

corresponding to the increase of temperature, and the power piston is impelled to the end of its stroke. As shown in the figure, D is rising, and C is just beginning to rise; the pressure in B reacts on C, and forces the latter upwards till it reaches nearly to the top of its stroke. In the meantime the air is passing rapidly through the regenerator from B to A, giving up its heat, and is further cooled by means of a water-jacket E, through which water is constantly circulating. By this cooling of the air the pressure falls to its minimum, the piston D descends, and the compression begins again. In engines used for pumping, the water which is pumped is made to circulate through the cooler E. The heater F is kept at a dull red heat by a steady fire (of coke generally), which is underneath it. There is a small valve at L, which admits air when the engine is started, and also makes good any small leakage that may occur. To stop the engine, a cock M on the regenerator is opened, thereby releasing the pressure. The pistons are kept tight by packings K, those on the cylinder B being cooled by a water-jacket, as shown in the figure.

The 'Rider' engine is only used for small powers, from $\frac{1}{4}$ H.P. to 1 H.P. The speed is from 100 to 140 revolutions per minute. The consumption of coke per hour is approximately as follows:—

$\frac{1}{4}$ H.P.	$\frac{1}{2}$ H.P.	1 H.P.
2.5 lbs.	4 lbs.	9 lbs.

The 'Bailey' hot-air engine, made by Messrs. W. H. Bailey and Co., Ltd., Salford, is another engine working on the Stirling principle. There are two forms made, a horizontal and a vertical. In the former there is one long cylinder, the back end of which is heated by the furnace gases coming from a stove; the front end is water-jacketed, and thus kept cool. There are two pistons—a displacer piston, which is loose-

fitting, at the back, and a motor piston at the front. The piston rod of the former passes through the latter; both are connected by linkwork to a crank shaft, and have separate movements. The displacer piston is used merely to cause the air to travel backwards and forwards in the cylinder. When the displacer piston is moved inwards, the heated air from the back or hot end travels to the front, is cooled, and the pressure falls; the motor piston then makes its inward stroke. On the outward stroke of the displacer the cool air is forced to the hot end, becomes heated, the pressure rises, and the motor piston makes its out or working stroke. The air is used over and over again, and there are no valves in this engine. The 'Bailey' engine is only made in small sizes; it is very easy to work, and is specially suitable for pumping.

The 'Bénier' hot-air engine, constructed by the Compagnie Française des Moteurs à Air Chaud, Paris, is made in sizes varying from 4 to 20 H.P. It is provided with a single-acting vertical motor cylinder, the lower end of which forms the furnace. The motor piston is connected by a rod to a beam, which is coupled at the opposite end to a crank shaft. The air-pump, which is single-acting and horizontal, is driven by a system of linkwork from the crank shaft. The air-pump draws in and compresses the air, which is then admitted through a slide-valve to the furnace. Part of the air is forced through the incandescent fuel, becoming increased in volume, and is then used in the motor cylinder, where it expands, and from which it is finally exhausted. A portion of the compressed air is blown into a narrow clearance space surrounding the lower part of the motor cylinder; this tends to keep the piston and cylinder cool, and any grit or dust

rising from the fuel is forced down again on to the furnace bars. The furnace is fed automatically by means of two hoppers. The proper quantity of coke for each charge is conveyed from the one hopper to the other, from which the contents are discharged into the port of a slide-valve. The coke is then carried along by this valve, and falls into the furnace when the port is opposite to an opening in the furnace. The valve prevents communication between the furnace and the atmosphere during the expansion of the air and the ascent of the piston. The Bénier appears to be one of the most efficient of hot-air engines, and is said to be economical in fuel. See *Gas, Oil, and Air Engines*, by Bryan Donkin; *The Steam-Engine, and other Heat-Engines*, by Professor Ewing.

Aire-sur-Lys (anc. *Aria*), tn., Pas de Calais dep., France, 30 m. N.W. of Arras, on ry. line to Calais; possesses breweries, oil-mills, and a market for corn and live stock. Pop. 8,000.

Air-gun, a weapon propelling bullets or darts by the sudden expansion of air which has been compressed into a chamber. Its range is short, owing to the comparatively small propulsive force of compressed air. In pneumatic guns, which were at one time used by the United States artillery, shells containing nitro-gelatine and other explosives were projected by air at 1,000 lbs. pressure. A range of over 3,000 yards has been attained by the Sims-Dudley pneumatic gun. See GUNS.

Airlie (1856-1900), DAVID WILLIAM STANLEY OGILVY, ELEVENTH EARL OF, succeeded his father in 1881; entered the army in 1874, served in the Nile expedition of 1884-5, and was appointed lieutenant-colonel of the 12th Royal Lancers in 1897. He died on the battlefield, near Pretoria, in June 1900. See Doyle, *The Great Boer War* (1900).

Air-lock. See CAISSON.

Airola, tn., Beneventa prov., Italy, 22 m. N.E. of Naples. Near Airola is the famous gorge of the 'Caudine Forks,' the site of a great Roman disaster in 321 B.C. Pop. 5,000.

Airolo (Ger. *Eriels*), a small vil. (alt. 3,822 ft.) near the head of the Upper Ticino or Tessin valley (Val Leventina), in the Swiss canton of Ticino. It is the station at the s. mouth of the St. Gothard Tunnel, being 10 m. by rail from Göschenen, at the N. end, and 40 m. from Bellinzona to the S.E. In 1877 it was destroyed by fire, but later rebuilt in stone. A disastrous landslip took place here in 1898. Pop. 1,600.

Air-plants. See EPIPHYTES.

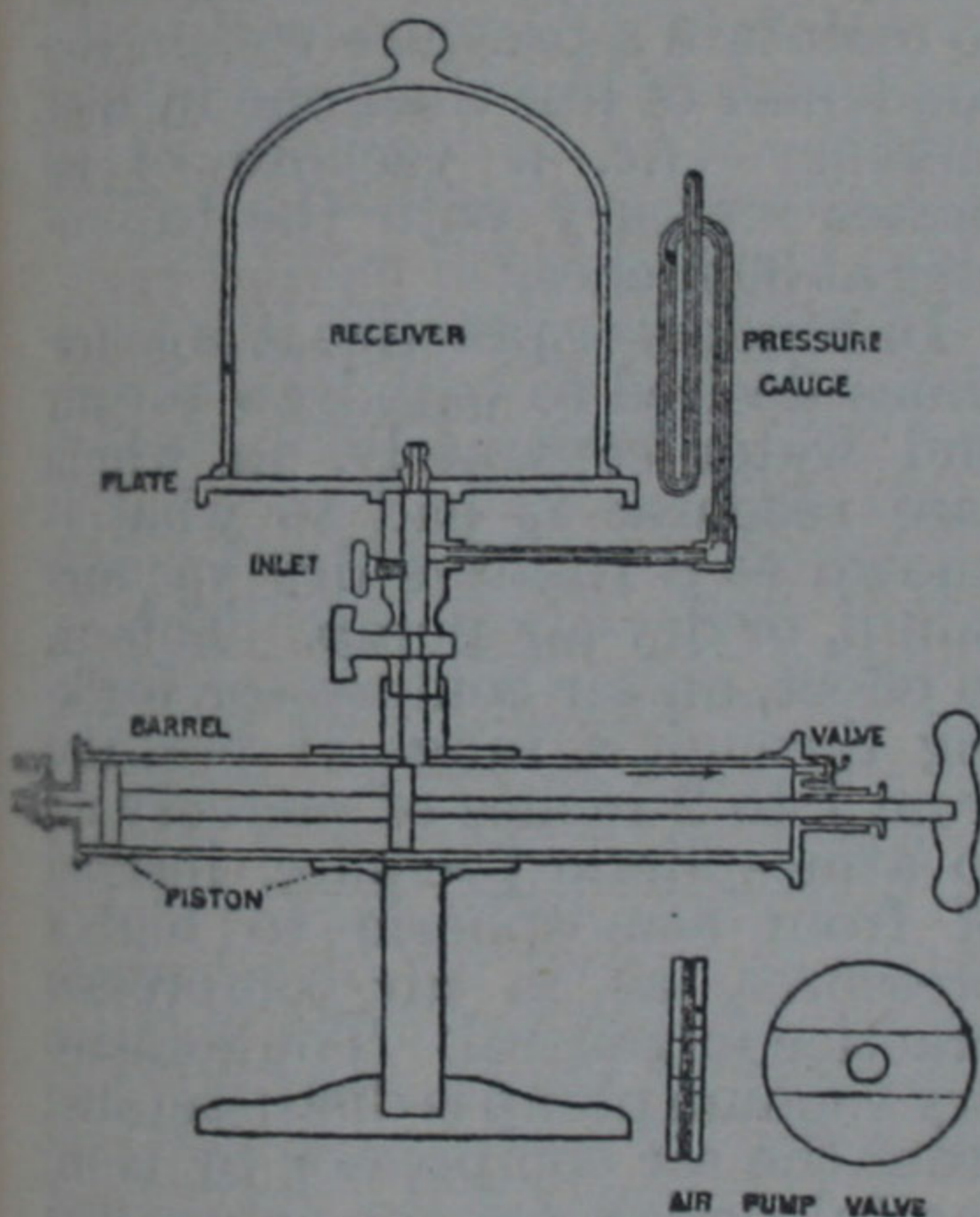
Air-pump, any apparatus for changing the density of air in a given space. There are two kinds—the condensing air-pump, or inflator, and the exhausting air-pump. The most familiar form of the condensing air-pump is the inflator used in pumping up the pneumatic tyres of cycles. It consists of a tube in which works a loosely-fitting piston faced with a leather cup-shaped valve. When the piston is pulled out, air passes the leather valve and fills the tube; and when the piston is pushed in, the cup expands, preventing the escape of air past the piston, and compelling it to make its way through the tyre valve. On the piston being pulled out again, the tyre valve is closed by the pressure of the air in the tyre, the amount of air within it being increased by a definite quantity at every stroke. The mechanism of the usual form of exhausting air-pump is essentially the same as that just described, except that the valves open in the opposite directions, so that the action is reversed. As a general rule, the region to be exhausted of air is in permanent connection with the tube and piston by which the exhaustion

is effected. It is enclosed in a glass bell-shaped jar, called the receiver, which rests on a perfectly plane plate, the junction being made air-tight by means of a layer of lard. From the centre of the plate a tube passes to the piston chamber, and brings the space within the receiver into communication with the space through which the piston works. This piston may be single-acting or double-acting. In the latter arrangement the valves are so adjusted as to bring into continuous

the receiver and piston chamber. Suppose, for example, that the volume of the piston chamber which is put into communication with the receiver is $\frac{1}{10}$ of the volume of the receiver. Then at the first half-stroke $\frac{1}{10}$ of the contents of the receiver passes into the piston chamber and is expelled. Hence $\frac{9}{10}$ of the original volume is left in the receiver. At the second half $\frac{1}{10}$ of this is left—*i.e.* $\frac{81}{100}$ of the original volume; and so on indefinitely. After, say, 20 full strokes, the quantity of air in the receiver will be the fraction 0.81 raised to the power 20—*i.e.* 0.0148 nearly. After 50 full strokes the fraction will be 0.000046.

The ordinary atmospheric pressure is balanced by the weight of a column of mercury 30 in. or 760 mm. high. Hence a convenient measure of low pressures is in terms of the corresponding height of the mercurial barometric column. (See BAROMETER.) Thus if only 0.0148 of the original amount of air is left in the receiver, the pressure will be about 0.44 of an inch of mercury, or 11.25 mm. If the fraction is 0.000046, the pressure will be 0.035 mm.

To obtain lower pressures, or higher vacua as they are called, recourse is had to what is known as a mercury air-pump. There are two fundamental types of this kind of exhauster, distinguished as the Geissler (invented in 1855) and Sprengel (1865) pump, of which many modifications have been devised by later experimenters. Both depend upon the properties of the Torricellian vacuum—the region above the mercury barometric column, which has been as far as possible emptied of air. In pumps of the Sprengel pattern the gradual reduction of the pressure in a closed vessel is effected by means of the flow of an interrupted



Exhausting Air-pump—double-acting.

communication the receiver and the end of the piston chamber which is being evacuated by the piston. During the return stroke this air is pushed out into the open air through an outward opening valve, while the valve through which the air from the receiver previously passed closes. Thus at every half-stroke the receiver loses a definite fraction of the air contained within it, the fraction being the proportion of the volume of the piston chamber to the combined volume of

stream of mercury down a vertical tube whose upper part is in communication with the interior of the vessel. The air gets entrapped between the successive drops of mercury which constitute the interrupted stream, is carried down the tube, and expelled at the lower end. With pumps of this type it is possible to reduce the pressure to 4-millionths of a millimetre of mercury—*i.e.* less than 100-millionths of an atmosphere. This form of pump is greatly used in the manufacture of the vacuum tubes for the production of the Röntgen rays, now so serviceable in surgery, and of incandescent electric lamps.

Air or vacuum pumps are used in connection with surface condensers to remove the condensed steam and the air carried in with the steam or entering by leakage. An improved style of wet vacuum pump for handling both air and water where the highest vacuum is desired, as in connection with steam turbines, is here briefly described. This pump contains only one set of valves—*viz.* stationary discharge valves at the head of the pump barrel. When the plunger reaches the bottom of the stroke, it uncovers ports through which the air in the condenser flows freely into the vacuum which has been created by the descent of the plunger. The advantage claimed for the absence of suction valves is that the entrance of air, which has a very feeble tension at high vacuums, is not impeded. While air and vapours are flowing into the pump barrel, any water which has accumulated in the bottom of the pump is splashed out by a conical plunger, and by suitably-shaped passages directed in through the open ports, tending by inspirator action to compress and drive in more air. The rising plunger then closes off the ports and compresses the charge of air and vapour until the latter

have a pressure sufficient to lift the discharge valves at the top of the pump barrel and escape to the atmosphere. As the air lies on top of the water and is discharged ahead of it, no air is left within the pump barrel, which is an advantage, as such water would re-expand during the ensuing downward stroke and thereby diminish the effective capacity of the pump to take in a new charge of water and vapour from the condenser. With pumps of this type it has been found possible, under full load conditions, to maintain a pressure within the condenser of less than one inch of mercury—*i.e.* a vacuum of 29 inches mercury with the barometer at 30 inches.

In condenser practice it is sometimes desired to withdraw the air and water separately, in which case recourse is had to what is known as a rotative dry vacuum pump, or dry-air pump. This is, in effect, an air compressor working through a range of pressure from 1 to 2 inches of mercury up to atmospheric pressure, instead of from atmospheric to higher pressures, as in air-compressor practice in general. The rotative dry vacuum pump is distinguished from the air compressor by more careful design for the valves and passages, to ensure that the rarefied air and vapours may freely enter the cylinder at the beginning of the stroke, and that they will be expelled completely at the end of the stroke. In the dry-air pump this is accomplished by a special combination of mechanically operated and poppet valves. Communication between the condenser and the pump barrel during the suction stroke is established by a mechanically operated valve driven from an eccentric on the crank shaft at the completion of the stroke. The same valve serves to place the cylinder in communication with poppet

valves, which do not open to the atmosphere until the pressure within the cylinder has reached atmospheric pressure. At the end of the stroke the clearance space within the cylinder, and the passages connected therewith, contain air and vapours at atmospheric pressure. If these were allowed to remain, they would re-expand during the succeeding suction stroke, and to a certain extent would reduce the capacity of the cylinder to take in a new charge of air from the condenser. In order to get rid of this compressed air in the clearance space, a special port has been provided in the mechanical valve, which places the clearance space of what has just been the discharge side, for a brief moment, in communication with the other end of the cylinder, which contains only an uncompressed charge. The remnant of the compressed charge in the clearance space then flows through the valve and mingles with the charge which is to be compressed, until an equality of pressure is reached. As it is unavoidable that small quantities of water should be drawn in with the air in pumps of this character, the valves are placed at the bottom of the cylinder in order to secure perfect drainage.

Both types of air pumps above described are widely used for other purposes than condensing steam-engines or turbines—for instance, for withdrawing vapours and gases from evaporating pans and stills operated below atmospheric pressure, in certain processes of creosoting, or otherwise treating wood in which air is poured out of the pores of the wood to permit more easily the entrance of the preserving liquid, in connection with certain processes of dyeing where it is found advantageous to secure more perfect evaporation by means of a vacuum; similarly, in certain methods of curing tobacco, etc.

Air - sacs are thin-walled chambers communicating with the lungs in birds. They not only occur within the body cavity, but are usually continued into the cavities of the bones, rendering these *pneumatic*. The presence of these air-sacs lowers the specific gravity of the body; but their main function is undoubtedly respiratory, and the superficial ones also assist in regulating the body temperature. In the chameleon, among reptiles, the lungs develop prolongations which seem to foreshadow the air-sacs of birds.

Air-ship. See BALLOON; AEROPLANES.

Air-space, the number of cubic feet of air in any apartment or building. It is held that every healthy adult should be allowed 800 cub. ft. of air-space. See VENTILATION. For air-spaces in plants, see STOMATA.

Air-valve. Air is apt to collect at the tops of undulations in water-pipe lines, thus impeding the flow of water, and air-valves are introduced at these points to expel it. A simple type consists of a cast-iron box bolted to the upper surface of the main pipe. At the top of the box there is an opening for the escape of the air from within. A float is attached to a spindle, which is guided so that it can only rise and fall. When the pipe is empty, the float is down; when the pipe has filled, the float closes the valve.

Air-vessel. In single-acting pumps, in which motion is only given during the forward stroke, the column of water in the rising main comes to rest during the back stroke. This necessitates a great expenditure of energy in starting the column of water from rest at every stroke. To obviate this an air-vessel is used. It consists of a strong cylindrical air-tight iron box, bolted just beyond the pump to the main, and communicating freely with it. The vessel is full

of air, which is compressed at each forward stroke, thus storing energy. This is given up during the back stroke, thus forcing the water on, and giving a more uniform delivery. The air also acts as an air-cushion, relieving the pipes from shocks which might otherwise fracture them. The air is absorbed by the water in time, so that a fresh supply has to be introduced. A stand-pipe is sometimes used instead of an air-vessel.

Air-way, a passage for ventilation in a mine. Malicious tampering with an air-way is regarded as felony.

Airy, SIR GEORGE BIDDELL (1801-92), astronomer-royal, was born at Alnwick. He graduated as senior wrangler and first Smith's prizeman of Trinity College, Cambridge, in 1823; was nominated Lucasian professor of mathematics in 1826, and astronomer-royal June 18, 1835. His administration at Greenwich extended over forty-six strenuous years. The magnetic department was created by him in 1838, the spectroscopic department in 1868; he initiated the electrical registration of transits, and the photographic record of sun spots. The solar eclipses of 1842, 1851, and 1860 were observed by him in Italy, Sweden, and Spain respectively; and he organized the transit of Venus expeditions in 1854. See his *Autobiography* (1896).

Aisle, the lateral subdivision of a church parallel to the choir, nave, or transept, from which it is divided by a row of columns or wall-piers. In Gothic architecture the breadth of the church is divided into three or five parts by two or four rows of pillars. The middle division is called the nave, the others the side aisles. The word is often misapplied to any passage in a church between rows of pews.

Aislé, in heraldry, used when the wings are blazoned of a different tincture from the animal.

Aismunderby, a township in the West Riding of Yorkshire, England, adjoining Ripon, in which borough the urban part is included.

Aisne. (1.) Department, N. France, forming for a few miles the French frontier towards Belgium. It is crossed in a s.w. direction by the Oise R. (having its source in Belgium), by the Aisne towards its middle in a w. direction, and by the Marne in the s. The department is fertile, two-thirds being under crops. Wheat, and beetroot for sugar, are the staple crops; but flax, hemp, and hops are extensively cultivated. Market gardening is carried on along the railway line; and the industries, more chemical than metallurgic, are clustered in a few centres. Cap. Laon. Area, 2,868 sq. m. Pop. 535,000. (2.) River (anc. *Axona*), N. France, 175 m. long; rises in Meuse dep.; passes through Vouziers and Soissons, and joins the Oise near Compiègne. It is connected by canals with all the other important rivers of the region.

Aïssé, MADEMOISELLE (1694-1733), daughter of a Circassian chief; carried off in early childhood by the Turks, and sold in the slave market at Constantinople to the Count de Ferriol, French ambassador (1698). Brought by him to France and educated, she became famous for her extraordinary beauty and accomplishments, as well as for her virtuous life amid the profligacies of the court during the regency. Her letters to Mme. de Calandrini and Chevalier d'Aydie were published with Voltaire's notes (1787); best edition that of Sainte-Beuve in 1846. See Courteault's *Une Idylle au XVIII. Siècle* (1900).

Aistulf, or ASTOLF (d. 756), king of the Lombards, took pos-

session of Ravenna (752) and threatened Rome, where Stephen III. occupied the papal throne. By the armed intervention, in 755, of Pepin, king of the Franks, he was, however, forced to abandon his threatening attitude and make amends to the Pope. Nevertheless in the following year Aistulf laid siege to Rome, but was attacked by Pepin, who compelled him to retire, and to surrender Ravenna.

Aitchison, SIR CHARLES UMPHERSTON (1832-96), Indian administrator, born in Edinburgh; joined the Indian Civil Service in 1855. From 1859-65 he served as under-secretary in the political department of the government of India, and as foreign secretary from 1868-78. He was chief commissioner of British Burma from 1878-81, lieutenant-governor of the Punjab from 1882-7. He published *A Collection of Treaties, Engagements, and Sanads (patents of appointment) relating to India and the Neighbouring Countries* (11 vols. 1862-92); *The Native States of India* (1875); *Lord Lawrence in Rulers of India Series* (1892).

Aivalik, AIWALIK, or KYDONIA (anc. *Heracleia*), seapt. tn., Asia Minor, 66 m. N.N.W. of Smyrna, on Gulf of Edremid. Formerly a place of considerable trade, it was burnt by the Turks in 1821, but has since revived. It exports oil, soap, skins, flour, etc., to the annual value of over £230,000. Pop. 25,000.

Aivazovski, IVAN KONSTANTINOVITCH (1817-1900), Russian marine painter, studied at the St. Petersburg Academy of Art. His works include *Sunrise on the Black Sea*, *Wreck of the Frigate Ingermannland*, *Naples by Moonlight*, *View of Constantinople*.

Aix, small isl. opposite mouth of the Charente, dep. Charente-Inférieure, France; forms the outer defence for Rochefort. In the roads naval battles took place

between English and French in 1806 and 1809. Here Napoleon surrendered to the British on board the *Bellerophon* on July 15, 1815.

Aix (AIX-EN-PROVENCE; anc. *Aquæ Sextia*), tn., Bouches-du-Rhône, France, the former cap. of Provence, 17 m. N. of Marseilles, on the ry. to Lyons by Grenoble. The town has grown up round a hot sulphur spring known before the Roman invasion. It is the seat of an archbishop (cathedral of the 12th century), and has a university and a technical college. The Facultés d'Aix were two celebrated schools which were organized in 1409 as the university, one of the famous seats of learning in the middle ages. It is now incorporated with that of Marseilles (*L'Université d'Aix-Marseille*), and consists of faculties of law and letters (with an honorary professor 'of the ancient faculty of Catholic theology of Aix'), and faculties of science and medicine at Marseilles. Aix is a centre for the trade in olive oil, wine, corn, cotton-spinning. Pop. 30,000.

Aix-la-Chapelle. See AACHEN.

Aix-les-Bains (anc. *Aquæ Gratiana*), tn., dep. Savoie, France, 1 m. from the E. shore of Lac du Bourget, stn. on the main line from Paris to Turin (360 m.), 9 m. N. of Chambéry. Though surrounded by high mountains, Aix enjoys a very temperate climate, and is a popular health resort. There are copious warm springs (103° and 107° F.), charged with alum and sulphur, used especially in douches and baths. Pop. 8,700. See Wakefield's *Baths of Aix-les-Bains* (1886), and Brachet's *Aix-les-Bains* (1891).

Ajaccio (anc. *Adjacium*), cap. of Corsica, on the W. coast, at the N.E. extremity of a deep gulf bearing the same name, and the terminus of a railway crossing the island. Ajaccio is a healthy winter resort, and has a good

harbour. Trade in corn, wines, leather, wood, sardines, anchovies, corals, cigars, and shipbuilding. It has been the seat of a bishop since the 7th century. It was the birthplace of Napoleon Bonaparte; the 'Casa Bonaparte' is now national property. Pop. 22,300. See Joanne's *Ajaccio and its Environs* (1899).

Ajaigarh, native state, Bundelkhand, Central India, 105 m. s.w. of Allahabad. The fortress (9th century) is on a granite rock 1,744 ft. high. Pop. 93,000.

Ajalon, or AIJALON, now YALO, a town in the territory of Dan, near which Joshua won a great victory over five Canaanite kings, the sun and the moon being described (Josh. 10) as standing still (Heb. 'were silent') till the rout was complete.

Ajax. (1.) Son of Telamon, one of the leading Greek heroes in the Trojan war. After the death of Achilles, and the award of his armour to Odysseus, he committed suicide. From his blood, according to the legend, sprang up a purple flower bearing the letters α—his initials, and the expression of a sigh—on its leaves. (See Homer, *Iliad*; Sophocles, *Ajax*; and Ovid, *Metam.*, xiii.) (2.) Son of Oileus, one of the lesser Greek heroes before Troy.

Ajmere, or AJMIR, prov., Rajputana, India; also ancient city, cap. of the prov., 220 m. s.w. of Delhi, on the lower slopes of Taragarh Hill. It contains the Daulat Bagh (or Garden of Splendour), a fine mosque (originally a Jain temple), and, above all, the *dargah* or tomb of the Mohammedan saint Kwaja (13th century), which is a venerated place of pilgrimage. There are two colleges—Ajmere College, affiliated to Calcutta University, and Mayo Rajkumar College (1875), for the education of noble Rajputs. There is considerable trade in cotton. Pop. 76,000.

The lofty district of Ajmere-Merwara, to the s., was conquered in 1820. Pop. 480,000 (80 per cent. Hindus).

Ajodhya, city, near Faizabad, Oudh, India, on r. bk. of the Gogra, and 77 m. E. of Lucknow. The old city, now in ruins, was the former capital of the kingdom of Kosala, the modern Oudh. Its glories are portrayed in the *Ramayana*. The city is small (about 12,000), but its Jain temples attract about 500,000 pilgrims at the annual fair.

Ajowan, the Indian name for the fruit of a plant of the same genus as caraway, used as spice. The antiseptic thymol is extracted from it.

Ajuruoca, tn., Minas Geraes, Brazil, 117 m. N.E. of Rio de Janeiro. In the neighbourhood pigs are reared for the Rio de Janeiro market, and tobacco, manioc, sugar-cane, millet, and coffee are cultivated. Pop. 12,000.

Akabah, the E. arm at the head of the Red Sea; also a town there, near the Elath of Scripture (Deut. 2:8). It was in this neighbourhood that the Turks encroached (1906) without provocation upon Egyptian territory, and only withdrew under threat of an ultimatum from Britain.

Akashi, tn., prov. Harima, s. of Hondo I., Japan, 12 m. S.W. of Kobe; a seaside resort on N.E. corner of Inland Sea. It is the Greenwich of Japan, as Japanese time is regulated from it. Pop. 21,000.

Akassa, depôt, S. Nigeria, at mouth of the Nun entrance to the R. Niger; has large government engineering and repairing shops.

Akbar, JELLAL-UD-DIN MOHAMMED (1542-1605), greatest of the Mogul emperors. His father, Humayun, died when Akbar was fourteen years old; and he remained for four years under the tutelage of Bairam Khan, a Turcoman general, who in 1556, by the

victory of Paniput, secured for him the provinces of Delhi and Agra. He dismissed Bairam in 1560, and at the age of eighteen commenced his conquest of Hindustan. His empire, at its greatest, extended from Kashmir in the N. to Ahmedabad in the S., and from Kabul in the W. to Dacca in the E. The peculiar glory of Akbar's reign was his daring change of policy from fanatical Mohammedanism to universal toleration. He modified freely principles and practices which had the sanction of the Koran. He promoted capable men of any creed to high office in his court and army; he prohibited slavery and the sale of the wives, children, and dependants of the conquered; he abolished the *jazuja*, or poll-tax on infidels, and the pilgrimage-tax on Hindus; he prohibited early marriages, and he permitted Hindu widows to refuse to perform suttee, and to remarry. Having publicly consulted Mohammedans, Hindus, Parsees, Jews, and Christians, he drew up a new faith on eclectic principles, and substituted for the well-known 'kalma' another formula — *viz.* 'There is one God, and Akbar is His Kha-lifa.' The principal authorities for his reign are the *Ain-i-Akbari* and *Akbar Namah* of Abul Fazl, and the *Tabakat-i-Akbari* of Nizam-ud-din-Ahmed. See *Life* by Malleson in *Rulers of India Series*. See INDIA.

Akee Fruit, the produce of one of the trees of the Soapberry family (Sapindaceæ). A native of W. Africa, it was introduced into the W. Indies. The red fruit is 3 in. long, and contains three black seeds, with a pale pulpy aril which is cooked and eaten.

A Kempis, THOMAS. See KEMPIS.

Aken, or ACKEN, tn., Prussian Saxony, on the Elbe, 25 m. S.E. of Magdeburg; has engineering and shipbuilding yards. Pop. 9,000.

Akenside, MARK (1721-70), physician and poet, the son of a butcher of Newcastle. At seventeen he began his chief work, *The Pleasures of Imagination* (1744). Obtaining the degree of Doctor of Physic at Leyden, he practised at Northampton, where he published his *Epistle to Curio* (1744), a tirade on the party desertion of William Pulteney. At the end of 1745 (during which year he published ten odes on various subjects) Akenside started practice in London; but his arrogance repelled his patients, and he provoked Smollett to satirize him in *Peregrine Pickle*. His *Hymn to the Naiads*, published in 1746, was his last important piece. Akenside's works display much fine writing and pompous rhetoric, but little originality. They were first collected by Dyson (1 vol. 4to, 1772); best edition that of Dyce (1834), whose excellent *Life* is also prefixed to the Aldine edition (1886) of the poems. See also Bucke's *Life of Akenside* (1832); Beers's *Hist. of Eng. Romanticism in the 18th Cent.* (1899).

Akerman. See AKKERMANN.

Akers-Douglas, RT. HON. ARETAS (1851), English politician; was called to the bar at the Inner Temple in 1874; represented E. Kent div. (1880-5) and St. Augustine's div. (since 1880) in Parliament; was parliamentary secretary to the Treasury (1885-92); Conservative whip (1883-95); First Commissioner of Works (1895-1902); Privy Councillor (1891); Home Secretary (1902-6).

Akershus, a fortress in county of same name, Norway, at the head of the Christiania fjord, on a peninsula S. of Christiania. It was originally built in the 13th century, rebuilt by Christian IV. of Denmark, and down to 1740 was a residence of the Danish kings. The county has an area of 2,075 sq. m., and a pop. of 115,000.

Akhal, populous oasis of Transcaspia (often called Akhal-Tekke,

from its Tekke Turcoman inhabitants), near the Atek oasis, at the foot of the Kopet Dagh, between the towns of Kizil Arvat and Luxtabad. Length (with Atek) over 30 m.; average breadth about 1½ m.

Akhaltsikh, tn., gov. Tiflis, Transcaucasia, on the Potskhofchai, near the Kura, 3,300 ft. above sea-level, and 100 m. w. of Tiflis. Manufactures the silver ornaments sold at Tiflis. Pop. 16,000.

Ak-Hissar (anc. *Thyatira*), tn., Asia Minor, 50 m. N.E. of Smyrna; has marble quarries and cotton factories. Pop. 12,000.

Akhlat, or **KHELAT**, tn., Asiatic Turkey, on the shore of Lake Van; once the capital of the Armenian kings, now the see of an Armenian bishop. Pop. 5,000.

Akhmim, or **EKHMIM** (anc. *Khmin*; Gr. *Panopolis*), tn. of Upper Egypt, on r. bk. of Nile, 85 m. S.S.E. of Assiut; famous now, as it was anciently, for cotton textiles. Pop. 20,000.

Akhnaton, Pharaoh of Egypt in the 14th century before Christ, was, according to Professor Breasted, the 'first individual in human history.' He overthrew the old state religion of Egypt, and introduced an idealistic theology. Instead of the crude anthropomorphism of the earlier Egyptian cult, he founded the worship of the Atar, or the 'effulgence of the sun,' which possessed all the qualities which an antiquated theology attributes to God. The god of Akhnaton had not only sublimity and omnipotence, but a kind of human tenderness which cannot be paralleled till the advent of Christianity. The city of Atar, founded by Akhnaton, was first made known to the world by Professor Petrie's excavations at Tell-el-Amarna (1891-92), and three years ago the mummy of a Pharaoh was discovered at Thebes. Some scholars have assumed a connection, not very patent, between Atar and the Syrian cult of Adon

or Adonis. See Weigall's *Life and Times of Akhnaton* (1910).

Akhtirka, tn., gov. Kharkov, Russia, 70 m. N.W. of Kharkov; founded by the Poles (1641). A famous image of the Holy Virgin draws many pilgrims. Pop. 24,000.

Akiba, **BEN JOSEPH**, a Jewish rabbi of the 2nd century; born in Syria; principal teacher in a school at Jaffa. Akiba was executed by the Romans in 135 A.D. for his participation in the revolt of the false Messiah Bar-Cochba. He is believed to have written the *Mishna of Rabbi Eliezer*.

Akita (*Kubota*), rice-exporting seapt., Hondo, Japan. Spun silk, cloth, and white *chijimi* are extensively made. Pop. 30,000.

Akka. See **ACRE**.

Akka (called *Tikki-Tikki* by their Niam-Niam neighbours), a dwarf people of Equatorial Africa, discovered by Schweinfurth in 1869. They inhabit the region between 1° and 2° N. lat., among the N. affluents of the R. Welle. Height, 4 to 5 ft.; complexion brown; head disproportionately large, and very prognathous; facial angle, 60°-66°; mouth large; woolly hair; hirsute, pot-bellied body. They live in amity with the surrounding tall races, for whom they act as hunters. See **DWARFS**; also Schweinfurth's *Heart of Africa* (1873); Stanley's *In Darkest Africa*.

Akkad, or **ACCAD**, one of the chief cities of the land of Shinar (Gen. 10:10). See **BABYLONIA**.

Akerman, **AKERMAN**, or **AKYERMAN** ('white water'), chief tn., Bessarabia, Russia, on w. side of the coastal lake where the Dniester joins the Black Sea, about 30 m. S.W. of Odessa. Fruit culture, fishing, and carrying trade are the chief occupations. Treaty of 1826 signed here between Russia and Turkey. Pop. 30,000.

Akmolinsk (*Akmolinskaya Oblast*). (1.) A prov., Siberia, slightly larger than France, of the general

government of the Steppes, E. of the Sea of Aral. Area, 229,609 sq. m. Pop. about 800,000. Only 140,000 of these are Kirghiz and other Asiatics, mostly shepherds and nomads; the rest, almost all agriculturists, are Russians. Chief town Omsk. Corn and millet are grown in the N.; copper, gold, and other minerals are plentiful; hides, horn, and salt are important products. (2.) Town of above, 280 m. s.w. of Omsk, on the Ishim. Founded in 1862, it is now an important market, the meeting-place of the caravans passing between Siberia, Tashkend, and Bokhara. Pop. 10,000.

Akola, munic. tn., Berar dist., India, on the river Morna, 53 m. s.w. of Amraoti. Assigned to the British government by the Nizam; now the headquarters of the British commissionership of W. Berar. Pop. 30,000. Pop. of the dist. Akola (1901) 600,000.

Akot, tn., India, in Berar, 60 m. E.S.E. of Burhanpur. Has large cotton trade. Pop. 18,000.

Akreyri, seapt., N. coast of Iceland, at the head of the Eyjafjord. It is the seat of the government of the Northern Company, and in trade ranks next to Reykjavik. Pop. 1,800.

Akron, city, Ohio, U.S.A., the co. seat of Summit co., on the Ohio Canal, 30 m. s. by E. of Cleveland. Manufactures flour and woollen goods. Site of Buchtel College. Pop. 70,000.

Aksakov, IVAN SERGEIEVITCH (1823-86), Russian poet and publicist, son of Sergei Timofeievitch; born at Moscow; was editor of several Panslavist journals, including the *Den* (*The Day*; 1861-5), the *Moskva* (1867-8), and the *Moskvich*. His works were collected and published by his wife.

Aksakov, KONSTANTIN SERGEIEVITCH (1817-60), Russian author and poet, brother of Ivan. His works were collected and

published in 5 vols.: Historical Works, vols. i.-iii., and Philological Works, vols. iv., v. (1861-80).

Aksakov, SERGEI TIMOFEIEVITCH (1791-1859), born at Ufa; occupied many official appointments until 1839, when he devoted himself to literature. His principal works are, *Family History and Recollections* (1856), a masterpiece of Russian literature; *Memoirs of a Hunter* (1855); *Winter Morning*; *Natasha*.

Akshehr, or AK-SHEHER, city, dist. Karamania, Asiatic Turkey, 70 m. N.W. of Konieh; has carpet manufactures. Pop. 15,000.

Ak-su ('white water'), lat. 41° 9' N., long. 79° 13' E., a very ancient city of E. Turkestan, formerly called Arpadil or Ardabil, on the l. bk. of the Aksu Daria, a confluent of the Tarim R.; alt 3,500 ft. Manufactures tobacco, saddlery, pottery, etc., and is the centre of a large caravan trade. Pop. about 20,000.

Akyab, seapt. and dist. in Arakan div., Burma, about 190 m. S.E. of Calcutta. Exports rice. Pop. 32,000. The district has an area of 5,136 sq. m. Pop. 480,000.

Al, or EL (*cf.* Heb. *hal*), the Arabic definite article. Before words beginning with dentals, sibilants, and liquids, the *l* is assimilated to the following consonant: thus, Abd-al-Rahman becomes Abd-ar-Rah-man. After a word ending with a vowel the *a* is elided, as in Abu'l-Islam, and the following words when in the nominative case, ending *u*: Abdu'l-Kadir, Abdu'r-Rahman, Harunu'r-Rashid. In adjectival phrases it is used with both noun and adjective—al-Khalafa'u-'l-Rashidun, 'the Orthodox Caliphs;' but in compound phrases only with the second noun—Amiru'l-Mu'minin, 'the Commander of the Faithful.' It is seen as a first syllable in many English words derived from Arabic—alcohol, etc.

Alabama, THE, a celebrated Confederate cruiser during the American civil war. She was originally known as 'No. 290,' her number in the yard of the builders, Messrs. Laird of Birkenhead, and was a wooden, barquentine-rigged screw steamer of 1,040 tons, with a speed under steam of about eleven knots. On July 29, 1862, the vessel, under pretext of making a trial trip, slipped out to sea. She made for the Azores, where she was met by two other vessels which brought her armament; and having been thus armed, she was, on August 24, commissioned by Capt. Semmes, of the Confederate navy, as the *Alabama*. She at once began to cruise in the neighbourhood of the Azores, and by September 14 had captured ten ships belonging to the Northern States, all of which, as Semmes had no port to take his prizes to, were destroyed. After making several other captures between the Banks of Newfoundland and Martinique, the *Alabama* next proceeded to Galveston, then blockaded by Federal vessels, one of which (the *Hatteras*) she succeeded in drawing off and destroying. Thereafter she sailed for Cape San Roque, where she captured many valuable prizes. The Federal government now took more adequate measures for hunting her down, and Semmes made for Cape Town, coaled there, and went on to the Strait of Sunda. Here he took several prizes; but being hampered by the presence of the Federal vessel *Wyoming*, he sailed for the Cape in the end of 1863, and finally arrived at Cherbourg in June 1864. The United States warship *Kearsarge*, Captain Winslow, which was off Flushing, promptly set off for Cherbourg; and after a challenge, the *Alabama*, on Sunday, June 19, steamed out to engage her. After a close engagement lasting about an hour, Semmes

found the *Alabama* sinking, and struck his flag. During her short existence, the *Alabama* captured one steamer and no less than sixty-seven sailing vessels. The direct loss was great, but greater still was the indirect injury; for the *Alabama* and several other commerce - destroyers paralyzed the American shipping trade, and caused the transfer of 348 ships, aggregating more than 250,000 tons, in one year alone, to the British flag. For the damage done by the *Alabama* and several other cruisers, claims were made by the United States against the British government for breach of neutrality, on the ground that they had 'failed to use due diligence,' and that after the escape of the vessel the measures taken for pursuit and arrest led to no result, and that on several occasions the *Alabama* had been freely admitted into the ports of Great Britain's colonies. Under the treaty of Washington, 1871, the *Alabama* claims were submitted to an international tribunal which sat at Geneva in 1872. The arbitrators rejected the claims for indirect damage, but upheld the claims for the damage done by the *Alabama*, as well as some of the claims in respect of the *Florida* and the *Shenandoah*, and awarded an indemnity of £3,229,166. The character of the award has met with general but by no means universal approval. It has been contended that there was no breach of what at the time was recognized to be the duty of neutrals, and that *ex post facto* rules laid down in the treaty were applied retrospectively.

See Semmes's *Service Afloat* (1887); Haywood's *The Cruise of the 'Alabama'* (1886); Admiral Porter's *Naval History of the Civil War* (1887); Scharf's *History of the Confederate States Navy* (1894); Phillimore's *International Law* (1873); Calvo's *Le*

Droit International (1888); Elliott's *Life of Admiral Winslow* (1902); *Political History of England*, xii. 11-12 (1907); and *Cambridge Modern History*, xi. (1909).

The name *Alabama* is also borne by a United States first-class battleship of 11,565 tons and 16 knots, built in 1898.

Alabama (recognized abbreviation, Ala.), a southern state, U.S.A., bordering on the Gulf of Mexico; organized as a territory in 1817; admitted as a state in 1819. It has a length of about 336 m. from N. to S., and an average width of 175 m. Total area, 52,250 sq. m., including 710 sq. m. of water. The surface of the N.E. part consists of the S. portion of the Cumberland plateau, which here appears as more or less detached table-lands, with an elevation of approximately 2,000 ft., cut deeply and broadly by stream valleys. The remainder of the state is a plain, more or less rolling, and sloping gently southward. The N. part is drained by the Tennessee R., which flows across it from the N.E. to the N.W. corner. Mobile R., with its branches the Alabama and Tombigbee, drains nearly all the remainder of its area. The principal crop is cotton; the next in importance is Indian corn. The principal industry is the manufacture of iron and steel products, in a district of which Birmingham is the centre. The mineral products consist mainly of coal and iron, which are to a large extent mined in close juxtaposition, making Alabama iron among the cheapest in the world. The lumber industry is a large and growing one. Nearly all the area of the state was originally covered with forest, and is still so in great measure, except as it has been removed for cultivation. The principal growth is yellow pine timber. The state is not yet well supplied with means of transpor-

tation. In 1908 there were in operation 6,068 m. of railway. The population in 1900 was 1,828,697, the rate of increase during the preceding decade being 20.9 per cent., and the average number of inhabitants to a square mile 35; pop. (1910), 2,138,093. The chief cities are Mobile, its seaport, with a population of 45,000; Birmingham, with 50,000; and Montgomery, the capital, with 42,000. The district was visited and named by De Soto in 1540, and was first settled by the French in the 17th century. In 1763 Alabama was ceded by France to Great Britain, and after the revolution it passed to the U.S.A. See Saunders's *Early Settlers of Alabama* (1899); Ball's *Alabama* (1882); and Hillyard's *The New South* (1887).

Alabama River flows through the states of Alabama and Georgia, U.S.A. It rises in the N. part of the latter state in two main branches, Coosa and Tallapoosa, which join about 10 m. N. of Montgomery, Alabama. Its general course is W., then S.W. to its junction with the Tombigbee, to form the Mobile. It is 320 m. long, and is navigable for vessels of six feet draught as far as Claiborne, 60 m. above its junction with the Tombigbee.

Alabaster is usually understood to be a massive form of gypsum, hydrated calcium sulphate, $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$; though the variety known as 'oriental alabaster' is a carbonate of lime (calcite) which has been deposited in caves as stalagmite. The white alabaster of Florence is composed of sulphate of lime; and this variety is also found in Derbyshire, but inferior in purity to the Florentine. Alabaster columns, statues, and smaller objects occur among Egyptian and Roman relics. See SELENITE.

Alacoque, MARGUERITE MARIE (1647-90), a nun and religious en-

thusiast; born at Lauthecour, France. She was the founder of the devotion of the Sacred Heart, and wrote several works on religious subjects. See *Lives* by Barry (1889), Tickell (1890), and Bougaud (1900).

Aladdin, a name chiefly associated with the well-known tale of the Wonderful Lamp, signifies literally, 'Glory of the Faith' (*Ala al-Din*). This name is borne by another hero of the *Arabian Nights*; and also by the 'Old Man of the Mountain,' king of the Assassins, and an Osmanli prince, son of the great Osman.

Alaghöz, ALAGOZ, or ALI-GHEZ, mts., Transcaucasia, in N. of dist. of Erivan; direction, w. to E. Alaghöz (13,436 ft.), the highest point, is an extinct volcano.

Alagoas, a state of Brazil, on the Atlantic coast, between Pernambuco and Sergipe. The interior is mountainous, and contains iron and other minerals. The woods yield Brazil wood, copaiva balsam, and timber; and in the low coast zone cotton, sugar, and tobacco are grown, which furnish the material for a few factories. Railways run to Pernambuco, and from Piranhas to Jatoba, past the Paulo Affonso Fall on the San Francisco. The capital and chief port is Maceio. Hides, cotton, and sugar are the chief exports. Area, 22,580 sq. m. Pop. 700,000.

Alagoinhas, tn., state of Bahia, Brazil, 65 m. N. of Bahia city. Pop. 10,000.

Alagoz. See ALAGHÖZ.

Alai Mountains (*Alai Tagh*), the s.w. branch of the Tian-Shan, in 40° N. lat. The range has two parallel lines, Alai proper and Trans-Alai, on the N. and S. sides of the Alai River (trib. of the Vaksh, a main branch of the Upper Oxus or Amu Daria). They stretch for about 250 m. along the N. edge of the Pamir, average 15,000 to 18,000 ft. in the

E., and contain Peak Kaufmann, 25,000 ft.

Alais (anc. *Alestum*), tn., dep. Gard, France, on the l. bk. of Gardon d'Alais, where it issues from the Cevennes into the plain, 24 m. N.N.W. of Nîmes. Very important centre for silk trade. It gives its name to a coal-basin, including Bessèges and La Grande Combe, producing yearly between two and three million tons of coal. Glass, bricks, tiles, cloth are manufactured. A treaty was concluded here in 1629, which ended the Huguenot wars in France. Pop. 27,500.

Alajuela, chief tn. of prov. of same name, 11 m. N.W. of San José, Costa Rica, Central America; has a large trade in sugar-cane. Pop.: tn. 10,000; prov. 60,000.

Ala-kul, the 'variegated lake' of the Kirghiz, lies 120 m. E. of Lake Balkhash, in the prov. of Semirychensk, at the height of 790 ft. above sea-level. Its length from N. to S. is 50 m., its mean breadth 23 m.

Alaman, LUCAS (1775 - 1855), Mexican statesman and historian, author of *Disertaciones sobre la Historia Mejicana* (1844-9) and *Historia de Mejico* (1849-52), both works of high authority; represented the colony in the Spanish Cortes until 1823, when he returned to Mexico, and became successively secretary of the interior and foreign minister.

Alamanni, LUIGI (1495-1556), Italian poet; born at Florence, died at Amboise. Detected in a conspiracy against Cardinal Giuliano, he escaped to Venice, and thence to France (1522), where he enjoyed the favour of Francis I., and later of Henry II., by both of whom he was sent on important embassies. His life thereafter was spent in France, where most of his poems were written. His works were various: *La Coltivazione* (1546), a didactic poem on agriculture (his principal work, and one

of the best of its kind in Italian literature); *Girone il Cortese* (1548), an epic; *L'Avarchide* (1570); collections of shorter poems, *Opere Toscane* (1532) and *Epigrammi Toscani* (1570); *Flora*, a drama; etc. See *Life* by Raffaelli (1859).

Alameda, city and summer resort, co. Alameda, California, U.S.A., on San Francisco Bay. It manufactures borax, and has shipyards, oil refineries, and potteries. Pop. 17,000.

Alamos ('poplar trees'), gold and silver mining tn., Sonora, Mexico, N. of the N. end of Sierra de Alamos. Pop. 9,000.

Aland Islands (300, of which 80 are inhabited), at mouth of Gulf of Bothnia, Finland, Russia; Swedish until 1809; majority of the 18,000 inhabitants are Swedes.

Alans, a Sarmatian people who inhabited the steppes N. of the Caucasus Mts. and the Black Sea during the first three centuries of the Christian era. A large section of them were subdued and incorporated by the Huns in 370. Subsequently they settled in Pannonia, Lusitania (411), and Africa (429).

Alanus ab Insulis. See L'ISLE, ALAIN DE.

Alaotra, the largest lake in Madagascar, about 125 m. N.E. of Antananarivo. Now about 25 m. long, and still shrinking, it formerly ran N. and S. for 200 m.

Alapayevsk, tn., Russia, gov. of and 200 m. E. of Perm; has large iron and steel works. Pop. 9,000.

Alarcon, HERNANDO DE, Spanish navigator of the 16th century, sailed from Acapulco in 1540, and disproved the idea that California was an island. He was the first European to explore the Colorado R., the lower course of which, with the Gulf of California, was mapped by a member of the expedition. The map appears in Winsor's *Narrative and Critical Hist. of America* (1886).

Alarcon, PEDRO ANTONIO DE (1833-91), Spanish author, revolu-

tionary soldier, and politician, was a native of Guadix, in the prov. of Granada. In 1859, having previously (1857) published his *El Hijo prodigo*, he followed the Spanish army in Morocco as newspaper correspondent, and chronicled these experiences in his *Diario de un Testigo de la Guerra de Africa* (1860). He was sent to the Cortes by Cadiz in 1864, and in 1868 he fought at the battle of Alcolea. His novels enjoyed great popularity by reason of their national spirit, and light, humorous, yet sincere tone. Among the best are *La Nochebuena del Poeta* (many eds.), *El Escandalo* (1875), *Las Alpujarras*, *El Sombrero de tres Picos* (1874), and *El Niño de la Bola* (1880). His poems are represented by the *Poesias serias y humoristicas* (1870). See his *Obras Escogidas*, with biography (1874). A collected edition of his works was begun in 1899.

Alarcon y Mendoza, JUAN RUIZ DE (1581-1639), Spanish dramatist; born in Mexico, died in Madrid. He was for a time professor at the University of Mexico and a magistrate of the supreme court. He lived in Spain from 1611 until his death, as an officer of the council of the Indies. Alarcon was one of the first modern Spanish playwrights to embody types in his characters, and to make each of his plays convey a moral lesson. His most famous comedy, *La Verdad Sospechosa*, for instance, enforces the folly of lying and hypocrisy. It is to this play that Corneille is indebted, as he acknowledges, for the plot of *Le Menteur*. Twenty of Alarcon's plays still survive, the most notable of which, besides the above, are *El Tejedor de Segovia*, *El Semejante á si mismo*, *Todo es Ventura*, *Las Paredes Oyen*, and *Ganar Amigos*. His style is chaste and elegant. Alarcon's principal plays are included in Moratin's

Teatro Escogido (1838), and in Garcia Ramon's edition of the same (1884).

Alaric I. (c. 375-410), king of the Visigoths or Western Goths, was a scion of the noble family of the Balthings. During his minority the Visigoths were in vassalage to the Romans; but on the death of the Emperor Theodosius in 395, Alaric led the great revolt of the Visigoths, and was elected as their king. He overran Greece, and exacted a heavy ransom from Athens itself. As a result, he was able to conclude a treaty with the emperor of the East (Arcadius), by which he became vicegerent of the greater part of the Balkan Peninsula. His growing power and ambition led him in 400 to invade Italy, the northern provinces remaining in his power for eighteen months, until his defeat at Pollentia by Stilicho. In 409, however, Alaric once more invaded Italy, and this time laid siege to Rome. He spared the city, contenting himself with a heavy ransom; but in the following year, on August 24, 410, the imperial city was entered and plundered. The Empire of the West was now almost within his grasp, when he died suddenly at Cosenza.

Alaric II. (c. 484-507), eighth of the Visigothic kings of Spain, succeeded to the throne in infancy on the death of his father, Evaric or Euric, in 485. At that period the Visigothic kingdom included almost the whole of Spain, together with the greater part of Central and Southern France. Nearly the whole of his French possessions, however, were wrested from him by Clovis, king of the Franks, who inflicted a crushing defeat on the Visigoths at Vouglé, near Poitiers, in 507, when Alaric was slain. Although a zealous Arian, he showed tolerance in religious matters. He enacted several useful statutes, and compiled a code of laws, 'The Breviary of Alaric II.'

Alarm, a British destroyer, launched in 1910. Displacement, 780 tons; speed, 29 knots. The ship-name is associated with Rodney's capture of Martinique (1762), capture of two French corvettes (1762), capture of the *Fenix* and *Thetis* (1762), Havana (1762), and the Nicaragua Expedition (1848).

Alarodian Languages, the group of languages of the Caucasus, of which Georgian is the chief division. The Alarodian group is distinctly inflectional. Sayce is inclined to think that the cuneiform inscriptions of Van represent an extinct form of Alarodian speech. See De Brosset's *Eléments de la Langue Géorgienne* (1837); Sayce's *Introd. to the Science of Language* (1880).

À Lasco, JOHANNES. See LASCO.

Ala-Shan, prov., S. Mongolia, lying between the desert of Gobi (Golbiin-Gobi) to the N., the prov. of Kan-su and the Great Wall to the S., the Hoang-ho and Ala-Shan range, or Khara-Narim (11,000 ft.), to the E. The extreme length is about 800 m., the mean breadth about 480 m.; the pop. is not more than 20,000. It is mostly a vast plain of sand, broken by grassy steppes, chalk downs covered with saline deposits, and low, unstable, sandy hills rising to 80 ft. or so. The population is mostly composed of the Kalmuck stock. Their live stock are mainly goats and yaks. The province was annexed to the empire of China in 1636.

Alashehr (anc. *Philadelphia*), walled city, on Anatolian railway, 74 m. E. of Smyrna, Asia Minor; has many ruined columns and fountains; is seat of a Greek archbishop; considerable trade. Pop. over 22,000.

Alaska consists of the N.W. extremity of N. America W. of 141° W. long., and a strip of coast extending S. to 56° N. lat., together with the adjacent islands. Its

area is about 590,000 sq. m., and its general coast-line measures 4,000 m.; inlets and islands included, the coast is some 26,000 m. long. The coast ranges of British Columbia traverse the s. part of Alaska, pass along the Alaskan peninsula, and appear partially submerged in the Aleutian Is. West of Cross Sound they rise precipitously to great heights, and above 2,500 ft. are covered with snow, which feeds thousands of glaciers. Along a belt of 2,000 m., from Cross Sound to the Aleutian Is., there are ten active volcanoes, and numerous hot springs highly charged with mineral matter. North of this coastal region lies a mountainous region of older rocks, rising to heights of 4,000 to 5,000 ft. Along the shores of Bering Sea and the Arctic Ocean, low, nearly level tundras extend inland for 70 to 100 m. South-eastern Alaska is an archipelago formed by submergence. The forests of this region are remarkably fine and valuable, mostly composed of the Menzies or Sitka spruce and the Marten spruce or hemlock. In the Yukon valley the trees are small, and the white spruce is the only timber of any value. The Yukon R., with its tributaries, drains the centre of Alaska. On the Kowak the subsoil ice, common in Alaska, rises in cliffs 125 to 150 ft. above the water. The seat of government is at Juneau, 120 m. N. by E. of Sitka. The climate presents marked contrasts. The mean temperature at Juneau and Sitka is about 50° F., and the thermometer seldom falls below 0° F. In the interior the thermometer sometimes rises in summer above 90°, but in winter temperatures of 40° and 50° below zero are frequently experienced. Sitka has an annual rainfall of 83 in.; on the s. coast 100 in. fall, and still more in the islands.

The most important product is

gold. At the Treadwell mine in Douglas I., near Juneau, and other workings in the vicinity, although the ore yields only ten to twelve shillings' worth of gold per ton, it is easily worked, and returns large profits. Auriferous veins have also been found at Silverbow basin, 3 m. E. of Juneau, at Sumdum, 5 m. to the s.e., and on Admiralty I. Gold-bearing rocks occur all along the Yukon, from the ramparts w. of Birch Creek, and about 900 m. from the mouth, into Canadian territory; and Circle City, in 65° 40' N. lat., very near the Arctic Circle, was a great mining centre till the discovery of coarse gold on the Klondike drew the miners across the frontier. The gold is alloyed with a small quantity of silver; and native silver, lead, and copper are frequently found. Platinum has also been reported from several localities. Brown coal occurs near the gold-producing district, on the E. shores of Cooks Inlet, on the s. shore of the Alaskan peninsula, in the Alexander archipelago, and elsewhere. Fur seals are taken at their chief breeding-place, the Pribylov Is., and hair seals occur along the entire coast-line. Large quantities of halibut, cod, and herring may be caught off the coast, and salmon and trout abound in all the rivers. In the interior there are still some valuable fur-bearing animals, also moose, caribou, deer, bears, mountain sheep, and wild goats. The traffic in fur has fallen off. A railway runs from Skagway to Whitehorse Rapids, through the White Pass, and is to be continued to Fort Selkirk, on the Pelley R. St. Michael's, Nome, and other ports in the w. are accessible only in July, August, and September. In summer flat-bottomed steamboats ply up and down the Yukon.

The natives belong to two main stocks, known as Eskimo and In-

dian. The Eskimos are divided into the Innuits, dwelling on the N. and W. coasts, and the Aleuts of the Alaskan peninsula and the Aleutian Is. The Indians of the interior are known as Tinneh or Athabaskans, and those of S.E. Alaska as Thlinkets. In 1900 the total population was 63,592, of whom 30,507 were whites and 29,536 natives, more than one-half of the latter being Eskimos. In 1907 the permanent white population was estimated at 31,000.

This part of the world was first sighted by the Russian navigator Bering in 1740, and the Russians began to settle there in 1784. In 1867 Alaska was sold to the United States for £1,440,000. Gold was discovered at Dawson City in 1896-1897, and at Nome in 1898-9. The boundary line between Canada and Alaska, after long controversy, was finally adjusted by a joint commission in November 1903. See Elliott's *Our Arctic Prov.* (1886); Seton-Karr's *Shores and Alps of Alaska* (1889); MacLain's *Alaska and the Klondyke* (1905); Repogle's *Among the Indians of Alaska* (1904); Schafer's *The Pacific Slope and Alaska* (1905); and Greely's *Handbook of Alaska* (1909).

Ala-tau, four mountain ranges in the Russian (Asiatic) province of Semiryechensk. (1.) The Kunghei Ala-tau and (2) the Trans-Ili Ala-tau stretch E. and W. on the N. side of Lake Issyk-kul (alt. 6,000 to 13,000 ft.), while (3) the Terskei Ala-tau lies parallel to them on the S. side of the lake: all three form part of the Tian-Shan system. (4.) The Dzungarian Ala-tau stretches farther to the N. across 80° and 82° E. long. and 45° N. lat., and reaches 11,000 ft.

Alatri, tn., prov. Rome, Italy, 45 m. S.E. of Rome, with remains of Cyclopean walls. Manufacture of tapestry and cloth. Close by is the Carthusian monastery of Trisulti. Pop. 15,000.

Alatyr. (1.) Town of Russia, Simbirsk gov., 85 m. N.W. of Simbirsk. It has large grain trade. Pop. 11,000. (2.) River of E. Russia (Volga basin), rising in the Penza hills, flowing E. across Nijni-Novgorod gov., and falling into the Sura at Alatyr.

Alaux, JEAN, called LE ROMAIN (1786-1864), French painter, studied under Vincent and Guérin, and in 1815 won the Grand Prix de Rome with *Briseïs finding the Body of Patroclus in the Tent of Achilles*.

Alava, prov., N. Spain, one of the three formerly autonomous Basque Provinces; intersected by river Zadorra (trib. of Ebro), traversed by N. of Spain Ry. Area, 1,175 sq. m. Pop. 100,000. Cap. Vitoria.

Alava, MIGUEL RICARDO DE (1771-1843), served first in the navy, then in the army, of Spain. During 1808-11 he fought on the side of the French, then joined the Spanish independents, and served under Wellington, who gave him command of a brigade. Later he was Spanish ambassador in the Netherlands (1819), London (1834), and Paris (1835). In 1822 he was elected president of the Cortes.

Alb, or ALBE, an ecclesiastical garment in use since the 4th century, now commonly worn only in the Roman Catholic Church, but also occasionally in the Anglican and Lutheran Churches. It consists of a tunic of white linen fastened with a girdle.

Alb, ALP, or ALF, in Teutonic and Scandinavian traditional lore, denotes a kind of being believed to have existed contemporaneously with man, although differing from man in some respects. See ELF and DWARFS; also Jacob Grimm's *Teutonic Mythology*.

Alba, tn. and episc. see, prov. Cuneo, Italy, on the Tanaro, 42 m. by rail S.W. of Alessandria; manufactures silk. Its cathedral dates from 1486. Pop. 14,000.

Albacete. (1.) Prov. in s.e. of Spain, formerly part of kingdom of Murcia; traversed by main line ry. from Madrid to Murcia. Area, 5,737 sq. m.; pop. 240,000. (2.) Cap. of prov. of same name, on main line ry. Madrid to Murcia, 80 m. n.w. of Murcia; famous for cutlery; centre of great agricultural district. Pop. 22,000.

Alba Longa, the ancient political and religious cap. of the Latin League, was built on a ridge above Lake Albano, 20 m. e. of Rome. The supposition that Alba Longa stood on the e. side of the lake, near the modern Palazzuolo, was generally accepted from 1624 to 1899; but in the latter year T. Ashby (*Jour. of Philology*, No. 53) advanced good reasons for placing the site of the ancient city on the s. of the lake, near Castel Gandolfo and the ancient Bovillæ.

Alban, St., the first British martyr, was born at Verulamium in the 3rd century. After a journey to Rome in company with Amphibalus, he adopted the Christian religion, and suffered martyrdom in 286 or 303, during the reign of Diocletian. Offa, king of the Mercians, erected in his memory a monastery near Verulamium, and around it grew up the town of St. Albans.

Alban Hills, in Italy, a volcanic girdle which overlooks the Campagna, 15 to 20 m. s.e. of Rome. The slopes of the hills (2,500 ft.) are for the most part covered with woods, groves, and orchards, and the tops crowned with numerous small towns—*e.g.* Albano, Ariccia, Frascati, Castel Gandolfo, Genzano. On the s. edge of the girdle are the crater lakes of Albano and Nemi. Lake Albano, about 6 m. in circumference, lies 960 ft. above sea-level. Its water is regulated by an aqueduct said to have been cut by the Romans in the 4th century B.C. The Mons Albanus of the ancients was the isolated volcanic cone Monte Cavo (3,115 ft.).

Albani, a Roman family who in the 15th century were driven by the Turks from Albania, and took refuge in Italy. They produced five cardinals and a pope—*viz.* Clement XI. (1700). The most important members of the family are:—ANNIBALE ALBANI (1682-1750), cardinal, author of *Memorie sopra la Citta d'Urbino* (1724). ALESSANDRO ALBANI (1692-1779), cardinal, antiquary, and literary patron. His home, the Villa Albani, contains a valuable collection of works of art. GIOVANNI FRANCESCO ALBANI (1720-1809), bishop of Ostia, and then, when only twenty-seven, cardinal. GIOVANNI GEROLAMO ALBANI (1504-91), cardinal, author of several works on jurisprudence. GIUSEPPE ALBANI (1750-1834), cardinal, a patron of music. See Tipaldo's *Biografia Italiana*.

Albani, or ALBANO, FRANCESCO (1578-1660), Bolognese painter; studied at the celebrated school of Ludovico Caracci, and later at Rome. He was the first Italian to paint cabinet pictures. He is represented in the Wallace Collection, London, by *Venus and Cupid*, and in the Louvre by twenty-two religious and classical pictures; nine of his works are in Florence, ten in Dresden, and others are in Milan, Turin, and St. Petersburg.

Albani (*née* MARIE LOUISE EMMA CECILIA LAJEUNESSE) (1852), soprano vocalist, known professionally as MADAME ALBANI; born at Chambly, near Montreal, Canada; was trained by her father, Joseph Lajeunesse, a native of Brittany; made her first appearance in public when eight years of age, and at fourteen was leading soprano at the Roman Catholic cathedral, Albany, N.Y.; afterwards studied with Duprez at Paris, and subsequently with Lamperti at Milan; made her début in opera in 1870 at Messina in *La Sonnambula*, and since then

has won a great reputation both in oratorio and in opera. In 1878 she married Mr. Ernest Gye, who succeeded his father as director of Italian Opera, Covent Garden. Madame Albani is court singer to the German Emperor, and has the Orders of Merit of England, Denmark, and Germany, besides two Jubilee medals and the Victorian Badge.

Albani, MATTHIAS (1621-73), celebrated Tyrolese violin-maker, a native of Bozen, trained by Stainer. His son MATTHIAS gained experience under the great violin-makers of Cremona, and settled at Rome.

Albania, an ethnographical rather than a geographical region in the w. of European Turkey, draining towards the Adriatic and Ionian Seas, and extending from Montenegro in the N. to the Gulf of Arta in the S., and from the Adriatic to the Shar Dagh and its extensions southward. The country is mountainous and rugged in the interior, and swampy and unhealthy towards the coast. It consists of the vilayets of Janina in the S., Scutari in the N., and part of Monastir and Kosovo towards the E. The Drin is the chief river. Other rivers are Shkumbi, Semeni, Viosa, and Artino. The principal lakes are Scutari, Okhrida, and Janina. The inhabitants (called by themselves Shkipetars, and by the Turks Arnauts) are much given to intertribal feuds and brigandage. Formerly all Christians, many Albanians have become Mohammedans; some are Roman Catholics, others belong to the Greek Church. Olives, hides, and wool are exported, chiefly at Durazzo, Aviona, Parga, and Prevesa, at entrance of Gulf of Arta, S. of Epirus. The chief towns are Scutari (35,000), on river Drin, in the N.; and Janina (25,000), in S. Prezeren or Perzerin (so called by the

Turks), at the entrance of Shar Dagh Pass, which was formerly the capital of the Servian kings. It has extensive manufactures of firearms. The Albanians number about 1,500,000. In antiquity this region was called Illyria. In the 2nd century B.C. it became a Roman province. In the middle ages it was invaded and settled by various Slav tribes. When the Turks invaded Europe, the Albanians fought stubbornly for their independence. The hero of this period is Scanderbeg, who fought successfully against the Turks from 1443-67. In 1478 Albania became a Turkish province. From 1807-22 it was practically independent under the rule of Ali Pasha (called the Lion of Janina), who is best known from Byron's life and poems. The Albanian language belongs to the Indo-European family of languages. It is spoken in a variety of dialects, the most important being the Gegh and the Tosk dialects. The principal works of Albanian literature (which, however, is very scanty) are Gerolamo de Rada's *Poesie Albanesi* (Corigliano, 1889); and his collection of popular songs under the title *Rapsodie di un Poema Albanese* (Florence, 1866). At the present day, among the writers who endeavour to create a literary language the most active is Constantin Kristoforidis, who, in addition to many didactic works, has published a good grammar of both dialects. See Pedersen's *Albanesische Texte* (1895); Degrand's *Souvenirs de la Haute-Albanie* (1901); Brown's *Winter in Albania* (1888); Galanti's *L'Albania* (1901); and Constante's *Spre Albania* (1905).

Albano, or ALBANO LAZIALE, tn. and episc. see, Italy, 18 m. S.E. of Rome, on the S. slope of the Alban Hills, 1,230 ft. above sea-level, a favourite summer resort of the inhabitants of Rome. Here

was a country house of Pompey the Great; also an imperial villa of Tiberius, Caligula, Nero, and Domitian. Pop. 8,000.

Albano, Lake. See ALBAN HILLS.

Albany. (1.) City, New York, U.S.A., cap. of the state, and co. seat of Albany co., on the w. bank of the Hudson, 145 m. N. of New York City. It is connected with Lake Erie at Buffalo by the Erie Canal, and is an important commercial and industrial city. The state capitol is one of the most imposing buildings of the kind in America. Albany is the oldest chartered town in the United States, having been incorporated as a city in 1686. It became the capital of the state of New York in 1797. The progress of Albany was at first slow, but with the era of the revolution the town awoke to new life. This we see in the importance given to it as the meeting-place of delegates from the seven American colonies and the Six Nations (Indian) in 1754, when, under the lead of Franklin, the Convention of Albany prepared a plan of confederation which was so closely followed two decades later as to entitle Albany to the name bestowed on it by President Garfield—'the birthplace of the American Union.' Its commercial prosperity dates from the completion of the Erie canal (1825). See Frothingham's *Rise of the Republic of the United States* (1872); Munsell's *The Annals of Albany* (1850-9), and *Weise's Hist. of the City of Albany* (1884); *Cambridge Modern Hist.*, vii. 69 (1903). Pop. 100,000. (2.) District N. of Algoa Bay, Cape Colony. Area, 1,685 sq. m. Pop. 23,000. (3.) Seaport tn., N. side of Princess Royal Harbour, King George Sound, W. Australia; port of call for the principal lines of steamers, and a fortified coaling station. Pop. 3,700. (4.) River, Canada, forming N.W. boundary

of Ontario; issues from Lake St. Joseph, and flows into James Bay. Length, 500 m.

Albany, CONVENTION OF. See ALBANY.

Albany, COUNT D', the title assumed by two brothers, John Sobieski Stolberg Stuart (1797-1872) and Charles Edward Stuart (1799-1880), who claimed to be the lineal descendants of the Young Pretender. Both brothers were in the service of Napoleon, and fought at Dresden, Leipzig, and Waterloo. After Napoleon's downfall they came to London to learn Gaelic, and thereafter, from 1817-46, they resided in the Scottish Highlands. Their last years were spent in Austria and in London. They wrote several poetical and other works.

Albany, LEOPOLD GEORGE DUNCAN ALBERT, DUKE OF (1853-84), youngest son of Queen Victoria, was very delicate from his birth. In 1881 the ancient dukedom of Albany was revived in his favour, and his marriage to the Princess Helene of Waldeck-Pyrmont was celebrated in April 1882. In the early spring of 1884 he died at Cannes, after an illness of only one day.

Albany, LOUISE MARIE KAROLINE VON STOLBERG - GEDERN, COUNTESS OF (1753-1824), daughter of the last reigning prince of Stolberg-Gedern, was born at Mons. She married (1772) Prince Charles Edward, the Young Pretender, who was then a dipsomaniac of fifty-two. His ill-treatment compelled her to seek refuge in a convent in 1780. She obtained a legal separation from him in 1783. The poet Alfieri, whose mistress she was, has immortalized her memory. After Alfieri's death she married the French painter Fabre de Montpellier. See *Lives* by Von Reumont (1860) and Vernon Lee (1884), and *Le Portefeuille de la Comtesse d'Albany, 1806-24*, ed. by Pélissier (1902).

Albatross, a name applied to several species of the genus *Diomedea*, but specially to *D. exulans*, one of the largest birds capable of sustained flight. It is a true sea-bird, following ships for great distances, and rarely found on land except at the breeding season. Its outspread wings measure 10 to 17 ft. from tip to tip. Like many of its allies, it chiefly haunts the southern oceans, though it also breeds in the N. Pacific. The albatrosses and their allies the petrels are often placed near the gulls; but great as is their power of flight, they are really much more primitive than the gulls.

Al-Battani, MOHAMMED BEN JABIR BEN SINAN, ABU ABDALLAH (c. 850-930), great Arabian astronomer, carried on his observations chiefly at Rakka, in Mesopotamia, from which he has also received the name 'Mohammedes Aractensis.' A brilliant mathematician, he made important advances in trigonometry. He also fixed the length of the year at 365 days, 5 hrs., 46 min., 24 sec.—a calculation which was short of the true length by 2 min. 26 sec. A translation of his works by Plato of Tivoli was printed at Nuremberg in 1537. See Chwolsohn's *Die Ssabier* (1856).

Albay, prov. (1,780 sq. m.), tn., and bay, s.w. extremity of Luzon I., Philippines. The province is very fertile, and has dense forests. There are deposits of coal, gold, silver, and iron. Mayon or Albay volcano, in the N.E., is still active. Pop. 250,000. Albay, the cap., is a seapt. on w. shore of Albay Bay. Pop. 14,000.

Albedo, a term used in astronomy to signify the proportion of incident light reflected by a non-luminous surface. This is determined for the various planets by comparing the total light received from each with the size of its visible disc and the

intensity of the solar rays falling upon it. The following table gives some of the best-authenticated results, absolute whiteness being taken as 1:—

Name of Object.	Albedo.	
The Moon.....	0·17.	..
Mercury	0·13.	..
Venus	0·50.	Zöllner.
Mars	0·26.	Zöllner.
Ceres	0·18.	Barnard.
Pallas	0·23.	Barnard.
Vesta	0·74.	Barnard.
Juno	0·45.	Barnard.
Jupiter	0·62.	Zöllner.
Saturn	0·52.	Zöllner.
Uranus.....	0·62.	Zöllner.
Neptune.....	0·45.	Zöllner.

It may be added, for purposes of comparison, that new-fallen snow has an albedo of 0·78; white paper, of 0·70; gray sandstone, clay marl, and quartz porphyry, severally, of 0·24, 0·16, and 0·11.

Albemarle, a British battleship of 14,000 tons and 19 knots; launched at Chatham in 1901.

Albemarle, DUKES AND EARLS OF. See KEPPEL and MONCK.

Albendorf, vil., Silesia, Prussia, 50 m. s.s.w. of Breslau. It has eighteen gates named after those of Jerusalem, and a model of the temple there, and is visited by 150,000 pilgrims annually.

Albenga (anc. *Albium Ingaunum*), tn. and episc. see, prov. Genoa, Italy, on the W. Riviera, 26 m. by rail s.w. of Savona, with mediæval walls and towers, remains of a Roman bridge built by the Emperor Constantius in 414-418, and a cathedral dating in part from the 13th century. Pop. 6,500.

Alberi, EUGENIO (1817-78), Italian historian, born at Padua; published, at the age of twenty-three, *Guerre d'Italia del Principe Eugenio di Savoia* (1839), which was much admired for the historical knowledge and scholarship displayed. Other works are *Vita di Caterina de Medici* (1838); *Re-*

lazioni degli Ambasciatori Veneti al Senato (1839). Alberi founded the *Annuario Storico Universale* (1843). He was an advocate of liberal principles. His last work is *Il problema dell' Umano Destino* (1872). He died at Vichy.

Alberni, lumber-shipping port and inlet on Pacific coast of Vancouver I., British N. America. The inlet is 20 m. long, and from $\frac{1}{2}$ to 1 m. wide, with a fine natural harbour at its head.

Alberoni, GIULIO (1664-1752), Spanish statesman, was the son of an Italian gardener. During the war of the Spanish Succession he served under Vendôme, and in 1713 was appointed agent of the Duke of Parma at the court of Philip v. of Spain, where he ingratiated himself with the king, and eventually became cardinal and prime minister. His policy aimed, first, at checking the decline of Spain by drastic reforms and by the development of her resources; and, secondly, at annulling the treaties of Utrecht and Rastadt, as subversive of the balance of power, and disastrous to Spain and Italy. Between 1715 and 1717, under his vigorous policy of reorganization and reform, commerce revived, the revenue was increased, manufactures flourished. His opposition to provincial as well as to class privilege made him, however, very unpopular with the Spanish nobles. His ambitious foreign policy, in which, backed by the queen (Elizabeth Farnese), he aimed at reannexing Milan, Naples, Sardinia, and Sicily to the Spanish crown, and the Spanish occupation of Sardinia in 1717, gave rise to a quadruple alliance against Spain between England, France, Austria, and Holland, and the destruction of the Spanish fleet by the British fleet, under Byng, in the battle of Cape Passaro (1718). At length, under pressure from the allies, Philip dismissed his minister in December

1719. After his departure from Spain, Alberoni's life has not many points of interest. He took part in the election of Innocent XIII. Clement XII. made him legate of Ravenna; but in 1740 he retired to Piacenza, where he founded a college, and where he died. See Bersani's *Storia del Cardinale Giulio Alberoni* (1862); Professione's *Il Ministro in Spagna ed il Processo del Cardinale Giulio Alberoni* (1897); Bourgeois's *Lettres intimes d'Alberoni adressés au Comte J. Rocca* (1893).

Albert. (1.) County of New Brunswick, Canada, on Bay of Fundy, which, with King's co., returns one member to the Dominion House. The co. contains valuable albertite mines and gypsum quarries. Pop. 12,000. (2.) District N. of Cape Colony, bounded by the Orange R. The whole country lies high, and has a cold climate in winter. There are coal mines in the district. Cap. Burghersdorp. Area, 2,635 sq. m. Pop. 17,000. (3.) Town, dep. Somme, France, on riv. Ancre, 18 m. N.E. of Amiens. It has cotton-spinning and manufactures of paper, cast iron, and beetroot sugar. Pop. 7,000.

Albert (1490-1568), son of the margrave of Ansbach, nephew of Sigismund, king of Poland, became last grand-master of the Teutonic Order in 1512. He refused to do homage to the king of Poland, who in 1519 declared war, which was concluded by a four years' truce in 1521. Four years later, Albert, now a zealous reformer, made a treaty with his uncle, and became hereditary Duke of Prussia under the Polish crown, with the right of succession to the estates of the Teutonic Order. Thereafter he devoted himself to his dukedom, establishing schools and the Königsberg University.

Albert, margrave of Brandenburg, surnamed the German Alcibiades (1522-58), fought in

the cause of the Emperor Charles v. in 1544, and subsequently in that of the king of France. Returning to his former allegiance, his conduct in Germany earned for him so much hatred that a league was formed against him. Defeated in a conflict with his enemies, he was placed under the ban of the empire, and died a victim of his own excesses.

Albert I. (1250-1308), Duke of Austria and German Emperor, eldest son of Rudolph of Hapsburg. His arrogant claim to the throne on the death of his father in 1292 was met by the election of Adolphus of Nassau, who was deposed in 1298, and in the same year defeated and slain by his rival. Albert was elected and crowned (1298), and first joined France against the Pope, and then the Pope against France. Wars with the Netherlands, Hungary, and Bohemia followed. His despotic measures in Switzerland provoked (1308) the revolution which led to the formation of the Swiss Confederation. Albert's refusal to recognize the claim of his nephew, Don John, to the dukedom of Swabia led to a conspiracy against him, and he was murdered.

Albert I., DUKE OF BRANDENBURG (1100-70), called the 'Bear,' founder of the house of Anhalt; succeeded his father in 1123, and in 1125 became Duke of the Ostmark and Lusatia; in 1134 he was invested by the emperor with the province of the Nordmark, or the territories on the left bank of the Elbe taken from the Slavs. These Albert transformed into a German province. In 1147 he undertook a crusade against the Wends, and in 1150 came into possession of the margravate of Brandenburg, and took the title of Duke of Brandenburg. In 1169 he resigned in favour of his eldest son.

Albert III., surnamed **ACHILLES**, and also **ULYSSES** (1414-86),

was third son of Frederick I., elector of Brandenburg, whom he succeeded (1440) in the principality of Ansbach. From his brother John he inherited the principality of Bayreuth in 1464, and in 1470 received the electorate of Brandenburg from his brother, Frederick II. Under his rule the Franconian lands were reunited with Brandenburg. He effectually resisted the attempts of the Teutonic knights to repossess themselves of the Neumark, and engaged in successful wars with Mecklenburg and Pomerania. He wrote the *Dispositio Achillea*, a family ordinance which provided for the future separation of Brandenburg and Ansbach-Bayreuth, and, according to Hallam, first legally established primogeniture.

Albert V., archbishop of Magdeburg and elector of Mainz, commonly known as **ALBERT OF BRANDENBURG** (1490-1545), was the second son of the elector, John Cicero of Brandenburg; entered holy orders, became in 1513 archbishop of Magdeburg, in 1514 archbishop and elector of Mainz, and in 1518 cardinal. He was one of the principal adversaries of the reformation, and Luther attacked him in a pamphlet, though at first Albert had tried to bring about reconciliation between the two parties. In return for the payment of 500,000 fl. he granted his Protestant subjects in the see of Magdeburg the free exercise of their religion. He was the first German prince to admit the newly-created order of the Jesuits into his dominions, and took a prominent part in the preparation for the religious wars which broke out shortly after his death. See Schum's *Kardinal A. von Mainz* (1878).

Albert the Bold, DUKE OF SAXONY, younger son of the Elector Frederick (1443-1500), passed a portion of his early life at the court of Frederick III. in Vienna.

On their father's death, the brothers Ernest and Albert ruled Saxony in partnership; but subsequently, by the agreement of Leipzig (1485), Ernest received Thuringia, and Albert Meissen. A brave and accomplished soldier, Albert fought in the wars of Frederick of Austria, against Charles the Bold (Duke of Burgundy) and others. His intervention on behalf of Maximilian I. gained him the stadtholdership of the Netherlands, as well as the hereditary governorship of Friesland. He was the founder of the present royal house of Saxony. See Abramoffski's *Zur Geschichte Albrechts des Beherzten* (1890).

Albert the Pious (1559-1621), Archduke of Austria, sixth son of the Emperor Maximilian II. Brought up at the Spanish court, he entered the church, and in 1577 he became cardinal, archbishop of Toledo (1584), and, in 1594, viceroy of Portugal. In 1596 he was appointed stadtholder of the Netherlands, and carried on the war against the revolted people. Defeated at Nieuwpoort, he took Ostend (1604) after a three years' siege, and concluded a twelve years' truce with the Dutch (1609). He ruled with justice and moderation until his death.

Albert I. (1875), King of the Belgians, the nephew of Leopold II., whom he succeeded on the Belgian throne in December 1909. Of an active temperament, he has travelled extensively, and has visited the west of America and the Congo, and has become a warm advocate of reforms in that state. He is a student of engineering and political economy.

Albert, ALEXANDRE MARTIN (1815-95), French politician, played an active part in the revolution of February 1848. He became a member of the provisional government, and presided over the commission for the organization of Louis Blanc's national work-

shops. He represented the department of the Seine in the Assembly, but suffered ten years' imprisonment for a political offence. In the siege of Paris, in 1870, he served on the Commission of Barricades.

Albert, EDUARD (1841-1900), surgeon, native of Bohemia, studied at Vienna, where, in 1881, he became professor of clinical surgery, after acting as professor of surgery at Innsbruck. Results of his important researches appear in his *Beiträge zur Geschichte der Chirurgie* (1878); *Beiträge zur operativen Chirurgie* (1878-80); *Lehrbuch der Chirurgie* (1889-91); *Diagnostik der chirurgischen Krankheiten* (1890); *Zur Theorie der Skoliose* (1890).

Albert, EUGEN FRANCIS CHAS. D' (1864), pianist and composer, son of a French musician, was born in Glasgow. He was trained first by his father, and subsequently in London under Sir Arthur Sullivan and others, but he owes much to Liszt and Hans Richter. With the latter he went to Vienna in 1881, where he achieved marked success. His compositions include the operas *Ghismonda* (1895), *Die Abreise* (1898), *Kain* (1900), *Der Improvisator* (1900), *Tietland* (1903), *Flauto Solo* (1905), and *Der Geborgte Ehemann* (1907). He is court pianist to the king of Saxony.

Albert, FRANCIS CHARLES AUGUSTUS EMANUEL (1819-61), Prince Consort, husband of Queen Victoria, was the younger of the two sons of Ernest, Duke of Saxe-Coburg-Gotha. He was carefully educated at Brussels and Bonn (1836-8), where he showed himself an ardent student, acquired many accomplishments, and developed a taste for music and the fine arts. King Leopold and Baron Stockmar had long contemplated an alliance between Prince Albert and Princess Vic-

torial, and the pair were brought together in 1836. When the succession of Victoria was assured the betrothal took place, and on Feb. 10, 1840, the marriage, which was one of real affection on both sides, was solemnized in the Chapel Royal, St. James's Palace. The Prince Consort's position as the husband of a constitutional sovereign was difficult, and in the early years of his married life his interference in matters of state was resented. Ultimately he became 'a sort of minister, without portfolio, of art and education,' and in this capacity won much esteem and popularity. He also interested himself in agriculture and in social and industrial reform. To him was due the Great Exhibition of 1851, which resulted in a balance of £200,000, available for the encouragement of science and art. His personal character was very high, and he exercised great influence on his children. He was an ideal consort, and entirely worthy of the title 'Albert the Good.' On Dec. 14, 1861, he succumbed to an attack of fever, and was buried in St. George's Chapel, Windsor. His remains were afterwards removed to the mausoleum at Frogmore. See Sir Theodore Martin's *Life of Prince Consort* (5 vols. 1875-80); Rimmer's *Early Homes of the Prince Consort* (1883); Grey's *Early Years of the Prince Consort* (1867); *Memoirs of Baron Stockmar* (1873); *Letters of Queen Victoria* (1907).

Albert, FREDERICK RUDOLF, Archduke of Austria (1817-95), son of the Archduke Charles, was born at Vienna. He fought at Santa Lucia, Gravellona, Mortara, and Novara (all 1848), under Radetzky, and as field-marshal commanded the army at Custozza (1866). He did much to reorganize the Austrian army, and was the author of works on military subjects. See *Life* by Emmer (1899).

Albert, HEINRICH (1604-55 or 56), musical composer, was born at Lobenstein, in Vogtland; studied music under his uncle Schütz in Dresden, and was appointed organist in the cathedral at Königsberg in 1631. His poems, consisting chiefly of hymns, have been set to music by himself. Those still in use include *Gott des Himmels und der Erde; Zum Sterben ich bereitet bin*. His secular poems are noted for their grace and lightness. They are collected in *Poetisch-musikalischen Lustwäldlein* (1642-8); a selection, set to music, and edited by Eitner, appeared in 1883-4.

Albert, JOSEPH (1825-86), photographer, began his professional career at Augsburg in 1850, and in 1858 settled at Munich. He produced a large number of copies of famous pictures and drawings.

Alberta, prov. of N.W. Canada, created in 1905, and composed of the territory formerly named Alberta and the western part of Athabaska. It is bounded on the s. by the 49th parallel, the international boundary between Canada and the United States; on the w. by British Columbia, on the n. by the 60th parallel, and on the e. by the 4th meridian in the system of the Dominion Lands Survey. Its length from N. to s. is 760 m., its average breadth 330 m., and its area 253,540 sq. m., including 2,360 sq. m. of water surface. The population apportioned to the province, according to the returns of 1906, is 185,412, but since that date it has increased enormously. Alberta returns seven members to the House of Commons at Ottawa, and receives four representatives in the Senate, with the possibility of increase to six. The usual provincial subsidies are granted, with an allowance for public lands, the disposal of which remains with the Dominion. The government of the province, following the dominant type obtaining in

Canada, consists of a lieutenant-governor, a responsible cabinet or council after the British model, and an elective legislature of a single chamber. The members, at present 41, are chosen on a residential manhood suffrage. The capital is fixed at Edmonton—lat. $53^{\circ} 29'$ N. and long. $113^{\circ} 49'$ W.—the centre of the new wheat region and the converging point of the railways in progress and projected. Alberta is part, the highest steppe, of the great American plain that trends from the Rocky Mts. to Hudson Bay and the Arctic Ocean. Its soil is of rich alluvial loam, watered by the Peace, Athabaska, N. Saskatchewan, Battle, Red Deer, Bow and Belly rivers, with their many tributaries. The northern section is heavily wooded, and is well adapted for the production of all kinds of cereals, vegetable and root crops. Mild winds from the Pacific, called chinook, moderate the climate, so that the mean average temperature of Edmonton for the last ten years is—summer, 59.3° F.; winter, 8.8° F.; the year, 35.9° F. The southern section, whose centre is Calgary, is open and rolling prairie, sparsely wooded, but covered with luxuriant grasses, notably the 'bunch grass,' and is highly prized for ranching and dairy purposes. East of a line from Calgary to Lethbridge, and looking towards the Grand Coteau, the average rainfall is insufficient to ripen crops, and irrigation has been, and is being, resorted to with success. The red wheat of southern Alberta commands a high price on the world's markets. In 1901 the total production of grain was 5,529,500 bushels; in 1908 the production was 36,436,000 bushels, together with 153,000 tons of hay, clover, and sugar beets. Six lines of railway traverse the province. The Calgary and Edmonton runs N. and S., and con-

nects with the United States by means of the Alberta Coal Company's route, which has a branch to St. Mary's R. The C.P.R. (main line) passes through Calgary, while the Crow's Nest Pass Ry. serves the coal industry and taps the mining region of Kootenay, B. C. The Canada Northern gives Edmonton direct communication with the E., and the Grand Trunk Pacific, now being pushed forward, will secure her an outlet on the ocean as well as open up the country along the route.

A large portion of Alberta, estimated at 50,000 sq. m., is underlain by coal measures, bituminous and anthracite, and in 1907 1,834,745 tons were mined. The chief seats of the coal industry are Lethbridge, Coleman, Bankhead, Taber, Frank, and Blairmore. Iron, silver, copper, galena, petroleum are also found. Gold placer-mining is carried on near Edmonton on the Saskatchewan and elsewhere. The sulphur springs of Banff Sanatorium are well known. Near Banff is the Rocky Mountain Park, a national preserve, 20 m. long by 10 m. broad, set apart in 1887 for the native flora and fauna, as well as for a pleasure resort. In 1908 there were 1,000 schools, having 1,210 teachers and 34,338 pupils; and the provincial, non-sectarian University of Alberta has been founded at Strathcona, on the Saskatchewan R., directly opposite Edmonton. See *Reports of the Geological and Natural History Survey*, by Dawson (1882-4) and Tyrrell (1886); and *Reports of Minister of Interior*.

Albert Edward. See EDWARD VII.

Albert Edward Nyanza, a lake in the upper part of the Nile basin, Central Africa, now known as EDWARD NYANZA.

Alberti, LEONE BATTISTA DEGLI (1404-72), Italian writer,

architect, sculptor, painter, and scholar; spent most of his life at Rome, where, from 1432-72, he was papal abbreviator. Buildings at Florence and Mantua testify to his architectural skill, his constant endeavour being to revive the classical style. His work, *De Re Aedificatoria* (1485), appeared in numerous editions, and in 1565 was translated into Italian. He also wrote on painting and sculpture. His great work in literature is *Della Famiglia* (1437-41), which discusses education and domestic economy, and contains a picture of Italian life at the time of the renaissance. Other important works are the *Teogenio* (the influence of fortune on man) and *Della Tranquillita dell' Anima*. He also wrote in Latin, and imitated classical models so skilfully that his comedy of *Philodoxius* was long held to be the work of an ancient writer. He is credited with the invention of the camera obscura. See G. Mancini's *Vita de Leon Battista Alberti* (1882).

Albertine Line, the younger of the two dynasties of the German (Saxon) family of Wettin; founded in 1485; gained the electoral dignity in 1547; ascended the throne of Poland in 1697, but lost it in 1763; and since its foundation has ruled in what is now the kingdom (since 1806) of Saxony. The elder branch is known as the Ernestine line, and now rules several of the small Thuringian (Saxon) states of Germany.

Albertinelli, MARIOTTO (1474-1515), Florentine painter, apprenticed to Cosimo Rosselli; friend and assistant to Fra Bartolommeo, whose work his paintings closely resemble. The National Gallery, London, has a *Virgin and Child* attributed to him; his most important paintings are in Florence, Louvre in Paris, and Munich.

Albert Medal, a British decoration, established in 1866, for gallantry in the saving of life.

Albert Memorial, in Hyde Park, London, erected in memory of Prince Albert, is an Eleanor cross, 150 ft. high, embellished with statues, after the design of Sir George Gilbert Scott. It was completed in 1872, and contains a gilt statue of Prince Albert by Foley, unveiled March 9, 1876. (See Bell's *Account of Albert Mem.*, 1873.) The Albert Hall, opposite, also a memorial to the Prince Consort, was opened on March 29, 1871. It is seated for ten thousand persons, and has a fine organ.

Albert Nyanza, a lake, British E. Africa, Uganda Protectorate, in the basin of the Nile, extending N.E. to S.W. from about 2° 20' to 1° 10' N. lat., about 110 m. long by about 20 to 25 m. broad. Together with Tanganyika and Edward Nyanza, it occupies the W. rift-valley of Eastern Equatorial Africa, at an altitude of 2,200 ft. At its S.W. end it receives the Semliki R., and at its N.E. end the Somerset Nile, while at its extreme N. its waters find an outlet in the White Nile. On the E. and W. the lake is hemmed in by high escarpments. The S. end of the lake is occupied by impenetrable ambash forest. Discovered by Sir S. Baker (1864)—although its existence had been previously announced by Speke—it was circumnavigated by Romolo Gessi (1876).

Albertus Magnus (1193-1280), known also as the 'Universal Doctor,' came of a Swabian family; a Dominican monk, and afterwards (1260) archbishop of Ratisbon; was a celebrated teacher of science, theology, and philosophy in the University of Paris (1230), and also at Cologne, where he died. His vast knowledge of science brought on him the accusation of wizardry and black magic.

Albert Victor, PRINCE. See CLARENCE, DUKE OF.

Albertville, tn., dep. Savoie, France, on riv. Arly, close to its junction with the Isère, 50 m. N.E. of Grenoble; has trade in slates, earthenware, and tiles. Pop. 6,000.

Albertville, stn., Congo Free State, on Lake Tanganyika, on opposite shore and 60 m. S.S.W. of Ujiji.

Alberus (ALBER), ERASMUS (c. 1500-53), theologian and reformer; born near Frankfort-on-the-Main. In 1518, at Wittenberg, he became intimate with Luther and Melancthon. From 1528-39 he was pastor at Sprendlingen, and afterwards at Brandenburg. He was active in the propagation of Lutheranism, and was well known as a pamphleteer, hymn-writer, and fabulist; the final edition of his fables, *Das Buch von der Tugend und Weisheit*, appeared in 1550. See Schnorr von Carolsfeld, *Erasmus Alberus* (1893).

Albi (anc. *Albiga*), tn., cap. of dep. Tarn, France, on the l. bk. of the Tarn, 40 m. N.E. of Toulouse. It is the seat of an archbishop, and has a trade in aniseed, wines, and canvas. Pop. 23,300. The town suffered greatly in the early 13th century wars against the reforming Albigenses, who derive their name from it.

Albicore, or ALBACORE, a species of tunny (*Thynnus*) found in the W. Indies.

Albigenses, a name applied, from the end of the 12th century, to a sect of heretics living in the S. of France; probably derived from the town Albi, where it is said the heresy first appeared. They professed the same religious views as the Cathari, the Pataranes, and similar sects, which originated in the 11th century among the Slavs in the Balkan peninsula. Thence they spread to Italy, the S. of France, Germany, and Flanders. They believed in the existence of two principles, good and evil, equally eternal;

they denied the incarnation, passion, and resurrection of our Lord. Their morality was pure, even to asceticism; they condemned the procreation of children. The Albigenses were destroyed by the so-called crusade against them promoted by Innocent III., which was headed by Simon de Montfort; it was directed principally against Raymond VI., Count of Toulouse, in whose dominions the heretics were numerous. These unfortunate people were slaughtered without pity; whole towns were destroyed, including Béziers, where 20,000 perished at one time; and that part of France was utterly devastated. The struggle lasted twenty years (1209-29), and was concluded only by the complete submission of Raymond VII. (who succeeded his father in 1222) to the conditions of the king of France, who, after the death of Simon de Montfort, carried on the crusade. The Albigenses were utterly rooted out, except a few who fled to Piedmont; and the Inquisition was established at Toulouse. See Donais's *Les Albigeos* (1878); Peyrat's *Histoire des Albigeois* (1882); Luchaire's *La Croisade des Albigeois*, 2nd ed.

Albinism, the absence of pigment in man or animals; sometimes occurring in patches, giving a piebald appearance; often affecting the whole body, and, in the true albino, even the iris and choroid membrane of the eye. In the human albino the skin is transparent, white and pink; the hair white as in old age; the iris a pinkish gray, or, in negroes, blue; the pupil contracted and bright red; and the eye painfully sensitive to light—the albino being, consequently, short-sighted by day, and seeing best at dusk. The chief predisposing cause appears to be unhealthiness of climate, such as that of low-lying tropical countries; it may also be due to congenital arrest of de-

velopment, and is sometimes associated with other malformations; but it often occurs in persons who are otherwise normal. White mice, white rabbits, white crows, white elephants, etc., are albinos.

Albion, an ancient name, in use (probably) among the early Celtic inhabitants for *Britain*. In the form *Alban* or *Albany* it is restricted to Scotland, and especially to the Highlands of Scotland.

Albion, NEW, the name given to the N.W. coast of America by Sir Francis Drake on his voyage of exploration in 1579. Humboldt held that this designation applied only to the district between the Columbia R. and the Bay of San Francisco.

Albion, a British battleship of 12,950 tons and 18½ knots, launched at Blackwall in 1898.

Albion Metal, a mechanical compound of tin and lead, formed by pressing sheets of these metals together.

Albion Press, a hand-press invented about 1823 by R. W. Cope of London. It is still used for pulling proofs. The impression is given by means of a piston moving up and down, which propels the platen.

Albistan, or EL BOSTAN, tn., 40 m. N.E. of Marash, Asiatic Turkey. Pop. 6,500.

Albite, a very widespread mineral, especially in such rocks as gneiss and mica-schist. It is a soda felspar (see FELSPAR), consisting of soda, alumina, and silica; and forms colourless or white transparent crystals. Lamellar twinning on the brachypinacoid is so characteristic that such twinning is known as the 'albite type.'

Albocarbon, a name for naphthalene, C₁₀H₈, when used to enrich coal-gas. See NAPHTHALENE.

Alboin (reigned 561-572 or 574), the Lombard conqueror of Italy; succeeded his father, Audoin, in the kingship of the tribe while

they were yet settled in Pannonia. He twice defeated the Gepidæ (551 and 566), on the second occasion slaying their king, Kunimond, whose daughter, Rosamond, he then made his queen. In 568 the Lombards left Pannonia, and descended upon Italy by the plain between Venice and the Carnic Alps. Alboin took Milan (569) and Pavia, which he made his capital. His rule was wise and moderate. But having made his wife drink, at a feast in Verona, from a wine-cup made of her father's skull, he was murdered by her paramour. (See Paulus Diaconus, *Hist. Langobardorum*, I. i. and ii.; *Gregory of Tours*, I. iv. c. 35.) The story has been much used by dramatists, from the *Rosmunda* of Rucellai (1525), through Bandello (18th novel of Part iii.), to the Elizabethan stage. Later versions are Davenant's first play, *The Tragedy of Albovine* (1629), Alfieri's *Rosmunda*, and Swinburne's *Rosamund, Queen of the Lombards* (1899).

Albona, tn., Austria, on the E. side of Istria, 20 m. N.E. of Pola, near lignite mines. Pop. 5,000.

Alboni, MARIETTA (1823-94), celebrated contralto vocalist; born at Cesena, near Ravenna; became a pupil of Bertolotti and Rossini, and made her début at Bologna and Milan when only fifteen; attained remarkable success in London, Paris, and America. She was married to Count Pepoli in 1854, and retired from the stage in 1866. Her voice had a range of two and a half octaves.

Albornoz, ÆGIDIUS (c. 1300-67), cardinal; born at Cuença, in Spain; a notable prelate warrior; created (1339) archbishop of Toledo by Alfonso XI. of Castile; fought against the Moors, led the siege of Algeciras, and was made a knight. On account of his denunciation of Peter the Cruel he had to flee to Avignon, where he was received by Pope Clement VI. and made a cardinal (1350). He restored the

papal authority in Rome after the death of Rienzi (1354), and prepared the way for the Pope's return. He drafted a code of laws for the Papal States, known as the *Ægidian Constitutions*.

Albox, tn., prov. Almeria, Spain, 30 m. s.w. of Lorca; manufactures textiles, and has notable fairs in May and November. Pop. 10,000.

Albrecht. See ALBERT.

Albret, JEANNE D' (1528-72), only daughter of Henry II. of Navarre and Margaret of Valois, sister of Francis I. of France, took an active part in the defence of the Protestants in times of persecution. She married Antony of Bourbon, and after his death (1562) became ruler of Navarre; she governed wisely, and introduced the reformation. Her son was Henry of Navarre, later Henry IV., king of France.

Albrizzi, ISABELLA THEOTOKI, COUNTESS OF (1770-1836), called by Byron the Mme. de Staël of Venice; born in Corfu; married Joseph d'Albrizzi, state inquisitor. Her beauty and talents brought her the friendship of Alfieri, Canova, and Byron; and her circle was frequented by many artists and savants. She died in Venice. She left *Ritratti* (1807), a series of portraits of the distinguished Italian men of her time; and *Opere di Plastica di Canova* (1822), a study of this artist's sculptures. A collection of her letters was published by Barozzi (1872).

Albrun Pass (7,907 ft.) leads from the Swiss valley of Binn (a trib. of the Upper Rhone valley in the canton Valais) to the Italian glen of Devero, which joins the Tosa valley above Domo d'Ossola (on the Simplon road). It is a very easy pass, and much used by smugglers. In 1420 a Swiss army crossed it when making a raid on the Ossola valley.

Albuera, vil., prov. Badajoz, Spain, 15 m. s.e. of Badajoz; here

was fought the battle, May 16, 1811, in which the Anglo-Spanish forces under Beresford defeated the French under Soult. Pop. 800.

Albula Pass (7,595 ft.) leads from Bergün (at the head of an affluent of the Hinter Rhine, in the Swiss canton Grisons) to Ponte, in the Upper Engadine. It has a carriage road, and a hospice at the summit. A railway tunnel was pierced beneath it in 1898-1902, at an alt. of 5,981 ft.; it is 3 m. 1,150 yds. in length.

Album, in literature the name given to a once popular class of publications distinguished for the beauty of their illustrations and the magnificence of their bindings. The first work of the kind was Ackermann's *Forget-me-not*, issued in 1823. It was followed by, among others, *Friendship's Offering*, *The Literary Souvenir*, and *The Keepsake*, all of which enjoyed an immense yearly circulation. The general characteristics of these works are pleasantly satirized by Thackeray in *Pendennis*. Almost every contemporary artist of note, including Stothard, Turner, MacIise, and Cattermole, contributed plates; and among the writers were Wordsworth, Coleridge, Macaulay, Southey, Lamb (*Album Verses*), Scott (*Bonnie Dundee*, etc.), and Tennyson (*St. Agnes's Eve*). The last annual, *The Keepsake*, was issued in 1856. (See Andrew Lang, *The Library*, p. 135.) ALBUM has also various other meanings: at the present day it generally refers to a book for holding photographs, autographs, postage stamps, etc., or a portfolio of prints, drawings, or engravings of artistic or other interest.

Albumazar (805-85), celebrated Arabian astronomer, born at Balkh. His works were published in Latin at Augsburg (1489) and at Venice (1506-15).

Albumin is one of the simpler proteins present in animal protoplasm. Like all proteins, it con-

tains the elements carbon, oxygen, hydrogen, nitrogen, and sulphur. The form in which it is most widely known and easily experimented with is egg-albumin, which, together with globulin, forms the white of egg. Other known forms are serum-albumin, found in animal serum, and lact-albumin, found in milk. Albumins are soluble in distilled water. Their solutions are coagulable by a heat of from 70°-73° c. They are also soluble in saturated solutions of sodium chloride and magnesium sulphate, and in dilute saline solutions, but are precipitated by saturating their solutions with ammonium sulphate. Their action on polarized light is levorotatory, like that of all proteins; but it differs in degree from the levorotatory action of other proteins. Also, like all other proteins save peptones, albumin is colloid—*i.e.* it will not pass through an animal membrane. It is coagulated by strong acids, such as nitric acid, by tannin, picric and acetic acids, and by salts of the heavy metals, such as nitrate of silver and sulphate of copper (hence used as caustics), by acetate of lead (whence the astringent qualities of that salt), and by other metallic salts. Alcohol precipitates it, but the fresh precipitate will readily redissolve in water. If albumin, however, be left long in alcohol, it will be not merely precipitated, but coagulated. In digestion, egg-albumin, lact-albumin, and serum-albumin, all of which are present in an ordinary diet, go through the same stages. In the stomach they first change to acid-albumin and to albumoses, through the action of pepsin, with the help of hydrochloric acid. Albumoses are differentiated from albumins by the following qualities: they are not coagulated by heat or alcohol; they are precipitated by nitric acid, but the precipitate disappears with the application

of heat, and reappears on cooling; they are slightly, though only slightly, diffusible through an animal membrane; and some albumose is absorbed in digestion as such. From acid-albumin and albumoses albumins change to peptones, under the prolonged action of pepsin, before they leave the stomach. Peptones are distinguished from the earlier stage of albumose by being readily diffusible through an animal membrane (and therefore prepared for assimilation); they are not precipitated by cold nitric acid; nor by ammonium sulphate, which precipitates all other proteins. Most of the albumin which enters the stomach passes into the small intestine in the form of the readily diffusible peptones, and is so absorbed. Whatever part may pass from the stomach as such, or in the intermediate condition of albumose, is acted on by the trypsin of the pancreatic juice, and then forms alkali-albumin and peptones. If the action of trypsin upon peptones be prolonged, it splits them up into simpler bodies, of which the chief are leucin and tyrosin; and these are absorbed without further change. Peptones introduced directly into the blood, without undergoing the changes induced by the absorbing cells, produce toxic symptoms. Some small proportion passes from the small intestine into the lymphatics, but the greater part goes directly to the blood-stream. Peptones, however, do not reach the blood as such, but as albumin, being reconverted in their passage through the gastric and intestinal walls. Albumin is used as a mordant in dyeing, as a vehicle for the sensitive salts in photography, and in sugar refining. See Halliburton's *Essentials of Chem. Physiol.*; Foster's *Text-book of Physiol.*; also

PROTEINS, DIGESTION.
Albuminoid Disease. See
 WAXY DISEASE.

Albuminoids, compound organic nitrogenous substances chemically allied to proteids, but differing from them and from one another in various ways. The chief recognized albuminoids are collagen, gelatin, keratin, elastin, ossein, and chitin. Collagen forms the white fibres of connective tissue; elastin (a particularly insoluble albuminoid) forms the yellow fibres. Ossein is the chief organic constituent of bone, and in chemical composition is similar to collagen. Keratin occurs in nails, hair, horns, and hoofs, all of which are histologically related to the epidermis. Keratin is remarkable for its insolubility, and for its large percentage of sulphur. Chitin is peculiar to the exo-skeleton of many invertebrate animals. Gelatin is the most important of the albuminoids, and is much used as an article of diet. It is obtained by boiling collagen in water, the result being a solution of gelatin, which solidifies or gelatinizes on cooling. Gelatin answers to the colour tests for proteids, but the fact that it does not coagulate in hot solution separates it from many of the proteid group. It is readily digestible, and is converted in the stomach into a form not to be distinguished from peptones; but whereas the peptones formed from albumins and other proteids are highly nutritious, the product of the digestion of gelatin cannot take the place of proteids. Though gelatin alone will not support life, it is a useful supplement to other nitrogenous food. It is therefore valuable when the alimentary tract needs comparative rest and the body can bear a modified fast. Elastin and keratin are particularly indigestible forms of albuminoids. Elastin is apparently digested more by the pancreatic juice than by the gastric, while keratin is excreted practically undigested. The vegetable sub-

stance gluten, prepared from wheat flour, and as a by-product in the manufacture of starch, is of a similar character to the animal albuminoids.

Albuminuria. The presence of albumin in the urine, formerly looked on as a sign of Bright's disease, is now known to occur under many circumstances not indicating serious change in the kidneys. Albumin may appear in the urine as a result of disturbance of the renal circulation—as, for example, ligature of the renal vein; in pregnancy, when pressure is exerted on that vein; in the later stages of certain diseases of the heart; in ague; and in cholera. It may appear as the result of changes in the blood consequent on pyæmia, septicæmia, and purpura, and associated with scarlet fever, diphtheria, measles, enteric and other fevers; it is also a result of such diseases of the kidney as interstitial nephritis, waxy kidney, and fatty degeneration of the kidney. Certain dietaries containing albumin in excess may produce it temporarily. Renal casts, consisting of detached epithelial cells and of epithelial cylinders showing various degrees of degeneration, are often associated in the urine with the albuminuria of kidney disease. A simple test for the presence of albumin in the urine is to boil the urine: if turbidity appears which is not dissolved by nitric acid, albumin is most likely present. If the urine be alkaline, it must be acidified by acetic acid before boiling. Long-continued albuminuria leads to great anæmia and exhaustion. The treatment varies with the several causes.

Albumosuria, or PROPEPTONURIA, is a morbid condition in which albumoses are present in the urine. Traces are found in chronic suppuration, in febrile diseases, in inflammatory erup-

tions of the skin, such as pemphigus and urticaria, and in nervous diseases. Recently albumose in the urine has been found associated with multiple myelomata of bones. For tests, see URINE.

Albunol, tn., prov. Granada, Spain, 43 m. s.e. of Granada, and near Mediterranean. Produces and exports wine and almonds. Some lead mines in district. Pop. 8,700.

Albuquerque. (1.) Town, prov. Badajoz, Spain, 27 m. n. by w. of Badajoz. Ancient castle and walls (13th century). Great cattle fairs, May and September. Pop. 10,000. (2.) City, New Mexico, U.S.A., co. seat of Bernalillo co., on the Rio Grande. It is the seat of the University of New Mexico, and has a busy trade in wool, hides, grain, etc. Gold, silver, iron, and copper are found in the neighbourhood. Pop., with suburbs, 11,000.

Albuquerque, AFFONSO D' (1453-1515), surnamed the 'Great,' also 'The Portuguese Mars,' a man of extraordinary ability and force of character, who upheld and extended the power of Portugal in India and the East from 1503-15. He captured Goa, making it his capital (1510), the island of Ormuz (1507 and 1515), and Malacca (1511); and gradually subdued Malabar, Ceylon, and other parts of the East. His *Commentaries*, issued by his natural son Braz, were translated by Birch, and published by the Hakluyt Soc. (4 vols. 1875-84). See Stephens's *Albuquerque and the Early Portuguese Settlements in India* (1892).

Alburnum, or SAPWOOD, is that portion of the wood of a dicotyledonous or coniferous tree which lies between the heart-wood and the bark. It is light in colour (hence its name), carries the root-sap upwards, and consists of a variable number of the last-formed annual rings of wood.

Albury, tn., N.E. of upper reaches of Murray R., Goulbourn co., New South Wales, connected by a bridge with the colony of Victoria; terminus of N.S.W. part of Southern Ry.; is at the head of river navigation. Pop. 6,000.

Alcæus (c. 600 B.C.) of Lesbos, one of the greatest of Greek lyric poets, who gave his name to, if he did not invent, the metre called Alcaic. He was an aristocrat, and after a civil war was exiled from Lesbos. Only fragments of his poems survive, but they reveal the spirit and vigour with which he sings of war, love, and wine. Alcaic verse is a variety of the logæedic type; and the stanza as used by Alcæus and by Horace consists of four lines, displaying three types. The first two begin with the second syllable of a foot, followed by anakrousis; then come a trochee, a spondaic trochee, a dactylic trochee, a trochee, and a half-mute trochee. The third verse consists of the second half a foot, anakrousis, trochee, spondaic trochee, trochee, trochee; and the fourth verse has no anakrousis, but consists of two dactylic trochees followed by two ordinary trochees. The anakrousis is the distinguishing feature of Alcaic metre. It was Horace's favourite metre, and Tennyson has attempted to anglicize it in his *Ode to Milton*, 'O mighty-mouthed inventor of harmonies.'

Alcala, GALIANO. See GALIANO.

Alcala de Chisbert, tn., Spain, prov. of Castellon, on the coast, 25 m. N.E. of Castellon de la Plana. Pop. 6,400.

Alcala de Guadaira, tn., prov. Seville, Spain, 7 m. s.e. of Seville; olive cultivation. Beautiful Moorish castle. Pop. 9,000.

Alcala de Henares, tn., prov. Madrid, Spain, 15 m. N.E. of Madrid, on riv. Henares, trib. of Tagus; birthplace of Cervantes; seat

of university founded by Cardinal Jimenez in 1508, transferred to Madrid in 1836; garrison town for province of Madrid. Pop. 10,500.

Alcala de los Gazules, tn., Spain, prov. of and 32 m. E. of Cadiz; seat of military district of Gibraltar. Black jasper and coal mines in district. Pop. 10,000.

Alcala la Real, tn., prov. Jaen, Spain, 25 m. N.W. of Granada. Alfonso XI. took the fortress from the Moors (1340), hence the name ('the royal castle'). Milling and olive-oil pressing. Pop. 16,000.

Alcalde. See AYUNTAMIENTO.

Alcamo, tn., prov. Trapani, Sicily, built on the N. slope (837 ft.) of Mt. Bonifato, 24 m. W.S.W. of Palermo. It was founded by Saracens, and still preserves remains of mediæval buildings. Pop. 52,000.

Alcaniz, tn., prov. Teruel, Spain, 60 m. S.E. of Saragossa. Fine mediæval castle, and bridge over river Guadalupe. Country well irrigated artificially. Pop. 8,000.

Alcantara. (1.) Fort. tn., prov. Caceres, Spain; on the Tagus, 34 m. W.N.W. of Caceres; takes its name from a Roman six-arched bridge 600 ft. long, over river Tagus, built by Trajan 105 A.D. Here is the ruined monastery of the knights of Alcantara. Pop. 4,000.

(2.) Port, Maranhão, Brazil, on St. Marcos Bay, 16 m. from St. Luiz. Vessels anchor $\frac{1}{2}$ m. S.E. of town. Pop. 10,000.

(3.) Former tn., adjoining Lisbon, Portugal, but since 1885 a western part of that city. A magnificent aqueduct, resting on 127 arches, crosses the Alcantara valley here, and, together with another aqueduct, gives Lisbon an abundance of pure water.

Alcantara, ORDER OF, one of the old Spanish religious and military orders created during the wars against the Moors. Founded

in 1156, it was recognized as a religious order by Pope Alexander III. in 1177. In 1221 it took the name of the Order of Alcantara, from the town of that name.

Alcaraz, range of mts., prov. Albacete, Spain; the prolongation to the N. of the E. end of Sierra Morena. The copper mines of San Juan de Alcaraz are near the town of same name, which stands N. of the range, and has a ruined castle and a Roman aqueduct. Pop. of tn. 4,500.

Alcarria, LA, fertile dist., prov. Guadalajara, Spain; supplies grain, cattle, and honey for the Madrid market. It lies 4,000 ft. above sea-level, and is watered by a branch of the Tajura, a trib. of the Tagus.

Alcaudete, tn., Jaen, Spain, 20 m. S.W. of Jaen, produces dried and candied fruits. Pop. 10,000.

Alcazar, name given to several palaces built by the Moors in Spain. The Alcazar of Segovia formerly contained many objects of historic value remaining from the Moorish period; these were destroyed in 1862 by a fire which left the mere shell of the building. The Alcazar of Seville ranks second only to the Alhambra in architectural beauty, although since its construction by the Moors in the 12th century it has been enlarged by several Spanish kings, who united the Gothic with the original style of architecture. It contains many ancient treasures.

Alcazar de San Juan, tn., prov. Ciudad Real, Spain, 50 m. N.E. of Ciudad Real; important ry. junction; manufactures gunpowder and nitre. Pop. 11,500.

Alcedo. See KINGFISHERS.

Alcedo y Herrera, ANTONIO, Peruvian soldier and author; his work, *Diccionario geográfico histórico de las Indias Occidentales* (1786-9), was published in English by Thompson (1812-15). The *Biblioteca Americana*, in MS., was also the work of Alcedo.

Alcester, mrkt. tn., England, in Warwickshire, at junction of the Alne and the Arrow, 9 m. N.W. of Stratford-on-Avon. Pop. 2,500.

Alcester, FREDERICK BEAUCHAMP PAGET SEYMOUR, BARON (1821-95), English naval officer; commanded the naval brigade during the Maori war (1860-1); was commander-in-chief of Mediterranean fleet (1880-3); and for the bombardment of Alexandria (1882) he received a parliamentary grant of £25,000, and was raised to the peerage as Baron Alcester of Alcester.

Alcestis, wife of Admetus; the heroine of Euripides's drama, in which her self-sacrifice is contrasted with the selfishness of Admetus's aged parents, and of Admetus himself, who refuse to give up their few remaining years to deliver him from death. While Admetus is mourning her death, he receives a visit from Heracles, who rewards him for his hospitality, and rescues Alcestis from the lower world. Browning's *Balaustion* is a free translation of the play. For other editions, see EURIPIDES.

Alchemilla, a genus of the order Rosaceæ; flowers greenish, small; leaves rounded in outline. The alpine species has compound leaves like a miniature lupine, and is found in abundance over the Scottish Highlands. The common alchemilla is plentiful at low levels. The name 'lady's mantle' is applied to the common species.

Alchemy, the early form of chemistry, was occupied chiefly with the supposed art of making gold and silver from the baser metals. The dominant theory of the alchemists was that any of the baser metals—*e.g.* lead—contains the same constituents as gold, mixed with impurities; and that when the latter are removed by using 'the philosopher's stone,' the transmutation is effected.

The great quest of the early alchemists was, therefore, to discover the philosopher's stone. At a later date was added the search for the *alkahest*, or universal solvent, and (when the adepts had gained some knowledge of physiology and drugs) the *magisterium*, a substance which could not only convert all metals into gold, but could also heal all diseases, and the *elixir vite*, a universal medicine by which human life might be prolonged indefinitely. It was believed that metals were compounds of mercury, sulphur, and salt, and that by altering the proportions of the ingredients a new metal could be formed.

The chief alchemists were:—HERMES, surnamed *Trismegistus*, from whom the term 'hermetic' is derived; GEBER, an Arabian, the author of the first authentic work on alchemy; ALBERTUS MAGNUS, German Dominican friar of the 13th century, said to have invented the word 'amalgam,' though other authorities attribute this to Thomas Aquinas, who also wrote on alchemy; RAYMOND LULLY, born at Majorca in 1235, who was the first to apply nitric acid to dissolve gold; ROGER BACON, a monk of Somerset, the contemporary of Magnus and Lully, and, although a keen alchemist, an opponent of necromancy and magic. During the century after Bacon the practice of alchemy increased greatly, but not without opposition, for in England an Act of Henry IV. declared the attempted transmutation of metals to be a felony. With every generation, however, alchemy was becoming the serious pioneer of chemistry, and PARACELSUS (a Swiss of the name of Von Hohenheim), although described as an alchemist, was a qualified lecturer in medicine at the University of Basel in the first half of the 16th century. The

many treatises on alchemy ascribed to a 'Basil Valentine' of the 15th century are now known to have been written in the 17th century by Johann Thölde. The last professional British alchemist appears to have been DR. PRYCE of Guildford (d. 1782), who pretended to transmute mercury. It is said, however, that at the present day there are at least three secret societies whose avowed object is to continue the work of the alchemists on a quasi-religious basis. Pope John XXII. and King Charles VII. of France, the Emperor Rudolph II. and the Elector Augustus of Saxony, were all great patrons of the alchemists. See Thomson's *Hist. of Alchemy*, and also Bergman's; Kopp's *Die Alchemie in alterer und neuerer Zeit* (1886); G. Rodwell's *Birth of Chemistry* (1874).

Alciati, ANDREA (1492-1550), Italian lawyer, was successively professor of civil law at Avignon, Bourges, Bologna, Pavia, and Ferrara. He wrote commentaries on the Pandects, and on the code of Justinian; a history of the Roman magistrature, and a history of Milan (1625); but his best-known work is *Emblematum Libellus* (Eng. trans. by Green, 1872).

Alcibiades (c. 450-404 B.C.), the Athenian, son of Clinias, was brought up after the death of his father (447) by his kinsman Pericles, the great statesman. Born of a noble and wealthy family, and distinguished by great personal beauty and transcendent ability, he soon became one of the leading men in Athens, but by reason of the extravagance and irregularity of his private life, and the masterfulness of his character, was always regarded with suspicion by the democracy. The Athenians feared that he might attempt to overthrow their constitution and make himself despot of the city, and their distrust pre-

vented them from making full use of his genius, and so, according to Thucydides, led to their own ruin. He was a favourite pupil of Socrates, who saved his life in battle near Potidæa (431 B.C.), and whose life he saved at Delium (424). About 422 he became head of the war party in opposition to Nicias. He induced Athens to fight with Argos against Sparta at Mantinea (418), and to undertake the great expedition to Sicily (415), of which he and Nicias and Lamachus were commanders. Implicated in the religious scandal caused by the mutilation of the busts of the Hermæ, he was summoned to trial, but escaped, and took refuge in Sparta. Having been condemned to death in absence, he assisted the Spartans against Athens. But he deserted again in 411, owing to the hostility of the Spartan king, Agis II., and secured the favour of the Athenians by detaching the Persian satrap Tissaphernes from the Spartan side. During the next four years he gained the victories of Abydos (411) and Cyzicus (410), captured Chalcedon and Byzantium, and in 407 returned to Athens, where he was appointed commander-in-chief of all the forces. But next year, in his absence, his lieutenant Antiochus lost the battle of Notium, and the Athenians superseded him. He went into voluntary exile in Bithynia, and, after three years of inactivity, was assassinated in Phrygia. Alcibiades was equally brilliant as statesman and soldier, and showed great versatility in other directions; but his great vanity and passion for personal aggrandizement and his want of principle completely marred his career. See *Life* by Plutarch, and Plato's *Symposium*.

Alcides, a patronymic by which Hercules is often called, as his supposed father, Amphitryon, was the son of Alcæus.

Alcinous, son of Nausithous, and grandson of Poseidon; mentioned in the *Odyssey* as king of the Phæacians, in the isle of Scheria, which later writers have identified with Corcyra (Corfu). He entertained Odysseus hospitably, and sent him home after ten years' wanderings. He also comes into the story of the Argonauts. His garden, as described by Homer, was famous, and the phrase 'apples to Alcinous' became proverbial in the same sense as our 'coals to Newcastle.' His court was always quoted as the type of magnificence and luxury, in later writers. See Homer's *Odyssey*, vi.-vii., and Apollonius Rhodius's *Argonautica*.

Alciphron, Greek rhetorician (end of 2nd century), and one of the most eminent of Greek epistolographers. The 116 letters (character studies) attributed to him have been edited by Hercher (in *Epistolographi Græci*, 1873), Schepers (1902), and others.

Alcira, tn., prov. Valencia, Spain, 22 m. s. by w. of Valencia, on an island formed by two branches of the river Jucar; depôt for timber brought down by this river from the Cuença Mts. Oranges and rice are much cultivated in the surrounding plain, the 'Garden of Valencia,' which is very fertile, but marshy and malarial. Alcira was a Carthaginian colony, and flourished under both the Roman and the Moorish occupation. Pop. 20,000.

Alclyde, an ancient Celtic kingdom of Britain, stretched south from the lower Clyde to the Solway Firth; was merged in the kingdom of Alban in 945. Its capital was Alclyth or Alclyde, now Dumbarton.

Alcmæon, son of Amphiaraus, and a member of the second expedition of the Seven against Thebes. On his return he slew his mother Eriphyle at his father's command. Pursued by the Furies,

he was purified by Phegeus, whose daughter he married. But as the land became barren from his presence, he fled to the islands at the mouth of the Achelous. There he married Callirrhoë, daughter of the river-god; and having dishonestly obtained for her a necklace which he had given to his former wife, he was murdered by the brothers of the latter.

Alcmæon, physician and philosopher (6th century B.C.), was a native of Crotona, in S. Italy. He is said by some—but Aristotle always classes him as an Ionian—to have been a disciple of Pythagoras, and is chiefly distinguished for his experimental researches in anatomy and physiology, as discoverer of the optic nerve and the Eustachian tube, of the connections between the brain and the organs of sense, and of the spinal cord, etc. He was the first to practise dissection, and to distinguish between veins and arteries. He wrote also on physics and metaphysics.

Alcmæonidæ, a celebrated and very wealthy clan at Athens, from which Cleisthenes, Pericles, Alcibiades, and other great Athenians, were descended. A member of the clan, Megacles, was one of the archons who treacherously killed the adherents of Cylon after their surrender, and about 594 B.C. the whole family was banished as blood-guilty. Having bribed the Delphic oracle to influence the Spartans to restore them, they returned in 509 B.C. But at the outbreak of the Peloponnesian war (432 B.C.) the Spartans struck at Pericles by demanding that Athens should expel this clan, 'the accursed.' Herodotus (vi. 125) gives the interesting story of the foundation of the great wealth of this clan.

Alcman, one of the earliest lyric poets; a Lydian by birth, but lived at Sparta, probably about 670-630 B.C. Few fragments of his works

survive. They comprised love poems, hymns to the gods, and especially lyrics to be sung by choruses at public festivals. The fragments are collected in Bergk's *Poeta Lyrici Græci*. Alcmanian verse, the metre of Alcman, is trochaic, allowing of the admixture of spondaic and dactylic trochees, which are usual in all logæedic verses.

Alcmene, wife of Amphitryon and mother, by Zeus, of Hercules.

Alcobaça, tn., prov. Estremadura, Portugal, 60 m. N. by E. of Lisbon. Before its partial destruction by the French in 1811, it possessed the most splendid monastery (Cistercian) in Portugal. In the monastery church lie buried Kings Alfonso I. and II., Sancho I., Pedro I., and his ill-fated mistress Ines de Castro. Pop. 2,400.

Alcock, SIR RUTHERFORD (1809-1897), diplomatist, born in London, joined the medical staff of the British auxiliary forces in the Peninsula (1832-6). He was British consul in China (1844), and in 1858 he became consul-general in Japan. Seven years later he was appointed minister-plenipotentiary at Peking, from which post he retired in 1871, and returned to England, where he interested himself in hospital nursing establishments. Among other works he wrote *Elements of Japanese Grammar* (1861), *The Capital of the Tycoon* (1863), and *Art and Industries in Japan* (1878). See Michie's *The Englishman in China during the Victorian Era* (1900), with two portraits.

Alcoforado, MARIANNA (1640-1723), a nun of the Portuguese town of Beja, and author of the passionate love-letters *Lettres Portugaises* (1669), which she addressed to the Count of St. Léger, afterwards marshal of France, and which were translated into almost every language of Europe (Eng. trans. by Edgar Prestage, 1893).

They may be compared with Heloise's letters to Abélard.

Alcofribas Nasier, the *nom de plume* under which François Rabelais published *Pantagruel*; an anagram formed from his name.

Alcohol (Ar.), a generic term in chemistry for a number of compounds which are the hydroxy derivations of hydrocarbon radicals, but usually applied to one member of the series—*viz.* ethyl alcohol, C_2H_5OH , the active principle of intoxicating liquors. Alcohol may be formed synthetically from its elements carbon, hydrogen, oxygen, but in practice it is always produced by the fermentation of a saccharine liquid. Originally the juice of the grape was used, as it still is in the preparation of wine and brandy; but the alcohol of commerce is now made from malt and one or other of the following raw materials—wheat, maize, rice, millet, potatoes, molasses, glucose, cane or beet sugar, honey, milk, apples, and cherries. The manufacturing operations, the details of which vary in different countries, are divided into three distinct stages: (1) the preparation of the saccharine liquid or *wort*; (2) the fermentation of the wort, producing what is technically known as *wash*; and (3) the distillation of the wash. Fusel oil and furfural are most important by-products of distillation. They are difficult to remove entirely, and are responsible for many of the objectionable qualities of alcoholic drinks. Small quantities of other alcohols, of greater toxicity in proportion to their greater atomic weight, are also often found mixed with ethyl alcohol.

Absolute or anhydrous alcohol is a colourless liquid of sp. gr. .79, and a boiling-point of $78^{\circ} C$. Alcohol is the characteristic component of brandy, whisky, gin, etc.; is used in the manufacture of chloroform, chloral, ether, essences, tinctures, alka-

loids, liniments, and lotions; as a solvent for oils, fats, resins, and gums; in making transparent soap; and for burning in spirit lamps. No simple chemical test has been devised by means of which alcohol can be readily detected. When in quantity, it may be obtained, mixed only with water, by distillation, and is then recognized by its odour and taste. When in small proportions, the best test is to add a solution of potassium iodide saturated with iodine, till the liquid is a permanent brown colour; then add dilute caustic potash solution, drop by drop, till the brown colour is removed. A yellow crystalline deposit of iodoform is produced. As several alcohol derivatives produce iodoform under similar conditions, the test should be confirmed by the oxidation of a portion of the suspected liquid: if alcohol is present, acetic acid would be produced. Alcohol is rarely adulterated, unless by the addition of water, and the presence of traces of impurities produced during manufacture are unavoidable; but see METHYLATED SPIRIT. See Allen's *Commercial Organic Analysis*, vol. i.; Thorpe's *Dict. of Applied Chem.*; Duplais's *Industrial Organic Chem.*; Wagner's *Chemical Technology* (1872).

Alcohol, ACTION AND USES OF.

Alcohol is a stimulant in small doses, and a depressant in larger doses. It exerts a brief stimulating effect on the heart and circulation and on the higher mental faculties, and it dilates the surface blood-vessels, thus causing more heat to be given off by radiation, with resulting lowering of the body temperature. The flushing of the skin, with the deceptive feeling of warmth that follows the ingestion of alcohol, sometimes leads to alcohol being taken to 'keep out the cold.' This is a great mistake, and in

not a few instances has proved fatal. Alcohol in any form should never be taken with the object of keeping out the cold, as its action is, after a very brief initial stimulation, precisely the reverse. When taken immoderately over a long period, alcohol induces serious structural changes in many important organs, notably the brain, blood-vessels, heart, liver, kidneys, and stomach. In all these organs the special cells are to a large extent destroyed, being replaced by a lower type of connective tissue. The percentage of alcohol by volume in some common alcoholic beverages is roughly as follows:—

	Per cent.
Rum	43
Whisky	43
Brandy	43
Gin	37
Port	25
Sherry	21
Champagne	10-15
Claret	9
Bottled beer	7-8
Lager beer	4

An important advance in our knowledge of the action of alcohol has been made in the last few years, largely the result of the researches of Kraepelin and his psychological school at Heidelberg. Kraepelin has made an exhaustive study into the influence of alcohol on the higher mental faculties, his experiments being of a very elaborate and ingenious kind. Their general results prove that small doses of alcohol from the first adversely influence the finer brain cells and the centres of latest and highest intellectual development.

Experiments have also been made by Hodge on the effect of alcohol on the muscular energy of dogs, tests being devised that would elicit the comparative ability of the dogs as to strength, endurance, and resistance to

fatigue, the dogs being taught to return a ball thrown to them. The experiments gave clear evidence of the greater alertness, strength, and energy of the non-alcoholic dogs. The experience of Sir Frederick Treves with the Ladysmith relief column may also be cited in this connection. 'In that enormous column of 30,000 men the first who dropped out were not the tall men, or the short men, or the big men, or the little men—they were the drinkers, and they dropped out as clearly as if they had been labelled with a big letter on their backs.' The clinical experience of medical men generally is in harmony with that of Treves in regarding alcohol as an agent which diminishes muscular energy; and in keeping with the altered views now held as to the action of alcohol in health, a great change has come over the practice of the medical profession in recent years with regard to the use of alcohol as a therapeutic agent. Whereas in 1891 the consumption of alcohol in all its forms in the Edinburgh Royal Infirmary worked out at 12s. per head per annum, in 1900 this had fallen to 1s. per head per annum. In a ward under the care of Sir Thomas Fraser, one of the greatest living pharmacologists and therapists, no alcohol of any kind was used in the year 1909. Similar facts have been recorded of nearly all the large hospitals in this country. This change of practice is the result of the fuller knowledge we now have of the limitations to the use of alcohol as a stimulant, to the serious risks attendant on its use as regards the alcoholic habit, and also to the acquisition of new drugs which have most of the advantages and none of the disadvantages of alcohol.

Alcohol is not now much used in medicine. It is of distinct service, however, in certain acute

illnesses in children, and may tide the patient over the critical period of pneumonia, diphtheria, and the like; it is valuable as an aid to digestion, and as a general tonic for promoting sleep in elderly people. It is, further, of value to adults suffering from pneumonia, typhoid fever, and heart disease; but whereas formerly it was employed as a routine in pneumonia, its use is now exceptional. The indications for its use are signs of failing strength and circulation, such as quick, feeble, irregular pulse, with general restlessness and prostration. A full account of 'Alcohol and the Human Body' is given in a recent work by Sir Victor Horsley and Mary Sturge, M.D. (1907). See also *Memoir* by Prof. Karl Pearson (1910), and Supplement to same (1910). (See INEBRIETY and INEBRIATE ACTS.)

Alcoholism, a nervous disease occasioned by excessive drinking of alcohol, characterized by numerous profound disturbances, always including, in the first instance, a loss of power to resist alcohol, and frequently associated with disorders of digestion and diseases in the stomach, liver, kidneys, and blood-vessels. The more remote causes of alcoholism are constitutional; but the hereditary effect of alcoholism, as such, has been much exaggerated, though patients who suffer from it are likely to beget epileptic or imbecile children. In most cases alcoholism is the result of insidious habit, rather than of a constitutional craving. A common incident of alcoholism is *delirium tremens*. In such a crisis a doctor must, of course, be called in. But, in the meantime, food and drink should be given to the patient—soda and milk, porridge and eggs, are most useful. *Alcoholic neuritis* is an inflammation of the nerves, common in women, accompanied by tenderness and muscular paral-

ysis, generally affecting the legs. *Alcoholic epilepsy* may supervene, and the patient suffer convulsions; or *alcoholic insanity* may necessitate removal to an asylum. The treatment of alcoholism consists in every case in a withdrawal of alcohol as rapidly as possible. See 'Report of the Edin. Med. Chir. Soc.,' *Brit. Med. Jour.*, July 13, 1901, with views of Prof. T. R. Fraser, Sims Woodhead, Dr. Clouston, etc.; *De l'Alcoolisme* (1874), by Magnan; Dr. Legrain's *Dégénérescence Sociale et l'Alcoolisme* (1895); Norman Kerr's *Inebriety* (3rd ed. 1894); G. R. Wilson's *Clinical Study in Vice and Insanity* (1899). (See INEBRIETY and INEBRIATE ACTS.)

Alcoholometry, the determination of the percentage of alcohol in a liquid. When the alcohol is mixed with water only, the proportion is estimated from the specific gravity, which is found by means of the specific gravity bottle or by a hydrometer. Tables are published showing the percentage of alcohol (by volume and weight) and of proof spirit, corresponding to the specific gravity. Sykes's hydrometer is used by the excise authorities. In liquors containing substances other than alcohol, such as beer, the strength can be determined only after the alcohol and water have been separated by distillation. See Allen's *Commercial Organic Analysis*, vol. i.; Thorpe's *Dict. of Chem.*; and, for alcoholic tables, *Analyst*, vol. v. (1880).

Alcott, AMOS BRONSON (1799-1888), American philosophical writer, born at Wolcott in Connecticut. In 1834 he opened the seminary in Boston of which Miss Peabody has given an account in her *Recollections of a School* (1834). Opposition to his methods caused his withdrawal to Concord, where he became the friend of Emerson, Thoreau, Hawthorne, and Channing, and was made dean of

the Concord School of Philosophy. In 1842 he visited England, where he met Carlyle, who described him as 'the good Alcott, with his long, lean face and figure, with his gray, worn temples and mild, radiant eyes; all bent on saving the world by a return to acorns and the golden age.' Alcott was a Neoplatonist, his central doctrine being the lapse of the soul from holiness. His chief works are, *Orphic Sayings* (1840); *Tablets* (1868); *Concord Days* (1872); *Table Talk* (1877); *New Connecticut* (1881 and 1887); and *Ralph W. Emerson* (1882). See *Life* by Sanborn and Harris (1893).

Alcott, LOUISA MAY (1832-88), American writer for the young; born at Germantown, Pennsylvania, U.S.A.; daughter of the above; began life as a schoolmistress. During the civil war she acted as a hospital nurse. Wrote *Hospital Sketches* (1863), *Little Women* (1867-9), *Little Men* (1871), *Jack and Jill* (1880), etc.

Alcoy, tn., prov. Alicante, Spain, 24 m. N. of Alicante; one of the most prosperous towns in Spain; the Molinar and Barchel rivers supply power for paper, cloth, and match factories. Pop. 32,000.

Alcuin, or ALBINUS (735-804), surnamed FLACCUS, whose name in English was EALHWINE, was born at York. Educated there under Archbishop Egbert and the teacher Ethelbert, he succeeded the latter on his promotion to the archbishopric in 767, and, with Ethelbert's resignation in 778, became head of both school and library. In 781, on his return from Rome with the pallium for Eanbald, Ethelbert's successor in the archbishopric of York, he met Charlemagne at Parma, and the emperor persuaded him to settle in France. He received the abbey of Ferrières in Gâtinais, St. Loup at Troyes, and St. Martin at Tours. The intellectual torpor of the 7th and early 8th centuries was giving place to

the stirrings of a general, if as yet childlike, curiosity; and Alcuin's service to his time was to foster this revival. In the court at Aachen he had among his pupils the emperor, his sons Charles, Pepin, and Louis, imperial counsellors such as Adalhard, the archbishops of Mayence and Trèves, Charlemagne's sister and daughter, the nuns of the dioceses, and Adalhard's sister Gundrade, to whom Alcuin dedicates his philosophical essay, *De Ratione Animæ*. The instruction embraced the stages of the *trivium* and *quadrivium*, in the usual lines of such rhetoricians and grammarians as Martianus Capella, Isidore, Priscian, etc.; but even in these it found methods and symbols allying it with that of later periods of renaissance. The dialogue, and especially the dialogue in allegorical character, was Alcuin's favourite device. In his letters, too, he conveyed instruction; and of the 232 that have come down to us, 30 are addressed to Charlemagne. In these he congratulates the emperor on victories over the Huns, advises clemency, outlines missionary schemes, expounds astronomy, and touches on ecclesiastical events and heresies of the day. Manners and the state of society are also recorded, together with the surroundings of his earlier manhood, in the most notable of his poems, *Carmen de Pontificibus et Sanctis Ecclesiæ Eboracensis* (ed. Raine, Rolls Series, 1878). Alcuin revisited England (790-792) in connection with a renewed treaty between the emperor and Offa, king of Mercia. In 796 he settled at Tours as abbot and head of the great school, and died in 804.

Alcuin's theological and poetical writings are not of the first importance. What interest his remains possess lies almost wholly in scholastic and historical work. The former includes treatises on grammar, orthography, rhetoric,

and dialectic, and the discourse *De Virtutibus et Vitiis*—the latter the four lives of St. Waast, St. Martin, St. Riquier (or Richarius), and St. Willibrord. The earliest edition of Alcuin's works is that of Duchesne (1617), the best that of Frobenius (1777), incorporated in Migne's *Patrologia Cursus Completus* (1851), vols. c. and ci. Additions to these are included in Jaffé's *Monumenta Alcuiniana* (1873), and Halm's *Rhetores Latini Minores* (1863). See also Guizot's *Civilisation en France*, vol. ii. lec. 22, an admirable exposition; Lorenz's *Alcuin's Leben* (Eng. trans. 1837); Monnier's *Alcuin et Charlemagne* (2nd ed. 1863); Werner's *Alcuin und sein Jahrhundert* (1876); Mullinger's *Schools of Charles the Great* (1877); West's *Alcuin and the Christian Schools* (1892); and *Alcuin of York*, by Bishop Browne (1908).

Alcyonaria, a subdivision of the Actinozoa, including *Alcyonium* or dead men's fingers, the sea-pen (*Pennatula*), the red coral of commerce (*Corallium*), and numerous other beautiful forms. The Alcyonarians are mostly colonial; and the polypes, or single members of the colony, differ from sea anemones and the reef corals in having eight branched tentacles, instead of simple tentacles in multiples of six.

Alcyone, or HALCYONE, in ancient Greek legend, a daughter of Æolus and Enarete or Ægi-ale. When her husband Ceyx was drowned, Alcyone cast herself into the sea. The gods pitied the devoted pair, and changed them into birds, the alcyons or halcyons (kingfishers): it was believed that during the breeding-time of these birds the sea was always calm.

Aldan, riv., Yakutsk gov., Siberia, rises in the Aldan Mts., and flows N.E., then W. to its junction with the Lena. Length, 1,370 m.

Aldborough, vil., W. Riding of Yorkshire, England, near the confluence of the Swale and Ure, on Watling Street, 16 m. w.n.w. of York. Near it was *Isurium*, the ancient capital of the Brigantes, and a Roman station. Pop. 500.

Aldebaran = α Tauri, a standard first-magnitude star of a light-red colour, showing a spectrum of 'advanced' solar type. The name signifies the 'follower' (of the Pleiades), and an alternative Arabic appellation, *Ain-al-Thaur*, means the 'eye of the bull.' The Romans called the star 'Palilicium,' because it set for the last time visibly in evening twilight on April 21, when the Palilia, or feast of Pales, was celebrated. Its parallax of 0.11" corresponds to a light-journey of just thirty years, and involves the consequence that Aldebaran shines with a total brilliancy forty times that of the sun. It is retreating from the sun with a velocity (according to Vogel) of 30 miles a second.

Aldeburgh, munic. bor., Suffolk, England, 7 m. s.e. of Saxmundham. Since the 17th century the sea has seriously encroached upon the town. Birth-place of the poet Crabbe (1754). Pop. 2,500.

Aldegrever, or ALDEGRAVE, HEINRICH, whose real name was TRIPPENMAKER (1502-60), German painter and engraver. His work was greatly influenced by Dürer, Beham, and Pencz. His few known paintings are in Breslau, Brunswick, and Vienna. Later he gave himself wholly to engraving. He worked entirely with the graver, and his plates are finished with precision and delicacy. There is a good collection of them (1522-55) in the British Museum; he produced over 300 altogether. See *The Little Masters of Germany* (1880), in the Great Artists Series, by William Bell Scott; Adam von Bartsch, *Peintre-Graveur: Catalogue raisonné* (1802-21).

Aldehyde, a generic term applied to a class of organic compounds which are produced by the partial oxidation of the primary alcohols, and contain a group—CH.O. They are intermediate compounds between the alcohols and acids; by reducing agents they are converted into alcohols, and by oxidizing agents into acids. The first member of the series is formaldehyde, which is made by the oxidation of methyl alcohol; it is a gas with a pungent smell, and is sold in a 40 per cent. solution under the name of formalin. Common aldehyde (acetic aldehyde), which is made by oxidizing ordinary alcohol by means of chromic acid, is a volatile liquid with a peculiar, penetrating odour (b.p. 20.8° c.; sp. gr. 0.8). A polymeric modification is used in medicine. All the aldehydes are easily oxidized to acids—*e.g.*, on exposure to air, formaldehyde becomes formic acid, and common aldehyde acetic acid. The aldehydes also unite chemically with ammonia, the acid sulphites of the alkalis, and hydrocyanic acid. They also precipitate metallic silver from an ammoniacal solution of silver nitrate, and this property is sometimes utilized in the manufacture of mirrors. See CHLORAL and FORMALDEHYDE.

Aldeia Gallega, tn., dist. Lisbon, Portugal, 10 m. E. of Lisbon; sulphur springs. Pop. 8,000.

Alden, JOHN (1599-1687), one of the Pilgrim Fathers who sailed in the *Mayflower*. His wooing is immortalized in Longfellow's *Courtship of Miles Standish*.

Alderman, or EALDORMAN (*ealdor*, 'elder'), originally applied to a Teutonic chief of a privileged family, seems to refer to a primitive constitution, in which the chief authority was held by the oldest member of a tribe. In Egbert's time the title denoted a magistrate appointed by the king and Witan. When the Danish

jarl (earl) superseded the *ealdorman*, in the 11th century, the latter title declined in dignity.

In English boroughs, under the Municipal Corporations Acts, aldermen are elected by the council from persons who are councillors, or are qualified to be so. The number of aldermen is one-third the number of the councillors, and their term of office is six years, half of them retiring at the end of every third year. A councillor who is elected an alderman vacates his seat as councillor, and *vice versa*. Aldermen have the same powers and duties as councillors, and are a constituent part of a municipal corporation, which consists of the mayor, aldermen, and burgesses, acting by the council. County aldermen are elected under the Local Government Act, 1888, by the county councillors. Their position, number, and term of office are the same as in the case of borough aldermen, except in the county of London, where they number only one-sixth of the councillors; and their qualification is practically the same, except that clerks in holy orders, and other ministers of religion, are not disqualified, and peers owning property in the county, and persons registered as parliamentary electors in respect of the ownership of property in the county, are eligible. Aldermen of the metropolitan boroughs created by the London Government Act, 1899, must be qualified in each borough in the same way as county aldermen, and they number one-sixth of the council. Aldermen of the city of London are elected for life, one for each ward of the city. They are in a different position in many respects from borough or county aldermen. See LONDON; Macmorran and Dill, *On Local Government Acts*, 1888 (3rd ed. 1898) and 1894 (4th ed. 1907); Jenkin, *On the London Government Act*, 1899.

Alderney (Fr. *Aurigny*; anc. *Riduna*), Brit. isl., most N. of the Channel Is., 10 m. W. of Cape La Hague, and separated from Normandy by the Race of Alderney—dangerous to mariners on account of the strength and rapidity of its tides. The treacherous Casquet Rocks, to the W., are marked by three lighthouses. There is a harbour of refuge at Braye, on the N. side. The local legislative body—consisting of a judge appointed by the crown, six *jurats*, and twelve *douzeniers* popularly elected, the last having no vote—has civil but not criminal jurisdiction; and the island is a dependency of Guernsey. French is spoken, and the inhabitants are Protestant. The capital is St. Anne, in a fine valley near the centre of the island. Area, 1,962 ac.; length, 4 m.; extreme breadth, 1½ m.; climate mild and healthy. Pop. 2,100. See Clarke's *The Isle of Alderney* (1851).

Aldershot, tn., Hampshire, England, 35 m. S.W. of London, on the L. & S.W. and S.E. & Chatham Rys. Pop. 36,000.

ALDERSHOT CAMP, the largest permanent military camp in England, situated chiefly to the N. of Aldershot town, between Farnham and Farnborough, on the borders of Hants, Surrey, and Berks. The concentration of troops in large garrisons dates from the time of the Crimean war, when the camps at Aldershot, Colchester, Shorncliffe, and the Curragh were formed. At Aldershot the barracks, inclusive of the drill grounds that lie between them, cover a space 2½ m. in length and nearly 1 m. in width. The permanent buildings can house some 20,000 men, with 4,000 horses.

Alder Tree (*Alnus glutinosa*) belongs to the birch family, and is of comparatively small size, though some specimens reach a height of sixty feet. The buds are

peculiar among those of British trees in being stalked, for most buds are sessile. The leaves are somewhat like those of hazel, roundish in outline, irregularly toothed, and strongly veined; but the colour is of a deeper green and the surface smoother than in the hazel. Anglers sometimes steep their fishing-gut in an infusion of the leaves, or rub the gut with the leaves, to prevent its glistening in the sunlight. The flowers yield green, the twigs pale brown, and the rough bark dark red dyes, which are used in the Highlands of Scotland. By the banks of British streams, especially in Scotland, the tree forms a dense covering. It loves moisture, and it is often the companion of oaks and birches. The wood, capable of withstanding long immersion in water, is used for piles; and, from its reddish colour and suitability for polishing, it is sometimes called 'Scottish mahogany.' The male inflorescences form catkins, and the female (on the same tree) are like fir cones. These begin to appear in autumn, last through winter, and mature in March or April. The ripened 'cones' are black, and about half an inch long.

Aldhelm, or EALDHELM. See EALDHELM.

Aldiborontiphoscophornio, a courtier in Carey's burlesque, *Chrononhotonthologos* (1734). The name was applied playfully by Sir Walter Scott to James Ballantyne, the printer, on account of his formal style of speech. See Lockhart's *Life*, ch. xviii.

Aldine Editions. See MANUTIUS, ALDUS.

Aldobrandini, a celebrated Tuscan family, settled in Florence about the end of the 12th century. Among its chief members are SILVESTRO ALDOBRANDINI (1499-1558), jurisconsult, banished from Florence for opposing the Medici, entered the serv-

ice of the papal court; IPPOLITO ALDOBRANDINI, son of Silvestro Aldobrandini, became Pope under the title of Clement VIII. (1592-1605); GIOVANNI ALDOBRANDINI, son of Silvestro, became a cardinal (1570); PIETRO ALDOBRANDINI (1572-1621), a nephew of Ippolito, was made cardinal in 1594, and was chief minister during the pontificate of his uncle—he was also archbishop of Ravenna; TOMMASO ALDOBRANDINI, another son of Silvestro, author of a Latin translation of Diogenes Laertius; and CINZIO PASSERO ALDOBRANDINI, cardinal, a grandson of Silvestro Aldobrandini. The principal family died out in 1681.

Aldred (d. 1069), elected (1060) archbishop of York, was the first English bishop (of Worcester) to visit Jerusalem (1058). His archiepiscopate is noteworthy for the Pope's refusal to grant him the pallium; for his reform of the external life of the clergy, and the modelling of his diocese after the splendour of the German Church; and for his loyal yet independent attitude to William the Conqueror, whom he crowned, as he had previously crowned Harold.

Aldrich, HENRY (1647-1710), dean of Christ Church, Oxford, and author of a small treatise on logic, *Artis Logicæ Compendium* (1st ed. 1691, ed. by Dean Mansel, and repr. 1862), was born at Westminster. His clerical and scholastic labours were varied by his architectural and musical interests—he composed the catch, 'Hark, the bonny Christ Church Bells'—and not least by his love of conviviality. He is said to have designed the Chapel of Trinity College and All Saints' Church, Oxford.

Aldrich, THOMAS BAILEY (1836-1907), American poet and novelist, was born at Portsmouth, New Hampshire. He contributed much prose and verse to many of the

principal magazines, and was editor of *Every Saturday* (1865-74) and of the *Atlantic Monthly* (1881-1890). His chief publications are the poems *The Ballad of Babie Bell* (1856), *Pampinea* (1861), *Cloth of Gold* (1874), *Thirty-six Lyrics* (1881), and *Sisters' Tragedy* (1891); and the novels *Story of a Bad Boy* (1869), *Marjory Daw* (1873), *Prudence Palfrey* (1874), *Queen of Sheba* (1877), *Stillwater Tragedy* (1880), *Two Bites at a Cherry* (1893), *A Sea Turn* (1902), and *Ponkapog Papers* (1903).

Aldridge, IRA (1805-67), the 'African Roscius,' a negro, born at Bel Air, near Baltimore, who in 1825 began to prepare for a missionary career at Glasgow, but appeared next year in London as Othello, and subsequently starred the provinces. On one occasion he acted Othello to Edmund Kean's Iago. On the Continent, which he visited in 1852, he had great success as an exponent of Shakespearean rôles.

Aldringen, or ALDRINGER, JOHANN, COUNT (1588-1634), Imperialist general in the Thirty Years' war; was born at Diedenhofen (Thionville), Lorraine. He subdued Würtemberg (1631), and after Tilly's death became commander of the army of the League (1632). See Pufendorf's *Rerum Suecicis*, vi. 157; Brohm's *Johann von Aldringen* (1882).

Aldrovandi, ULYSSES (1522-1605), zoologist, born in Bologna; studied law, philosophy, and medicine there, and later at Padua. In 1549 he was imprisoned at Rome for heresy, but was afterwards released. Thereafter he took a medical degree at Bologna in 1553, and held successively the botany and natural history chairs in that university. He established the Botanic Gardens at Bologna in 1567, and spent many years in forming a natural history museum. The first volume of his great work on natural history

appeared in 1599. Six others appeared during his lifetime, seven after his death.

Aldus Manutius. See MANUTIUS.

Aldwych, the name of a new thoroughfare which forms part of the great scheme of street improvement authorized by the London County Council (Improvements) Act, 1899. The main idea was to open up direct and adequate communication between Holborn and the Strand, north and south, and at the same time to improve and beautify the latter thoroughfare, east and west. Aldwych, which forms a noble crescent, sweeps behind the Strand frontage from Wellington Street to near the law courts. The 'island' formed between Aldwych and the Strand, and the frontages of both the crescent and Kingsway (another new thoroughfare), will, when completed, possess many architectural features of interest and beauty. Kingsway and Aldwych were opened for traffic by King Edward VII. in 1905.

Ale (Dan. *øl*, A.S. *eale*, Scot. *yill*), a term variously applied to beer. Strictly, ale differs from beer by the large percentage of alcohol (7 or 8 instead of about 2) and by the greater quantity of sugar. (See BREWING.)—HEATHER ALE, a legendary drink brewed from young heather tops and malt in the Scottish Highlands and Galloway. See Stevenson's *Ballads*.

Aleander, Hieronymus (1480-1542), cardinal, was born near Venice. He was a strong opponent of Luther at the Diet of Worms (1521), and a persecutor of those who held the reformed faith, notably in the Netherlands; author of a *Lexicon Græco-Latinum* (1512). He died at Rome.

Aleardi, ALEARDO (1812-78), Italian poet, often imprisoned for revolutionary tendencies; professor (1864) of æsthetics in the

Accademia della Belle Arte at Florence; and later, member of Senate. His *Canti* (complete ed. Florence, 1882) are elegant and patriotically inspired, though somewhat sentimental. Wrote also *Epistolario* (Verona, 1879). See Rosso's *Life* (1900).

Aleatory Contracts (Lat. *aleator*, 'a gamester'), defined by Holland (*Jurisprudence*, p. 234) as those 'depending or not depending upon an uncertain event,' include wagers, bottomry, respondentia, insurance, etc.

Ale-conner, a local officer appointed yearly to assay ale and ale measures; called also *ale-taster*, *ale-founder*. The liverymen of London, assembled in common hall on Midsummer Day, still appoint four such officers.

Alecto, in Greek mythology one of the three Erinnys or Furies—Alecto, Megæra, and Tisiphone, denoting hatred, jealousy, and revenge. See EUMENIDES.

Alegria, tn., Cebú, Philippine Is., 55 m. s.w. of tn. of Cebú. Has petroleum wells. Pop. 10,000.

Aleman, MATEO (c. 1550–1610), Spanish novelist; author of the popular story of roguery, *La Vida del Picaro Guzman de Alfarache* (1599; several English trans.), also of *Ortografia Castellana* (1608); was for twenty years in the service of the king of Spain; died in Mexico. See Ticknor's *Hist. of Spanish Literature*.

Alemanni, or ALAMANS, a fusion rather than a confederation of Teutonic tribes who rose into prominence during the later years of the Roman empire, with which they were almost constantly at war during the 3rd, 4th, and 5th centuries. At the battle of Tolbiac, 24 m. from Cologne, they suffered a crushing defeat at the hands of the Franks under Clovis, in 496. Thereafter they were allowed by the Emperor Theodoric to settle in what is now S. Bavaria. They were the

ancestors of the modern Swabians. From their name comes the French *Allemand* and *Allemagne*, applied to the whole of Germany.

Alembert. See D'ALEMBERT.

Alembic, an apparatus for distillation used by the alchemists; now superseded by retorts and flasks connected to a condenser.

Alemtejo, the largest prov. of Portugal, drained by the Tagus, the Guadiana, and the Sado; detached mountain ranges in the E., well wooded with cork trees, oaks, and chestnuts; towards the w. broad, treeless plains, where sheep are pastured; coast swampy. Cereals are grown, and there are copper and iron mines, and mineral springs, but very little manufacture. Area, 9,220 sq. m. Pop. 440,000. Chief tn., Evora.

Alençon, cap. of dep. Orne, France, on the Sarthe, 110 m. w. by s. of Paris. Woollen and linen manufactures; the *point d'Alençon* lace industry is decaying. It was held by the English during the Hundred Years' war from 1415–49. Pop. 18,000. Alençon has been the title of a duchy since the 14th century. See Odolant Desnas's *Memoires Historiques sur la Ville d'Alençon* (1787).

Aleppo. (1.) Vilayet (33,400 sq. m.), N. Syria, Asiatic Turkey, extending from the Mediterranean to the Euphrates. Pop. est. at 1,500,000 (2.) Town (Turk. *Halebes-Shabba*; anc. *Berea*), cap. of above, on the Koeik, 70 m. E. of the Mediterranean. An important and historic trade centre, inhabited by Turks, Armenians, Greeks, Jews, Maronites, Syrians, four-fifths being Mohammedans. The Italianized name commemorates the trade connection with Venice, active to the close of the 15th century, when the Cape route to India robbed it of its importance. Conquered by Saracens (636 A.D.); sacked by Tamerlane (1402); captured by Turks (1517); devastated by earthquakes (1170

and 1822); ravaged by plague (1827) and cholera (1832). Silk and cotton stuffs, silk cocoons, wool, liquorice, morocco leather, butter, wheat, and other grain are produced and exported through the port of Alexandretta. The total trade is valued at 3 $\frac{3}{4}$ millions sterling per annum, 60 per cent. being imports. Pop. 200,000, of whom 30,000 are Christians and 8,000 Jews.

Aleshki, formerly DNIIEPROVSK, tn., gov. Taurida, Russia, on the Dnieper. Fisheries, fruit culture, active trade. Pop. 10,000.

Alesia, or ALEXIA (modern ALISE), fort. tn., ancient Gaul, near the source of the Seine, where Cæsar besieged Vercingetorix (*De Bel. Gal.*, bk. vii. c. 68 ff.).

Alesius (Lat. of *Hales* or *Ales*), ALEXANDER (1500-65), Scottish Lutheran divine, canon at St. Andrews, chosen for his skill in confuting Luther's opinions to reclaim Patrick Hamilton; but, himself convinced of what he attempted to confute, had to fly to Germany (1532), where he formed a friendship with Melanchthon. Sent to England, he met Cranmer and Thomas Cromwell (Earl of Essex), and lectured at Cambridge. When Cromwell's fall was imminent, Alesius returned to Germany (1540), and, after holding for three years a professorship at Frankfort-on-the-Oder, spent his closing days at Leipzig. See M'Crie's *Life of Knox*, note 1 (7th ed. 1855); Strype's *Memoirs of Cranmer* (1853).

Alessandria. (1.) Fort. tn. and episc. see, cap. of prov. of same name, Piedmont, Italy, 48 m. E. by S. of Turin; built (1168) by the Lombard League as a bulwark against Frederick Barbarossa; the citadel was built in 1728. Now an important railway centre, and manufactures linen, macaroni, etc. Near it took place the battle of Marengo (1800). Pop. 75,000. (2.) Province, Piedmont, Italy,

drained by the Tanaro and other affluents of the Po; chief industries are agriculture and silk. Area 1,960 sq. m.; pop. 850,000.

Alessi, GALEAZZO (1512-72), Italian architect, enjoyed the friendship of Michael Angelo. He designed several churches and palaces at Genoa, and the churches of San Paolo, San Vittoria, and the Palazzo Marino at Milan. Buildings after his designs may also be seen in Germany and Belgium.

Aletschhorn, second highest peak (13,721 ft.) in the Bernese Oberland; dominates the great glacier of Aletsch, the largest of the Swiss glaciers, which is about 13 m. in length, and descends to a level of 5,500 ft.

Aleurone Grains, small albuminoid granules, with definite chemical and optical properties, found in the endosperm of ripe seeds.

Aleutian Islands, or CATHERINE ARCHIPELAGO, a curved chain of islands numbering about 150, extending W. from the Alaskan peninsula for a distance of 1,500 m. towards the coast of Kamchatka. The islands are bare and rocky, and many of their summits are volcanoes; the largest, Unimak, which is also nearest to the mainland, has two active volcanoes. The climate is like that of Iceland (mean temp., July 50°, Jan. 35°). Fishing and sealing are the sole industries. Foxes, bears, dogs, reindeer, caribou, otters, and seals are the chief mammals. The island of Unalaska is the centre of the American whale and seal fisheries; there is a good harbour. The inhabitants, called Aleuts, are Eskimo in origin. They have been converted to the Greek Church, and number barely 2,000. The greater part of the chain belongs to the U.S. territory of Alaska.

Alewife (*Clupea mallowocca*), a N. American coast, river, and

lake fish, 8 to 10 in. long, so called from its rounded, corpulent shape, is somewhat like a shad, but not so good for food. It is taken in great quantities, salted, and exported.

Alexander, eight popes. **ALEXANDER I.** (106-115) is believed to have died a martyr.—**ALEXANDER II.**, Anselmo de Baggio (1061-73), was born in Milan; bishop of Lucca; papal legate at Milan (1059); elected Pope (1061) through the influence of Hildebrand; opposed and defeated Pope Honorius II., who was elected through the influence of the German emperor; was opposed to the divorce of the Emperor Henry IV.; did much, under the inspiration of Peter Damiani and Hildebrand (later Pope Gregory VII.), to reform the Roman Catholic Church.—**ALEXANDER III.**, Orlando Bandinelli (1159-81), one of the greatest popes of the middle ages, was born in Siena; elected Pope in 1159; fought successfully against the Emperor Frederick Barbarossa, who opposed to him successively three anti-popes, and whom he forced to sign the treaty of Venice (1177), for which he was hailed as defender of the liberty of Italy. He was successful also against Henry II., king of England, whom he constrained to do penance for the murder of Thomas à Becket. In 1179 he summoned the Lateran Council, which conferred on the Pope alone the right of canonization, and drew up the laws under which the election of the popes is still governed.—**ALEXANDER IV.**, Rinaldo, Comte de Segni (1254-61), formerly bishop of Ostria and Velletri, was of weak character, and in his struggle against Manfred, natural son of Frederick II., was defeated and compelled to fly to Viterbo, where he died.—**ALEXANDER V.**, Pietro Filargi (1409-10), was Pope only ten months. Bishop of Milan in 1402, cardinal in 1405, he was elected Pope in

1409. He died, it is believed, of poison administered by his chancellor, subsequently his successor, under the title John XXIII.—**ALEXANDER VI.**, Rodrigo Borgia (1492-1503), whose memory is one of the most abused in history; born in 1431 in Jativa, prov. Valencia, Spain. The election of his uncle as Pope Calixtus III. turned his ambition towards the church. At the age of twenty-five he was made a cardinal, and became bishop of Valencia in 1458. The beautiful Vanozza de Cataneis, his mistress, bore him four sons and a daughter, two of whom were the notorious Cæsar and Lucrezia. Elected Pope in 1492, he figured conspicuously in the political events of Italy, endeavouring to establish a dynasty for his own family, in the prosecution of which purpose he is accused of having shrunk from no means, not even from assassination and poison. On the other hand, he showed himself an able administrator and politician, a patron of the arts and sciences, and a friend of the people. Cæsar Borgia, who largely inspired Alexander's policy, is Machiaveli's type of the statesman. See Leonetti's *Papa Alessandro VI.* (3 vols. 1880); Clément's *Les Borgia* (1882); Pastor's *Geschichte der Päpste* (3 vols. 1895); Gregorovius's *Lucrezia Borgia* (1875); Creighton's *A History of the Popes*, iv. (1903).—**ALEXANDER VII.**, Fabio Chigi (1655-67), was born at Siena in 1599; cardinal and papal nuncio in Germany at the peace of Westphalia; was elected Pope in 1655. Alexander was a patron of learning, and himself the author of a volume of poems in Latin. He did much for the improvement of Rome, and constructed the beautiful colonnade in the piazza of St. Peter. He had a dispute with Louis XIV. of France, in consequence of which the Papal See lost Avignon (1662).—**ALEXANDER VIII.**, Pietro Ottoboni (1689-91),

born in Venice (1610), was bishop of Torcello and Brescia; elected Pope in 1689. He assisted Venice in her struggle against the Turks, issued the bull *Inter multiplices* against the four articles of the Gallican Church, and enriched the Vatican library with valuable mss. from the library of Queen Christina of Sweden.

Alexander, surnamed POLY-HISTOR, a native of Cotyaeum, in Lower Phrygia, was brought to Rome as a slave in the time of Sulla; became tutor to the children of Cornelius Lentulus, and was liberated by his master (82 B.C.); subsequently accompanied Cræsus on his travels, and died at Laurentum. He was a voluminous compiler of books on historical and geographical subjects, now only surviving in fragments (Müller, *Frag. Histor. Græc.*, vol. iii.; Eng. trans. I. R. Cory, 1876), one of which contains excerpts from otherwise unknown Jewish writers. His works were largely quoted by Pliny, Eusebius, Clement of Alexandria, and others.

Alexander OF APHRODISIAS, so called from his birthplace in Caria, styled the 'Second Aristotle' as being the greatest expositor of the peripatetic school, was the head of the Lyceum, Athens (c. 200 A.D.), and author of numerous commentaries on the philosophy of Aristotle, some of which still exist, as well as of original contributions to philosophy. Of the former, the most important is his commentary on the *Metaphysica*, ed. by Bonitz (Berlin, 1847); of the latter, *De Fato* and *De Animo*.

Alexander OF HALES (d. 1245), English scholastic theologian (*Doctor Irrefragabilis*), having resigned his benefice in Gloucestershire, went to Paris to study, and was there appointed professor in the schools. Having resigned this position, he entered the

Franciscan order (1222). He was a strenuous supporter of the papacy, and gave new authority to the teaching of the orders, which now vied with that of the secular professors of the universities. His work, *Summa Universa Theologiae* (first printed 1475, best ed. 1576) is of no permanent value. See Erdmann's *Geschichte der neuern Philosophie* (Eng. trans.).

Alexander I. (?1078-1124), king of Scotland, fourth son of Malcolm Canmore, succeeded (1107) his brother Edgar to the northern kingdom, while his younger brother David I. ruled the country south of the Clyde and Forth. Alexander promoted important ecclesiastical reforms, introducing a diocesan episcopacy on the Roman model, establishing the see of St. Andrews and defending it against the claims of the English Church, and founding abbeys at Inchcolm and Scone. He died childless, and was succeeded by David.

Alexander II. (1198-1249), king of Scotland, son of William the Lion, succeeded to the throne in 1214. After continuous disputes with regard to the Northumbrian and Cumbrian provinces, he concluded a treaty with Henry III. (1217), and married Joan, sister of the English king. Henry, however, attempted to force Alexander to give homage (1244), but the matter was peacefully settled by the treaty of Newcastle. Alexander protected the church, reformed the laws, and by his wisdom and courage brought prosperity to Scotland.

Alexander III. (1241-85), king of Scotland, succeeded his father Alexander II. when eight years old, and till 1261 was sore beset by regencies of English and Scottish nobles. Alexander is renowned for his splendid architecture, his pure coinage, his wise administration of justice, and for the defeat of Haco of

Norway at Largs in 1263, which united the Hebrides to Scotland. Externally, the disputes with England about homage began to take a form ominous of the fast-approaching struggles for independence. On March 12, 1285, he perished by falling over a cliff between Burntisland and Kinghorn. A monument (1887) now marks the spot.

Alexander I., PAULOVITCH (1777-1825), emperor of Russia, eldest son and successor of Paul I. (Petrovitch), was educated by Laharpe, a Swiss of high character and liberal ideas. The assassination of the Emperor Paul in March 1801 placed Alexander on the throne. The reign of Alexander began well. It synchronizes with the stormy period of Napoleonic conquest, aggrandizement, and decay. Yet, although Russia inevitably found herself arrayed against France, Alexander himself was full of admiration for Napoleon's lofty genius. The chief incidents of the struggle between the two nations were Russia's alliance with Prussia and the treaty of Tilsit (1807), and Napoleon's disastrous invasion of Russia (1812). Under the influence of Mme. de Krüdener, Alexander was instrumental in forming the Holy Alliance. More purely Russian events were the definite annexations of Georgia and Finland (1809), and the tightening of the Russian grip on Poland. This enlightened ruler founded universities and schools; fostered trade; abolished torture, the secret tribunal, and the transference of parents as mere chattels; and reconciled church and people. Nevertheless, his closing years were marked by reactionary measures. Disappointed and broken in spirit, he took refuge in dissipation, alternating with fits of religious mysticism. He died at Taganrog, on the Sea of Azov.

Alexander II., NICOLAEVITCH (1818-81), Czar of Russia, known as the 'Czar Liberator,' was the eldest son of Czar Nicholas, whom he succeeded on March 2, 1855. The reign of Alexander II. is marked by two great wars—the Crimean war, which was going on at the time of his accession, and the war with Turkey in 1877. Into this last he was in great part forced by the Panslavist party. Moreover, from 1866 to 1881 his troops were engaged in intermittent and successful warfare with the Turcoman tribes of Central Asia, and the Russian frontier was ever pushed farther and farther to the south-east. The subjugation of the peoples of the Caucasus was likewise completed; and he acted with great severity in suppressing the Polish insurrection of 1863. On the other hand, the emancipation of the serfs in 1861 was due to the initiative of the Czar; and he also took a keen interest in advancing internal reforms in Russia, especially the reorganization of the judiciary and the army. In 1872 the Triple Alliance was concluded between himself and the emperors of Austria and Germany. But the many attempts on his life by the Nihilists drove him to adopt methods of the most severe repression, with no result; and at length, on March 13, 1881, he was fatally injured by the explosion of dynamite bombs thrown at his carriage in the streets of St. Petersburg.

Alexander III., ALEXANDROVITCH (1845-94), Czar of Russia, second son of Alexander II., succeeded to the throne on the death of his father on March 13, 1881, his elder brother Nicholas having died in 1865. Plain and blunt in manner ('the Peasant Czar'), and of great personal strength, Alexander III. evinced also a dogged determination to continue the hereditary policy of his house.

In matters of foreign policy he consistently followed the idea of Russian expansion, and strengthened the army and navy.

Alexander I., OBRENOVITCH, king of Servia (1876-1903), succeeded his father, ex-King Milan, in 1889, but was under the guardianship of two regents till 1893. In 1900 he married Mme. Draga Maschin, *née* Lunyevica, against the wishes of his advisers and the people; this led, in 1903, to the assassination of both king and queen at Belgrade.

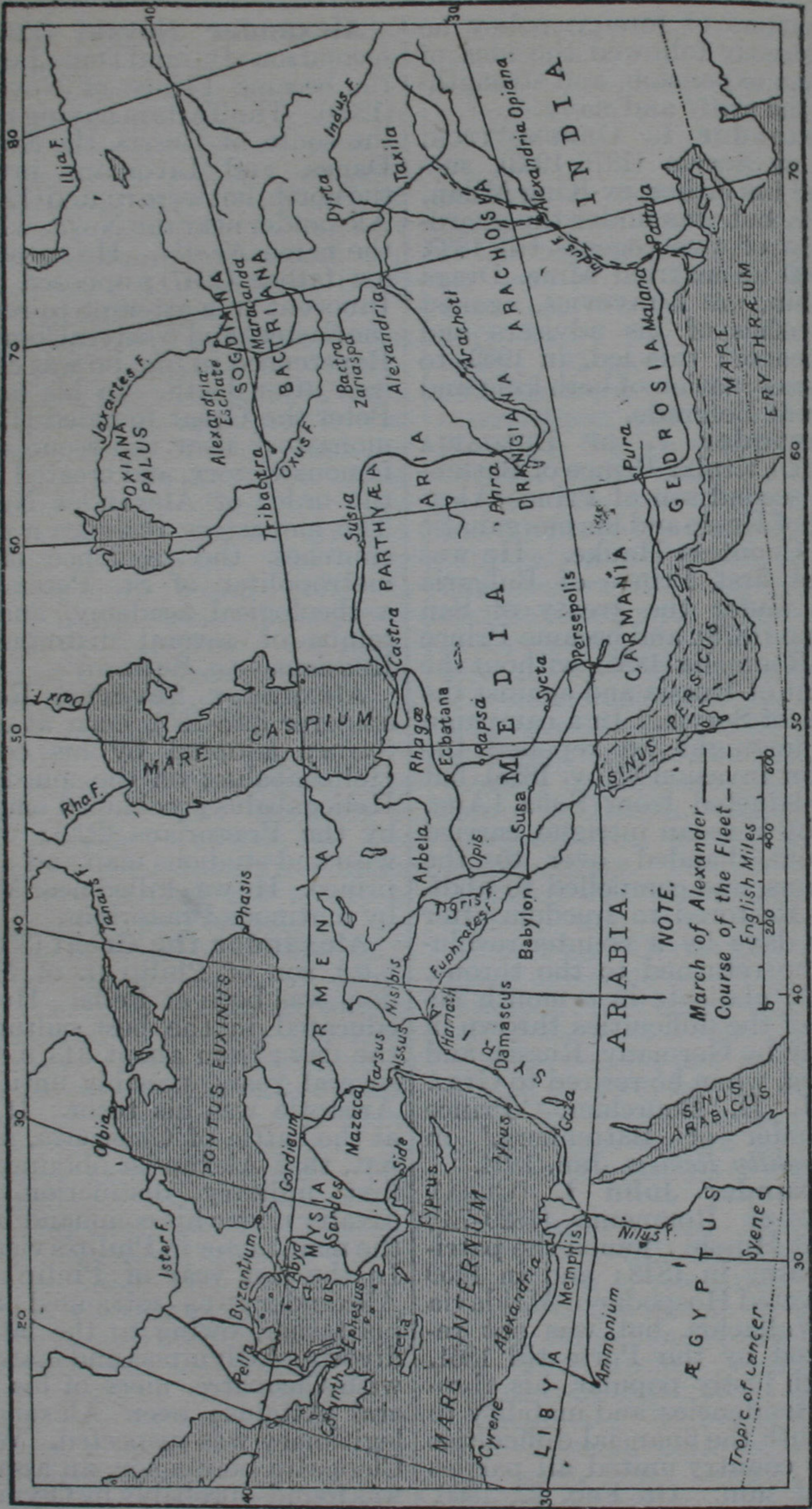
Alexander I. OF BULGARIA (1857-93), titular Prince of Battenberg, second son of Prince Alexander of Hesse and his morganatic wife, Countess Hauke. He was elected first Prince of Bulgaria (1879) under the treaty of San Stefano (1878), and became Prince of E. Roumelia (1885), without the consent of Russia and against the wishes of Servia. In a campaign of a fortnight he repelled the Servian invasion (Nov. 1885), but was abducted from Sofia (Aug. 1886) by Russian intrigue, carried to Reni, handed over to the Russians, and compelled to abdicate. Restored to freedom after a few days by a counter-revolution, he returned to the throne, only to abdicate in a month because of the difficulties thrown in his way by Germany, Russia, and Austria, when he retired to Graz. See J. D. Bouchier, 'Prince Alexander of Battenberg,' in *Fortnightly Review*, Jan. 1894.

Alexander John I. (CUSA), Prince of Roumania (1820-73), born at Husshi; joined the patriotic party in 1848; and in 1859 was elected Hospodar of Moldavia and Wallachia, but was not recognized by the Porte till 1861. Though justly popular, his absolutist tendencies and inability to cope with the financial difficulties of the country united all parties against him. On Feb. 22, 1866, he was forced to abdicate.

Alexander Nevski (1219-63), second son of Grand Duke Jaroslav II., became Prince of Novgorod (1239). The Tartars having raided the south of Russia, the Swedes, Danes, and Livonians invaded the north, but were routed (1240) by Alexander near the Neva, whence the name *Nevski*. He succeeded his father (1247); opposed Pope Innocent IV.'s attempt to reunite the Eastern and Western Churches. Reverenced in life, he was canonized after death. In his honour Peter the Great founded (1710) a monastery near the scene of his famous victory, and created (1722) the order of Alexander Nevski. The monastery includes a dozen churches, the residence of the metropolitan of St. Petersburg, a theological academy, and the tombs of several distinguished Russians—*e.g.* Suwarov.

Alexander Severus, Roman emperor (208-235), born at Arca, Syria; adopted by his cousin, Heliogabalus; on the murder of Heliogabalus proclaimed emperor by the Prætorians (222); was a wise and studious man and a just prince. He was killed near Mainz by mutinous Prætorians.

Alexander the Great (356-323 B.C.), son of Philip II. of Macedon, was born at Pella. He was educated in the best culture of the day; from about 343 B.C. for several years, possibly until 335, Aristotle was his tutor. It was at the battle of Chæronea, in 338 B.C., that Alexander obtained his first military distinction, the cavalry under his command being the main factor in Philip's victory. In the last year of Philip's life Alexander was estranged from his father, owing to the latter's divorce of Olympias and marriage with Cleopatra, niece of his general Attalus; even Alexander's legitimacy was suspected. When Cleopatra bore a son, an assassin was found—probably by Olympias—who murdered Philip. Alexan-



Sketch Map showing Campaigns of Alexander the Great.

der was the gainer by the crime; and though there is no evidence against him, it cannot be asserted that his innocence is incontestable. It was in 336 B.C. that Alexander ascended the throne, and found himself surrounded by enemies—the Greeks, the Thracians, the Illyrians, and Attalus—who supported the claims of Cleopatra's infant son. With marvellous rapidity he met and conquered his foes in turn; the Greeks, overawed by his energy, gave in without striking a blow, and he was elected commander-in-chief of the Greek forces for the expedition against Persia. Meanwhile Cleopatra and her son had been murdered by Olympias's command, and Attalus by that of the king. Next year he crushed the Thracians, advancing as far north as the Danube. In his absence, a report of his death reached Greece. Several states became restless, and Thebes took up arms, blockading the Macedonian garrison in the citadel. But in a fortnight Alexander marched from Thrace to Bœotia, outstripping even the news that he was alive; and as the city would not surrender, he took it and razed it to the ground, sparing only the house of Pindar the poet. Nearly all the inhabitants were enslaved. The other disaffected states, particularly Athens, submitted, and were pardoned (335 B.C.). Alexander then prepared for his conquest of Asia, and in the spring of 334 set out with but 30,000 foot and 5,000 horse. Only the outline of his campaigns can be given. In May he utterly defeated the Persians on the banks of the river Granicus in Mysia. He then advanced along the coast, through Lycia and Pamphylia, to Gordium in Phrygia, where he cut the famous Gordian knot, and thence into Cappadocia, and through the pass called the Cilician Gates, which

the Persians did not defend, to Tarsus in Cilicia. There he fell ill of a fever, and while ill received a letter from Parmenio warning him that his doctor was bribed by Darius to poison him. He drank the doctor's medicine, and then gave him the letter; his confidence was rewarded by a speedy recovery. In October he defeated the Persian forces under Darius at Issus in Cilicia. Next year (332) he subdued the cities of Phœnicia—Tyre only after a seven months' siege. The fall of Gaza opened the road to Egypt, which he entered Nov. 332. The country at once submitted, and Alexander was crowned king, for which purpose—as the Pharaohs were held to be sons of the god Ammon—he visited the oracle Ammon in the Libyan desert, and was acknowledged son of the god. The conquest of Syria and Egypt destroyed the sea-power of Darius, and left Alexander free to advance against Persia. He did so in 331, and in September of that year gained the decisive victory of Gaugamela (generally known as Arbela, which place is many miles distant). His foes are said to have numbered a million of men. As a result of the victory, Babylon and Susa submitted. At once he pressed on, forcing the pass known as the Persian Gates, to Persepolis, the old capital of the Persian kingdom, which he took, with, it is said, £30,000,000 of treasure. His next object was to secure the person of Darius, whom he pursued through Media into Parthia. Bessus, satrap of Bactria, seized the king and murdered him; Alexander found him breathing and no more (? May 330 B.C.). He then subdued Hyrcania (Tabaristan). A revolt in Areia called him back; he put it down, founded a city, Alexandria Areia (on the site of

which is probably the modern Herat), and conquered Drangiana (E. Afghanistan). There he discovered that Philotas, son of his general Parmenio, was conspiring against him. Philotas was condemned and slain by the Macedonians, and Parmenio was executed by Alexander's orders as an act of precaution. He then advanced southwards through Gedrosia (Seistan and S.W. Baluchistan), and in the spring of 329 reached Kandahar—probably a corruption of Alexandria. Then he crossed the Paropamisus (Hindu-Kush) into Bactria; thence, in pursuit of Bessus, into Sogdiana, the country between the rivers Oxus and Jaxartes. He seized Maracanda (Samarkand), captured Bessus, and founded Alexandria Eschata ('farthest'), where he fixed the frontier of his empire at the pass over the Tian-Shan Mountains. The year 328 was spent in securing the recent conquests. It was at Samarkand that, in a drunken bout, he killed, to his great remorse, his foster-brother Cleitus. In the same year he married Roxana, daughter of a Sogdian prince. In 327 he returned to Afghanistan, and prepared to invade India, which he reached through the Khyber Pass. In 326 he crossed the Indus, and advanced to the Hydaspes (Sutlej), where Porus, an Indian king, resisted stoutly, but was finally defeated after the third of Alexander's three great battles. Porus received his kingdom back from Alexander. He then reached the Hyphasis (Beas), which was the limit of his advance; his soldiers absolutely refused to go further, and the king had to yield (326). After nearly losing his life at the siege of Multan, he made his way to the mouth of the Indus. Thence he marched across Baluchistan (Aug. 325 B.C.) to Pura, losing, it is said, more than half his force. Upon getting back to

Susa he married Statira, daughter of Darius, and Parysatis, daughter of Ochus, to set his soldiers and officers an example in the fusion of the races, which was the great object of his policy. In the spring of 324 he went to Ecbatana, and in that year his bosom friend Hephæstion died. At the end of the year he returned to Babylon, where he met embassies from the Bruttians, Lucanians, and Etruscans in Italy, the Carthaginians, Celts, Scythians, Libyans, and Ethiopians—a wonderful testimony to his renown. His next purpose was to conquer Arabia, for which he began to make preparations (323 B.C.). When all was in readiness for the expedition, after a banquet to Nearchus, followed by two nights of carousal, he was attacked by a fever. The report spread among the Macedonians that he was dead, and they forced their way into the palace, and passed his couch in single file; he was able to greet them with a movement of his head and by signs. He died a few days later, in the thirty-second year of his age and the thirteenth of his reign.

In twelve years Alexander made himself master of W. Asia, and left upon it a mark which centuries could not efface. That he spread Greek civilization even beyond the Euphrates was the most enduring monument of his fame; for though the remoter provinces soon relapsed into barbarism, yet when Mesopotamia was lost to the Seleucids by the establishment of the Parthian empire, even the Parthian conquerors retained some tincture of Hellenism, which was destroyed only by the Saracen conquests in the 7th and 8th centuries. It is not the least of Alexander's claims to greatness that, truly Greek as he was, he was able to disregard the distinction of Greek and barbarian,