions to science obtained for him admission to the academy of sciences, to the astronomical section of which he was elected, Jan. 19, 1846. The success which had attended his calculations of the course of the planet Mercury induced him to revise the still more imperfect tables of Uranus. His studies on this subject convinced him that the movements of this planet could not be explained by the attraction of any known bodies, and he accordingly sought further for the cause of its perturbations. Finally, on June 1, 1846, he indicated to the academy of sciences within 10° the place where a new planet might be seen on Jan. 1, 1847. This was in fact done by the German astronomer Galle, who discovered it, however, Sept. 23, 1846. Leverrier had made an error, but only of 2° . The sensation excited by this discovery was immense, and Leverrier received abundant honor. The king of Denmark sent him the order of the Danebrog; most of the academies of Europe inscribed his name on their lists; Salvandy, the minister of public instruction in France, had his bust erected in public with great ceremony; Arago declared that the new planet should be called Leverrier; a chair of mathematical astronomy was created for him at the faculty of sciences; the royal society of England sent him the Copley gold medal, and the grand duke of Tuscany a splendidly bound copy of the works of Galileo. It is true that the planet only bore for a time the name of Leverrier, that of Neptune being subsequently given to it, but even this honor could hardly have added much to the renown of one whose name is so closely identified with it. The priority of discovery was however contested by a distinguished young English geometrician at St. John's college, Cambridge, Mr. Adams, who had arrived at the same conclusion about the same time, but who was less fortunate than his French rival in making it known to the world. E. O. Otté, the translator of Humboldt's *Kosmos*, remarks on the subject: "By a singular coincidence, Mr. Adams of Cambridge had predicted the appearance of the planet simultaneously with Leverrier; but by the concurrence of several circumstances much to be regretted, the world at large were not made acquainted with Mr. Adams's valuable discovery until subsequently to the period at which Leverrier published his observations. As the data of Leverrier and Adams stand at present, there is a discrepancy between the predicted and the true distance, and in some other elements of the planet; it remains therefore for them or future astronomers to reconcile theory and fact, or perhaps, as in the case of Uranus, to make the new planet the means of leading to yet greater discoveries." Alexander von Hum-

boldt himself says (*Kosmos*, vol. iv.): "I dare scarcely allude in this work to the certainly earlier labors of the distinguished and acute English geometrician Mr. Adams. The historical facts which refer to these labors, and to Leverrier's and Galle's happy discovery of the new planet, have been incontrovertibly and impartially developed from reliable sources in two works by the astronomer royal Airy and by Bernhard von Lindenau." In 1848 M. Leverrier made some ineffectual efforts to distinguish himself as a democratic leader, but it was not until 1849 that he was elected from La Manche to the legislative assembly. He modified his liberal views, took his place among the counter-revolutionary members, and occupied himself principally with questions of public instruction and with laws relative to scientific discoveries. He was in consequence appointed to prepare several important reports relative to the construction of electric telegraphs, the organization of the polytechnic school, and recruiting for the corps of engineers. When a decided division into parties took place in the assembly, Leverrier joined the imperialists. After the *coup d'état* of Dec. 2, 1851, he was appointed senator, and some time after inspector-general of public instruction. Since then he has exerted a decided influence on public instruction in France, particularly with regard to the polytechnic school. In 1849-'50 he read to the academy of sciences an account of new investigations into the movements of the planets, and in 1853 presented to it tables of the sun's rotation, with the complete system of the small planets situated between Mars and Jupiter. In 1858, on the death of Arago, Leverrier succeeded to the title and authority of director of the observatory. He has of late years been much occupied in urging upon government a reform of the old method of observations, which has caused much dispute between himself and his colleagues. In Sept. 1859, M. Leverrier communicated to the academy of sciences a movement of the perihelion of Mercury which could be accounted for only by the supposition of another planet, or perhaps a series of small bodies, moving between it and the sun. This communication called forth Dr. Lescarbault's revelation of a discovery which he had made at Orgères as early as March 25, 1859, of a new planet, and which was announced through Leverrier to the academy of sciences in the beginning of 1860. (See LESCARBAULT.)

LE VERT, OCTAVIA WALTON, an American authoress, born in Georgia about 1820. She is a granddaughter of George Walton, one of the signers of the declaration of independence. Her father removed to Pensacola in 1831, having been appointed territorial secretary for Florida, under Gen. Jackson as governor. On the retirement of Jackson from that office, Mr. Walton acted for a time as governor of the territory. Although his daughter's education was exclusively domestic and confined to Pensacola, she not only became a proficient in the French,

Spanish, and Italian languages, but obtained some knowledge of Latin and Greek, as well as of the sciences. At a very early age she was often called upon by her father to translate documents from the French and Spanish languages, which were then spoken by most of the inhabitants of Florida. In 1833 she left Pensacola to spend the winter in Augusta. While travelling in a stage coach through what was then the wild region of Alabama, in company with her brother, she formed the acquaintance of a fellow passenger, who proved to be Washington Irving. This acquaintance was the foundation of a friendship that continued throughout the remainder of Mr. Irving's life. Miss Walton spent the winter of 1833-'4 in Washington, and, during the debates upon the removal of the deposits, was in the habit of writing out reports of the principal speeches delivered in the capitol. These were so admirable, notwithstanding her youth, that, it is said, Mr. Clay, Mr. Calhoun, Mr. Webster, Mr. McDuffie, and Mr. Preston were all in the habit of calling to read, from her portfolio, the reports of their own speeches. In 1836 she was married to Dr. Henry S. Le Vert, a physician of Mobile, of which city she has since been a resident. Within a few years past she has made two visits to Europe, the results of which have been given to the world in her "Souvenirs of Travel" (1857). The idea of this work was suggested to the authoress by M. de Lamartine. She has for some years been a contributor to various American and English periodicals, and is now engaged upon a work embodying her "Souvenirs of Distinguished Americans."

LEVI, 3d son of Jacob and Leah, born in Mesopotamia. He and his brother Simeon caused the massacre of the Shechemites and the pillage of their city to avenge the wrong done to their sister Dinah (Gen. xxxiv. 25-29). This action displeased their father Jacob, and they therefore had no allotment in the division of Canaan, and their descendants were dispersed among the other tribes. The children of Levi were, however, set apart for the sacerdotal office, and were endowed with privileges and dignities above the other tribes. Moses and Aaron were of his tribe.

LEVIATHAN, the English form of a Hebrew word used in the Old Testament, probably applicable to any huge marine animal, and sometimes, as in Job. xli., designating particularly the Egyptian crocodile.

LEVITES, in a general sense, all the descendants of Levi; more particularly, those who were employed in the lower services of the temple, as distinguished from the priests, who were of the family of Aaron. Subordinate to the priests, it was their office in the desert to carry the hangings, the ark, and sacred vessels of the tabernacle, and the materials which composed it. Subsequently part of them attended at the tabernacle, while the others were distributed among 48 cities which were allotted to them in Canaan, and were the ordinary judges of the

country. Five of these cities were cities of refuge. Beside other means of subsistence, they had a tenth of the produce of the lands belonging to the other tribes. They were divided into 3 classes, named, after the 3 sons of Levi, Gershonites, Kohathites, and Merarites. In the time of David they numbered 38,000 men fit for official service, of whom 24,000 were "set over the work of the Lord," 6,000 were officers and judges, 4,000 were musicians, and 4,000 were porters.

LEVITICUS, the 3d book in the Old Testament canon, containing the legislation and regulations concerning the duties of priests and Levites, and the ceremonials of worship. The offering of sacrifices, the consecration and authority of priests, the distinction of things clean and unclean, the feast of atonement, the necessity of exterminating the Canaanites, the prohibition of alliances with them, and of idolatry, theft, perjury, divination, and other crimes, the religious festivals, and the sabbatical and jubilee years, are treated in the book. Leviticus is generally regarded as of Mosaic origin.

LEVY, a N. W. co. of the peninsula of Fla., on the gulf of Mexico, bounded N. W. by the Suwanee river, and S. by the Withlacoochee; area, 775 sq. m.; pop. in 1850, 465, of whom 145 were slaves. The surface is low and swampy, and abounds with valuable timber. The productions in 1850 were 68 hhds. of sugar, 59 bales of cotton, and 3,250 gallons of molasses. Capital, Atseenaotic.

LEWALD, JOHANN KARL AUGUST, a German journalist and author, born in Königsberg, Oct. 14, 1792. He passed from the gymnasium to a mercantile house, entered the service of Russia and made the campaigns of 1813-'15, was afterward appointed to the charge of the Russian hospitals in Germany, and travelled extensively in Europe. In 1817 he became associated at Breslau with Schell and Holtei, with whom he wrote the comedy of *Der Grosspapa*. He was for 9 years an actor at Brunn, aiding at the same time in the direction of the theatres at Munich, Nuremberg, and Bamberg, and he was afterward for 4 years stage manager at Hamburg. After again visiting Paris and Italy, he established himself in 1824 at Stuttgart, where he founded the journal *Europa, Chronik der gebildeten Welt*, which he edited successfully for 12 years. In 1848-'9 he wrote many conservative political articles for the journals of Frankfurt. In 1850 he became one of the editors of the *Deutsche Chronik*, and in 1858 he joined the Roman Catholic church. His works comprise novels, translations, critical essays, and sketches of travel. Most of them are contained in his *Gesammelte Werke* (12 vols., Leipzig, 1844-'5).—FANNY, a relative of the preceding, a German authoress, born in Königsberg, March 24, 1811. Her father, a wealthy Jewish merchant, provided a most careful education for her, and left her free to choose her religion. At the age of 17 she received Christian baptism. In 1831 she travelled through France and Ger-

many, and in 1834 began to write stories to amuse an invalid sister. Her first published novel, *Der Stellvertreter*, appeared in the *Europa* journal in 1841, and was soon followed by others. She lost her father in 1845 while travelling with him in Italy, and on her return to Germany devoted herself to authorship. Her most piquant work is her satire against the countess Hahn-Hahn, entitled *Diogenes* (2d ed., Leipsic, 1847).

LEWES, GEORGE HENRY, an English author, born in London, April 18, 1817. His early education was acquired partly on the continent and partly under Dr. Burney at Greenwich. While young he became the clerk of a Russian merchant, but soon left the counting house for the pursuit of medicine. This he also abandoned for literature and philosophy, which he studied in Germany during 1838-'9. Here he acquired a knowledge of German, and being already familiar with French, Italian, and Spanish, was as regarded languages well prepared for a literary career. After returning to London he soon became known as a brilliant and versatile writer, of great audacity of thought and piquancy of style. He contributed many articles to the leading British reviews and magazines, and to the "Morning Chronicle" and "Atlas" newspapers, and was the literary editor of the "Leader" from its commencement in 1849 until July, 1854. He is the author of "The Spanish Drama: Lope de Vega and Calderon," "Ranthorpe, a Tale" (1847), and "Rose, Blanche, and Violet" (1848). His "Life of Maximilian Robespierre, with Extracts from his unpublished Correspondence," appeared in 1849, and "Comte's Philosophy of the Sciences, being an Exposition of the Principles of the *Cours de philosophie positive d'Auguste Comte*," in 1853. He has also acquired some reputation as a dramatic author, his tragedy of "The Noble Heart" (1850) having been successfully acted, while "The Game of Speculation" has been frequently reproduced. His best known works are however the "Life and Works of Goethe, with Sketches of his Age and Contemporaries, from different Sources" (1855), and his "Biographical History of Philosophy," originally published in 1845 in Knight's "Weekly Volumes." Of late years Mr. Lewes has devoted much attention to physical science, and the results of his researches have appeared in "Seaside Studies at Ilfracombe," &c. (London, 1858), and in the "Physiology of Common Life," now in course of publication, to be completed in 1860. He is said to be at present occupied with translating and annotating Spinoza, in which he will probably develop his analysis of the system of that philosopher, as at first laid down in the "Biographical History of Philosophy."

LEWIS, in mechanics, an ingenious device for securing heavy blocks of stone to the tackle for hoisting. It is said to be named from Louis XIV., under whom the invention was supposed to have been first employed. In the ruins of Whitby abbey, however, originally founded in 658, there appear in the crown of the heavy

keystones of the arches cavities like those now made in such blocks for the lewis. These are quadrangular, and on two opposite sides spread at the bottom as in dovetailing. Three slips of iron are fitted to fill this hole, altogether making a wedge form the head of which is at the bottom of the cavity. The three ends projecting out of the stone present each an eye for a bolt, which is passed through the whole, and serves as the handle for lifting the stone. To remove the lewis, the bolt is driven out, and the key or middle one of the three slips, which is a straight rectangular piece of iron, is readily withdrawn, setting the other two free.

LEWIS, the name of counties in 6 of the United States. I. A N. co. of N. Y., intersected by Black river; area, 1,288 sq. m.; pop. in 1855, 25,229. The surface toward the E. is uneven, broken in many places by low ridges or isolated masses of naked gneiss, and rising gradually to an elevation of 1,400 feet. Toward the W. it rises by a series of terraces to a height of from 1,500 to 1,700 feet. The soil is of various qualities. In the E. part it is a light, sandy, unproductive loam; in the W. almost uniformly fertile, with a limestone basis. The productions in 1855 were 63,785 bushels of wheat, 37,513 of barley, 92,398 of Indian corn, 51,802 tons of hay, 236,918 lbs. of maple sugar, and 1,575,575 of butter. There were 10 grist mills, 95 saw mills, 15 tanneries, 54 churches, and 10,358 pupils attending public schools. Capital, Martinsburg. II. A N. W. co. of Va., drained by the Little Kanawha and the W. fork of the Monongahela river; area, 610 sq. m.; pop. in 1850, 10,181, of whom 368 were slaves. The surface is rough and hilly, in some parts mountainous, and fertile near the streams. The productions in 1850 were 31,056 bushels of wheat, 235,675 of Indian corn, 8,000 lbs. of tobacco, and 24,238 of wool. There were 15 churches, 47 schools, and 1,602 pupils attending public schools. Capital, Weston. III. A W. co. of Tenn.; area, 364 sq. m.; pop. in 1850, 4,438, of whom 736 were slaves. The surface is uneven with a fertile soil. In 1850 there were produced 293,610 bushels of Indian corn, 13,729 of oats, 11,430 of sweet potatoes, and 8,260 lbs. of tobacco. There were 16 churches, 8 academies, and 25 schools with 1,400 scholars. Capital, Newburg. IV. A N. E. co. of Ky., separated from Ohio by the Ohio river; area, 300 sq. m.; pop. in 1850, 7,202, of whom 323 were slaves. The surface is generally hilly, and the soil fertile. The productions in 1850 were 398,686 bushels of Indian corn, 54,306 of oats, 36,820 lbs. of tobacco, and 14,604 of wool. There were 7 saw mills, 4 tanneries, 13 churches, and 518 pupils attending public schools. It contains the Esculapia spring, a fashionable watering place. Capital, Clarksburg. V. A N. E. co. of Mo., separated from Ill. by the Mississippi river; area, 520 sq. m.; pop. in 1854, 9,959, of whom 1,393 were slaves. The surface is diversified, well timbered, very fertile, and of easy cultivation. Limestone underlies part of

the co., and coal has been discovered in several places. The productions in 1850 were 58,527 bushels of wheat, 836,780 of Indian corn, 67,104 of oats, and 19,988 lbs. of wool. There were 11 grist mills, 11 churches, and 1,178 pupils attending public schools. Capital, Monticello. VI. A W. co. of Washington territory; area, about 1,300 sq. m. It is drained by Cowlitz river and several smaller streams, and is mountainous in the E. part.

LEWIS, or SNAKE RIVER, the largest tributary of the Columbia river. It rises on the E. side of the Rocky mountains in Nebraska, near lat. 43° N., long. 109° W., and passing through the mountains into Oregon flows S. W. and then N. W. to about lat. 43° 45' N., long. 116° 45' W., whence it is diverted to the N. In lat. 46° 30', long. 117°, in the territory of Washington, it bends sharply to the W., and making soon afterward a sweep N. W. and S. W., joins the Columbia in lat. 46° 6', long. 118° 40', after a course of 900 m. It receives numerous affluents, most of which are small. The largest are the Punahly, Middle, Owyhee, Big Wood, Fayette, Malheur, Powder, North Branch or Salmon, and Kooskoosky.

LEWIS, the name of 4 brothers prominent in the revolutionary history of Virginia, whose father, John Lewis, was descended from a Huguenot family which settled first in England, and afterward in Ireland. Having killed his landlord in resisting an illegal attempt to oust him from his possession, he emigrated to America, and in 1732 settled at Bellefonte, Augusta co., Va., being the first white resident of the county. I. ANDREW, the third in age, but the most distinguished of the brothers, a revolutionary general, born in Ulster, Ireland, about 1730, died in Bedford co., Va., in 1780. He was remarkable for great bodily vigor and commanding presence. He early became conspicuous in frontier struggles; he volunteered in the expedition to take possession of the Ohio region in 1754, was with Washington at the surrender of Fort Necessity, was present at Braddock's defeat, commanded the Sandy creek expedition in 1756, and was made prisoner in the unfortunate enterprise of Major Grant near Fort Duquesne, but released when the French abandoned the post. In 1768 he was a commissioner on the part of Virginia to conclude a treaty with the Six Nations at Fort Stanwix, N. Y. In 1774, when hostilities had again broken out between the whites and Indians on the western frontier of Virginia, he received the appointment of brigadier-general; and as commander-in-chief at the battle of Point Pleasant (the junction of the Great Kanawha with the Ohio), gained a victory over the most formidable Indian force that ever assembled within the limits of the Old Dominion. That force comprised the flower of the confederated tribes of Delawares, Mingoes, Cayugas, Wyandots, and Shawnees, under their most renowned chiefs, and headed by the celebrated Cornstalk. The number of troops engaged under Gen. Lewis was about 550, of

whom from 40 to 75 were killed and about 140 wounded. The Indian force is believed to have been 800 or 1,000. Gen. Lewis also filled important civil stations. For several years he represented the county of Botetourt in the house of burgesses, and was a member of the two conventions of 1775, which met in March and June. It was then that he received the appointment of colonel of a regiment in the continental army, and soon after he was promoted to the rank of brigadier-general in the same service. One of his first acts after receiving this commission was to drive Lord Dunmore from his retreat on Gwynn's island. His post of duty was now for a considerable time in the lower part of the state, where he contracted a fever of which he died. Upward of 6 feet in height, clad in his fringed hunting shirt, and carrying his long rifle, with a countenance calm and almost stern, Lewis was an accurate type of a race of men who, in the obstinate struggle of the revolution, bore the heat and burden of the day. At Fort Stanwix, the governor of New York said that "the earth seemed to tremble under him as he walked along;" and there is ample evidence of the fact, that to these great physical proportions was united a mental resolution equally striking. His military abilities were very highly valued by Washington, and the estimate placed upon his character and services in Virginia is attested by the selection of his statue to fill one of the 6 pedestals around the Washington monument at Richmond. II. THOMAS, born in the co. of Dublin, Ireland, in 1718, died in 1790. He was a member of the Virginia house of burgesses, where he faithfully supported the rights of the colonies. He advocated the celebrated resolutions of Patrick Henry in the session of 1765, sat in the conventions of 1775 and 1776, and was a member of the state convention which ratified the federal constitution. III. WILLIAM, born in Ireland in 1724, died in Virginia in 1811. He was engaged in the French and Indian warfare under Andrew Lewis, and served with distinction during the revolution. He obtained the rank of colonel. IV. CHARLES, born in Virginia, killed at the battle of Point Pleasant, Oct. 10, 1774. He served with distinction under Andrew Lewis, was a leader in the conflicts of the W. frontier of the state, and rose to the rank of colonel.

LEWIS, DIXON HALL, a U. S. senator from Alabama, born in Hancock co., Ga., Aug. 10, 1802, died in New York, Oct. 25, 1848. He was graduated at the South Carolina college, studied law, and, removing to Alabama, speedily rose to distinction in his profession. In 1826 he was elected to the legislature, and was reelected for the two succeeding years. In 1829 he was elected a representative in congress, and was continued in that capacity until 1844, when he was appointed by Gov. Fitzpatrick a senator in congress, to fill the vacancy occasioned by the resignation of the Hon. William R. King, who had been appointed minister to France. He was elected to fill the unexpired term, and in

Dec. 1847, was reelected for 6 years. Mr. Lewis was a very able public speaker and writer, of the extreme state rights school of politics, sustaining the doctrines of nullification and secession. In person he was one of the largest men of his day, weighing about 500 pounds.

LEWIS, ELLIS, LL.D., an American jurist, born in Lewisberry, York co., Penn., May 16, 1798. He was originally a printer, afterward studied law, was admitted to the bar in 1822, appointed deputy attorney-general in 1824, elected to the state legislature in 1832, appointed attorney-general of Pennsylvania in Jan. 1833, president judge of the 8th judicial district in Oct. 1833, and president judge of the 2d judicial district in Jan. 1843. He was elected a judge of the supreme court of Pennsylvania in Oct. 1851, became chief justice of that court in Dec. 1854, and was unanimously nominated by the democratic state convention for reelection in 1857, but declined, and retired to private life. In 1858 he was appointed one of the commissioners to revise the criminal code of Pennsylvania. His acquaintance with medical jurisprudence gained for him the honorary degree of M.D. from the Philadelphia college of medicine. He has also received the degree of LL.D. from Transylvania university, and from Jefferson college. The opinions of Judge Lewis upon important and difficult questions of law have frequently been cited with approval by the most eminent writers of his profession. He is the author of an "Abridgment of the Criminal Law of the United States," has also devoted considerable time to lighter studies, and has contributed to periodical literature.

LEWIS, ENOCH, an American mathematician, born at Radnor, Chester co., Penn., Jan. 29, 1776, died in Philadelphia, July 14, 1856. He was educated in the principles and usages of the society of Friends. He early exhibited a remarkable talent for mathematics, and though his opportunities of education had been exceedingly limited, he was able at the age of 14 to fill the position of usher in a country school. At 15 he undertook to teach such a school as principal, and was enabled, by the gravity of his demeanor and the respect accorded to his acquirements, to maintain the proper authority over pupils older than himself. In the autumn of 1793 he removed to Philadelphia, and studied mathematics, chiefly without assistance, teaching half of each day to earn means for his support. In 1795 he was employed as surveyor in a corps then engaged under an act of the Pennsylvania legislature to lay out some towns in the western part of the state. From 1796 to 1799 he had charge of the mathematical school in the Friends' academy, founded by William Penn, in Philadelphia. He then became mathematical tutor at Westtown boarding school, a large institution for 200 pupils, then lately established by the Philadelphia yearly meeting of Friends. In 1808 he opened a private boarding school for mathematical students at New Garden, Chester co., where he

continued to teach for some years with success. He edited several mathematical works with notes, and about 1819 published a treatise on arithmetic, which was soon followed by one on algebra, and subsequently by a work on plane and spherical trigonometry. In 1827 he became editor of a monthly periodical called the "African Observer." He wrote a life of William Penn, published in "The Friends' Library," a treatise "On Oaths," one "On Baptism," a small volume reviewing Dr. Cox's "Quakerism not Christianity," and various pamphlets on subjects of temporary interest. In 1847 he undertook the publication of the "Friends' Review," of which he was the editor till his death.

LEWIS, ESTELLE ANNA (ROBINSON), an American authoress, born near Baltimore about 1835. She was educated at the female seminary of Troy, N. Y., after leaving which in 1841 she was married to Mr. J. D. Lewis, a lawyer of Brooklyn, N. Y., where she has since for the most part resided. Her earliest writings were published in the "Family Magazine," edited by Solomon Southwick of Albany, to which she continued a contributor after her marriage. In 1844 appeared her first volume of poems, "The Records of the Heart" (12mo., New York), containing some of her best minor pieces. It was followed by "The Child of the Sea and other Poems" (1848) and "Myths of the Minstrel" (1852); and in 1858 a handsome illustrated edition of her poetical works was published in New York. She has written many poems for "Graham's Magazine," the "Democratic Review," the "Literary World," and other periodicals, and to the first mentioned contributed a series of articles on art and artists in America.

LEWIS, FRANCIS, an American revolutionary statesman, born in Llandaff, Glamorganshire, Wales, in March, 1713, died in New York, Dec. 30, 1808. He was educated at Westminster school, and afterward served a clerkship in a mercantile house in London. At the age of 23 he emigrated to New York, and there embarked in commercial pursuits, which he followed for nearly 40 years, retiring definitively from business upon the outbreak of hostilities with Great Britain in 1775. In this long interval he several times visited Russia and other parts of Europe, and during the "old French war" was an agent for supplying the British troops in North America with clothing. At the surrender of Fort Oswego he was taken prisoner and narrowly escaped death by the Indians. At the outbreak of the revolution he was elected to the continental congress, and in May, 1775, he took his seat in that body as one of the delegates from New York. He signed the declaration of independence, and with the exception of one short interval continued to be a member of congress until April, 1779. His residence on Long island, whither at the time of his first election to congress he had removed his effects, was wantonly plundered by the British troops, and so greatly was his property reduced by the war that he died a poor man.

LEWIS, SIR GEORGE CORNEWALL, an English author and statesman, born in Radnor, Wales, Oct. 21, 1806. His father, Sir Thomas Frankland Lewis, born in London, May 14, 1780, died at Harpton, Radnorshire, June 22, 1855, officiated successively as joint secretary of the treasury, vice-president of the board of trade, treasurer of the navy, and in other public capacities, and was created a baronet in 1846. Sir George was educated at Eton, and at Christchurch, Oxford, where he distinguished himself by classical attainments, and in 1831 was called to the bar, at which however he never practised. After holding with credit various appointments under the crown, he succeeded his father in 1839 as a poor law commissioner, an office which he filled until 1847, when he entered parliament as member for Herefordshire, and became secretary to the board of control. In 1848 he became under secretary of the home department, in 1850 secretary of the treasury, and in 1852 retired from office on the dissolution of the Russell cabinet. In 1855 he was returned to parliament from Radnor, and on the resignation of Mr. Gladstone was appointed, in Feb. 1855, chancellor of the exchequer in the Palmerston ministry. He held office until Feb. 1858, when, on the formation of the Derby ministry, he retired. In June, 1859, he returned to office as home secretary, in the cabinet of Lord Palmerston. In the intervals of his political and official duties he has written several elaborate historical and philosophical treatises, including an "Inquiry into the Credibility of Early Roman History," in which the principles laid down by Mr. Grote are followed out; "Influence of Authority in Matters of Opinion;" the "Origin and Formation of Romance Languages;" a "Treatise on the Method of Observation and Reasoning in Politics," containing a positive system of philosophy applicable to the study of politics; and a translation of Müller's "History and Antiquities of the Doric Race." In 1854 he succeeded Professor Empson as editor of the "Edinburgh Review," but resigned the position upon being appointed chancellor of the exchequer. He married in 1844 Lady Maria Theresa, widow of Thomas Henry Lister, Esq., and sister to the earl of Clarendon.

LEWIS, JOHN FREDERIC, an English painter, born in London, July 14, 1805. He early attracted attention by representations of wild animals both in water colors and oils, and between 1830 and 1850 made long and repeated visits to Spain, Italy, Greece, Turkey, and Egypt. His Spanish scenes, representing bull fights, peasants dancing, or episodes in the Carlist war, were admired, as also the scenes from Italian life, such as "Roman Peasants at a Shrine," and "The Pope Blessing the People." In the exhibition of the water color society for 1850 appeared his "Harem," and in 1855 the artist made his first appearance for many years as a painter in oils in a portrait of an Armenian lady. Among his works are a series of 60 copies in water colors of the *chefs d'œuvre* of the

Venetian and Spanish schools, which belong to the Scottish academy. He has occasionally practised engraving both on metal and stone, and has published 2 volumes of sketches from Spanish subjects. Since 1855 he has been president of the society of painters in water colors.

LEWIS, MATTHEW GREGORY, an English novelist, dramatist, and poet, born in London, July 9, 1775, died at sea, while returning from Jamaica, May 14, 1818. He was educated at Oxford, and on leaving the university proceeded to Germany. In 1795 appeared the 1st edition of his romance "The Monk," the outline of which is taken from a story of the Santon Barsisa in the "Guardian." This at once became popular, and though he had obtained a seat in parliament, the society for the suppression of vice, shocked at the book, took steps to prosecute the author. In 1797 appeared his drama of the "Castle Spectre." In 1798 he visited Edinburgh, and made the acquaintance of Sir Walter Scott, who contributed several ballads to a work entitled "Tales of Wonder," published by Lewis in 1801. On the death of his father, Lewis became possessed of considerable wealth, and plantations in Jamaica, which he twice visited. Beside the works above named, he wrote "The Bravo of Venice," his most popular novel next to "The Monk;" "Timour the Tartar," a drama; "Alonzo the Brave," and "Durandarte," the most interesting of his poems; and the "West Indian Journal," which has been republished in Murray's "Home and Colonial Library."

LEWIS, MERIWETHER, an American soldier and explorer, born near Charlottesville, Va., Aug. 18, 1774, died by his own hand in Tennessee, Oct. 11, 1809. He inherited a moderate fortune from his father, and at the age of 18 engaged in the pursuits of a farmer. But being of an adventurous disposition, he enrolled himself as a volunteer in the troops called out by President Washington in 1794 to quell the "whiskey insurrection" in western Pennsylvania. Subsequently he entered the regular service, rose to the rank of captain, and between 1801 and 1808 filled the position of private secretary to President Jefferson. In the latter year he was recommended to congress by Jefferson, who paid a high tribute to his courage, firmness, and prudence, and intimate knowledge of natural history, to command the exploring expedition which it was contemplated to send across the continent to the Pacific. In company with Capt. William Clark, his associate in the conduct of the expedition, he departed on his mission in the summer of 1803, and encamped for the winter on the bank of the Mississippi, opposite the mouth of the Missouri. Their company was composed of 9 young men from Kentucky, 14 soldiers, 2 Canadian boatmen, an interpreter, a hunter, and a negro servant of Capt. Clark. Beside these, a corporal, 6 soldiers, and 9 boatmen had been engaged to accompany the expedition as far as the territory of the Mandans. Whatever was deemed suitable for exchanges with the Indians had been provided, as well

as all articles supposed likely to be necessary for travellers. These were conveyed in a little fleet of one covered and two open canoes, and two horses were to be conducted along the bank of the river, for service in securing game and provisions. In the spring of 1804 Lewis set his party in motion to ascend the Missouri. Early in June they were among the Osages. The Pawnees and Ottawas were then passed, and by September the country of the Sioux had been reached. A second winter was passed by the travellers in cabins constructed among the Mandans, lat. $47^{\circ} 21' N$. The party found, in buffaloes and other game, abundant food, but suffered severely from the intense cold. *From this point despatches were sent back to St. Louis. On April 7, 1805, they again moved forward, still ascending the Missouri, and reached the great falls by the middle of June. Above these, near the close of July, they attained the point where three nearly equal streams concur and constitute the mighty river they had ascended. To these were given the names of Jefferson, Madison, and Gallatin, then president, vice-president, and secretary of state of the United States. They ascended the Jefferson, the northernmost of the three. On Aug. 1, soon after entering it, Capt. Lewis with three companions set out on foot toward the mountains in search of the Shoshonee Indians. On the 12th he reached the head of the Jefferson, the extreme source of the Missouri, in a defile of the Rocky mountains, and crossing the dividing ridge discovered a small rivulet tending to the Pacific. Meeting with the Shoshonees, he induced a number to return with him to the last forks of the Jefferson, to which the boats had been brought, but beyond which further navigation was impossible. The party encamping, Capt. Clark went forward to determine their future course, and on the 20th came upon the river whose head had been first seen by Capt. Lewis, and named it Lewis's river. On his return, favorable arrangements being made with the Indians, a number of horses procured, and a guide engaged, the expedition set out again, Aug. 31, and until Sept. 22 travelled in the mountains. Then were entered the broad plains of the great western slope. The latter part of this mountain transit was peculiarly painful, by reason of the great quantity of snow, which began to fall on Sept. 16. On Oct. 7, leaving their horses, &c., with friendly Indians, they embarked in canoes on the Kaskaskia, the left branch of the Columbia, and on Nov. 15 reached the mouth of that great river, having travelled more than 4,000 miles from the confluence of the Mississippi and Missouri. They passed their 3d winter in an intrenched camp which they constructed on the southern bank of the Columbia, suffering from want of fuel and food. On March 23, 1806, embarking for their homeward voyage, they began to reascend the Columbia. On May 2, leaving the boats, and resuming the horses, found safe with the Indians to whom they had been intrusted, they essayed anew a mountain

march. This from the west proved much more difficult than it had been found in the other direction. It was the end of June before they reached the point from which they had set out Sept. 12 of the previous year. Attempting from this point to penetrate N. E. through a region not before explored, Lewis encountered peculiar perils from hostile Indians, and was beside accidentally wounded by the discharge of a gun belonging to one of his party. On Aug. 12 he rejoined Clark, and descending the Missouri together, they reached St. Louis Sept. 23, after an absence of 2 years and 4 months. The report of their arrival was received with general joy throughout the United States. By the middle of February they reached Washington, congress being in session. By this body grants of land were made both to the men of the expedition and to their chiefs, while Lewis was made governor of Missouri territory, and Clark general of its militia and Indian agent. In the comparative quiet of his new mode of life, Mr. Lewis began to suffer from hypochondria, hereditary in his family, and to which he had been more or less subject from his youth. During one of these seasons of depression duty called him to Washington, and at a lodging place on the road he put an end to his life. A narrative of the expedition of Lewis and Clark, from materials furnished by each of the explorers, was prepared by Nicholas Biddle and Paul Allen, to which was prefixed a memoir of Lewis by Jefferson (2 vols. 8vo., Philadelphia, 1814).

LEWIS, MORGAN, an American soldier, jurist, and politician, born in New York, Oct. 16, 1754, died there, April 7, 1844. He was graduated at Princeton college in 1773, and subsequently entered the office of John Jay as a student of law. At the breaking out of the revolution he obtained a commission in the American service, and from the time when he joined the army before Boston until the close of the war was actively employed, distinguishing himself at Saratoga, and in the operations undertaken by Gen. Clinton against Sir John Johnson in northern New York. He retired from the service at the close of the war with the rank of colonel, resumed the study of the law, and in 1801 was appointed chief justice of the supreme court of New York, an office which he resigned in 1804 upon being elected governor of the state. In 1807 he resumed his practice, and upon the breaking out of the war with England in 1812 he was appointed quartermaster-general in the U. S. army. In 1814 as major-general he commanded the forces concentrated in New York.

LEWIS, SAMUEL, an American educationist, born in Falmouth, Mass., March 17, 1799, died in Cincinnati, O., July 28, 1854. His father was captain of a small coasting vessel, and before he was 11 years old he had made several voyages as cabin boy. In 1813 the family removed to Ohio, the father and his 5 sons walking the whole distance from Falmouth to Pittsburgh, Penn. Samuel was now employed on a farm, and when 15 years of age was appointed

mail carrier between Cincinnati and Chillicothe. He was afterward one of a party of surveyors in Indiana, and next a carpenter. He acquired the rudiments of education in his leisure moments, and at the age of 20, resolving to study law, obtained a place in the office of the clerk of the Hamilton county court. In less than 8 years he was admitted to the bar, and soon obtained a high reputation. In 1824 he was licensed as a local preacher in the Methodist church. He had at this time taken a stand in behalf of temperance and education. To his efforts were due the founding and endowment of the Woodward, and subsequently of the Hughes high school, at Cincinnati. Of the funds for the endowment of these schools, now amounting to \$310,000, he was a life trustee. From 1831, when he had aided effectively in forming the western college of teachers, he took an active interest in the promotion of common school education in Ohio. In 1837 he was elected by the legislature superintendent of schools. He visited 40 counties and 300 schools, and lectured on education in nearly all. In his report to the legislature he advocated the adoption of a better system of schools, with power to the cities and larger towns to organize high schools or seminaries; the founding of a state fund; loans for building school houses; the establishment of school libraries; the publication of a school journal; and such legislation as should secure the largest returns from the school lands. These measures were adopted, and he was re-appointed as permanent state superintendent, and editor of the "Common School Director." His report for the year 1839 suggested nearly every improvement which has since been made in the schools of Ohio. His health, however, had become so much impaired that he resigned his office, in performing the duties of which his travelling expenses had amounted to more than the whole sum received from the state. Identified with the anti-slavery party from 1841, he was for the next 12 years its favorite candidate for the state senate, for congress, and for governor, and he was very zealous in the promotion of temperance and kindred reforms.

LEWIS, TAYLER, LL.D., an American scholar and author, born in Northumberland, Saratoga co., N. Y., in 1802. His father was an officer in the revolutionary war. Dr. Lewis was graduated at Union college in 1820, studied law in Albany, and practised at Fort Miller. He gave much of his time to the study of Hebrew and general biblical and classical literature. In 1838 he taught a classical school at Waterford, whence he removed in 1835 to Ogdensburg; and in 1838 he was appointed professor of Greek in the university of New York. In 1849 he took the same professorship in Union college. Dr. Lewis has devoted much time to the study of languages, and occupies a high position as a philologist. He has contributed largely to the more prominent magazines and reviews, and has delivered and published several addresses on important literary and philosophical topics.

In 1844 he published a volume on the "Nature and Ground of Punishment," sustaining the penalty of death for capital crimes; and in 1845 "Plato contra Atheos," appending to the Greek text extended critical and philosophical notes. In 1858 appeared his "Six Days of Creation, or Scriptural Cosmology, with the Ancient Idea of Time-Worlds in distinction from Worlds of Space;" which was followed by a controversial work on the same subject, entitled "The Bible and Science, or the World Problem." In 1860 he published "The Divine Human in the Scriptures," an acute and learned work, designed as introductory to a more extended publication on the figurative language of the Bible. He has also in preparation a translation of Plato's "Theætetus."

LEWISBURG, a town of Union co., Penn., on the W. branch of the Susquehanna river, 69 m. N. from Harrisburg; pop. about 3,000. It contains 4 churches, and is the seat of a university under the direction of the Baptists, founded in 1847, which in 1859 had 4 professors, 54 students, and a library of 4,000 volumes.

LEWISTON, a township of Androscoggin co., Maine, 83 m. N. from Portland, extending for about 12 m. along the E. side of the Androscoggin river, and connected with Auburn on the opposite side by a bridge 700 feet long; pop. in 1850, 3,584, since which time it has more than doubled. By the Androscoggin and Kennebec railroad, which connects with the Atlantic and St. Lawrence railroad at Danville, 6 m. below Lewiston, and with the Androscoggin railroad at Leeds, 11 m. above, it communicates with the most populous and flourishing portions of the state. Its importance is chiefly due to its water privileges, which are among the best in New England, now applied to a great variety of machinery, involving large manufacturing interests. The river breaks over a diagonal ledge of rocks, and falls more than 50 feet in a distance of 200 feet. The natural advantages thus furnished are increased by a dam extending across the river, and by a canal, 60 feet wide, reaching from above the falls to the mills. The conformation of the ground is such that the water may be used several times. An association of capitalists, called the Franklin company, has purchased more than 1,100 acres of land adjacent to the falls, with the purpose of building up a manufacturing city. It owns all the water power, and rents it to the other companies. It is also a manufacturing company, and has a bleachery, the best in New England, capable of bleaching 6 tons of goods per day. The principal corporations are the Franklin company, having a capital of \$600,000, 21,000 spindles, and 425 operatives, for white cottons; the Bates manufacturing company, \$800,000 capital, 36,000 spindles, 812 looms, and 1,000 operatives, for cottons; the Hill manufacturing company, \$1,000,000 capital, 22,400 spindles, 414 looms, and 400 operatives, for fine cotton goods (it has one mill in operation, and is now (June, 1860) laying the foundation for a second

of equal capacity, with a third to be added); the Lewiston bagging company, \$150,000 capital, 4,500 spindles, 74 looms, and 120 operatives, manufacturing an average of 2,500 grain sacks daily; the Lewiston Falls manufacturing company, \$59,000 capital, 5 sets of machinery, and 60 operatives, for woollens; and the Lewiston furnace company, \$35,000 capital and 40 operatives, for steam engines, boilers, and other machinery. The Androscoggin company, chartered in 1860, has nearly completed (June, 1860) the foundation for a mill of 40,000 spindles. There are two other machine shops; a corn and flour mill, having 4 runs of stones, and capable of making 150 barrels of flour per day; a large card factory; a steam saw mill; and another saw mill, having one gang and a single saw capable of cutting 5,000,000 feet of lumber annually, and all the appliances for manufacturing shingles, laths, sashes, blinds, doors, and bobbins. Lewiston has 8 churches, viz.: 1 Baptist, 1 Congregational, 2 Freewill Baptist, 1 Methodist, 1 Episcopal, 1 Universalist, and 1 Roman Catholic. Its public schools are among the best in the state. It is the seat also of the Maine state seminary, under the patronage of the Freewill Baptists, chartered in 1855, established in 1857, with a liberal endowment by the state, and having in 1860 8 teachers and 850 pupils. Four newspapers are published here. In the vicinity of the village are valuable ledges of rock, furnishing excellent building materials.

LEWISTON, a port of entry for Niagara district, N. Y., on the Niagara river, 7 m. from its entrance into Lake Ontario and from the falls, with which it is connected by railroad; pop. in 1855, 1,014; of the township, 3,260. It is connected with Queenstown, Canada, by a suspension bridge, and has railroad communication with Detroit and Albany. For the year ending June 30, 1859, the exports of the district, of which the greater part was entered in the port of Lewiston, amounted to \$1,734,580; imports, \$1,019,944. The entrances of vessels were 356, tonnage 106,693; clearances 354, tonnage 106,174; tonnage of the district, 1,175. It contains 4 churches (Baptist, Episcopal, Presbyterian, and Roman Catholic), and 13 schools with 1,214 pupils. In 1814 it was burned by the British.

LEWISTOWN, a village and the capital of Mifflin co., Penn., on the left bank of the Juniata; pop. in 1850, 2,735. It has an active trade, exporting large quantities of wheat, Indian corn, pork, and iron, and is connected by canal and railroad with Philadelphia and Pittsburg. In 1850 it contained 7 churches (African, Baptist, Episcopal, Lutheran, Methodist, Presbyterian, and Roman Catholic).

LEWSCHIN, ALEXEI, a Russian statesman and scholar, born in 1799. He attended the university of Kharkov, and published as early as 1816 "Sketches of Little Russia." He received an appointment in the government of Orenburg, where he collected materials for his "Historico-Statistical Description of the Ural Cossacks" (St. Petersburg, 1823), and "His-

torical and Geographical Notice of the River Sir Daria or Jihon," which is in French (Paris, 1828), most of his other works being in German. An extensive exploration in the Kirgheez steppes enabled him to make a considerable addition to the stock of knowledge of those distant regions in his "Description of the Kirgheez Hordes and Steppes" (St. Petersburg, 1832). Having officiated for some time as one of the military commanders of the city of Odessa, he visited Italy in 1843, which gave occasion for his *Spaziergänge eines Russen in Pompeji* (St. Petersburg, 1843); and on his return to Russia he was appointed chief of the economical department in the ministry of public domains. In 1844 he was made a privy councillor, and after the accession of Alexander II. he was attached to the ministry of the interior, where he was appointed to prepare a plan for the emancipation of the serfs. In conjunction with Struve and other men of science, he founded in 1845 the Russian geographical society; and as a leading member of the council of that body, he has actively promoted the different expeditions which have since been despatched under its auspices to remote parts of the Russian empire. Since 1857 he has been president of the administrative council of the great Russian railway company.

LEXINGTON, a central district of S. C., bounded N. E. by the Broad and Congaree and S. W. by N. Edisto river, and intersected by the Saluda; area, 980 sq. m.; pop. in 1850, 12,980, of whom 5,557 were slaves; white pop. in 1859, 8,726. The surface is diversified. The productions in 1850 were 382,518 bushels of Indian corn, 36,942 of wheat, 84,066 of oats, 60,721 of sweet potatoes, and 4,608 bales of cotton. There were 33 saw mills, 8 grist mills, 33 churches, and 700 pupils attending public schools. Capital, Lexington.

LEXINGTON, a township and village of Middlesex co., Mass., 10 m. N. W. from Boston and 7 m. E. from Concord; pop. in 1855, 2,549. The village is the terminus of the Lexington and West Cambridge railroad, a branch of the Boston and Fitchburg railroad. The surface of the township is diversified, and the soil is generally fertile. A great quantity of milk is produced, of which several hundred thousand gallons are annually sent to the Boston market. There are 4 churches (1 Baptist, 2 Congregational, and 1 Unitarian), and a high school.—Lexington is memorable as the scene of the first armed encounter between the British and Americans in the revolutionary contest. On the night of April 18, 1775, Paul Revere of Boston, eluding the British sentinels, escaped into the country across Charles river and spread information of the intended march of a detachment of British troops 800 strong, commanded by Lieut. Col. Smith, to seize the provincial stores and cannon at Concord. About midnight he reached the house of the Rev. Jonas Clark, the minister of Lexington, where Hancock and Adams lodged. The town at that time contained about 700 inhabitants, and nearly all the able-bodied

males had been trained to the use of arms, and were enrolled as minute men. The alarm was given, and by 2 o'clock in the morning about 180 militiamen were assembled under arms on the common, commanded by Capt. John Parker, who ordered them to load with powder and ball, but to take care not to be the first to fire. Messengers were then sent toward Boston to look for the British, who returned reporting that there were no signs of their approach. A watch was set, and the militia dismissed with orders to assemble again at beat of drum. Just at daybreak the advanced guard of the enemy, commanded by Major Pitcairn, was discovered approaching the village. The alarm was given, and between 60 and 70 of the militia assembled and were paraded in two ranks on the common a few rods north of the meeting house. The British halted to load, and to allow the rest of the detachment to come up. They then advanced almost on a run. Pitcairn rode in front, and when within 5 or 6 rods of the Americans he called out: "Disperse, ye villains, ye rebels, disperse; lay down your arms; why don't you lay down your arms and disperse?" They kept their ranks firmly and silently until Pitcairn discharged a pistol at them and ordered the soldiery to fire. A heavy discharge of musketry followed, and 7 of the men of Lexington were killed and 9 wounded. The killed were Jonas Parker, Isaac Muzzey, Jonathan Harrington, jr., Caleb Harrington, Robert Monroe, Samuel Hadley, and John Brown. The last two were pursued and killed after they had left the common. Asahel Porter of Woburn, a prisoner taken by the British on the march, was killed at the same time as he was trying to escape. When the British fired, Capt. Parker ordered his men to disperse. A few of them then returned the fire, and Pitcairn's horse was grazed by a bullet and a private slightly wounded in the leg. The British drew up on the common, fired a volley, gave three cheers, and after a halt of half an hour marched on to Concord. On their retreat from that place, after the battle at the bridge (see CONCORD), while passing through Lincoln, they were attacked by the Lexington men, and as they were ascending Fiske's hill in the west part of Lexington a sharp contest took place in which a number were killed. About a mile below the common the British were saved from total destruction by the arrival of a reinforcement of 1,200 men under Lord Percy. The action at Lexington roused the whole country. The night before it there were few people in the colonies that expected any blood would be shed in the contest. The night after, says Bancroft, the king's governor and the king's army found themselves closely beleaguered in Boston. In 1799 a small monument was erected on Lexington common to mark the spot of the first bloodshed of the revolutionary war. In 1859 an association, of which Edward Everett is president, was organized to procure by voluntary contributions the erection of a more fitting memorial of the event, in the shape of a

colossal bronze statue of a revolutionary minute man elevated upon a lofty pedestal of granite, with appropriate sculptures in bas-relief.

LEXINGTON, the capital of Rockbridge co., Va., on North river, an affluent of James, 146 m. W. from Richmond; pop. in 1850, 1,738. It is situated in a valley and surrounded by beautiful mountain scenery. Washington college, founded in 1798 and endowed by General Washington, and the Virginia military institute, founded in 1838, are situated here; and there are also in the village 4 or 5 churches, and 2 seminaries.

LEXINGTON, a city and the capital of Fayette co., Ky., situated on the Town fork of the Elkhorn, a tributary of Kentucky river, 77 m. E. from Louisville, in lat. 38° 2' N. and long. 84° 26' W.; pop. in 1850, 9,180; in 1860, about 10,000. It is surrounded by a country unsurpassed in beauty and fertility. The streets are laid out at right angles. The finest one, Main, is upward of a mile in length. The public buildings are a court house, Transylvania university, masonic hall, 12 churches, the city hospital, state lunatic asylum (one of the largest and most commodious in the Union), two banks of issue and several of deposit, an orphan asylum, public schools, &c. There are published in the city two semi-weekly newspapers. Transylvania university, the oldest college in the state, was founded in 1798. In 1859 it had 8 professors and 25 students. Connected with it are law and medical departments. The university libraries, including those of the law and medical schools, number about 15,000 volumes. Lexington also has a city library with 5,000 or 6,000 volumes. There are about 100 stores and shops of various kinds and 80 manufacturing establishments in the city. A heavy business is done in the manufacture of hemp. There are 8 railroads leading from the city, the Louisville, Covington, and Danville; and 12 macadamized turnpikes. At the west end of Main street there is a beautiful cemetery, in the midst of which stands a monument erected to the memory of Henry Clay. The city is well paved and lighted with gas. The first settlement was made in 1775 by Col. Robert Patterson. The news of the battle of Lexington reached the settlers while they were laying out the town, and they immediately named it after the first battle field of the revolution. The town was incorporated by an act of the Virginia legislature in 1782, and was formerly the capital of the state.

LEXINGTON, a township and capital of Lafayette co., Mo., finely situated on the right bank of the Missouri river, 350 m. from St. Louis, and 125 m. from Jefferson City; pop. in 1859, 5,200. It has 7 churches, a branch of the bank of Missouri, capital \$600,000, 2 weekly newspapers, 8 hotels, and 6 grist mills. It was settled in 1837.

LEYDEN (anc. *Lugdunum Batavorum*), a city of Holland, in the province of South Holland, 27 m. by railway from Amsterdam and 9½ m. from the Hague, on the Old Rhine, which

discharges its narrow stream into the sea at a distance of 8 m. from the city; pop. about 40,000. The city presents an antique, venerable, scrupulously clean, but dull and inanimate appearance. It is surrounded by numerous wind mills, in one of which Rembrandt is said to have been born, and by pleasant country seats, where Descartes found an asylum and Boerhaave resided. It is traversed by many canals, the bridges of which number about 150. The *Brede Straat*, or Broad street, ranks among the finest of Europe. The large open space called the *Ruine* in the Rapenburg street, now planted with trees, was covered with dwellings until 1807, when 300 of them were destroyed with 150 persons by an explosion of gunpowder. The chief ornament of Leyden is the university, founded in 1575 by the prince of Orange. For some time it contributed so much to the learning of Europe, that Leyden was called the Athens of the West. Associated with it are the names of Grotius, Descartes, Heinsius, Scaliger, Boerhaave, Arminius, and Gomarus. Evelyn, Goldsmith, Fielding, and other English men of letters studied at Leyden. The university is still attended by about 600 students, and there are 33 professors. Most of the lectures are delivered in Latin. The junior students have for a short time after their entrance to act as fags to those of older standing. The students reside in lodgings in the city, and wear no uniform dress. The museum of natural history, one of the most extensive in Europe, is especially rich in productions of the East and West Indies, and has a remarkable collection of birds. The cabinet of comparative anatomy is exceedingly rich. The collections of shells, of minerals and insects, and of agricultural objects, as well as the Egyptian museum, possess great interest, as does the Japanese collection of Siebold, the most comprehensive of the kind in the world. The library contains 60,000 printed volumes and 14,000 MSS., including some of the rarest oriental ones, collected by Golius in the 17th century. Printing was extensively carried on in Leyden in the 17th and 18th centuries, as was the manufacture of fine woollen cloth. In the 17th century the population was estimated as high as 100,000. Nearly 4,000 of the inhabitants were carried off by the plague in 1655. In more recent times industry has declined, but Leyden continues to be the principal market for wool and woollen goods in Holland, and the population has nearly doubled since the beginning of the 19th century.—The siege of Leyden and its heroic defence against the Spaniards in the Dutch war of independence, forms one of the most interesting episodes in the history of the Dutch republic. After a protracted warfare the city was relieved on the morning of Oct. 3, 1574, when the fleet of Boisot entered Leyden. Motley, in his "Rise of the Dutch Republic" (New York, 1856), says: "The quays were lined with the famishing population, as the fleet rowed through the canals, every human being who could stand coming forth to

greet the preservers of the city. . . . On Feb. 8, 1575, the city of Leyden, so lately the victim of famine and pestilence, had crowned itself with flowers." A grand procession was formed on that day, which marched to the cloister of St. Barbara, the place prepared for the new university, which the prince of Orange established, as well as a 10 days' annual fair without tolls or taxes, as a reward for the sufferings and heroism of the citizens. An interesting medal struck on the occasion of the siege of Leyden being raised was exhibited by Dr. Lee in the London numismatic society in 1858. Leyden is also associated with American history through the pilgrim fathers, who, after their arrival from England in Amsterdam (1608), removed to Leyden (1609), where "they saw poverty coming on them like an armed man."

LEYDEN, JOHN OF. See ANABAPTIST.

LEYDEN, JOHN, a Scottish author, born in Denholm, Roxburghshire, Sept. 8, 1775, died in Batavia, Aug. 21, 1811. He studied at the university of Edinburgh, and was ordained in 1798; but not attaining any success in the clerical profession, he abandoned it, and applied himself to the study of medicine. In 1802 he was appointed assistant surgeon in the East India company's service, and on arriving at Madras turned his attention to the oriental languages. In 1806 he removed to Calcutta, where he was appointed professor of Hindostanee in Fort William college, and shortly afterward judge of the Twenty-Four Pergunnahs. In 1809 he was made a commissioner of the court of requests, and in 1810 was promoted to the office of assay master of the mint. Having accompanied Lord Minto in an expedition against the Dutch colony of Java in 1811, he there contracted a fever which proved fatal. The most important of his works are: a "Historical Account of Discoveries and Travels in Africa" (enlarged and completed by Hugh Murray, 2 vols. 8vo., Edinburgh, 1817); and "An Essay on the Languages and Literature of the Indo-Chinese Nations," published in vol. x. of "Asiatic Researches." His poetical remains were published in London in 1819 by the Rev. John Morton, and a new edition of his "Poems and Ballads," with a memoir by Sir Walter Scott, in 1858.

LEYDEN, LUCAS VAN, otherwise called *LUCAS JACOBZ*, a Dutch painter and engraver, born in Leyden in 1494, died in 1538. At 10 years of age he was placed with Cornelius Engelbrechten, a painter of Leyden, and two years later he produced a picture of St. Hubert which astonished the artists of Leyden. At 14 he produced a celebrated print of "Mohammed killing Sergius." He subsequently rose to eminence in Holland, was an intimate friend and correspondent of Albert Dürer, and finished a large number of pictures, few of which however are now well authenticated. In all that regards external manner he resembled Dürer, particularly in his tendency to the grotesque and whimsical, but lacked his grandeur of design. He painted

in oil, in distemper, and on glass, and essayed history, landscape, and portraits, but inclined rather to scenes of common life. His most important work is the "Last Judgment" in the town house at Leyden, a picture of immense size. He was equally celebrated as an engraver, working on wood as well as copper.

LHA-SSA. See LASSA.

L'HÔPITAL, or L'HOSPITAL, MICHEL DE, chancellor of France, born in Aigueperse about 1504, died in Bellebat, near Étampes, March 13, 1573. He was made president of the court of accounts in 1554, and chancellor of France in 1560. In the former office he proved his integrity and courage by refusing the 20,000 livres which Henry II. demanded for Diana of Poitiers. In the latter office he refused to sign a sentence of death against the prince of Condé. His aim was to moderate all parties, and he opposed violence in politics and intolerance in religion. To him were due the edict of Romorantin (1560), which prevented the establishment of the inquisition in France; the ordinance of Orleans (1561), at once an administrative, judicial, and religious code; the edict of pacification (1562), which authorized the free exercise of Protestant worship, with certain precautions for the preservation of peace; the edict of Roussillon (1565), which fixed the beginning of the year at Jan. 1; and the ordinance of Moulins (1566), to reform the administration of justice. He gave up the seals of office in 1568, and retired to the country. His moderation had drawn upon him the enmity and suspicion of the Catholic party, especially as his wife and family had all become Protestants. A troop sent to protect him at the period of the St. Bartholomew massacre being mistaken for assassins, he commanded the door to be opened to them, saying that his time would come whenever God pleased. His complete works, embracing Latin poems, harangues, memoirs addressed to the king and the parliament, and a political testament, were edited by Dufey l'Yonne (4 vols., Paris, 1824).

LIAS, an English provincial name for a group of strata lying at the base of the jurassic formation, and more or less intermingled with the overlying oolite; but in the Jura the two formations are distinct, the oolite reposing unconformably upon the lias. Over a considerable portion of Europe it is found in alternating beds of clays, sandstones, and limestones, which altogether attain a thickness of 500 to 1,000 feet. The limestones have a peculiar appearance, lying in thin strata of a bluish or grayish color within, and light brown without where exposed to the weather. As noticed in the article GZOLOG, the nearest representatives of the group in the United States are found in the coal fields of S. E. Virginia and North Carolina, and the middle secondary sandstones of the Connecticut river valley and of New Jersey; though it may be that these correspond more closely to the oolite. The formation is especially interesting in Europe for the variety of fossils it affords, the most extraordinary

among which are the huge reptiles, the ichthyosaurus and plesiosaurus of several species. The limestones abound also in corallines, and in great variety of shells. The remains of fish are all of extinct genera.

LIBANIUS, a Greek sophist and rhetorician, born in Antioch about A. D. 316, died there toward the close of the same century. He taught rhetoric at Constantinople, where his school drew such vast numbers of students that his rivals caused him to be expelled from the city as a sorcerer. He subsequently returned to Antioch, and there passed his latter days. He was highly esteemed by the emperors Julian, Valens, and Theodosius. He was a pagan, but yet maintained friendly relations with many Christians, including St. Basil and St. Chrysostom, who were his pupils. He was a voluminous author, and several of his works are extant, but there is no complete edition of them.

LIBANUS, MOUNT. See LEBANON.

LIBEL, in law, has one meaning in criminal law, or as a ground for civil action, and quite another as one of the processes of legal remedy. In both senses the word is derived from the Latin *libellus*, which means literally a little book, but was used for any brief writing. In the Roman criminal law the phrase was *libellus famosus*. The qualifying adjective is dropped in our common use of the word, but is often used in accurate legal documents, as in the latest English statute about libels, where the expression generally used is "defamatory libel." Generally, however, the word libel is supposed to imply defamation. Its exact definition is difficult; Lord Chancellor Lyndhurst has said that he never met with one entirely satisfactory to him. The shortest and simplest, and at the same time the best in our judgment, is this: a libel is any published defamation. In "The People vs. Croswell," 3 Johnson's Cases, 354, occurs the following definition of a libel: "A censorious or ridiculous writing, picture, or sign, made with a mischievous and malicious intent toward government, magistrates, or individuals." This definition is approved and adopted in 9 Johnson's Reports, 214, and more recently in Denio's Reports, 347.—We propose to consider: 1, what this defamation must be; 2, what the publication; 3, what the punishment or remedies; 4, what may be the defence. Before proceeding to these topics, it may be well to remark, however, that libel is distinguished, in law, from slander, by the fact of publication; for while libel is published defamation, slander is only spoken defamation. The offences are entirely different in law, and very different systems of rules apply to them. (See SLANDER.) As to the requisite defamation, it need not charge any crime, nor any thing which must affect a man's business or pecuniary interest, or indeed accuse him of any moral obliquity. It is quite enough if it holds him up to ridicule. One reason for this is, that a man has a right to a respectable position in society, and is injured by any thing which tends to degrade

him in the opinion of his neighbors. But the reason most commonly given by courts and text writers is, that the essence of the offence of libel lies in its being dangerous to the public peace; and defamation which only makes its object ridiculous, is quite as likely to make him angry and stir him to break the peace, as if it affected his pecuniary interests or exposed him to legal measures. On the same foundation rests the distinction between libel and slander; because the law considers that words, which while spoken only are fleeting and transitory, become fixed and vested by publication, and capable of indefinite diffusion, and therefore their capacity of mischief is vastly increased; hence, while libel is indictable, slander is not. The defamation may be of the dead, provided it have a tendency to stir up to revenge or violence any living friends of the deceased. So it has been held, that a publication is a libel which consists only of defamation of the Christian religion, of morality, or of decency. The publication may consist of any act or acts which put the defamation into distinct and apprehensible form; thus, not only printing it in any form is sufficient, but painting it, as on a sign, or drawing it, as in a caricature. Nor need the name of any person be mentioned if it be sufficiently obvious who is thus held up to public ridicule; nor need it be given to the public. If it is written in a letter sent to but one person, that is publication; and it has been held, on what seem to us good grounds, that if one write what is defamatory of a person, in a letter addressed to the person defamed, and send it to him only, this also may be publication. It has been held that if one take down a volume from book shelves and read from it a defamatory passage to one or more persons, this is publication of a libel. Again, if the defamation be published in a work of general circulation, as a newspaper, the writer, the editor, and the publisher are all and severally liable; and the editor and publisher are liable although they give the name of the writer, or even if the writer's name be appended to the article; for if the law were otherwise, it would be easy to give any publicity to any libel with impunity, merely by putting to it the name of some person who was not responsible in fact, because he had nothing to lose. But if a servant of the publisher sell the book, this is not, of itself, publication on his part, but it is some evidence of publication on the part of his master; and perhaps the same rule would be applied to any mere agent. Nor is it held to be a defence to the editor or publisher, that he did not know the libellous character or nature of the matter published. It is as much publication if the book or paper be given away as if it be sold; and with every copy given or sold there is a repetition and renewal of the offence. It is doubtless of the essence of libel that malice enter into the act or motive; but this may be either express malice or constructive malice; that is, there may be direct proof of an actual malicious purpose in

the words or act, or they may be such that the law will imply malice in the absence of proof, on the ground partly that no person could do such a thing if he were not malicious, and partly that the thing itself is so wrongful and mischievous, that the safety of society requires that the doer should be punished as if he were malicious, and that no one should be able to defend himself for doing so great a wrong by showing that it was done only through negligence or stupidity.—As to the punishment, any person guilty of libel may be indicted for the offence, as a crime against the public, and if convicted punished accordingly. But the person defamed may also bring his action for damages and recover full compensation. The reason for treating libel as a public offence as well as a private one consists in the injury done to the public by endangering its peace. But this is entirely independent of the injury to the person defamed, for which he has therefore his own remedy. The punishment for libel is fine and imprisonment. This is regulated by statutes in some states, and in others rests on the common law, according to which libel is a misdemeanor.—The defence against libel has presented questions which were once of great public interest; and if they are less so now, it is only because they are now quite well settled, and the law in respect to them stands on a basis which no one is disposed to disturb. By the Roman civil law, the crime of libel was punished very severely. The 12 tables made it a capital offence. By the time of Augustus usage had so modified the law, that the punishment was only corporal; but Valentinian made it once more capital, and extended the punishment of death to him who wrote or published the libel, or omitted the destroying or suppressing of it if he could do so. By a law of Alfred, the inventor of a public falsehood (*publicum mendacium*) was punished by the loss of his tongue, nor could he redeem his tongue for less than the price of his head. The laws of Greece as well as those of Rome made many distinctions in relation to the law of libel, some of which were very nice; but they do not seem to have recognized that which has been for a long time the fundamental distinction, by the law of England and of this country, between published defamation or libel and merely spoken defamation, which, as we have seen, is only slander.—The earliest question in point of time, and one of the most important in its character, which has arisen in the history of the law of libel, is in relation to the function of the jury as distinct from that of the court. A familiar and perfectly well established principle gives all questions of fact to the jury, and leaves all questions of law to the court. In the last century there was an endeavor in the English courts to confine the question before the jury to the mere publication of the words charged, leaving it for the court to say whether the words or thing published constituted a libel. This was so held by the court of king's bench, in "The King vs

Owen" (10 St. Tr. App. 169); in "The King *vs.* Mott" (3 T. R. 430, in notes); and in "The King *vs.* Shebbeare" (*ibid.*). Then Lord Mansfield and his colleagues asserted the same law in "The King *vs.* Woodfall," as the publisher of Junius (5 Burrows, 2666); and finally in the case of "The King *vs.* the Dean of St. Asaph" (3 T. R. 428, in notes). The powerful and very eloquent speech of Erskine in this last case attracted general attention to the subject; and soon afterward, the statute 32 George III. ch. 60 (1792), provided that in every trial of an indictment or information for libel the court should give their opinion and direction to the jury on the whole matter at issue, as in other criminal cases. This placed the whole question before the jury, who might, if they saw fit, bring in a general verdict of not guilty, although they were satisfied that the accused published the words alleged, and the court instructed them that these words constituted a libel. Still, it was thought that this question remained properly a question of law only. But in 1803 the case of "The People of New York *vs.* Croswell," for an alleged libel against Thomas Jefferson, was tried before the supreme court; and the court being equally divided upon this question, an act was passed in 1805, going further than the English statute, and providing that on every trial of an indictment for libel, the jury "shall have a right to determine the law and the fact, under the direction of the court, as in other criminal cases." This may now be regarded as the settled law in every part of the United States. —Another question, next in time and not inferior in importance, is: How far and under what limitations the truth of the words published is a defence against a criminal charge of libel. In an action for slander, or for words spoken, the truth is always a good defence; and it is settled that the truth is a defence, perhaps an equally good and unqualified defence, against a civil action for libel. But the law is certainly not so upon the trial of an indictment for libel. It must be remembered that a libel was regarded as a crime, or a public offence, because it endangered the public peace; and as an inference from this principle, the common law did undoubtedly refuse to permit the truth of the words spoken to be any defence against an indictment for libel. Lord Coke (5 Co. 125) said: "The greater appearance there is of truth in any malicious invective, so much the more provoking it is;" and Lord Mansfield only simplified and condensed the ancient rule in his famous saying: "The greater the truth, the greater the libel." This continued to be the law in England until the statute 6 and 7 Victoria, ch. 96, provided, in substance, that the truth should be a defence if it was published for the public benefit. In the case of "The people of New York *vs.* Croswell," to which we have before referred, this question also arose, whether the truth could be given in evidence as a defence, as well as whether the jury could pass upon the whole case, including the law as well as the fact. Alexander Hamil-

ton exerted his utmost power of argument on the affirmative side of both questions. Justices Kent and Thompson were with him, and Justices Lewis and Livingston contra. The verdict having been against the defendant, and the court being equally divided, judgment would have been pronounced had not the legislature interposed the statute of 1805, already referred to. By this it was enacted, that the truth should be a defence, provided it were published with good motives and for justifiable ends; and this is now, either by constitutional provisions, by statute, or by adjudication, the law of every one of the United States. It is also settled that the publication of proceedings of courts of justice, or of petitions to the legislature, is not libellous on the part of the publisher. But the publication of injurious rumors is not justified merely by their existence.—There is still another rule, which is universally admitted, although it is one which is not easy to define; it is, that a much larger freedom of speech or writing is allowable where it concerns a candidate for public office, and relates to his fitness for that office. The absolute necessity that the people, in a country as democratic as this is, should know all that can be known of those for whom they are called upon to vote, makes this rule inevitable. But it would be a great misfortune if this rule, which is intended to protect the public from the danger of choosing unworthy persons, should in fact deprive them of the services of the best men, who are unwilling to be made the targets for that unrestricted calumny which will always be the favorite weapon of partisan or personal malignity, when it knows that it can wield it with impunity. Upon the subject of defence, it may be proper to add, that many things which would not be sufficient for a full and technical defence (as for example, that the defendant, as printer, knew nothing of the character of the article, and had given the name of the writer), would operate strongly to mitigate the punishment if the defendant were found guilty under an indictment, or to lessen the damages in a civil suit.—LIBEL is also the name of the first process in a suit in admiralty. The whole procedure of this court follows, with much exactness, that of the Roman civil law, and the terms used are derived from that law. The *libellus* was the initiatory step in an action, corresponding to the writ and declaration at common law. In England the word is retained, for some purposes at least, in the canonical courts; and its influence remains in courts of chancery, where the plaintiff is often called the libellant, but the instrument itself is not called a libel, but a bill. In the United States, it is in practice confined to courts of admiralty. There are no especial forms which must be adhered to; and, although in each of our district courts certain forms and methods are customary and usually followed, we apprehend that any narrative of the libellant's case, which was distinct, intelligible, and sufficiently full, would be received by the court, and if necessary amended into conformity with any

established precedents. There are, however, some essentials to a libel in admiralty, none of which should be omitted, and all of which should be present, either originally or by subsequent amendment, in order to sustain a judgment. These are: 1, it should be properly addressed to the right judge; 2, it should state and designate with clearness and accuracy the parties to the action; 3, it should narrate the facts and circumstances, directly and affirmatively, upon which the libellant rests his case; 4, these should be sufficient, as stated, to give the court jurisdiction; 5, it should pray for the proper relief, specifically, and the proper process, and for relief generally. A libel is sometimes "simple," that is, it tells a plain story, continuously, from beginning to end. More often it is, and perhaps it should always be, "articulate," or divided into articles, which are successively numbered, and each one of which includes some one allegation of a specific, material fact. The purpose of this is, to enable the respondent to answer definitively and specifically each part of the libellant's case; some parts he would wish to admit, others to deny, and yet others to qualify.

LIBERIA, a republic of American negroes on the W. coast of Africa, extending S. E. along the coast from the British colony of Sierra Leone about 500 m. to the San Pedro river, with an average breadth of 50 m., between lat. $4^{\circ} 20'$ and $7^{\circ} 20'$ N., long. $6^{\circ} 50'$ and $12^{\circ} 40'$ W.; area, about 80,000 sq. m. It is divided into 4 counties: Mesurado, Bassa, Sinou, and Cape Palmas. The capital and largest town is Monrovia, a seaport on Cape Mesurado, with about 2,000 inhabitants. The other towns are Marshall, Edina, Grand Bassa, and Greenville on the coast, and Caldwell, Louisiana, Millsburg, Bexley, and Cresson in the interior. The general line of the coast is from N. W. to S. E. There are several inlets and harbors at Cape Mount, Cape Mesurado, Cape Palmas, and Bassa Cove. There are many rivers, of which the principal is the St. Paul, which enters the ocean at Cape Mesurado. It is about half a mile wide, and at low tide has 7 feet of water on the bar at its mouth. It is navigable only about 18 miles from the sea. The other largest rivers are the St. John, which empties at Bassa Cove; the Junk river, which runs between the St. Paul and the St. John; Cape Mount river, which flows into the sea at Cape Mount; and the Grand Sesters, E. of the St. John, which has 14 feet of water over the bar at its mouth. The land on the coast is generally low and sandy, except near the capes, which are elevated, and in the S. E., where the shore is bold and rocky. From the coast the land gradually rises, until at the distance of 80 miles inland it swells into forest-covered hills, and in the remoter interior into mountain ridges divided by fertile valleys. The soil is generally good, though there is some poor land. It is of a yellowish color, and tinges the rivers which flow through it. There is little swamp land, the country being almost universally broken and rocky or gravelly. The climate

is that common to regions near the equator. There are two seasons, the wet and the dry. The former begins with June and ends with October. Rain falls during the greater part of this season, though not without intervals of clear skies and successive days of fine weather, especially in July and August. In the dry season rain is rare, though there are occasional showers. The average heat of the year in Monrovia is 80° F., that of the rainy season being 76° and of the dry 84° . The mercury seldom rises above 90° in the shade, and never falls below 60° ; the daily variation seldom exceeds 10° . June is the coolest month, and January the hottest. During the hottest months, January, February, and March, the heat is mitigated by the constant winds, the land breeze blowing from midnight until near midday, and the sea breeze from midday until near midnight. The climate both on the coast and in the interior is deadly to the white man, and though less fatal is still formidable to the black man born and reared in temperate regions. Strangers soon after their arrival are attacked with a fever called acclimating, which seems to be caused not by the heat, but by miasmata of the origin and character of which little is known. This sickness indicates its approach by headache, pains in the back, loss of appetite, and more or less gastric derangement, and rapidly develops into bilious remittent fever. This sometimes yields to mild medical treatment, and the patient is then prepared to endure ordinary exposure to the climate. Generally, however, the disease assumes the tertiary or other form of intermittent fever, accompanied by bilious vomiting, a dull expression of the eye, and in the febrile paroxysms intense headache and delirium. This is the African fever, and is frequently fatal. To the white man there is no acclimation in Liberia; the first attack of the fever does not secure him from subsequent attacks. To the natives the climate is not unfavorable; they are robust and have few diseases, and many of them live to a great age.—Iron ore abounds in Liberia, and it is said that copper and other metals exist in the interior of the country. The vegetables are almost endless in their variety. The most important of the native trees are rosewood, teak, mahogany, hickory, poplar, brimstone wood (so called from its yellow color), sassa wood, and many others valuable in ship building and cabinet work. Camwood and other dyewoods, ebony, the acacia which yields gum Arabic, and the copal tree are found. There are several varieties of palm, all highly useful, especially the nut-bearing palm from which palm oil is made. Medicinal plants abound; among them are the copaiba tree, the *croton tiglium*, which yields the croton oil, the castor oil plant, and the *ricinus major*, whose seeds produce a highly purgative oil, and whose wood is much used for hedges and fences. Several varieties of maize and rice of excellent quality are cultivated, and on the highlands of the interior good crops of wheat, barley, and oats have been

raised. Cotton flourishes, and sugar cane and excellent coffee are easily produced. The esculent and farinaceous roots chiefly cultivated are the sweet potato, the cassava, the yam, the tenia, which in flavor resembles the potato, and the arrow root. Cabbages, beans, peas, tomatoes, beets, cucumbers, and almost all the common garden vegetables known in America, thrive when planted in the proper season. The fruits are numerous and fine. Among them are the mango, lemon, lime, orange, guava, tamarind, pomegranate, cocoanut, plantain, banana, rose apple, African cherry, pineapple, avocado pear, and the African peach. Wild animals are becoming scarce in Liberia, and the elephant, hippopotamus, leopard, crocodile, boa constrictor, and deer, formerly abundant, are now rarely met with. Monkeys, guanas, chameleons, lizards, and ants in great variety, abound in the forests. The driver ants, which travel from place to place in countless multitudes, are welcomed by the people, for when they enter a house they soon clear it of every other species of insect and vermin.—The population of Liberia is composed of American negroes, emigrants from the United States and their descendants, who are the ruling class, and of uncivilized native tribes. The American Africans number about 10,000. The Rev. T. J. Bowen of South Carolina, a missionary sent to western Africa in 1849 by the foreign mission board of the southern Baptist convention, thus describes their condition: "The houses in Monrovia are generally two stories high, the lower one designed for servants, store rooms, &c., and the upper one, with bedrooms, parlors, and piazzas, for the family, built of wood. The furniture is similar to that used by the middle classes in America. I was pleased to see a good many valuable books and periodicals on the shelves and tables. Most of the people in short appear to live as comfortably as people of means commonly do at home. I have heard them accused of being too fond of dress and show; but if they were more so than other people who live in towns, I was not able to perceive it. . . . Liberia is full of well attended churches and schools. She has a good government, well administered under officers elected by the people from among themselves. She is steadily increasing in prosperity and in every thing that pertains to civilization." A more recent observer, the Rev. Charles W. Thomas of Georgia, chaplain to the U. S. African squadron in 1855-'7, says: "In looking into the industrial, social, moral, and intellectual character of the Liberians, justice to ourselves and to them demands that we should give due weight to the following considerations: 1, the recentness of the establishment; 2, the want of capital in those who formed the government, and those who, by immigration, continue to increase its population; 3, most of the emigrants were from the slave states, and had never learned to plan and provide for their own maintenance; those from the states called free were equally dependent; and the difficult lesson of self-dependence had to be learned under the

disadvantages arising from an unfavorable climate, new modes of labor, new elements of subsistence, new states of society, and entirely new associations. . . . The sum of these considerations is, that in any of the departments of civilized society we are not to look for much in Liberia; yet as a people they are not without excellences which reflect credit on the civilization of their adoption, their virtue and intelligence. As yet the Liberians have done but little in the way of agriculture, and until they become a producing people they cannot be wealthy, nor in any high sense independent. They do nothing in the way of manufactures, if we except the little sugar that is produced on the farms of the St. Paul's river; their main business is traffic, and though this is carried on in a small-sale way, it furnishes employment to the capital of the country and to many of the people. The petty merchants buy palm oil, rice, camwood, skins, and a few other unimportant articles, in small quantities, from the natives; for which they give tobacco, powder, cheap cutlery, and cotton cloths. The more wealthy merchants buy from these, and sell again to the English and American merchant vessels, or ship directly to the States. There are several men of considerable wealth in Monrovia. They keep large, well assorted stocks of dry goods, and find ready purchasers among their own people. . . . Society in Liberia is as good as can be reasonably expected; indeed, we found a degree of refinement and taste for which we were not prepared. The people desire to live in comfortable and pretty houses, the ladies and beaux dress in the fashion, and an aristocracy of means and education is already set up." The native population under the jurisdiction of the republic is estimated at 250,000, and comprises a variety of tribes, of whom the principal are the Kroos, the Golahs, the Vays, and the Deyas. The Kroos are black and woolly-headed, and are a stout brawny race, very industrious, and peculiarly fond of working on board ships. They are good seamen, and generally speak English. The greatest ambition of a Krooman is to marry many wives; this is said to be the chief reason why they wander from home, and labor on ships. When one of them has earned money enough to buy a wife, he returns to his native village, marries, and remains a while at home. When he desires another wife, he goes to sea again. As he grows old he retires altogether from the ocean, and lives in ease and plenty supported by the labor of his wives, who cheerfully work to maintain him in comfort. The Kroos are mostly idolaters, though they believe in one supreme God. They are beginning to embrace civilization, and to clothe themselves in the American fashion. The Golahs inhabit both sides of the St. Paul's river back of Monrovia. They are degraded and superstitious, and are one of the lowest tribes in Africa. The Vays are considered superior to other tribes on the coast in morals and intelligence. They are the only people in Africa who have invented an

alphabet for their language. Some of them are Mohammedans. The Deys live about the mouth of St. Paul's river, and are few in number. They are grossly superstitious, and are savages in manners and intelligence. A few thousand of the natives have become Christianized and civilized, and been admitted to the privileges of citizenship.—Agriculture has made but little progress in Liberia. Horses, mules, and asses cannot endure the climate, and soon wear out and die; and the oxen are said to be too small to be of much service in field labor. The native process of farming is extremely simple. In the dry season the men clear the bushes from a new piece of land with a heavy knife, and in the spring, when the rains begin to fall, the women sow rice, which requires slight cultivation, because newly cleared land produces but little grass. A crop of cassava is planted for the second year, by the end of which the grass takes full possession of the farm, and it is abandoned for new ground. In 3 or 4 years the bushes grow again and destroy the grass, and then the whole process is repeated. The American emigrants follow to a great extent the native mode of cultivation. They have added largely to the list of agricultural products, and among other plants have introduced the sugar cane, which is well adapted to the soil and climate. There are several sugar mills in the country, and in 1856 one farmer planted 100 acres in cane. In May, 1860, a cargo of sugar was sent to New York. Sugar making is the only manufacture yet prosecuted. The commerce of the republic is confined to a trade with the natives for palm oil, rice, camwood, skins, and a few other articles, which are sold to English and American vessels, or shipped to the United States. The quantity of palm oil exported in 1859 is estimated to have been worth upward of \$500,000.—There are several schools in Liberia supported by the government, and there is an excellent academy in Monrovia maintained by voluntary contributions. A college has lately been established, of which the president is Joseph J. Roberts, an ex-president of the republic. Two newspapers are published weekly in Monrovia, one of which has existed upward of 20 years. The principal sects in the republic are the Methodist, Baptist, Presbyterian, and Episcopal. The Methodists have 25 preachers and over 1,800 church members, many of whom are natives. The Baptists have 70 missionaries and teachers, and about 1,000 members. The Episcopal church has a bishop, 4 white missionaries and 8 colored, 8 of whom are natives; 80 teachers, 12 of whom are natives; and 250 communicants, more than half of whom are natives. The Presbyterian church has 2 white missionaries and 4 colored, 12 teachers, and 180 communicants.—The constitution of the republic of Liberia provides for the maintenance of the following fundamental principles: All men are born equally free in the right of enjoying and defending life, liberty, and the pursuit of happiness. All power of government is inherent in the people. Slavery shall

not exist in the republic, or be countenanced by any of its citizens. All elections shall be by ballot, and every male citizen possessing real estate shall have the right of suffrage. None but citizens may hold real estate in the republic. None but persons of color shall be admitted to citizenship. The law excluding white persons from the right of citizenship is intended to be of but temporary duration. The legislative body is styled "the legislature of Liberia," and is composed of two branches, a senate and a house of representatives. Each county is entitled to two senators, who are elected for a term of 4 years. Representatives are elected biennially, every county being entitled to one representative and an additional one for every 10,000 inhabitants. The president is elected by the people for a term of two years. With the consent of the senate he appoints the secretaries of war, the navy, treasury, and state, the postmaster-general, the judges, and many other officers civil and military. The judicial power is vested in a supreme court and several subordinate courts.—For the history of the settlement and progress of Liberia, see COLONIZATION SOCIETY. Bowen's "Central Africa" (New York, 1857), and Thomas's "West Coast of Africa" (New York, 1860), also treat of Liberia and its people.

LIBERTY. I. A S. E. co. of Ga., bordering on the Atlantic, and partly bounded on the S. W. by the Altamaha river; area, 660 sq. m.; pop. in 1859, 8,408, of whom 6,029 were slaves. The surface is level and the soil fertile. The productions in 1850 were 114,310 bushels of Indian corn, 116,119 of sweet potatoes, 1,892,462 lbs. of rice, and 1,883 bales of cotton. There were 10 churches, and 246 pupils attending schools. Capital, Hinesville. II. A S. E. co. of Texas; area, about 1,400 sq. m.; pop. in 1858, 3,534, of whom 1,214 were slaves. It is intersected by the Trinity river, upon which the soil is extremely fertile; elsewhere it is generally light and sandy. A large portion of the county is prairie, affording a fine range for large herds of cattle. Value of live stock in 1859, \$209,600; taxable property, \$1,114,458. Capital, Liberty.

LIBRARY, a collection of books designed for use and preservation, not for sale. The term is also applied to the edifice or apartment containing such a collection. In early antiquity libraries consisted of archives, which were preserved in the most sacred temples. The oldest library is said to have been founded in Memphis by the Egyptian king Osymandyas, of the 12th dynasty. It was in a division of the palace, at the entrance of which were inscribed the words: "The Healing of the Soul;" and it contained works of an unknown antiquity deemed sacred by the Egyptians, which were destroyed in the ravages attending and following the Persian invasion. The monumental cuneiform records of the ancient Assyrian, Babylonian, and Persian empires have been designated "public libraries in clay." The principal Hebrew library was in the temple at Jerusalem; it was restored after the captivity by Nehemiah, and again by Judas

Maccabæus, and perished in the conquest by the Romans. In Greece, Pisistratus was, according to Aulus Gellius, the first to establish a public library at Athens. It was taken to Persia by Xerxes, returned by Seleucus Nicator, pillaged by Sylla, and restored by Hadrian. Polycrates soon after founded a library in Samos, and large collections of books were made by Euclid, Euripides, and especially by Aristotle, whose library, after passing through two generations, was purchased by Ptolemy Philadelphus and transported to Alexandria. Of ancient libraries, the most celebrated was that at Alexandria, which at one time is said to have contained 700,000 volumes, vastly inferior however to modern volumes in average size. It ultimately included the library of the kings of Pergamus, of 200,000 volumes, presented by Antony to Cleopatra, and, after suffering repeated diminutions in the civil wars, is said to have been finally destroyed by the order of Caliph Omar. The first library at Rome was that of Paulus Æmilius (167 B. C.), the booty of war in Macedonia. Libraries subsequently became common, and in the time of Augustus it was fashionable for men of culture to have one in their houses. Sylla took from Athens to Rome the library of Apellicon the Teian; Lucullus made a large collection, and his galleries and porticoes became a favorite resort for conversation; Varro, Atticus, and Cicero were enthusiastic collectors of books. One of the unfulfilled projects of Cæsar was the formation of a public library, which should contain all the works in Greek and Latin literature. Augustus established the Octavian and Palatine public libraries, the latter of which continued until the time of Pope Gregory I. More important was the Ulpian library, founded by Trajan. In the 4th century Publius Victor mentions 28 public libraries in Rome, beside many valuable private collections. All of these perished in the storms of barbarian invasion. The library of Constantinople, founded by Constantine, and enlarged by Julian and the younger Theodosius to the number of 120,000 volumes, was partially burned by the iconoclasts in the 8th century under Leo the Isaurian. Libraries were founded from the 9th to the 11th century, especially by the imperial family of the Comneni, in the cloisters on the islands of the archipelago and on Mt. Athos. After the fall of the Byzantine empire the imperial library was preserved by the command of Mohammed II. in one of the apartments of the seraglio, and was either destroyed by Amurath IV. or perished by neglect. The Moslems had an important library of Arabic books in Alexandria, and one at Bagdad, which included Greek manuscripts. In Spain they had 70 public libraries in the 12th century, that at Cordova containing 250,000 volumes. In the West from the time of Charlemagne no monastery was founded without a library. The Benedictines had celebrated collections at Monte Casino, Canterbury, York, Bobbio, and Corbei. There were others at Fulda, Hirschau, Tours, St. Germain des Prés, and St.

Gall. The revival of classical learning gave a new impulse to the formation of libraries. The universities, princely families, and many private scholars, as Aungervyle, Petrarch, and Boccaccio, were zealous collectors. With the invention of printing began a new era in the history of libraries, the number of books being greatly increased, and their cost greatly reduced. Several of the largest European libraries date from that period. The suppression of the numerous cloisters in consequence of the reformation caused many small libraries to be incorporated into the larger collections of universities, cities, and princes.—See Edwards, "Memoirs of Libraries, and Handbook of Library Economy" (London, 1859), and W. J. Rhees, "Manual of Public Libraries in the United States," &c. (Philadelphia, 1859). See also in this work the articles on BIBLIOGRAPHY, BOOK, BOOKSELLING, and CATALOGUE, and the articles on particular libraries, as ALEXANDRIAN LIBRARY, and ASTOR LIBRARY.—The following are tabular views of the largest libraries in the United States (exclusive of libraries connected with colleges, for which see COLLEGE), and of those libraries in Europe containing more than 100,000 volumes:

PUBLIC LIBRARIES IN THE UNITED STATES CONTAINING 20,000 VOLUMES OR MORE, EXCLUSIVE OF COLLEGE LIBRARIES.

Place.	Name.	When founded.	No. of vols.
New York city....	Astor	1839	100,000
"	Mercantile	1820	54,000
"	Society	1754	40,000
"	Historical	1804	25,000
"	Union Theological Seminary	1836	24,000
Albany, N. Y.....	State	1818	58,500
Boston	Athenæum	1804	75,000
"	Public City	1853	70,000
Worcester, Mass...	American Antiquarian Society	1813	24,000
Andover, Mass....	Theological Seminary	1808	22,700
Providence, R. I..	Athenæum	1758	23,602
Philadelphia	Library Company and Loganian Library	1781	64,900
"	Academy of Natural Sciences	1812	25,000
"	American Philosophical Society	1743	30,000
Washington, D. C.	Congressional	1851	50,700
"	Smithsonian Institution	1849	25,000
Charleston, S. C..	Library Society	1743	25,000
Annapolis, Md....	State	1826	20,000
Indianapolis, Ind..	"	1825	20,000

EUROPEAN LIBRARIES CONTAINING 100,000 VOLUMES OR MORE.

Place.	Name.	When founded.	Printed vols.	MS. vols.	Whole No.
London	Brit. Museum	1753	575,000	40,000	615,000
Oxford	Bodleian	1597	260,000	22,000	282,000
Cambridge	University	1475	197,000	8,163	205,163
Edinburgh	Advocates	1680	172,000	2,000	174,000
"	University	1680	100,000	400	100,400
Dublin	Trinity college	1602	122,000	1,600	123,600
Paris	Imperial	1877	1,000,000	84,000	1,084,000
"	Arsenal	1731	202,000	6,000	208,000
"	St. Geneviève	1624	180,000	2,500	182,500
"	Mazarin	1640	182,000	2,000	184,000
Strasbourg	Town	1581	180,000	1,539	181,539
Bordeaux	"	1783	122,000	820	122,820
Bouen	"	"	110,000	2,353	112,353
Troyes	"	"	100,000	2,000	102,000
Munich	Royal	1550	800,000	18,600	818,600
Berlin	"	1661	500,000	10,000	510,000

Place.	Name.	When founded.	Printed vols.	MS. vols.	Whole No.
Vienna.....	Imperial	1440	850,000	30,000	870,000
"	University	1777	120,609		120,609
Dresden.....	Royal	1555	800,000	2,800	802,800
Göttingen.....	University	1736	800,000	6,000	806,000
Wolfenbüttel.....	Ducal	1604	900,000	4,500	904,500
Tübingen.....	University	1765	200,000	3,000	203,000
Stuttgart.....	Royal	1765	200,000	1,800	201,800
Leipzig.....	University	1548	180,000	2,500	182,500
Hamburg.....	Town	1529	150,000	5,000	155,000
Gotha.....	Ducal	1640	180,000	5,000	185,000
Darmstadt.....	Grand Ducal	1760	800,000	4,000	804,000
Heidelberg.....	University	1703	900,000	3,000	903,000
Weimar.....	Ducal	1400	140,000		140,000
Prague.....	University	1850	180,000	4,000	184,000
Breslau.....	Royal and Unl.	1811	850,000	2,000	852,000
Augsburg.....	Town	1537	113,000	894	113,894
Hanover.....	Royal	1690	190,000		190,000
Erlangen.....	University	1743	100,000	500	100,500
Brussels.....	Town	1850	200,000	13,000	213,000
"	Royal	1837	115,000	1,500	116,500
The Hague.....	Royal	1795	100,000	2,000	102,000
Rome.....	Vatican	1450	800,000	24,000	824,000
Bologna.....	University	1690	150,000	11,000	161,000
Naples.....	Royal	1780	160,000	4,760	164,760
Turin.....	University	1426	115,000	3,000	118,000
Venice.....	St. Mark's.....	1468	103,359	10,000	113,359
Florence.....	Magliabecchian	1714	150,000	12,000	162,000
"	Laurentian	1444	130,000	6,000	136,000
Milan.....	Brera	1768	125,000	1,040	126,040
Madrid.....	Royal	1712	125,000	2,500	127,500
St. Peterab'g.....	Imperial	1747	450,000	25,000	475,000
"	Academy	1736	110,000		110,000
Copenhagen.....	Royal	1550	410,000	13,000	423,000
"	University	1731	100,000	4,000	104,000
Upsal.....	"	1621	135,000	7,000	142,000
Christiania.....	"	1811	190,000	600	190,600

LIBRATION. See Moon.

LIBRETTO, a small book, which contains the text for an opera. The most fertile author of librettos in France is Eugène Scribe. Some of the best of Germany are those written by Kind for Weber's *Freischütz*, and by Helmina von Chézy for *Euryanthe*. Richard Wagner asserts in his *Oper und Drama* (Leipsic, 1852) that librettos, to be in the highest sense successful, should be written by the composer of the opera himself.

LIBRI-CARRUCCI DELLA SOMMAIA, GUILLAUME BRUTUS IOLE TIMOLÉON, count, a French mathematician and collector of books and manuscripts, born in Florence, Jan. 2, 1803. His father was the count Libri-Bagnano, an Italian adventurer, who was in 1816 condemned at Lyons to 10 years' imprisonment at hard labor and to branding for counterfeiting goods, and who finally became a secret agent of the king of the Netherlands. The son, being an excellent mathematician, became professor at the university of Pisa, where he published in the scientific journals several articles on the theory of numbers, on analysis, and the resolution of indeterminate equations of the first degree. Having been compromised by his political views, he fled in 1830 to France, where the friendship of Arago introduced him to the world of science. Shortly after being naturalized as a Frenchman (Jan. 2, 1833) he was called to the academy of sciences as successor of Legendre. Identifying himself with the *doctrinaire* party, he became inspector-general of public instruction, obtained the cross of the legion of honor, and was appointed inspector-general of the li-

braries of France, an office created expressly for him. Several works published by him during this period gave him a widely extended reputation. Among these were his *Histoire des sciences mathématiques en Italie depuis la renaissance jusqu'à la fin du 17^e siècle* (Paris, 1838-'41); *Souvenirs de la jeunesse de Napoléon* (1842); and *Lettres sur le clergé et la liberté de l'enseignement* (1844); to which may be added many memoirs, articles in magazines, and bibliographical labors in the form of annotated catalogues. During the latter part of the reign of Louis Philippe, Libri began to be suspected of having made use of the facilities afforded by his office of inspector-general of libraries to plunder them extensively. It was asserted that he had purloined the most precious books and MSS. from the libraries of Grenoble, Montpellier, Troyes, Poitiers, and Alby, as well as from the Mazarin collection and that of the arsenal. A report on this subject by M. Bouchy, addressed to the king through M. Guizot, estimated the literary thefts of Libri, from 1842 to 1847, at the value of more than 500,000 francs. This document, dated Feb. 4, 1848, was found in the hotel of foreign affairs by the victors of Feb. 24, and the case was at once put on trial. After the minutest investigation, Libri, who had escaped to London, was found guilty and condemned (June 22, 1850) to 10 years' imprisonment and degradation from public employment. For 2 or 3 years he continued to send letters, vindicating himself in a haughty tone, to public and literary men. He was also defended by Paul Lacroix, G. Brunet, and others, whose defence was however controverted by Lalanne, Bordier, and Bourquelot. A remarkable paper was written on his behalf by Paul Mérimée entitled *Le procès Libri*, and published in 1852 in the *Revue des deux mondes*. Its reflections upon the French magistrates were resented by the government, and the author was sentenced to a brief term of imprisonment.

LIBURNIA, in ancient geography, a district of Illyricum along the coast of the Adriatic, now included partly in Croatia and partly in Dalmatia. The country is mountainous, and the inhabitants maintain themselves chiefly by navigation. They were celebrated from early times as sailors. They occupied the northern islands of the Adriatic, and had settlements on the Italian coast. After their ships a kind of swift sailing vessels were styled *Liburnæ naves* by the Romans. Of all Illyrians the Liburnians first submitted to the sway of Rome.

LIBYA, the name given to Africa, or that portion lying between Egypt and the Atlantic, by the ancient geographers. It was also the name of a district between Egypt and Marmarica, which, in contradistinction to the former, was often designated as *Libya Exterior*.

LIBYAN DESERT, that part of the Sahara or Great Desert which lies E. of Fezzan and the country of the Tibboos. It is probably not less than 1,000 m. in length from Tripoli to Darfoor and Waday, and from 500 to 600 m. in

width, its E. border being Egypt and Nubia. Unlike the W. division of the Sahara, the Libyan desert contains a number of oases or fertile tracts which support a moderate population, and nearly all of them are overspread with extensive groves of date trees and fields in which durra is grown. Generally, however, the surface consists of vast level sandy plains or gravelly deserts lying E. and W., separated by low rocky ridges, or shelving down in a series of terraces toward the Mediterranean.—See Bayle St. John's "Adventures in the Libyan Desert" (London and New York, 1849).

LIBYAN SEA, the name given by ancient geographers to that part of the Mediterranean which lies between the island of Crete and the coast of Africa.

LICE. See **EPIZOA**, vol. vii. p. 253.

LICENSE, in law, may be simply and well defined as a permission. Thus, a permission to go upon the land or enter the house of him who gives it; the permission accorded by a belligerent power to its own subjects or to those of the enemy to carry on a trade interdicted by war; and the permission granted by a state to its citizens to sell certain wares or exercise certain callings, are familiar examples of licenses. The most common and important of these are licenses to keep a tavern, to sell spirituous liquor, to peddle out goods, to sell by auction, and the like. All of these are governed and regulated exclusively by statutes, and these vary in the different states so entirely that it is impossible to state any general principles by which they are governed. In each state, the amount paid by way of tax for the license, if any, the privileges conferred by it, and the precautions against abuse, are determined only by the judgment of the legislatures of the several states, in reference to the wants or peculiar circumstances of each state. It is universally admitted that each state has full power to enact general police regulations for the preservation of the public health and morals. But the question has arisen, whether after a license has been given under a law of the state, it remains within the power of the state, and can be withdrawn or qualified at pleasure. If no fee, premium, or bonus is paid for the license, it seems quite certain that the state retains this power. But if a fee or other pecuniary consideration have been paid for the license, some cases favor the doctrine that there is now a contract between the state and licensee, which can be annulled only by the consent of both parties. Another question has caused much discussion, but seems now to be settled. The state of New York, by 5 statutes passed between 1798 and 1811, gave to certain parties "the sole and exclusive right" of navigating vessels by steam in the waters of the state, for a certain time. Some one claimed a right to navigate these waters on the ground that his vessels were duly licensed, under the laws of the United States, to carry on the coasting trade. The courts of New York decided that this general license gave the licensee no power

to interfere with the special license of the state of New York. But this decision was overruled by the supreme court of the United States, on the ground that the power "to regulate commerce" given by the constitution of the United States to congress included not only traffic, but intercourse, and therefore all navigation which was not completely internal to any state, and carried on only between the parts of the same. (See 4 Johnson's Chancery R., 150; 17 Johnson's R., 488; and 9 Wheaton, 1. For a license to shipping, under the navigation laws, see **SHIPPING**.)—A mere and proper license transfers no property in any thing, and gives no interest. It simply authorizes, or so to speak pardons, an unlawful act. Being a mere permission, it is evident that a license cannot permit any thing which the licensor himself cannot do; so that if one permits another simply to go upon his land, the alienation of the land will necessarily extinguish the privilege. Further, it is clear that the benefit of a license is limited to him who receives it; for as the license transfers no property or interest, the licensee has nothing to assign. Finally, it is characteristic of a license that, as it passes no estate, but rests wholly in the indulgence and will of the licensor, it is revocable at his pleasure. These are the incidents of every mere license; but if the license be supported by the grant of an interest, or be necessary to the enjoyment of a right, it attaches inseparably to it, and partakes of its incidents. It may not only cease to be revocable, but may become capable of assignment. Thus, to borrow a familiar illustration, a permission to hunt in a park, and to carry away the deer killed, is a license so far as it concerns the mere privilege of hunting; but it includes also a grant of the deer. If in such a case the grant of the property be well made, the license is irrevocable. So if one make a sale or gift of a chattel which is situated on his land or in his shop, the license to remove, though not express, but implied in such a case by law, is yet irrevocable, because the licensee has an interest in the chattel which can only be enjoyed by taking it away. But when the irrevocable right which the licensee claims, even under an express license, has the effect of diminishing an owner's control over and enjoyment of his property, the interest or estate alleged in support of it must be a real, legal one. The enjoyment of a mere parol license cannot be pushed so far as to create an easement; for such a continuing interest in lands can be legally raised only by deed, that is, by a formal instrument under seal. So that when one licenses another, by a mere parol permission, to keep hay stacks on his land, or allows the licensee to dig a ditch across it, the privilege in both cases is equally revocable even though it have been executed by the licensee. An easement would have been irrevocable, but that could have been created only by deed. But let it be supposed that one has, with another's permission, erected a building on the land of the latter; a revoca-

tion of the license in such a case would cause the licensee material injury. He has executed the permission by an expenditure of labor or money, the benefit of which he cannot enjoy if the license to go upon the land can be recalled at the option of the licensor. In such a case a court of equity will sometimes interpose for the protection of the licensee. It regards the revocation in such circumstances as fraudulent, actually, or at least constructively, and, when the threatened injury to the licensee could not be compensated in damages, has construed the execution of the parol permission sufficient to supply the place of a writing, and so to take the case out of the statute of frauds. Courts of law have generally adhered to the strict law doctrines; and, in respect to permanent structures, though there are some decisions which regard the license as coextensive with the duration of the building to which it relates, yet the weight of authority is adverse to this view, and in favor of limiting the licensee's privilege to a right of entry and removal, as in the case of ordinary chattels. The more favorable decisions rest on the doctrine of equitable estoppel, which has been borrowed from the chancery practice, and now forms a means of remedying by common law many wrongs which otherwise would not fall within the range of the common law jurisdiction. The general rule then, in the United States as well as in England, respecting licenses which concern the enjoyment of interests in lands, maintains their revocability, no matter what may have been done in reliance upon them; and no matter whether the question arise between the original parties, or be complicated by conveyance to third persons; for it has been often held that a grantee of the licensee cannot claim an absolute right in the continuance of the license, even though it be essential to the enjoyment of his grant.—In international law, licenses are permissions to carry on a trade interdicted during war. The power to grant them rests naturally with the sovereign; but in time of actual hostilities they may be immediately issued by generals or other high military or naval officers. These licenses are liberally construed, but no advantage must be taken of the indulgence which they grant; as for example, by carrying a different kind of goods from that expressly permitted, or by changing, without the consent of the granting power, the person by whom the license was to be used; for, if it be not expressly transferable, the license is personal only. A wrong description of the licensee invalidates the license, and so does a fraudulent alteration of it, even when the person claiming protection is innocent of the fraud. Under United States statutes, ships which engage in the fisheries or in the coasting trade need not be registered like ships which carry on a foreign commerce. It is sufficient if they be enrolled, though they must be every year licensed for the employment or business in which they are to engage. The particular trade is specified in the license, and they are not permitted to engage in any other.

The use of a forged or altered license, or of one issued to any other ship, subjects to forfeiture the vessel and cargo sailing under it.

LICHENS, cellular cryptogamous plants, closely allied to the algæ and to the fungi, yet generally distinguishable from either by characteristic peculiarities. Thus a lichen may be defined as consisting of a *thallus*, of *apothecia*, and of *spermagonia*. The thallus is the nutritive or vegetating functional part; the apothecia contain the organs of reproduction, and are analogous to the fertile or female flower; the spermagonia contain the fecundating apparatus, and are analogous to the barren or male flowers. There is also another form of reproductive organs, which may be considered as secondary, and which are called *pycnidia*; these most usually occur in imperfectly developed lichens, or in those whose thallus is of a crustaceous character. In order to understand the structure of lichens, it will be necessary to consider these characteristics in detail. 1. The *thallus*, or organ of nutrition, consists of 4 parts, viz.: 1. The cortical layer, which is ordinarily formed of colorless cellular tissue, but where nearest the exterior surface becomes amorphous and colored, giving rise to a sort of epidermis to be seen in some lichens more than in others. 2. The gonimous layer, which is of a very lively green color, and lies immediately beneath the cortical layer; it is composed of a sort of pavement of opaque cells, not altogether continuous, which gives the lively green tints of some lichens when moistened by the rain. 3. The medullary layer or pith layer, found in the centre of the stem or thallus, and lying beneath the gonimous layer. It has 3 modified conditions as it occurs in different species, viz.: *a*, composed of a tissue of threads woven together into a loose web, serving to give consistence and elasticity to the plant, which is the most common form; *b*, composed chiefly of granules in which are often scattering threads and octahedric crystals of oxalate of lime, forming a compact white pith; *c*, composed of cellular tissue containing gonidia in the interior of the cellules or else between them. 4. The 4th layer is called the hypothalline; it lies beneath all the others, and is indeed that upon which the others are laid, but it is not always visible, and sometimes becomes wholly wanting in the matured condition of the thallus. In the process of development it precedes them all, but it is liable to be arrested after they are in a formative state so as to be hardly traceable or quite invisible. Its structure is filamentous or even cellular, its color generally dark or blackish, sometimes pale, rarely white. There are two forms of the hypothalline layer, viz.: *a*, the hypothallus, made up of blackish or bluish fibres spreading horizontally, frequently beyond the edge of the thallus, and surrounding it with a delicate fringed line, as seen in lichens which grow upon smooth rocks or on the bark of trees; *b*, the rhizinae, root-like fibres, branching, with their extremities sometimes formed like a brush, in color

commonly black, but sometimes gray or whitish, giving to some lichens on their inferior surfaces the appearance of a rough pile, or a shaggy aspect; they serve the purpose of affixing the lichen to its matrix. The thallus is liable to modifications of these several parts, or its tissue may be entirely homogeneous. The external peculiarities of the thallus are: the *cyphella*, little whitish or yellowish excavations upon the under surface of the thallus of *sticta*, probably serving in some nutritive function; *cephalodia*, globular-shaped, tuberculous, or shapeless swellings, looking like morbid excrescences, commonly paler than the rest of the upper surface of the thallus; *isidia*, exuberant growths of the thallus into erect, stalked, coral-like, and perhaps branching excrescences, always of the same color as the thallus itself; *lepraria*, morbid conditions of the thallus, when it becomes converted into a sterile and pulverulent state; *soredia*, partial pulverulent eruptions of the cortical layer, often in the form of scattered rounded heaps of spherical particles of a brighter color, sometimes confined to the border of the thallus, producing a rich and beautiful edging; *variolaria*, a condition of the fruit-bearing organs, where they become pulverulent; *epiloma*, pulverulent spots, most commonly black, seen upon the thallus, and resulting from the presence of small parasitical fungi similar to what we see upon the foliage of higher plants. II. The *apothecia*, or reproductive organs, commonly occupy the cortical layer, but sometimes nestle deeply within the interior tissues. Of those first mentioned, which are called discoid, there are the following modifications: *a*, peltate, large, bare apothecia; *b*, scutellate, having an exterior covering formed of the thallus; *c*, patellate, having a border or edge made of their own substance, and not of the thallus; *d*, lirellate, irregularly formed, elongated, or branching apothecia, and often varying in shape in the same species of lichen. The term nucleiform is attached to those apothecia which nestle more or less deeply in the tissue. In internal structure the apothecia consist of a conceptacle or tegumentary covering made up of cellular tissue protecting the hymenium, in which are found numerous beaded or jointed threads, among which are the *asci* or flask-shaped cells containing numerous seed-like bodies called spores. It is by these spores that the normal growth of the lichens is effected; their number is often increased by pustules or gonidia, which when detached act like cuttings, buds, eyes, &c., in the higher plants. These asci are not constant in the number of the spores they contain; those of some lichens have uniformly 8 spores, others 6, 4, 2, and some have only one; still others contain a very great number of spores. When an ascus contains 8 spores, it is called octosporous, and so on. The spores, too, differ much in size, varying indeed from $\frac{1}{1000}$ to $\frac{1}{2}$ of a millimetre in length. After a while the hymenium becomes emptied out from the conceptacle, and the asci being dissolved set free the

spores, which, taken up by the atmosphere or washed away by the rains, are ready to germinate in such places as are suitable to their growth. So rapidly may the mere process of germination be effected, that spores immersed in water upon the slide of the microscope in the process of examination can be seen protruding filamentary threads of growth from their external walls. When the apothecia are first evolved upon or in the thallus, they consist of little buds or nuclei, containing the imperfect hymeneal layer and its forming asci, each of which has granular matter in its interior, which, acted upon by the spermatogonia, arranges itself into the spores which have been described. III. The *spermatogonia*, or fecundating organs, the barren or male flowers, so to speak, are generally very small oblong or rounded bodies, sometimes in the form of special tubercles, sometimes immersed in the superior surface of the thallus, and presenting to the eye little papillary or simple perforations (ostioles), of a blackish or brownish color, though sometimes of the same general hue as the thallus itself. Each spermatogonium has a conceptacle, *sterigmata*, and *spermatia*. The conceptacle is composed of a tissue of small cells united together into a wall, whose exterior layers are of a similar consistence with that of the thallus, but whose interior wall is transformed into particular organs called *sterigmata*. These are either simple or jointed threads, straight and undivided, or branching. The cellulules which make up the *sterigmata* taper toward their summits, and bear divergent, protuberant bodies of various shapes in different species of lichens. When these reach their full development, they detach themselves from their support, and become free corpuscles, ready to be expelled from the conceptacle. Generally only one of these corpuscles is produced from a *sterigma*; but when the *sterigmata* are composed of several beads or joints, each joint can produce its corpuscle, which in fact is the spermatium. Frequently a very great number of *spermatia* are found within the conceptacle, which have not been excluded through the ostiole. Beside the *sterigmata*, barren threads are noticeable, which probably are no more than undeveloped *sterigmata*. These *spermatia* are remarkably constant in form and size as they occur in particular lichens, and thus afford excellent specific distinctions. Thus in some instances they measure $\frac{1}{100}$ of a millimetre in length; some, whose form is very attenuate, measure $\frac{1}{1000}$ of a millimetre. Their color is always white, though under the microscope they appear of a clear yellow tint. Their forms are very various, acicular, bluntly thickened at the extremities, cylindrical, cylindrical but curved, or ellipsoid. Compared with the spores, their number is immense. Among the most convincing proofs of their fecundating properties are the facts that there are several lichens destitute of apothecia, which are equally destitute of *spermatogonia*; there are others which in one part of the world never produce apothecia, but have them abun-

dantly elsewhere, and accompanied by numerous spermagonia. Were these parasitical growths (fungi for instance), as has been maintained, such peculiarities would scarcely occur. IV. Mention has been made of a secondary reproductive apparatus called *pycnidia*. These in their exterior form have a resemblance to the spermagonia in being furnished with conceptacles, and even in their sporiferous threads (stylospores); but these are less abundant, simple, of thicker substance, and bear much larger spores. Not only do these spores germinate, but the stylospores have the same property. Generally the pycnidia appear in the closest proximity to the apothecia, and they seem to have some intimate connection with them, as if they were fruit-bearing organs, not developed or perhaps arrested in their development, yet capable of producing spores of a particular character.—Thus we see that the essential elements of terrestrial vegetation are to be found in these plants, which hold such a subordinate rank in the scale of creation, being in fact rootless and cellular, subsisting upon the air, but furnished with stems, branches, floral apparatus, fruits, and seeds; their position in the vegetable kingdom being intermediate between the floating tribes of the algae and the fugacious forms of the fungi, or, as Fries expresses it, “having the vegetation of the algae and the fructification of the fungals.” Thus ingeniously contrived and admirably fitted for an especial office, we should expect to find them in situations suited to no other vegetation, or else occupying posts among it still unfitted to its most propitious growths. According to Dumont d'Urville, the pulverulent lichens are the first plants that clothe the bare rocks of newly formed islands in the midst of the ocean; the foliaceous lichens follow these, then mosses and liverworts. (*Annales des sciences naturelles*, vi. 54.) The crustaceous lichens affect the very summits of mountains, growing near the limits of perpetual snow, and are seen near the pole, so seemingly rudimentary as to appear like colored spots of the solid rocks. They are not, however, exclusively confined to such regions, being common in some instances on the margin of the sea in countries where granitic strata especially are to be found. The sides of buildings and the surfaces of sandstone rocks are favorite situations for many kinds. The larger and more conspicuous are found in temperate and moist climates, choosing northern and western exposures; and even at the equator there are species rich and gorgeous in colors. The prevailing tints in lichens are gray, white, black, dark brown, rich green, pale yellow, and orange red. From mere specks or patches of hard, seemingly inanimate matter, the lichens assume sizes of considerable magnitude, owing to the development of their thalli, of which may be cited the following forms: the hypophleoid, where the plant does not appear upon the surface of the substance on which it grows, but burrows beneath the bark of trees or between the fibres of dead wood, presenting to the eye only the

apothecia, in a variety of forms in different species; the crustaceous, a closely appressed condition, scarcely to be distinguished from the matrix, or else perhaps made up or broken up into distinct squamules; the fruticulose, assuming the contour of little branching shrubs, sometimes very dwarf, and sometimes, especially when pendent from old trees, of a great length; the foliaceous, varying from very small, membranaceous, thin, scale-like forms, affixed to a central or an eccentric base (peltate), or spreading out horizontally many inches in extent, and having its circumference entire, lobed, or even deeply jagged. Lichens grow upon almost every substance where alternate dryness and moisture can be found, a very few only passing much of their existence in a submerged state. Destitute of roots and dependent upon the atmosphere for their nutrition, it seems to matter little with them upon what matrix they fix. In so wide a geographical range as that over which they are spread, the same identical species must be found occurring upon very distinct kinds of trees and soils, yet maintaining their specific characters. Thus there are some species which are most commonly to be expected upon rocks, yet which frequently grow upon the bark of trees. Many species are excessively polymorphous, and present themselves under so many varieties as to render it difficult to reduce them to an original type, the color of the thallus being often affected by the chemical composition of the rock on which they grow, or the color of the disk of the apothecia remarkably diverse. Several species are parasitical upon others, occurring upon their thalli in the reduced forms of mere fruits or of spermagonia; their own vegetative functions being in some sort supplied by the vicarious action of the subject to which they have attached themselves, or even dispensing with it, as other species do upon particular matrices.—The value of the lichens to man may be estimated from their uses as articles of food and of medicine, and from their employment in the arts. According to Linnæus, in the arctic regions of Lapland the reindeer lichen (*cladonia rangiferina*) grows in the utmost profusion, and overspreads plains hundreds of miles in extent. These are the fertile fields of the Laplanders, so that the possessor of such a barren tract thus covered with lichens considers himself fortunate; for when the cold of winter has withered up every sort of herbage, this lichen becomes the principal aliment of the herds in which consists his wealth, and on which depends the very existence of the natives of that country. The reindeer lichen was at one time by edict of Gustavus III. used in the manufacture of flour, when grain was scarce. The Iceland moss (*cetraria Islandica*) fattens cattle, sheep, deer, and swine; and out of this and of the *C. nivalis* the Icelanders make soup and even bread. According to Olafsen, one ton of Iceland moss is equal to half a ton of meal. (See ICELAND MOSS.) *Lecanora esculenta*, of the steppes of Asia, is eaten by

the nomadic tribes of those regions. The *tripe de roche* (*umbilicaria Muhlenbergii*), mixed with the roe of fishes, assists in making nutritious food for the North American Indians. Sir John Franklin was indebted to this lichen for subsistence after a 4 days' abstinence when on his journey to the shores of the Polar sea. Lichens afford valuable materials for dyeing, of which the pabelle (*lecanora parella*) and cudbear (*L. tartarea*) may be cited as familiar instances. To these may be added *urceolaria scruposa* and *cinerea*, with *parmelia saxatilis*, *omphalodes*, *conspersa*, &c. *Rocella tinctoria*, *fuciformis*, *intricata*, &c., inhabitants of the shores of the Mediterranean or of the coast of Africa, Chili, &c., yield archil. Even the common yellow wall lichen (*parmelia parietina*), so abundant near our sea coasts, possesses a peculiar principle called parietine (Thompson), which forms a bright yellow coloring matter; this is heightened by nitric, sulphuric, or muriatic acid, and alkalies change it to a rich purplish red.—The chemical constituents of lichens are phosphate of lime, salt, manganese, iron; several principles, as picrolichine, variolarine, orceine, cetrarine, inuline, erythrine, roceline, picroerythrine; several acids, as pabelle, usnic, orceic, and erythrinic acid; others, uncrystallizable sugar, oil, waxy matter, resinous matter; crystals, and oxalate of lime in the tissues especially of *lecanora tartarea*.—The name lichen was originally given by Dioscorides, and after him by Pliny, to certain species, because of a fancied resemblance to the cutaneous disease so called, whence they were supposed to be specifics for it. Tournefort in 1719 first accurately limited the class of cryptogamic plants, assigning to it a distinct division in the vegetable kingdom. The *Enumeratio Lichenum* of Hoffman appeared in 1784, and the *Prodromus Lichenographia Suecica*, by Acharius, in 1798; in the latter lichens are distributed into 3 families, viz., the crustaceous, foliaceous, and branching. Acharius published several other works on the same subject, including the *Lichenographia Universalis* (Göttingen, 1810-'14), and *Synopsis Methodica Lichenum* (Lund, 1814), which have been generally used for identification and for the study of lichens in Great Britain as well as the United States; but in continental Europe other authors have been preferred. An arrangement of the lichens by Sprengel in his *Systema* (Göttingen, 1827) is considered admirable. The simplified arrangement of Fries, in his *Lichenographia Europæa Reformata* (Lund, 1881), has been made the basis of study by admirers of his classical beauty of language and description. Eschweiler, a profound investigator, published his *Systema Lichenum* at Nuremberg in 1824; but his greatest and most valuable contributions to this subject are to be found in Martius's *Flora Brasiliensis* (Stuttgart and Tübingen, 1838). Bayrhammer's *Eineges über Lichenum und deren Befruchtung* (Bern, 1841) gave a new impetus to these studies. The most extensive and careful essays upon their arrangement and struc-

ture have been contributed to the *Annales des sciences naturelles* (Paris), through many successive years, by Tulasse, Bayrhammer, Kzigssohn, and others. Fée issued *Méthode lichenographique et genera, ornés de quatre planches*, with colored figures (4to., Paris, 1824); also an *Essai sur les cryptogames des écorces exotiques officinales* (Paris, 1824-'87), succeeded in 1837 by a supplement and revision with figures of the spores of different genera, a most valuable contribution. See also the works of Massalongo, *Ricerche sull' autonomia dei licheni crostosi* (Verona, 1852), and *Memorie lichenografiche* (Verona, 1855); Körber, *Systema Lichenum Germaniæ* (Breslau, 1855), and a supplement now publishing; Nylander, *Synopsis Methodica Lichenum* (Paris, 1858 et seq.); and among English botanists, Sir William Hooker, "English Flora" (London, 1823); Turner and Borrer, *Lichenographia Britannica* (Yarmouth, 1839, printed for private circulation); W. L. Lindsay, M.D., "British Lichens" (London, 1852); the Rev. M. J. Berkley, "Introduction to Cryptogamic Botany" (London, 1857).—The study and arrangement of lichens in America was perhaps as early as the earlier American floras and catalogues. In Gronovius's *Flora Virginica* (1761) are enumerated some which were observed by Clayton; and to this list were added others from Forster's "Catalogue of the Plants of North America" (London, 1774), and from Walter's *Flora Caroliniana* (London, 1788). Muhlenberg's *Catalogus Plantarum America Septentrionalis* (Lancaster, Penn., 1813) contains 184 species, 18 of which are considered as new. In 1819 Prof. Torrey published his catalogue of the plants of New York, in which a number of species are given. In 1823 Mr. Halsey's "Synoptical View of the Lichens of New York" appeared in the "Annals of the Lyceum," in which 170 species are given, of which 9 are claimed as new; this paper is a descriptive catalogue. Appended to the "Geological Report" of Prof. Hitchcock 116 species, including a number from the late Dr. Porter of Plainfield, Mass., are enumerated in the catalogue of the plants of Massachusetts. The "Flora of Boreal America" (London, 1823-'40), by Sir William J. Hooker, contains a general survey of the lichens of that region, and descriptions of new species. In the Boston "Journal of Natural History" for the years 1838, '39, '40, and '41, may be found an "Enumeration of some Lichens of New England, with Remarks," valuable contributions from the pen of Edward Tuckerman; and in Silliman's "Journal of Science and Arts" is an "Enumeration of North American Lichens," followed by supplementary articles in the volumes for 1858-'9. Mr. Tuckerman also published an "Enumeration of North American Lichens, with a Preliminary View of the Structure and General History of these Plants, and of the Friesian System," &c. (Cambridge, 1845), and a "Synopsis of the Lichens of New England and of the Northern States and British America" (Cambridge, 1848). His contribu-

tions to American lichenology may be seen likewise in Agassiz's "Lake Superior and its Vegetation" (Boston, 1850). Mr. Tuckerman (now professor of botany at Amherst college) has also published 6 fascicles of specimens, dried, mounted, and named by himself, of the lichens of North America, amounting thus far to 150 species. They are known as *Lichenes America Septentrionalis Essiccati* (1848-'51). He is now (1860) engaged in the investigation of those of the southern United States and of Cuba. Some notices of the lichens of Massachusetts and Vermont may be likewise found in the "Journal of the Essex County Natural History Society" (Salem, 1836), and in the "Proceedings of the Essex Institute" (Salem, 1848-'56), of which particularly the description of a new genus in the *collemacea* is important. Those of the extreme west on the shores of the Pacific ocean were collected many years since by Menzies, and have been published from descriptions made on the species in the herbarium of Hooker; but others doubtless remain as yet undetected.

LICHFIELD, an episcopal city and municipal and parliamentary borough of Staffordshire, England, and a county in itself, situated on a small branch of the Trent, 116 m. N. W. from London by the London and north-western railway; pop. in 1851, 7,012. It is well paved and lighted, and the principal streets are lined with handsome and well built houses. The most interesting public edifice is the cathedral, parts of which display the early English architecture. It is 410 feet long, 153 feet wide across the transepts, and has 3 spires, the central one of which is 280 feet high. In the interior is a monument to Dr. Samuel Johnson, who was a native of Lichfield. The city has places of worship for various denominations, several national schools, a grammar school founded by Edward VI. and formerly free, several charitable institutions, a savings bank, carpet manufactories, breweries, a theatre, and a guildhall.

LICHNOWSKY, FELIX, prince, a Prussian general, born April 5, 1814, killed in Frankfort-on-the-Main, Sept. 18, 1848. He was a member of an ancient family, who hold large estates in Prussia and Austria, and who were raised to the rank of princes in the former country in 1773, and in the latter in 1824. His father, Prince Eduard Maria (born in 1789, died in 1845), was the author of an unfinished history of the house of Hapsburg (8 vols., Vienna, 1836-'44). Prince Felix entered the Prussian service at an early age, but left it in 1838 to fight in the ranks for Don Carlos in Spain, whose adjutant-general he became. A work on his reminiscences of Spain, which he published in 1841-'2, involved him in a duel in which he was severely wounded. After his recovery he visited Portugal, and wrote a work on that country which appeared in 1843. While at Barcelona a mob attacked him on account of his having served the cause of Don Carlos. In 1848 he became a member for Ratisbon of the Frankfort parliament. Conspicuous as one

of the most brilliant men of the ultra-conservative party, he as well as his companion Gen. Anerswald was killed by the mob during the outbreak which followed the ratification of the treaty of Malmö with Denmark.

LICHTENBERG, GEORGE CHRISTOPH, a German physicist and author, born in Darmstadt, July 1, 1742, died in Göttingen, Feb. 24, 1799. He was educated at Darmstadt and Göttingen, was appointed a professor at the university of the latter place in 1770, and in 1777 became professor of experimental philosophy there. In his latter days he was subject to hypochondria. His most celebrated work is his *Erklärung der Hogarthischen Kupferstiche*, which was left unfinished, and not published till after his death (1794-'9). Among his other works are the "Madhouse for Opinions and Inventions," a "Sentimental Journey to Laputa," and "Consolation for those Unfortunates who are no Original Geniuses." A complete edition of his works, by F. G. Kries, was published at Göttingen (9 vols. 8vo., 1800-'6, and 6 vols., 1844-'5).

LICHTENSTEIN, MARTIN HEINRICH KARL, a German naturalist, born in Hamburg, Jan. 10, 1780, died Sept. 8, 1857, on board the steamer between Korsör and Kiel. He studied at Jena, was graduated in 1802 as doctor of medicine at the university of Helmstedt, and in the same year accompanied the Dutch governor Janssens to the Cape of Good Hope, as his secretary and physician, and as tutor to his children. At the end of 1802 he made a tour of exploration in the interior of Cape Colony, and collected the materials for his scientific work, *Reisen im südlichen Afrika* (Berlin, 1810-'11; English translation by Anne Plumptre, London, 1812). In 1804, on the outbreak of the war with England, he served as surgeon in a regiment of Hottentot light infantry, and in 1805 was sent on a mission to some of the native tribes. After the English conquest of the Cape he returned with the Dutch governor to Europe. In 1811 he became professor of zoology at the university of Berlin, and in 1813 director-in-chief of the zoological museum. He was eminent as an ornithologist, and wrote many treatises on various branches of zoology.

LICKING, a central co. of Ohio, drained by the Licking river; area, 666 sq. m.; pop. in 1850, 38,846. It has a level surface and a good soil, mostly under cultivation, and abounds with iron ore. The productions in 1850 were 336,317 bushels of wheat, 1,433,345 of Indian corn, and 239,310 of oats. There were 32 grist mills, 60 saw mills, 4 iron foundries, 5 woollen factories, 23 tanneries, 6 newspaper offices, 99 churches, and 16,989 pupils attending public schools. Capital, Newark.

LICKING. I. A river of Kentucky, rising in Floyd co. among the Cumberland mountains, and, after a course of about 200 m., falling into the Ohio at Newport, opposite Cincinnati. It is navigable for small steamers to Falmouth, about 50 m. from its mouth. II. A river of Ohio, called the Pataskala by the Indians, rising

near the centre of the state, and flowing into the Muskingum near Newark. It furnishes valuable water power.

LICTORS, in Roman antiquity, public officers appointed to attend on the chief magistrates. The ancient kings were always preceded by 12 lictors, who bore the *fusces* and *secures*. One of the consuls was preceded by the same number, bearing only the fasces. Dictators had a double number. Lictors also waited on the decemviri, prætors, and proconsuls, and on some minor magistrates when in the provinces. It belonged to them to inflict punishment on condemned Roman citizens.

LIEBER, FRANÇOIS, an American publicist, born in Berlin, March 18, 1800. He entered the Prussian army at the age of 15 as a volunteer in a regiment stationed nearest the frontier. He fought in the contests of Ligny and Waterloo, and was severely wounded at the assault of Nanur. Returning to Berlin, in common with the ingenuous youth of that day, he resisted the reactionary measures of government. He was arrested as a liberal, but procured his release, when he prosecuted his studies at the university of Jena. The government placing obstacles in the way of his advancement, at the age of 21 he proceeded to Greece to take part in its struggle for independence, travelling on foot through Switzerland to Marseilles. After enduring various privations, he returned to Italy, where he was received into the family of the Prussian ambassador, the historian Niebuhr. He passed the years 1822 and 1823 at Rome in this most advantageous relation, of which he has published an interesting volume of reminiscences, mainly occupied with the table talk, on a great variety of learned and more familiar topics, of his distinguished friend. While with Niebuhr he wrote in German a journal of his sojourn in Greece, which was published at Leipzig, and has been translated into other languages. Returning to Germany with promises of safety, he was imprisoned at Kopnick, where he passed his time in study and writing a collection of poems, which, on his release by the influence of Niebuhr, were printed at Berlin under the name of Franz Arnold. Annoyed by the persecutions which he had endured, and by the prospect of others of a similar nature, he left his country in 1825 for England, and supported himself for a year in London as a private teacher, while he wrote for the German periodicals. In 1827 he came to the United States, and commenced his active career in this country by the delivery of lectures on history and politics in the larger cities. He also founded a swimming school in Boston in accordance with the system of instructions of Gen. Pfuhl, whose pupil he had been in Berlin. While residing at Boston he undertook the editorship of the "*Encyclopædia Americana*," based upon Brockhaus's *Conversations-Lexikon*. It was published in Philadelphia in 13 volumes, between the years 1829 and 1833. Translations of a French work on the revolution of July, 1830, and of the life of

Kaspar Hauser by Feuerbach, were among his publications of this period. At New York in 1832 he translated the work of De Beaumont and De Tocqueville on the penitentiary system in the United States, adding an introduction and notes. He was now called upon by the trustees of Girard college to furnish a plan of education and instruction for that institution, which was published at Philadelphia in 1834. In the same year appeared his "Letters to a Gentleman in Germany, written after a Trip from Philadelphia to Niagara," being the vehicle of much entertaining anecdote and philosophical table talk on matters suggested by the way; and in 1835 his "Reminiscences of Niebuhr." In this year he was called from Philadelphia, which he had now made his place of residence, to the professorship of history and political economy in the South Carolina college at Columbia, and discharged the duties of this chair till his removal to New York in 1838, immediately after which he was appointed to the same professorship at Columbia college in that city. During this long period he published numerous important works, of which we may enumerate "A Manual of Political Ethics" (2 vols. 8vo., Boston, 1838), adopted by Harvard college as a text book, and commended by Kent and Story; "Legal and Political Hermeneutics, or Principles of Interpretation and Construction in Law and Politics;" "Laws of Property: Essays on Property and Labor" (18mo., New York, 1842); and "Civil Liberty and Self-Government" (2 vols. 12mo., Philadelphia, 1853). Special branches of polity or civil administration have also engaged his attention, particularly the subject of penal legislation, among his writings on which are: "Essays on Subjects of Penal Law and the Penitentiary System," published by the Philadelphia prison discipline society; an essay on the "Abuse of the Pardoning Power," republished by the legislature of New York; "Remarks on Mrs. Fry's Views of Solitary Confinement," published in England; and a "Letter on the Penitentiary System," published by the legislature of South Carolina. His occasional papers are worthy of mention, as a "Letter on Anglican and Gallican Liberty," translated into German and annotated by the distinguished jurist Mittermaier, who is also now (1860) superintending a translation of the "Civil Liberty;" a paper on the vocal sounds of Laura Bridgman, the blind deaf mute, compared with the elements of phonetic language, published in the "Smithsonian Contributions to Knowledge;" political articles in "Putnam's Monthly" on Napoleon and Utah; and numerous addresses on anniversary and other occasions. Since his occupancy of the chair at Columbia college, he has published his inaugural address on "Individualism and Socialism or Communism," which he regards as the two poles on which all human life turns, while he maintains that the problem is not to exclude one or the other, but to ascertain their true limits; also his introductory discourse to a course of lectures on the state in the college law

school, entitled "The Ancient and the Modern Teacher of Politics."—His son, OSCAR MONTGOMERY, born in Boston in 1880, educated in Germany and at the mining school of Freiberg, is the author of a work entitled the "Assayer's Guide, or Practical Directions to Assayers, Miners, and Smelters" (Philadelphia, 1852), and of various articles on mining in reference to this country in the "New York Mining Magazine." He was state geologist of Mississippi in 1850-'51; was engaged in the geological survey of Alabama in 1854-'5; and until 1860 held the office of mineralogical, geological, and agricultural surveyor of South Carolina. His first annual report of the last mentioned survey was published at Columbia, S. C., in 1857.

LIEBHARD, JOACHIM. See CAMERARIUS.

LIEBIG, JUSTUS VON, baron, a German chemist, born in Darmstadt, May 12, 1803. While a youth he was taught in the gymnasium of his native town; and after spending 10 months in an apothecary's establishment, he entered in 1819 the university of Bonn. Afterward at Erlangen he obtained the degree of M.D. By the assistance of the grand duke of Hesse-Darmstadt he was enabled in 1822 to visit Paris, where he devoted two years to the study of chemistry. In 1824 he read a paper before the French institute in which he explained the chemical composition of the fulminates, compounds of a base with the unstable fulminic acid, which consists of carbon, nitrogen, hydrogen, and oxygen. Thus early the study of the intricate combinations which these elements form engaged his attention; a subject which, prosecuted through the departments of vegetable and animal chemistry, has since occupied a large portion of his life. This paper attracted the attention of Humboldt, and by his influence Liebig was appointed adjunct professor of chemistry at Giessen. In 1826 he was made professor in the university, and soon established a laboratory for teaching practical chemistry, the first of the kind in Germany. It became a resort for students from different parts of the world, and especially from England, among whom are found the names of Lyon Playfair, Gregory, and Johnston. Dr. Hofmann, Will, and Fresenius were his assistants. In 1832 Liebig with his colleague Wöhler established the *Annalen der Pharmacie*, to which he continued for many years to contribute valuable papers. In 1838 he visited England, and was present at the meeting of the British association for the advancement of science. At this meeting he read a paper on lithic acid, in which he announced the discovery by Wöhler of the composition of urea and the method of making it artificially. This was received with much interest by scientific men; for the artificial production of one of the intricate compounds, before known as elaborated only by the mysterious living forces, was a pledge that the nature of these forces would be better comprehended, and the processes going on in living bodies be explained. The association requested him to draw up two reports, one on isomeric bodies, the

other on organic chemistry. The response was made in 1840, in a work dedicated to the British association, entitled "Chemistry in its Application to Agriculture and Physiology." The translation from the manuscript into English by Dr. Lyon Playfair was soon published in England and in the United States. In the preface the author states that his object in the work was "to develop, in a manner correspondent to the present state of science, the fundamental principles of chemistry in general, and the laws of organic chemistry in particular, in their applications to agriculture and physiology; to the causes of fermentation, decay, and putrefaction; to the vinous and acetic fermentations; and to nitrification. The conversion of woody fibre into wood and mineral coal, the nature of poisons, contagions, and miasms, and the causes of their action on the living organism, have been elucidated in their chemical relations." No chemist since the time of Davy, he remarks, had occupied himself in studying the applications of chemical principles to the growth of vegetables and to organic processes. In the living animal body he recognized a number of transformations exclusively dependent on the influence of the chemical forces; and in many diseases and contagions he perceived principles analogous to those at the base of chemical processes. In this work he determined the constituents of plants, and then investigated the sources whence they were derived, by what manures they were furnished, and to what extent they were obtained from the atmosphere. The action of animal manure he referred wholly to the formation of ammonia; and from this substance, chiefly as existing in the atmosphere, he argued that the nitrogenous portions of plants were wholly derived. In the animal system, he traced the introduction of disease and poison either to chemical compounds formed with portions of the body and foreign substances introduced, or to chemical changes induced, as in fermentation and eremacausis or decay by mere presence or contact of some exciting body. Although many of the theoretical conclusions of Liebig have not been adopted by chemists, and some even have been abandoned by their author, great practical benefits have resulted from his speculations and suggestions, and the true principles of agriculture and of the use of manures especially are unquestionably much better understood for his labors. To this work soon succeeded a volume of "Familiar Letters on Chemistry and its Relations to Commerce, Physiology, and Agriculture," in which the same investigations are continued. The effect of these letters in Germany, as stated by Liebig in his preface to the English edition of 1843, was "to lead to the establishment of new professorships in the universities of Göttingen and Würzburg for the express purpose of facilitating the application of chemical truths to the practical arts of life, and of following up the new line of investigation and research—the bearing of chemistry upon physiology, medicine, and agriculture—

which may be said to be only just begun." In June, 1842, Liebig presented to the British association a second report in response to their request in 1838. This was entitled "Animal Chemistry, or Chemistry in its Application to Physiology and Pathology." It was translated into English from the author's manuscript by Prof. William Gregory; and a third and greatly improved edition was published in 1846. The same course was followed by Liebig in this investigation which he had commenced in tracing out the changes in vegetable bodies and their causes. The nature of the substances taken into the body and of those rejected from it was carefully determined; and the specific effects of those retained for nourishment, and of those consumed for producing animal heat, were presented with a certainty and accuracy never before arrived at, and often in opposition to the current opinions of chemists. His readiness for generalizing, however, led him, as in agricultural chemistry, to adopt some theories which have not been admitted by scientific men. Great practical good has nevertheless resulted in this department also from his investigations, which soon led to a better appreciation of the nature and proper application of medicines and food. This particular subject continued to occupy his attention, and papers frequently appeared in the *Annalen* and other scientific journals presenting the results of further investigations. These were embodied in two works translated by Prof. Gregory: "The Motions of the Juices in the Animal Body" (1848), and "Researches on the Chemistry of Food." The nature of the animal tissues and of the liquid compounds of the body was fully investigated in these works, and the passage of their elements from one to another was carefully traced. The practical application, which is never wanting in the original researches of Liebig, is found in the observations upon the cooking of food, and the suggestions by which this process may be conducted with greater economy and more exact knowledge of the objects to be attained in the effect of the aliment upon the system. Liebig has been engaged with others in several publications beside those named. With Wöhler he completed a "Dictionary of Chemistry," commenced in 1837. He contributed to Geiger's "Handbook of Pharmaceutical Chemistry" (1839) the portion devoted to organic chemistry, which afterward appeared as a separate work. He also furnished in 1841 the organic portion of Dr. Turner's "Elements of Chemistry." In 1848 he established in connection with Professor Kopp an annual report on the progress of chemistry, which, with the aid of others as contributors, has been continued to the present time. In 1859 he published "Letters on Modern Agriculture," of which an English translation appeared in London and New York. The subject to which his attention has been most recently directed is the utilization of the sewage of cities; and his letters setting forth the continual loss in fertilizing material, which is experienced in all the

great food-producing countries of the world, and which must be greatly augmented when the supplies of guano are exhausted, have been read with no little interest by scientific and thoughtful men. The sewage of cities he regards as the best source from which to restore this loss.—Many honors have been conferred upon Liebig by learned societies, public institutions, and individuals. By Louis II., grand duke of Hesse-Darmstadt, he was made a baron in 1845. Professorships have been offered him in England, at Heidelberg, Vienna, and other places. But he remained at Giessen until 1852, when he accepted the professorship of chemistry at Munich and the presidency of the chemical laboratory. By his friends in Europe a sum was contributed in 1854 amounting to more than £1,000, which was presented to him, a portion in the form of 5 pieces of plate, intended to pass finally one piece to each of his 5 children, and the remainder, amounting to £460, in money. In 1860 he was appointed president of the academy of sciences of Munich as successor of Thiersch.

LIECHTENSTEIN, a principality and the smallest state of the German confederation, bounded N. E. and E. by Vorarlberg and the Tyrol, S. by the canton of Grisons, and W. and N. W. by the Rhine, which separates it from the canton of St. Gall; area, 61 sq. m.; pop. in 1855, 7,150. It has a mountainous surface, crossed by branches of the Alps, which however do not rise to any great height. The soil in most parts is fertile and well watered, producing flax, grain, wine, and fruit. Timber is abundant, and there is much excellent pasturage. Capital, Liechtenstein or Vaduz.—The prince of Liechtenstein is a member of the family of Este, and though his territory as a sovereign is so small in extent, his lordships and other possessions in Austria render him one of the richest proprietors in Germany. The family of Liechtenstein is one of the oldest of Austria. At the beginning of the 17th century its members were raised to the rank of princes. Many of them have distinguished themselves by their public services, especially as soldiers. JOHANN JOSEPH (1760–1836) took a conspicuous part in the campaigns on the Rhine and in Italy, and concluded in 1805 the treaty of Presburg. His son, Prince ALOIS JOSEPH, born in 1796, died in Eisgrub, Moravia, Nov. 12, 1858. By his wife, the countess Francisca de Paula, he had 8 daughters and 2 sons, the elder of whom, Prince JOHANN FRANZ (born in 1840), is the present sovereign of Liechtenstein. The 5 surviving brothers of Prince Alois Joseph occupy commanding positions in the Austrian empire as provincial governors and in the army; and a member of the same family, Prince Karl, officiates as chief master of ceremonies at the court of Vienna.

LIÈGE (Ger. *Lüttich*), a province of Belgium, drained by the river Meuse and its tributaries, and bounded N. by Limbourg, E. by Rhenish Prussia, S. by Luxembourg, and S. W. and W. by Namur and South Brabant; area, about

1,200 sq. m.; pop. in 1856, 503,654; of the *arrondissement* of Liège, 258,265.—*Liège*, the capital of the province, is situated in the middle of a plain girt by mountains, at the junction of the Meuse and Ourthe, 71½ m. by railway from Brussels, and 84½ m. from Aix la Chapelle; pop. in 1857, 89,411. The streets, excepting in the new part of the town and in some of the 10 suburbs, are steep and narrow. The church of St. Jacques is the most remarkable architectural monument of Liège, its magnificent interior containing some of the finest specimens of tracery and fretwork in the world. There are over 20 Roman Catholic churches, and a place of worship for Protestants. Liège is rich in educational, charitable, literary, and artistic institutions. The University place is adorned by a statue of the native composer Grétry, and contains a botanic garden and various public buildings, beside the university. The latter was founded by the late king of Holland in the early part of the present century, is attended by about 500 students, and is the headquarters of the Roman Catholic party. Liège, from its extensive iron works, and from its situation in a district abounding with coal and iron, has acquired the title of the Birmingham of Belgium. The neighboring village of Seraing is a focus of industry, iron furnaces, forges, and coal mines, the chief being the establishment formed by the English engineer, the late John Cockerill, and now conducted by a company. Glons, a village N. of the town, is the centre of a great straw hat manufacture, employing upward of 6,000 persons; and 3 m. from it is Hérival, from which Pepin the Fat took his name D'Hérival, and which is important for its steel works, coal mines, and iron foundries. The manufactures in and around the town include hardware, broadcloth, glass, leather, nails, steam engines, and all sorts of machinery, carriages, and linen and cotton goods. The manufacture of firearms, however, is that for which Liège and its environs are most celebrated. The royal cannon foundry was established there in 1802.—A village named Legia occupied the present site of the town in the 7th century. In mediæval Latin it was called *Leodium*. At the beginning of the 8th century it became the seat of a bishop, who in the 10th century was raised to the rank of an independent sovereign prince by the German emperor. At the beginning of the 12th century, the chapter of St. Lambert cathedral in Liège was the noblest in Europe. The repeated conflicts between the citizens and their bishops and the bishops against their allies, the dukes of Burgundy, are described in Scott's "*Quentin Durward*." Charles the Bold, to protect the bishop Louis de Bourbon, inflicted severe punishment upon his mutinous subjects in 1467 by abridging their privileges and ordering all the fortifications to be demolished. In 1468, the citizens having resumed their rebellious conduct, Charles condemned the town to destruction, and all the

buildings, except churches and monasteries, were burned. Many of the inhabitants were slaughtered on this occasion. The bishop, however, was murdered in 1482 by William de la Marck, the so called "*wild boar of Ardenne*," who wished to obtain the mitre for his son. But the audacity of the bishops was not easily to be subdued, and one of them declared war against Louis XIV., in consequence of which the town was taken by the French. Marshal Boufflers bombarded it for 5 days in 1691, and eventually abandoned it to the duke of Marlborough, who stormed the citadel, Oct. 23, 1702. The bishops were expelled on the outbreak of the French revolution in 1789, but reinstated by Austrian troops in 1791. In 1794 Liège was annexed to France, and included in the new kingdom of the Netherlands in 1814. In 1830 the Liégeois were the first and the most enthusiastic in advocating the national independence of Belgium, and the citizens have since remained uncompromising champions of liberal institutions.

LIEGNITZ, a governmental district of Prussian Silesia, comprising the N. W. part of the province; area, 5,824 sq. m.; pop. 921,002. The surface of the S. part is mountainous, the highest point being Schneekoppe, 5,000 feet above the sea, the culminating summit of the Riesengebirge. Northward it sinks into an extensive plain. The principal rivers are the Oder, the Spree, and their affluents. Some of the soil, particularly that of the valley of the Oder, is remarkably fertile, but the level grounds of the centre of the district and much of the land in the W. are sandy and overgrown with heath. Among the minerals are copper, tin, arsenic, cobalt, copperas, coal, lignite, potters' clay, &c.—*Liëgnitz*, the capital of the preceding district, situated between the Katzbach and Schwarzwasser near their junction, and on the Silesian and Saxon railway, 40 m. W. N. W. from Breslau and 180 m. S. E. from Berlin; pop. about 20,000. It is an old but well built and handsome town, with 5 suburbs; is defended by a castle and surrounded by a boulevard planted with trees. It contains 5 churches; the Ritter academy, a school for nobles; several hospitals, a public library, a gymnasium, and industrial and other schools. It is also the seat of a deaf and dumb institution. Its manufactures include table linen, hosiery, hats, tobacco, &c. The annual produce of vegetables raised in the gardens of the suburbs of Liegnitz is estimated at nearly \$30,000.—Frederic the Great won there one of his victories in 1760. The neighboring field of Wahlstatt witnessed the great battle of 1241 against the Mongols, and of 1813 against the French. Liegnitz was formerly the capital of a principality. The title of princess of Liegnitz was conferred by Frederic William III., king of Prussia, upon the Austrian countess Auguste von Harrach (born Aug. 30, 1800), whose acquaintance he had made at Töplitz, and with whom he contracted a morganatic marriage at Charlottenburg, Nov. 9, 1824.

LIEN (Fr. *lier*, to tie or bind), in its broader sense, includes every hold upon or right to property to secure the payment of a debt, or the discharge of an obligation. In this sense it includes mortgages, pledges, bottomries, and respondentia. All of these are liens created by contract; but in a narrower and more specific sense, it has been well defined as "a right in one man to retain that which is in his possession belonging to another till certain demands of the person in possession are satisfied." (Hammond *vs.* Barclay, 2 East, 227.) Liens of this kind are seldom created by contract. They arise almost always by the operation of law upon the relation between the parties. The most common of these are the liens of a carrier, an innkeeper, a factor, and a salvor. In addition to these, which are treated under their own titles, it may be said that modern law tends strongly to give this security to every bailee, or person to whom property is delivered, who receives the property for the purpose of improving its condition or adding to its value by putting his labor into the materials supplied him; as a tailor, who by this rule would have a lien on the cloths delivered him to make up into garments, for his wages or compensation for so doing; a watchmaker, employed to clean or repair a watch; a bookbinder on books bound by him; dyers on goods sent to them to be dyed, &c. It is by an extension of the same principle that an attorney has a lien on the papers in his hands, and on any judgment or money he may receive, for his demands against his client. It is said, however, that while he has a lien to cover all his charges against his client, he has no lien on money recovered, except to cover his charges for receiving it, whether by suit or otherwise. For a similar reason, a banker has a general lien on the paper securities in his hands to cover his claims; and so has an insurance broker, and if the assured transferred his interest in the policy, the transferee would take it subject to the broker's lien. In all these cases it will be observed that the lien is nothing more than a right to retain possession of the property. This principle is important, because it makes possession absolutely essential to the lien, and therefore the lien is lost if the creditor give up the possession; for the creditor is then supposed to waive and renounce the security he has upon the thing itself, and to trust only to his personal demand against the debtor. For an analogous reason, it is a general rule, that if one who has a lien to secure a debt receives from the debtor other and adequate security for the debt, he thereby waives and loses his lien on the goods; and if the creditor who thus loses his lien by giving up the possession, afterward comes into possession anew, he does not hold the goods by his former lien for security.—In general, courts of common law have, properly speaking, no power to enforce a lien. They can do little more than leave the creditor to enforce his own lien, and refuse to sustain others in actions which would defeat the lien. But courts of

equity have full power over liens. Upon petition, they will decree a sale of the property to pay the debt, or take such other order as the case may require. It used to be thought that this was the only way in which the holder of property by lien could avail of it. Now, however, it seems certain, in some cases of lien, and probably in all, that a creditor may himself sell the property and pay the debt to himself, holding the balance of proceeds, if any, for the debtor; provided that in all the circumstances of the sale, the notice given to the debtor, the time, place, and manner of the sale (which should, generally at least, be by public auction), he consults, in all fairness and with reasonable discretion, the rights and interests of the debtor. In some cases there may be a kind of foreclosure; in some the creditor may have a writ of *scire facias* against the debtor; in others, there are precise provisions of law applicable to the case (as in mechanics' liens); and in all, the fair agreement of the parties will determine their rights and obligations. There may be adverse liens on the same thing, and then the question arises as to which shall prevail; and when that which prevails is satisfied, the other comes into effect. Thus a carrier of goods from a seller to a buyer may be notified to retain them for the seller, for payment of his price; but the carrier has himself a lien for the price of carrying them. He will therefore hold the goods for his own demand; but when that price is paid to him, or if he recovers it in any way, his lien is discharged, and his possession is now the possession of the seller, who has a lien for the price. This lien of the seller, especially by the extension of it into the right of stoppage *in transitu*, is of great importance, and it will be treated more fully under the heads of SALE, and STOPPAGE IN TRANSITU.—Another exceedingly important lien is that upon the land of the debtor, created in favor of a creditor by a judgment, or final decree, of a court of law. The law and practice on this subject are singularly different in different states. Thus, in the New England states, a judgment is no lien whatever, nor is execution until it be levied. But in those states land may be attached on meane process, and this attachment, when returned and recorded as the law requires, is a valid lien. In New York every judgment and final decree are a lien on the real estate of the debtor, from the docketing of the judgment. This lien by judgment prevails in New Jersey, Delaware, Maryland, South Carolina, Georgia, Alabama, Louisiana, Tennessee, Kentucky, Ohio, Indiana, and Missouri. The limitations to or qualifications of this law are very various. It is said to have been copied from the statute 4 and 5 William and Mary, ch. 20. But that statute has been amended by the statute 1 and 2 Victoria, ch. 110, which provides that the judgment shall be entered into a record book at once, and a fresh memorandum be made therein every 5 years afterward. In New York the lien continues 10 years. It may be doubted whether,

in all our states where judgment liens exist, provisions are enacted so well adapted as those of the last English statute to guard against this lien being an injury to a *bona fide* purchaser of the land for value.—Another very important lien is the equitable lien of a seller of real estate for the unpaid balance of his price. This also is derived from England, and is unknown in some of our states, and exists with much variety in those in which it is recognized. It is not in general given by statute, nor is it acknowledged or enforced by courts of an exclusively common law jurisdiction. It is only an equitable lien, of which only courts of equity take cognizance. Traces of it may be found in the Roman civil law, but it undoubtedly came to this country from England, where it falls within the settled practice of the courts of equity. Hence, in those of our states, as for example in New England, where the equity powers of the courts have been until recently very limited, this lien of the vendor is almost unknown. It may be regarded as established in New York, Maryland, Virginia, North Carolina, Georgia, Alabama, Mississippi, Tennessee, Kentucky, Ohio, Michigan, Indiana, Illinois, Missouri, and by the courts of the United States. In Connecticut it exists in a qualified form, and did so in Vermont until it was abolished by statute. The effect of this lien is, that if a man sells real estate, and is paid half of the price, he has the estate sold as his security for the balance, as effectually as if it were mortgaged back to him. Hence this lien, and also the lien by judgment, are sometimes called equitable mortgages. To prevent this from becoming a trap whereby subsequent purchasers may be deceived, there are various rules adopted by the courts of different states; the substance of them all is, that the lien is valid against the purchaser himself, his widow, and his heirs, against all subsequent purchasers who buy with notice or knowledge of the lien, and against all subsequent grantees who take without consideration; but it is not valid against subsequent *bona fide* purchasers for valuable consideration. Formerly the lien was discharged by the seller's receiving a note or bond for the price unpaid; but now it is not discharged unless the seller receives other property as collateral security for the amount due.—Still another lien of great importance is that of mechanics on the houses and ships they build or repair. This was wholly unknown to the common law, and it has no existence in England. We believe that it was derived from the maritime lien which repairers and suppliers have upon a foreign vessel. (See SHIPPING.) It is of recent introduction, and depends almost wholly upon statutory provisions; and these differ so much as to leave but little resemblance between them, except on the main point. They all agree in giving to the mechanic a hold on the ship or house as his security for his work upon it, and sometimes for materials supplied. To prevent this lien from operating injuriously upon owners or purchasers ignorant of it, the

various statutes require public notice by record in some form, usually with the town or city clerk where the property is situated, or some similar officer whose records are easily accessible. In most, and perhaps all of the states where this lien is known, it remains in force but a short time, usually but 2 or 3 months, unless an action is brought to enforce it.—The reciprocal liens which a ship has on its cargo and the cargo on the ship, those of sailors on the ship, those of repairers and suppliers, or "material men," as they are called in maritime law, and some others of similar character, will be considered in the article SHIPPING.

LIEUTENANT, an officer next in rank below a captain, in whose absence he commands the company.—The LIEUTENANT-COLONEL is the second commissioned officer of a regiment, immediately subordinate to the colonel.—The LIEUTENANT-GENERAL, in the United States, holds military rank only below the president, who is commander-in-chief. The title has been conferred only on Washington and on Winfield Scott. In French history, the *lieutenant général du royaume* is a person invested with the powers of regent in temporary emergencies. Thus, the count d'Artois (afterward Charles X.) took this title on entering France in 1814, and held it till the arrival of Louis XVIII. The duke of Orleans in 1830 was appointed to this office by the chamber of deputies, before he accepted the crown as Louis Philippe.

LIEVEN, DOROTHEA, princess of, a Russian diplomatist, born in St. Petersburg in Dec. 1784, died in Paris, Jan. 26, 1857. Her father, Christoph von Benkendorff, originally belonging to the inferior gentry of Esthonia, pushed his fortunes by the aid of his wife, a German woman of low origin, who was a chambermaid and favorite of the empress of Paul. Her eldest brother, Count Alexander, was the all-powerful minister of police of the emperor Nicholas. She received a brilliant education, and at an early age married, at the suggestion of the empress, the prince Christoph Lieven, the scion of an ancient Livonian family, and for a time Russian minister of war. His father, Baron Lieven, was a lieutenant-general in the Russian army; and his mother, Charlotte de Vosse by birth, who had been governess of the daughters of the emperor Paul, was created a princess in 1826, and died in 1828. Thus powerfully connected, the Lievens obtained the Prussian embassy during the stormy era of Napoleon I., and remained for some time in Berlin, where the remarkable aptitude of the princess in dealing with public affairs and her eminent social qualities found full display. While controlling the main springs of political action in Berlin by her personal exertions and social prestige, she succeeded in shaping the opinions of the court of St. Petersburg by carrying on an extensive official and private correspondence with her mother-in-law, with her brother, and with the czar himself. After the French invasion of Russia in 1812 she left with her husband the court of Prussia for that

of St. James, where he was accredited as Russian ambassador. She soon became as conspicuous in London as she had been in Berlin, her diplomatic manœuvres aiding not a little her husband, as they did also Pozzo di Borgo and Gentz, who came to London between 1812 and 1814 on a special mission from the Austrian government. In 1815 she was one of the most prominent of the many distinguished persons who attended the congress of Vienna, and many of her intrigues there were said not to have been exclusively of a political nature. The princess of Lieven, the princess Zanaïde Volkonski, and the grand duchess of Oldenburg (sister of Alexander I.), were the great rivals for beauty and genius in Viennese society, and they were called "the three graces." From that time until 1834, when the prince was recalled to St. Petersburg, Mme. Lieven held a leading position in the highest political and social circles of London, where she competed eagerly for the honors of superior diplomatic skill with Talleyrand, then for a time French ambassador in England, and more particularly with his accomplished and crafty niece the duchess of Dino. Her saloon in London was a curious laboratory in which she endeavored to color and shape all political elements in accordance with the autocratic system of government, of which Russia was then the chief exponent. No sooner did a public question of English or European interest arise than the princess applied all the many resources of her cunning and plotting disposition, in order to derive from it some benefit for her imperial master, or to engraft upon it Russian political idiosyncrasies. During the agitation in England in regard to the Grecian struggle for independence, she was on the side of the Philhellenists, not from any sympathy with liberty, but with a view of strengthening Russia by weakening Turkey. She was active among those who conspired against the establishment of Belgium as an independent kingdom. Her talents and blandishments were duly appreciated in London society, but she was too fond of political intrigue and agitation to command the full confidence of English statesmen. Castle-reagh, Canning, and many of the most eminent men of Great Britain, however, were among her intimate acquaintances. With a view of giving the tsesarevitch (the present emperor Alexander II.) the benefit of the instruction and the society of a lady of Mme. Lieven's vast experience, she and her husband were recalled to St. Petersburg in 1834. The prince was appointed governor of the young Alexander, but his office was almost nominal, and for some time his wife discharged his functions as tutor as efficiently as she had acquitted herself of his duties as ambassador. He however accompanied the tsesarevitch on his travels in southern Europe, while the princess, who had been previously appointed lady in waiting of the empress, remained attached to the Russian court. In 1835 she had the misfortune to lose two of her children, respectively aged 13 and 8. Afflicted

by this calamity and yearning for a change, and at the same time for a more independent social atmosphere, she established herself in Paris in 1837, where she took up her residence in the hôtel Talleyrand, the large and beautiful mansion inhabited formerly by that minister, from whom its name is derived. After the death of her husband, which occurred during his visit in Rome, Jan. 10, 1839, she continued to reside in Paris, where her house became a great social focus during the reign of Louis Philippe. She was on peculiar terms of intimacy with M. Guizot, with whom she had become acquainted in London. She has been often called the Egeria of that statesman; but while the associations which mythological traditions establish between the nymph of that name and the Roman lawgiver Numa were believed to have been matrimonial as well as political, the relations between the adroit Russian princess and the austere French legislator were understood to be based solely upon mutual friendship and strong political sympathies; and the report circulated shortly before her death of their private marriage was not credited. The saloon of the princess of Lieven in Paris was for many years a favorite resort of the chief political, literary, artistic, and social celebrities of that metropolis, and the motley assembly of persons who congregated there included almost all phases of society, from the stately prime minister down to the sprightly comedian. Hence it became one of the fountain heads of the political and fashionable gossip of Paris. Thiers and Molé, the representative of Metternich's policy, Count Apponyi, and the constitutional Spanish statesman Martinez de la Rosa, Lord Granville and Gen. Cass, Lord Lyndhurst and Mr. Bowring, Mme. Thiers and Mme. de Flahaut (the British Baroness Keith), politicians, diplomatists, and ladies of all parties, met at the receptions of the princess; and the principal business of the Russian embassy was done in her boudoirs. With correspondents and acquaintances in every part of Europe, and with her great control over society, she obtained a mass of political and personal information which she forwarded to her friends in Russia. She was on terms of personal friendship with almost every eminent statesman of her time, excepting Lord Palmerston, who distrusted her influence, and of whom she became accordingly an unrelenting enemy. After the revolution of Feb. 24, 1848, she removed to London, but returned to Paris during the presidency of Louis Napoleon, and resumed her receptions in the hôtel Talleyrand, when, beside Guizot and the duke of Noailles and many of the other old attendants upon her reunions, Count Morny, Persigny, Fould, and other notabilities of the new régime, soon united there in social intercourse. Her saloon, however, possessed no longer the cosmopolitan prestige which distinguished it in former times, and was regarded as the headquarters of the Orleans party, although the princess herself professed to keep aloof from all political agitation. After the proclamation