

of a mere change of temperature upon organisms, but it seems certain that in the majority of cases transference from an equable climate to one in which there is a great annual range of temperature is rapidly fatal. Thus, many plants from S. Europe will live out of doors in the mild uniform climate of the west coast of Britain, but will not live in localities on the Continent where the mean annual temperature is the same, but where the extremes of heat and cold are greater. Similarly, many marine organisms are very widely distributed in both warm and cold seas, apparently because in both cases the range of temperature is small, and the power of adaptation to a new but constant temperature is readily acquired.

In general, the plants and animals which are most readily acclimatized to new conditions are those in which the reproductive period is prolonged. Such forms often show an enormous increase of fertility when transferred to a new and more favourable climate. The rabbit, which has become a pest in Australia and New Zealand, is an illustration of this; but as in the parallel cases of the English sparrow in America, and white clover, together with many other British plants, in New Zealand, the extraordinary abundance of the introduced form is in part to be ascribed to the absence in the new country of the natural checks to increase present in the original home. The abnormal increase of the rabbit in Australia is sometimes given as a proof that the marsupial fauna of that island-continent could not have persisted if isolation had not saved it from the competition of the higher mammals; but such facts as the extraordinary spread of Canadian water-weed (*Anacharis*) through the British Isles, shows that even in countries in which the struggle for existence has been keen, vacant

places in nature may still remain which can be seized by a dominant foreign species. It is said that the reign of this species in Britain is likely to be brief, and in many similar cases it is possible that the native species may ultimately recover their lost ground, and oust the intruder. Thus, it is interesting to note that American zoologists have found that European earthworms have become naturalized in many parts of the United States, and are often much more abundant than the native species. They ascribe this in part to the fact that the European species have a long breeding season, and the American a very short one. One would suspect, however, that the latter is a form of periodicity conditioned by the climate, and that ultimately it may be found to be a more perfect adaptation than the European condition.

Associated with the fact of the frequent great fertility of an introduced species is the fact that a parasitic or semi-parasitic form often inflicts far greater injury on its host in a new country than in the old. Thus, the vine phylloxera, introduced into Europe from America, has worked fearful havoc in vineyards in the former continent, while it produced relatively little injury in its native habitat. A study of the American Agricultural Bureau's publications will similarly show that insects, relatively harmless in Europe, have almost paralyzed agriculture when introduced into the States. Again, a great obstacle to the colonization of various parts of the world by the white man is his liability to parasitic disease, to which the natives are almost or entirely immune. Malaria—a disease due to the introduction of a protozoon parasite into the blood by the mosquito—has hitherto been a great obstacle to the spread of the white races over many parts of the globe. On

the other hand, the advent of the white man has often resulted in the sweeping away of native races, owing to the introduction of micro-organisms to whose action the white is at least partially immune, while the native races are singularly susceptible to it—*e.g.* measles introduced into Fiji in 1875. These facts show that organisms are adapted to their surroundings, not only by their structure, but also by functional peculiarities which are equally real, but from their nature are incapable of exact description. These functional peculiarities are hereditary, but in the case of dominant stocks, at least, are capable of slow, cumulative modification, so that the descendants may ultimately become habituated to surroundings which would have been at once fatal to the original stock. Acclimatization is thus a proof of the occurrence of physiological variation in organisms. Darwin's *Animals and Plants under Domestication* (1868) is the great storehouse of information on the subject. See also Hann's *Handbuch der Klimatologie* (1897).

Accolade. (1.) The ceremony by which knighthood is conferred; formerly an embrace round the neck, now the touch of a sword on the shoulder. (2.) In musical score, the brace connecting the staves.

Accommodation, a term used in Biblical exegesis to denote the modification of absolute truth to assist its acceptance, either by a *formal* change of method—*e.g.* in parables—or by a *material* alteration of the truth to suit contemporary modes of thinking.

Accommodation Bill. See BILL OF EXCHANGE.

Accommodation of Vision, the muscular adaptations of the eye to focus objects at various distances, and in varying degrees of light and darkness. See REFRACTION, ERRORS OF.

Accommodation Works are

works such as bridges, fences, etc., required to be executed by a railway company in order to enable the owners or occupiers of land affected by the railway to make a convenient use of their land. Railway Clauses Consolidation Act, 1845, 8 & 9 Vict. c. 20, s. 68.

Accompaniment, a musical term designating the subordinate instrumental parts which accompany the principal voice or instrument, as the pianoforte part in a song, or the orchestral part in a concert. It has every degree of importance and complexity, from that of a simple 'background' which is quite unessential to the leading melody, and may even be omitted (*ad libitum*), to that of an organic part of the composition having a large share in the development of the melodic scheme.

Accomplice, the general name applied to any person who is associated with another in committing or attempting to commit any criminal offence. The evidence of an accomplice is admissible; but as he is generally an interested and always an infamous witness, his evidence is scarcely ever acted upon without corroboration, although there is no exact rule of law to that effect. See Stephen's *Dig. Crim. Law*; Taylor, *On Evidence*, p. 830; also KING'S EVIDENCE and APPROVER.

Accord and Satisfaction, a special defence to a civil action in England. The defendant pleads that he has agreed with the plaintiff that something shall be paid or done in satisfaction of the cause of action, and that what has been agreed upon has been paid or done. See Bullen and Leake's *Pleadings*.

Accordion, a portable musical instrument, with keyboard and mechanical contrivance for wind, invented by Damian at Vienna in 1829. Each key gives two notes, one in expanding, the other in compressing the bellows. The

right hand manipulates the keyboard, while the left works the bellows, on the lower side of which are usually found two keys which furnish a simple harmony, generally of the tonic and dominant. The instrument is of no artistic value.

Account. See BOOKKEEPING and STOCK EXCHANGE. The law with regard to accounts is as follows:—In England actions for an account are assigned to the Chancery Division of the High Court, and an account may be claimed when there is a fiduciary relation, or mutual accounts, between the parties, or where circumstances of great complexity make it equitable that an account should be taken. Even if an account is not claimed, the court may at any stage of the proceedings direct any necessary accounts to be taken. In Scotland an account will be taken in most similar cases in an action of count, reckoning, and payment. In English law a stated account is an admission of a sum of money being due by the defendant to the plaintiff. It may be oral, or in writing, or implied from letters, conversations, or circumstances. It is a good cause of action, but not conclusive, as the defendant may plead mistake, want of consideration, etc. A final statement in writing of the position of accounts between two parties, agreed to by both as correct, is called a settled account. It is a serious offence in bankruptcy if the bankrupt has failed to keep such books of accounts as are usual in his business. Corporations, public companies, friendly and other statutory societies, executors and administrators, and officers appointed by the courts, are all bound to keep accounts, and are generally subject to statutory provisions as to audit, inspection, and submission of abstracts or copies to government departments, public officers, or courts of

law. See also FALSIFICATION OF ACCOUNTS and LIMITATION, STATUTES OF.

Accountant, a person skilled in the keeping of books of account and in financial matters generally. Insurance offices, banks, railway companies, and large mercantile firms employ an official called the accountant, whose duties include oversight of the bookkeepers' and cashiers' work, preparation of statements, balance-sheets, profit and loss accounts, etc. As a profession accountancy includes much more than this, and an accountant is usually a member of one of the chartered societies or institutes. Among these may be mentioned the Institute of Chartered Accountants in England and Wales (1870 and 1880); the Society of Accountants and Auditors (1885); Society of Accountants in Edinburgh (1854); the Institute of Accountants and Auditors, Glasgow (1855); and the Institute of Chartered Accountants in Ireland (1888). There are also similar bodies in Aberdeen, and in the colonies and abroad. The work of an accountant involves great responsibility, and necessitates not only a thorough knowledge of bookkeeping and accounts, but also of mercantile, bankruptcy, and other branches of law, and of the methods of conducting different businesses. As auditor, he is called upon to certify to the correctness of the accounts of firms, companies, trustees, cities, boroughs, etc. He reports upon the financial status of businesses in view of amalgamation, or upon their solvency or insolvency. He is frequently called upon to act as trustee in bankruptcies, sequestrations, liquidations, trust deeds for the benefit of creditors, private trusts, executories, curatories, judicial factories, etc.; and his expert knowledge is sought in such matters as apportionment of funds, partnerships, capital and

revenue expenditure, limited company work, etc. See AUDITOR.

To enter the profession it is necessary to become an indentured apprentice for five years to a qualified accountant, to whom a premium (returned in salary) is usually paid. During this period the preliminary, intermediate, and final examinations are taken, and if successfully passed, the society grants a certificate of professional qualification. See Pixley's *The Profession of a Chartered Accountant*, Dawson's *Accountant's Compendium*, Dicksee's *Manual on Auditing*.

Accountant-general, the title of two officers, one of the Court of Chancery, and the other of the Court of Exchequer. The offices were both abolished in 1872, their duties being transferred to the paymaster-general.

Accountant of Court, an officer of the Court of Session appointed under the Judicial Factors (Scotland) Act, 1889. He took over the duties of the accountant in bankruptcy abolished by that act, and has also the duties of supervising factors (with certain exceptions), supervising the investments and auditing the accounts of trustees, acting as custodian of consignations under the Court of Session's Consignation Act, 1895, and settling questions as to commissions and accounting referred to him by private parties.

Accountant Officers (NAVAL) enter between the ages of sixteen and eighteen, and are subject to a competitive examination held by the Civil Service Commissioners. Application should be made to the secretary of the First Lord of the Admiralty. From assistant-clerk a candidate may be promoted to be clerk. When twenty-one, he is examined for promotion to the rank of paymaster. As assistant-paymaster he is often appointed to the accountant charge of smaller ves-

sels, or, in larger ships, he may act under the paymaster. After service in this rank for about eleven years, he is eligible for the ranks of paymaster, staff paymaster, and ultimately fleet paymaster. Six years' service in each of these ranks is necessary for promotion, which is by seniority. The maximum retired pay for a fleet paymaster is £450 per annum. Retirement is optional at fifty-five, compulsory at sixty. The duties comprise the management of the squadron's accounts relative to pay, clothing, victualling, stores, and generally the rendering of such returns on behalf of the flag-officer or admiral as are required by the regulations. The paymaster is the modern representative of the purser, who, in old days, like the chaplain and surgeon, was a warrant officer only. He now, like other officers of wardroom rank, holds His Majesty's commission.

Account Current, a periodical statement of the debit and credit transactions between parties, in order of date; usually made up in such a form as to show the interest charged or allowed on each item at the date of rendering.

Account Sales, a statement sent by an agent or a broker to the consignor of goods when sold, giving particulars of weight, price obtained, etc., and showing the net proceeds after deduction of expenses.

Accra, seapt., W. Africa, cap. of British colony of Gold Coast. Exports gold dust, gum, palm oil, ivory, timber, and rubber. Pop. 18,000.

Accrescimento, in music, the prolongation of a note for another half of its value, by a dot placed after it.

Accretion. (I.) OF LAND. Land formed by alluvial deposit so gradual as to be imperceptible in its progress is accretion. It belongs to the owner of the adjacent

soil, even as against the crown. The leading case is *R. v. Lord Yarborough*, King's Bench, 1824, House of Lords, 1828. For actual instances of accretion, see **FENS**; **PO.** (2.) **OF TITLE.** A man cannot grant a better title than he himself has; but if he makes a grant, and afterwards obtains a title, or a better title than he had, this passes to the grantee by accretion, and validates his title to the subject-matter of the original grant. The maxim is, *Jus superveniens auctori accrescit successori*. The leading cases are *Doe dem. Christmas v. Oliver*, K.B., 1829, and *Swan v. The Western Bank of Scotland*, Court of Session, 1866.

Accrington (anc. *Akerington*), a munic. bor. and mrkt. tn., Lancashire, 23 m. N. of Manchester; has cotton-spinning, weaving, calico-printing, and manufacture of textile machinery. In the district are coal mines and quarries. Accrington returns one member to Parliament. Pop. 43,000.

Accumulation. Till the Thelusson Act, 1800, the income of property might by will or deed be directed to be accumulated for any period for which the property itself might legally be tied up and the power of alienation suspended—*i.e.* a life or lives in being and twenty-one years more. Since that act (39 & 40 Geo. III. c. 98) an accumulation of income can only be directed (1) during the life of the settlor and twenty-one years after; or (2) during the minority of a person or persons living at the death of the settlor; or (3) during the minority or respective minorities of a person or persons who, if of full age, would have been absolutely entitled under the settlement. Accumulations contrary to the act go to the person who would have been entitled if such accumulation had not been directed. The act does not apply to a provision for payment of debts or for raising portions for children of the

settlor, or of persons taking an interest under the settlement, or to a direction as to the produce of timber or wood upon any lands or tenements. The act did not at first extend to dispositions of heritable property in Scotland, but it has done so since August 14, 1848 (11 & 12 Vict. c. 36, s. 41). By the Accumulations Act, 1892, the accumulation of income for the purchase of land is only permitted in case (3) mentioned above.

Accumulator, HYDRAULIC, devised by Lord Armstrong, receives power at a constant rate from the hydraulic pump, and gives it out in large quantities at a time to machines, such as cranes, which work intermittently. It is thus a means of obtaining an artificial head of water. It consists of a vertical cylinder with a heavily-weighted ram, which will give a pressure of about 700 lbs. per sq. in. The inflow and outflow pipes are both at the bottom of the cylinder. When the piston reaches its highest point it automatically stops the pump, and any superfluous water escapes at the top of the cylinder.

In the differential accumulator, various pressures may be obtained as required by changing the area of the piston surface, or by using one of the several different pistons.

The steam accumulator (A. Betts Brown) consists of a steam cylinder, the piston-rod of which forms the ram of a hydraulic cylinder. Owing to the difference in area of the steam piston and the water ram, a pressure of 50 lbs. on the former may give 750 on the latter.

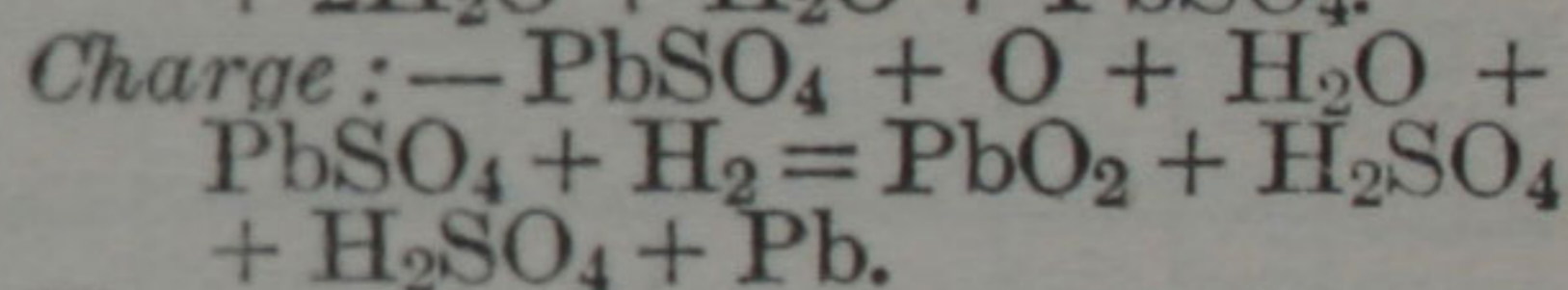
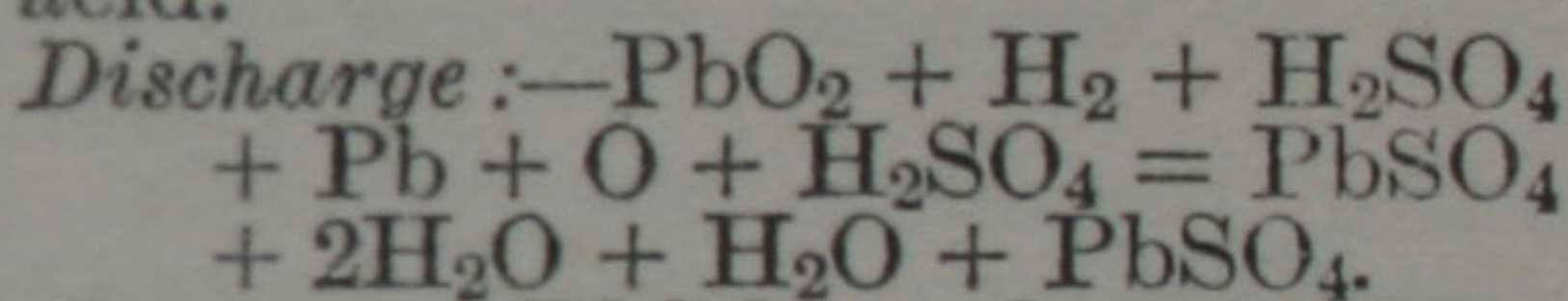
In the air accumulator (Armstrong), the ram works against compressed air in a chamber, instead of against weights. The pressure within the chamber is from 50 to 100 atmospheres, and this is multiplied, as in the steam accumulator, to a pressure fifteen

times as great on the water. See Robinson's *Hydraulic Power and Hydraulic Machinery*; and HYDRAULIC MACHINERY.

Accumulators, ELECTRIC, or SECONDARY BATTERIES. When an electric battery is discharged, there occur chemical changes in the liquids and electrodes, caused by the passage of the current through the cell. In some forms of cell all the products of the charge remain in the cell, and the passage of a current in the reverse direction will produce the reverse action and restore the original conditions. Broadly speaking, the current causes a transference of oxygen to one pole and hydrogen to the other, both being brought back to their previous positions and combinations by the reverse current. Such a battery acts as a reservoir or accumulator of electric energy; for, after each discharge, electric energy is again stored in it by driving a reverse current through it from some other source of electric energy. In the process of charging, the electric pressure of the cell must be overcome, and the resistance of the cell absorbs additional pressure. On discharging, there is likewise a loss of pressure, due to the resistance of the cell, and the pressure when discharging is therefore materially lower than when charging (Figs. 1 and 2). The quantity of chemical action taking place is proportional to the quantity of electricity passing in either direction; and in a perfect cell, with no irregular actions, the same quantity of electricity could be derived as is put in; but in practice this is not completely realized, though under favourable conditions the loss is not more than some five per cent.

Theory of Cell.—Though many forms of battery allow of reversal, there are few which are satisfactory. The simple collection of

oxygen and hydrogen at the poles is impracticable, since they pass off as gases, and the only battery that has proved satisfactory is the lead battery invented by Planté. In this a plate of pure lead forms the negative and a plate of peroxide of lead the positive electrode, immersed in sulphuric acid and water. On discharging, the lead is converted into sulphate of lead, and the hydrogen conveyed to the positive plate is oxidized by the peroxide of lead. The lower oxide thus formed is attacked by the acid, so that sulphate of lead is produced on both plates, and a part of the acid is removed from the liquid. On reversing the current hydrogen is carried to the negative plate, and reduces the sulphate of lead back to metallic lead, while the oxygen converts the sulphate on the positive plate to peroxide, and the sulphate in both cases returns to the liquid as sulphuric acid.



The acid becomes continually weaker as the discharge proceeds, and its strength indicates the state of the reservoir.

The action of the cell is similar to that of an ordinary primary battery, but there are important differences. By the use of lead instead of zinc there is formed the insoluble lead sulphate in place of the soluble zinc sulphate or chloride. Therefore the surface becomes covered with the products of the action on both electrodes, and the interior parts of the plates are rendered useless. Consequently both negative and positive plates are constructed of porous, spongy material, presenting an enormous surface to the acid, and solid metal is used only

as a framework or carrier. So long as any portion of unchanged material remains in contact with the acid, the E.M.F. is maintained with very gradual reduction. Fig. 2 shows a typical curve of discharge in which horizontal dis-

work of lead, or an alloy of lead and antimony, containing spongy material. Many forms of grid are in use. The negative plate is now usually a thin skeleton of lead forming many small pockets, into which is pressed a paste of

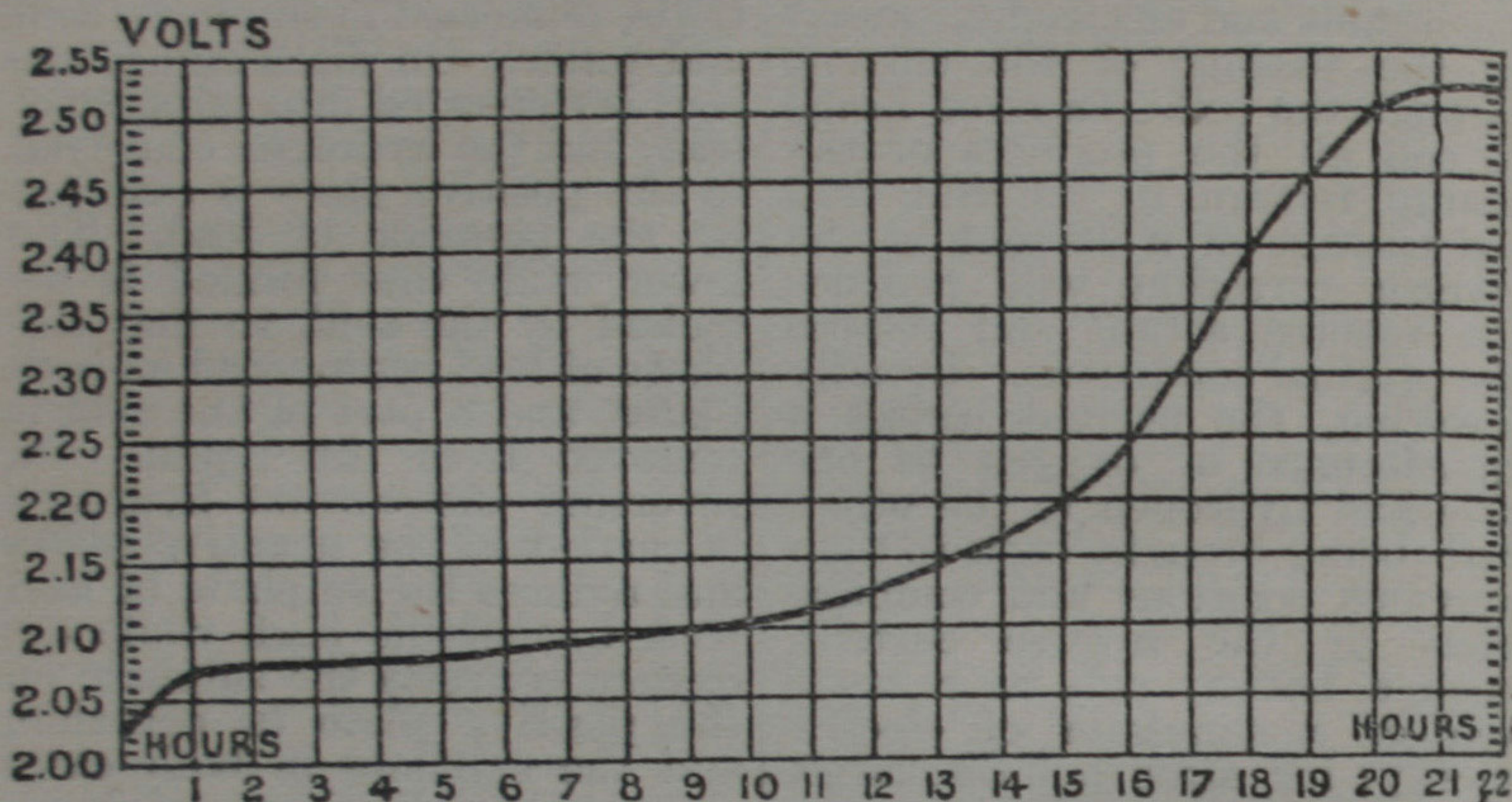


FIG. 1.—Charging.

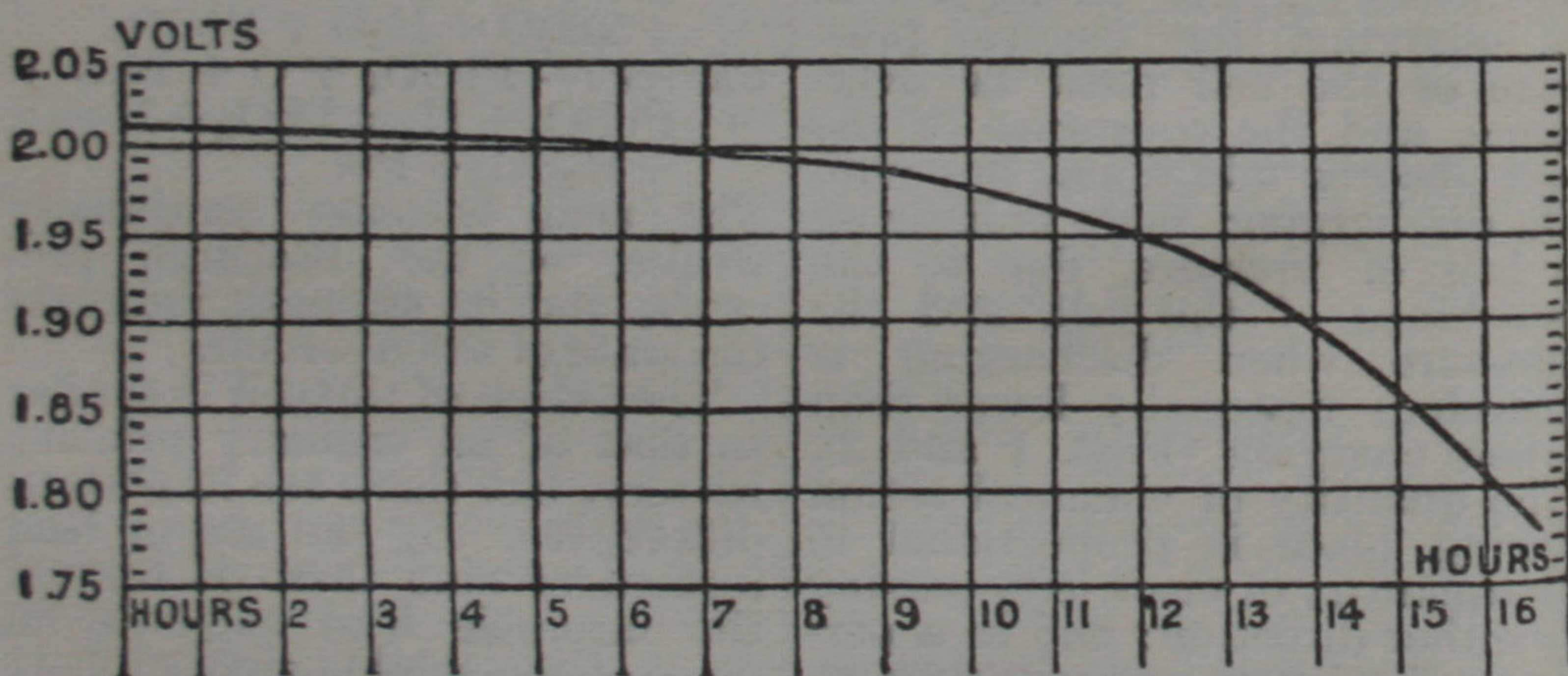


FIG. 2.—Discharging.

tances represent ampère hours. The cell is practically discharged at 1.8 volts. On charging Fig. 1, the E.M.F. rises rapidly to nearly 2.1 volts, then more slowly to 2.5 volts.

Construction of Plates.—The essential construction is a frame-

lead oxide and sulphuric acid, or the paste is enclosed in a porous lead envelope. On reduction by the current, this forms a porous mass of lead. The frame of the positive plate is made more stoutly, since the oxygen produced

at the end of every charge corrodes the frame slowly. It may be made by filling pockets or grooves with paste as before, which are then converted into peroxide; but more usually produced directly by repeated charging, assisted by oxidizing materials, such as sodium nitrate.

Capacity.—The capacity of a cell is determined by the quantity of electricity it will deliver, usually reckoned in ampère hours. It depends on the construction and size of the plates; but instead of using very large plates, several of each kind may be used, with positive and negative placed alternately. All of one kind are connected to a common bar, which forms the terminal of the cell. The capacity is not a constant quantity, for with a large current the acid in the pores of the plate is so rapidly weakened that fresh acid from outside cannot diffuse into the plate sufficiently quickly. Hence the interior portions are not fully discharged, unless the cell is given a period of rest.

Arrangement of Cell.—The alternate positive and negative plates are held about half an inch apart by tubes of glass. The space allows any loosened material to fall clear to the bottom, and in a large battery some three inches of space are left below the plates for its reception. The acid is 'brimstone' acid, free from metals, with a density of 1.2, or one volume of strong acid to five of water. If too strong, the lead is slowly attacked; while if too weak, the E.M.F. of the cell is reduced. At this strength also the resistance of the acid is at a minimum. The plates are usually contained in glass boxes when the size is moderate, but for large central-station cells lead-lined wooden boxes, or boxes of a lead alloy, are used. Ebonite boxes are employed for motor-car cells on account of lightness, while small portable batteries are gen-

erally put in lead-lined wood or ebonite with wooden case. The boxes are supported on glass or porcelain feet, to insulate them from the ground, and these should be wiped clean periodically.

Method of Charging.—It is usual to charge the cells with a definite current depending on the size of the cells; and if this current is exceeded at the end of the charge, the rapid evolution of gas tends to dislodge portions of the active material, especially on the positive plate, and these portions are lost. But rapid charging at the commencement produces no ill effects, and is often adopted to save time; while a reduction of current towards the end favours the complete conversion of the interior parts without great evolution of gas. Too rapid charging and discharging are apt to produce buckling of the plates, since the processes cause a change of bulk of the material, and more separators are required to prevent this.

The efficiency of the cell, or the relation between energy taken out and energy put in, depends on the care bestowed on the cells. In central stations, with frequent small discharges and charges, it may reach 80 per cent., but 70 to 75 per cent. is more usual; while in motor cars 55 or 60 per cent. is not uncommon, a high current and overcharging being the cause of the low efficiency.

Care of Cells.—Batteries deteriorate but little if they are not discharged to the full extent, and are charged immediately after discharge. But if allowed to stand for some time after a discharge, the plates are rapidly attacked by the acid, with the formation of white sulphate of lead. This is difficult to convert, and the material thus 'sulphated' is apt to split off and be lost. The life may be anything from six months to ten years, according to

Aceldama

treatment. Frequent exhaustion, heavy currents, and leaving uncharged shorten the life. When worn out, new plates can be inserted at about half the cost of the original battery.

The water slowly evaporates, and distilled or rain water is added as soon as the tops of the plates emerge. Hard water produces a skin on the plates. Fresh acid is rarely needed. If a cell shows a loss of E.M.F., it is probably due to a piece of active material bridging across between the plates and allowing a leakage of current. A slip of wood passed between the plates is the remedy, and a long charge. It will be found that when gas is evolved from the cells a fine mist of acid rises, and the room must be well ventilated. Also all metal and woodwork should be kept well painted, to prevent corrosion.

Sets of Cells.—Batteries are usually required for a system of constant E.M.F., and the number of cells in series is given by E.M.F. of system $\div 1.85$. Thus the full E.M.F. can be maintained to the end of the discharge. But as the fully-charged cell gives 2.1 volts nearly, a regulating switch is provided, by means of which one or more cells can be cut off when the battery is full, and reinserted one by one as the discharge proceeds.

Accumulators are largely used in electric lighting and traction as reservoirs of power (see ELECTRICAL SUPPLY); also for driving motor cars and tramcars, and for many purposes where their small size, low resistance, and constancy of E.M.F. render them more convenient than primary batteries. See Wade's *Secondary Batteries*, Niblett's *Storage Batteries*, Treadwell's *Storage Batteries*, Slingo and Brooker's *Electrical Engineering*.

Aceldama (Aram. 'the field of blood'), so named either because it was bought with the money with which Judas had been bribed

(Matt. 27:7, 8), or because it was the scene of the traitor's tragic death (Acts 1:18, 19). It is traditionally identified with Hakked-Dumm, near the Pool of Siloam, to the s. of Jerusalem.

Acephalous, a rhetorical term applied, in scanning verse, to a line that is short of a syllable at the beginning. Thus, 'A sea that is stranger than death' would be called 'anapæstic trimeter acephalous,' because the first foot is an incomplete anapæst.

Acer, ACERACEÆ. See MAPLE.

Acernus, SEBASTIAN FABIAN (1551-1608), the Latinized name of a Polish poet (Klonowicz), surnamed the Sarmatian Ovid. He wrote *Victoria Deorum*, a satire on the Polish nobility; the epic poem *Flis*; a Latin eulogium of Red Russia in *Roxolania*; etc.

Acerra (anc. *Acerræ*), tn. and episc. see, prov. Caserta, Italy, 9 m. N.E. of Naples; has sulphur springs, and a cathedral rebuilt in 1788 after an earthquake. Pop. 16,500.

Acetabulum (Lat. *acetum*, 'vinegar'), an ancient Roman sauce-vessel; thence an ancient liquid measure, about half a gill. The word is applied in anatomy to the cup-shaped articular surface of the innominate bone which receives the head of the femur, also to other cuplike structures in animals and fungi.

Acetamide ($\text{CH}_3\text{CO.NH}_2$) is a white crystalline solid prepared by the action of ethyl acetate on ammonia, or by heating ammonium acetate. It melts at 83°C ., boils at 222°C ., is easily soluble in water, and when heated with acids or alkalis is converted into ammonia and acetic acid, or their salts.

Acetic Acid ($\text{CH}_3\text{CO.OH}$) is formed by the oxidation of alcohol, and is thus present in vinegar, in which it is produced from the alcohol of wine by the oxidizing ferment *Mycoderma aceti*. It is chiefly prepared by the de-

destructive distillation of wood (hence called 'pyroligneous acid'), and is purified from the other products by neutralization with lime and subsequent distillation of resulting calcium acetate with sulphuric acid. Acetic acid is a colourless liquid which boils at 118° c., and solidifies, when pure, at 16.7° c. into a crystalline solid known as 'glacial acetic acid.' It is of sp. gr. 1.06 at 15° c. It is very stable, and acts as a monobasic acid, forming a series of salts called acetates, chief among which are those of calcium, sodium, lead, iron, and aluminium. These are obtained by dissolving the metallic oxide, hydroxide, or carbonate in the acid. They are soluble in water, and decomposed by heat, giving, as a rule, acetone and a carbonate. From this property calcium acetate is largely used as a source of acetone; and from the ease with which the acetates of aluminium, iron, etc., are decomposed by water-vapour into insoluble hydroxides and acetic acid, these bodies are extensively employed as mordants in dyeing. Basic acetate of copper, or verdigris, and aceto-arsenite of copper, or Schweinfurth's green, are used as pigments, lead acetate for the preparation of chrome yellow, and the alkaline acetates to a small extent in medicine. Acetic acid itself is used as a solvent for gelatin, albumin, resins, oils, etc., for the preparation of the acetates, and in medicine both externally and internally. The strong acid is used externally as a caustic, and its vapour is inhaled as a form of smelling-salts; the very dilute acid is sponged over the body as a refrigerant in fevers. Internally it has the common action of acids, acting as an escharotic, irritant, or stimulant in the mouth or stomach.

Acetic Ether (ethyl acetate, $\text{CH}_3\text{CO.O.C}_2\text{H}_5$, prepared by the

action of sodium acetate and sulphuric acid on alcohol) is a colourless liquid with a refreshing, penetrating smell. It is used in medicine and in the adulteration (to improve the flavour) of wine.

Acetifier, an apparatus for hastening the process of acetification, or turning fermented liquors into vinegar, the method consisting essentially in the exposure of a large surface of the liquor to the action of oxygen in the presence of a minute organism, *Mycoderma aceti*, which lives upon the albuminoids, etc., of the liquid. A common form of acetifier is a large vat, into which the liquor is allowed to enter in small quantities at the top, and then trickle down through layers of shavings, to which air is admitted.

Acetone (dimethyl ketone, $\text{CH}_3\text{CO.CH}_3$) is the simplest of the class of substances called ketones. It is present in the products of the destructive distillation of wood, but is mainly prepared by heating calcium acetate. Acetone is a colourless, volatile liquid of b.p. 56.5° c. and sp. gr. .79 at 20° c., with a peculiar empyreumatic odour. It mixes with water and alcohol, and acts as a useful solvent; it is used in this respect in the preparation of cordite.

Acetophenone (phenyl-methyl-ketone, $\text{C}_6\text{H}_5\text{CO.CH}_3$) is a solid, m.p. 20.5° c., b.p. 202° c., which crystallizes in large plates, has the odour of the oil of bitter almonds, and is used in medicine in small doses to induce sleep.

Acetyl (CH_3CO) is a univalent radical of which acetic acid, acetyl chloride, etc., are derivatives, the former being the hydroxide, and the latter the chloride.

Acetylene (C_2H_2) is a colourless poisonous gas having a faint odour of garlic. Discovered by Berthelot (1862), it was first brought into commercial use by Willson's discovery (1888) of the modern method of preparing cal-

cium carbide, and is now widely used as an illuminant. It occurs in small quantities in coal gas, and to a greater extent in oil gas. Acetylene can be obtained by forming an arc between carbon poles in an atmosphere of hydrogen, or by the imperfect combustion of coal gas, but is usually prepared by bringing water into contact with calcium carbide, which is a crystalline substance obtained by strongly heating a mixture of lime and powdered coke in the electric furnace. Carbide is now manufactured on a large scale in America and Europe, chiefly by means of water-power—*e.g.* Niagara Falls, Falls of Foyers, Sarpsborg—and is supplied to consumers in air-tight drums. No more than 28 lbs. may be stored in Britain without an annual licence (5s.). It must be kept hermetically sealed from the atmosphere, because it rapidly takes up moisture, thus deteriorating in quality and liberating the gas. Theoretically, 1 lb. of carbide yields 5.8 cub. ft. of gas, but the commercial substance rarely yields more than 5 cub. ft. The specific gravity of acetylene is about twice that of coal gas. The presence of impurities, especially compounds of phosphorus and sulphur, often gives it a very powerful and unpleasant odour. It is liable to spontaneous explosion when compressed into the liquid state, and it is now illegal to manufacture or keep it in this form. At a pressure of 100 inches of water, or less, it is officially regarded as safe. In contact with copper, acetylene forms a dangerous detonating compound, cuprous acetylide, Cu_2C_2 . Similar explosive acetylides are given by mercury and silver. Its action on wet bleaching-powder, sometimes used as a purifying medium, has led to explosions; and its general chemical reactions have not been fully investigated.

The gas is prepared in generators, in which water and carbide are brought together in various ways. The best form is that in which the carbide is thrown into an excess of water, for when water is dropped upon carbide intense heat is generated, and the gas is partly transformed into oily compounds, which condense in the pipes. From the generator the gas should be led into a separate gas-holder, large enough to contain a supply for twenty-four hours, and weighted to give a pressure of 3 inches of water; thence through a purifier, in which the gas is exposed to a large surface of dry bleaching-powder, or is passed through sulphuric acid to the main pipes. Taps must be well ground in and lubricated with vaseline, as the gas corrodes brass work. Special burners, by which two jets of flame are thrown against each other, are used. The flame is intensely white. When examined by the spectroscope it is found to resemble sunlight more nearly than any other artificial illuminant. By the use of suitably tinted globes it is possible to produce a light which gives the true colours of objects; but the naked acetylene flame, though better in this respect than lamp, coal gas, or electric light, still confuses some blues and greens. Its extreme whiteness makes the light somewhat trying to the eyes. Acetylene has been used successfully for bicycle lamps, dock lights, and military searchlights, and for church and domestic illumination in country places. The burners ordinarily used in house-lighting, consuming 7 cub. ft. per hour, give from 16 to 20 candles. The cost of lighting by acetylene is about the same as lighting by coal gas at 5s. per 1,000 ft. The gas is sometimes added to coal gas and oil gas to increase their luminosity; and it is an expensive but powerful heating agent for gas motors and bunsen burners.

Chemically, acetylene is an unsaturated hydrocarbon, adding on chlorine, bromine, and halogen acids. Under the influence of mercuric salts or sulphuric acid it assumes water and gives aldehyde, and on heating alone polymerizes to benzene (C_6H_6). See Lewes's *Acetylene* (1900), and Leeds and Butterfield's *Acetylene* (1905).

Achæi, or **ACHÆANS**, a name applied by Homer to the whole of the Greek nation, and so used also by later poets. It probably represents the population of Greece before the admixture of races caused by the Dorian invasion. In historical times the name is restricted to the inhabitants of the north coast of the Peloponnesus (Achaia), who were united in a league of twelve towns, which after 251 B.C. became the chief power of Greece. Its constitution was to some extent based on representation. Finally the league declared war against the Romans, and was crushed by them in 146 B.C.

Achæmenians, a dynasty of ancient Persia; it occupied the throne from about 730 B.C. to 333 B.C., and counted among its kings Cyrus the Great, Cambyses, and Darius the Great. In old Persian inscriptions Darius proudly traces his lineage back to Achæmenes, the founder of the line.

Achaia. (1.) With Elis, prov. (nomarchy) of Greece, extending from E. to W. along S. side of G. of Corinth; mountainous; coast low; chief currant-producing region of mainland. Area, 2,028 sq. m. Pop. 150,000. Chief tn. and port, Patras. (2.) In New Testament times the S. prov. of Greece, the N. being Macedonia. Gallio was Roman 'deputy' or proconsul of Achaia (Acts 18:12).

Achamoth, or **ACAMOTH**, the Gnostic name for a lower or imperfect manifestation of Wisdom; the form in which spirit becomes subservient to matter, and is thus the basis of the material world.

Achar, used by Hindu philosophers to signify the all-in-all, the source of all matter, and the ultimate end to which matter will return—matter and all its phenomena being merely sensible manifestations of Achar. See **ABSOLUTE**.

Achard, **FRANZ KARL** (1753–1821), chemist, the first to manufacture sugar from beetroot (in 1801, at Kunern, in Silesia). See his *Europäische Zuckerfabrikation aus Runkelrüben* (2nd ed. 1812).

Acharnians, **THE** (from *Acharnai*, the chief tnship. of Attica, lying N. of Athens), a comedy of Aristophanes, produced, B.C. 426, to support the aristocratic or peace party against the democratic or war party in Athens.

Achates, or in full *fidus Achates*, the faithful bosom friend of Æneas in Virgil's epic.

Ache, **CARAN D'**. See **POIRÉ**, **EMMANUEL**.

Aché. (1.) **COUNT D'** (c. 1700–75), a French vice-admiral who lost to the British the French possessions on the Malabar and Coromandel coasts of India (1757). (2.) **ROBERT FRANÇOIS, VICOMTE D'ACHÉ** (1757–1809), son of the above, during the French revolution was a leader of the royalist Chouans of Brittany. He escaped to England, returned to France in 1809, and fell in the Chouan insurrection of that year.

Achelous (modern name, **ASPROPOTAMO**), largest river of anc. Greece, rises in Mt. Pindus, flows S., and, dividing Ætolia and Acarnania, falls into the Ionian Sea opposite the Echinades Is., after a course of about 130 m.

Achenbach, **ANDREAS** (1815–1910), German painter of the Düsseldorf school, a leader of the realistic movement in German landscape painting—especially sea pieces. Typical works: *Foundering of the S.S. 'President'* (1842); *Hardanger Fjord* (1843); *Pontine Marshes* (1846); *Fish Market in Ostend* (1866, now in the

Berlin National Gallery); *Fish Market in Amsterdam* (1880, now in the Cologne Museum); *Flooding of Lower Rhine* (1876). — His brother, OSWALD (1827–1905), taught landscape painting at the Düsseldorf Academy from 1866–72.

Achenbach, HEINRICH VON (1829–99), German statesman; professor of law in Bonn University. As under-secretary of state to the minister for ecclesiastical affairs, he defended Bismarck's May Laws in the Reichstag (1872); from 1873 to 1878 minister for commerce, industry, and public works; and after his retirement president of W. Prussia, and afterwards of Brandenburg.

Achensee, or L. ACHEN, 20 m. N.E. of Innsbruck, Tyrol, Austria. Alt. 3,050 ft., measures 5 m. by $\frac{1}{2}$ m., and is surrounded by mountains 5,000 to 6,000 ft. high.

Achenwall, GOTTFRIED (1719–72), most important statistician of the 18th century; born at Elbing; lecturer in Marburg (1746); professor of philosophy at Göttingen (1748), and professor of law there later; first formulated the treatment of statistics as a distinct science in *Abriss der neuesten Staatswissenschaft der vornehmsten europäischen Reiche und Republiken* (1749).

Achernar = α Eridani, a white star of 0.5 photometric magnitude, showing a spectrum intermediate between the Sirian and Orion types. Its large southern declination of nearly 58° renders it permanently invisible in Europe. The small parallax of 0.043", determined for Achernar by Sir David Gill, corresponds to a light-journey of seventy-six years, and implies that the star possesses four hundred times the lustre of our sun.

Acheron, riv., Epirus, and another in Brutium, S. Italy; more famous as one of the five rivers of the lower world.

Acherusia, name given to several lakes, swamps, and caverns which were supposed by the Greeks to communicate with the lower world—*e.g.* one near Cumæ, in Italy, now the Lake of Fusaro.

A cheval Position, a position taken up by an army astride—*i.e.* on either side—of a land feature, such as a road or river.

Achievement, or HATCHMENT, in heraldry the shield and accessories fully represented; in a restricted sense, a representation of those of a deceased person, exhibited at his obsequies, and framed in black.

Achillas, Greek general and minister of Ptolemy Dionysius, king of Egypt. With L. Septimius he murdered Pompey (48 B.C.), and was assassinated by Ganymede, instigated by Arsinoë, sister of Ptolemy (47 B.C.). See *Cæsar de Bello Civili*, iii. 104.

Achillea, MILFOIL or YARROW, hardy plants, two to four feet high, with yellow, white, or pink flowers, widely naturalized in Europe and Asia. There are many species, all easily cultivated, and spreading very freely—some, of alpine habit (*A. tomentosa*, *rupestris*, *aizoon*), suitable for rock gardens; others (*A. ptarmica*, *eupatorium*) for borders. It is highly astringent.

Achilles, son of Peleus and Thetis, the great hero of the Trojan war on the Greek side. His fate, as foretold by his mother, was either a short and glorious or a long and uneventful life. He chose the former lot, and led his followers, the Myrmidons, to Troy. There he was the special terror of the Trojans, until Agamemnon, the chief leader of the Greeks, wronged him by seizing Briseis, a beautiful maiden, who was his prize. He refused to fight, until the death of Patroclus, his bosom friend, at the hands of Hector, aroused him. Thetis brought him special armour from Hephæstus, the god of craftsmanship. He

slew Hector and other Trojan champions, but fell himself before Troy was taken, wounded in his heel—his only vulnerable point, so legend says—by Paris. The story of his quarrel with Agamemnon is the main subject of Homer's *Iliad*. Achilles is there depicted as the type of Greek early manhood. In the *Odyssey* he is one of the heroes in the under world visited by Odysseus, and is also one of the characters in Shakespeare's *Troilus and Cressida*.

Achilles, a British armoured cruiser of 13,550 tons, and 22½ knots, launched in 1905. This ship-name was introduced into the navy in 1744, and is associated with the capture of the *St. Florentine* (1759) and the battle of Trafalgar (1805).

Achilles Tatiüs. See TATIUS.

Achilles Tendon. See TENDON OF ACHILLES.

Achillini. (1.) ALESSANDRO (1463–1512?), philosopher and physician; born at Bologna; taught at Padua and Bologna; one of the first to dissect the human subject. Achillini was a staunch disciple of Aristotle. The best among his philosophical works (*Opera Omnia*, 1545 and 1568) is *De Intelligentiis*. (2.) GIOVANNI FILOTEO (1466–1538), poet; brother of the above; born at Bologna; wrote *Il Viridario* (1513), *Il Fedele* (1523), and *Annotazioni della Lingua Volgare* (1536).

Achill Island, co. Mayo, Ireland, separated from mainland by Achill Sound (½ m. wide), which is crossed by a bridge. It is rocky, with precipitous coasts (2,000 ft.); has important fisheries, numerous cromlechs, etc., and the massive stone fort of Dun Ængus. Area, 36,283 ac. Pop. 4,500.

Achin. See ATJEH.

Achish, probably a general title borne by certain rulers of the Philistines, but applied specifically to the king of Gath who sheltered David when he fled from

Saul (1 Sam. 21:10 f.). A second Achish was contemporary with Solomon (1 Kings 2:39).

Achmet. See AHMED.

Achondroplasia, imperfect development of cartilage, with resulting stunting of bones; a disease of the embryo, in which the bones fail to develop, leading to excessive shortness of limbs and other deformities. When fully grown the patient is only three or four feet high. The special breed of dogs, "dachsunds," are examples of achondroplasia in the lower animals.

Achray, a loch (1¼ m. by ¾ m.) in the basin of the Teith, S.W. Perthshire, Scotland, 7 m. w. by s. of Callander, midway between Lochs Katrine and Vennachar. Its beauties have been described by Scott, Coleridge, and Dorothy Wordsworth.

Achroite, a mineral, a variety of tourmaline found in Elba.

Achromatic Lens, a compound lens made of glasses of different refractive indices, such that it refracts light without splitting it into its spectroscopic elements. It thus obviates chromatic aberration. Invented in 1773; perfected by Abbe of Jena. See ABERRATION; DISPERSION; LENSES.

Achromatin (Gr. 'not coloured'), those elements in the nucleus of a cell which, when the cell is stained by reagents, do not become so deeply coloured as the chromatin. See CELL.

Achromatopsia. See COLOUR-BLINDNESS.

Achsah, daughter of Caleb. She was promised in marriage to whosoever would take Debir. Othniel accomplished the task, and received her hand (Josh. 15:16–19).

Achtschelling, LUCAS (1616–1707), Flemish landscape painter, pupil of Louis de Wadder, and an ardent student of nature. Many of his pictures are in the churches of Brussels and the museum of Vienna.

Acidalius

Acidalius, VALENS (1567-95), philologist and Latin poet; native of Wittstock, Brandenburg; known for his commentaries on Quintus Curtius, Plautus, and other Latin authors, which gained him great reputation as a critic.

Acidaspis, a trilobite, one of the most highly specialized of the whole class, the body being covered with spiny processes. Its range is Ordovician to Devonian.

Acidimetry, the process of estimating the quantity of a free acid. Several methods of determination are in use. (1) When acids are mixed with water only, the strength may be determined by taking the specific gravity; (2) by measuring volumetrically the weight of alkali required to neutralize the acid; (3) by a gravimetric process adapted to the particular acid; (4) by loss of weight, after expelling the acid—this method is generally applied in the estimation of carbonic acid. Full details of these methods are given in Fresenius's *Quantitative Analysis* (1876); Sutton's *Volumetric Analysis* (1896); Lunge and Hurter's *Alkali Maker's Pocket-book* (1902).

Acidity. The incomplete oxidation of organic substances in the body results in the production of various acids, such as lactic, oxalic, uric, and other acids. A healthy adult excretes by the lungs and skin about 28 oz. of carbonic acid daily, and the acids excreted by the kidneys are equivalent to about 30 grains of oxalic acid. The excess of acid in the body, or acidity, depends mainly on two causes—excessive formation, the result of incomplete oxidation of the food and the tissues; and deficient elimination of the acid formed. These result from over-feeding, insufficient exercise, sedentary habits, or disease. The skin and mucous membranes are affected by acidity, which shows itself in the skin by attacks of

eczema, urticaria, and erythema, and in the mucous membranes by catarrh. In acid dyspepsia there is a regurgitation from the stomach of acid liquid, consisting chiefly of lactic, butyric, and acetic acids. Abnormal acidity of the urine irritates the urinary passages, and causes a deposit of insoluble uric acid in them, leading to the formation of calculi. The treatment of acidity must manifestly depend upon the form and the cause, but active open-air exercise and careful regulation of the quantity and quality of diet are of great importance. Pastry and fermented liquors are particularly hurtful; starchy and saccharine foods should be used sparingly; meat, fish, and poultry may be eaten slowly and in moderation; and skimmed milk and lime-water may be drunk. If any form of alcohol is taken, it should be remembered that pure spirits are more easily obtained than good wines, and, largely diluted with some mineral water, are probably among the least dangerous forms of alcohol. See DIGESTION and DYSPEPSIA.

Acids, in chemistry a class of substances which often have a sour taste and the 'acid reaction'—*i.e.* they change the colour of litmus from blue to red. Most acids possess both properties. All acids contain hydrogen, which is replaced by metals with the formation of salts. Some acids contain one atom of replaceable hydrogen in the molecule, others two, others three and more: these are called monobasic, dibasic, tribasic acids respectively, and so on. Salts are also formed from acids by neutralizing with basic oxides, hydroxides, or carbonates. Organic acids, except a few, such as hydrocyanic acid, the sulphonic acids, etc., contain the group CO.OH, which is called carboxyl; monobasic organic acids have one such group in the molecule, dibasic organic

acids two such groups, etc. Acids when dissolved in water are more or less dissociated into ions—the hydrogen ion, to which the specific properties of acids are due, and an ion peculiar to each acid. Thus hydrochloric acid is dissociated in aqueous solution into hydrogen ions, each with its positive charge of electricity, and chlorine ions, each with its negative charge of electricity; similarly, sulphuric acid is dissociated into hydrogen ions and HSO_4 ions, and on further dilution the latter gives hydrogen ions and SO_4 ions. Neutralization is the union of the hydrogen ions of the acid and hydroxyl ions of the base to form water; the other ions of the acid and base remaining unchanged. An acid is strong in proportion as it becomes dissociated. The amount dissociated can be determined from the electrical conductivity of the solution. The relative 'strengths' of acids can be determined in other ways: thus, by observing the amount of heat evolved when an acid acted on the salt of another acid, Thomsen compared their strengths or 'avidities.' For example, hydrochloric acid has the avidity 100, nitric acid 100, sulphuric acid 49, oxalic acid 24, acetic acid 3. Ostwald compared the volume changes which take place on neutralization, and obtained similar results. Other methods—such as the rate at which the acids invert sugar solutions, and the rate at which they effect the catalysis of methyl acetate—are also employed. The simplest method of all—that of the replacement of an acid radical of a salt by another acid radical—leads to satisfactory results only when the conditions of such a reaction are attended to. Under one set of circumstances an acid radical can turn another out of its salts, to be itself turned out by the first under different circumstances—examples of 'reversible reactions.'

I.

As used in medicine, acids differ widely in their action. Externally applied, some of them, such as sulphuric, nitric, and hydrochloric acids, act as caustics, and are never given internally, except in a very diluted form. If swallowed pure—as they sometimes are in error—they act as corrosive poisons. Internally, the above acids, much diluted, stimulate first the flow of saliva, and next that of the gastric juice, which itself contains hydrochloric acid. Nitric acid is also much used as a cholagogue. Insufficiently diluted, when not strong enough to act as corrosives, these acids are gastric irritants, and so interfere with digestion. When preparations containing vinegar or citric acid are taken to reduce fat, as they often are, the effect is produced by the action of the acetic acid in dangerously affecting the stomach walls. Other acids, such as carbolic and sulphurous acids, are disinfectants. Carbonic and hydrocyanic acids are gastric sedatives, the latter being also the most rapid of poisons. Tannic acid is an astringent, coagulating albumin. Salicylic acid is a valuable antipyretic. See POISONS, TOXICOLOGY, and MATERIA MEDICA.

Acì Reale, or ACIREALE (Sicil. *Jaci*), tn. and episc. see, Catania, Sicily, at the s.e. foot of Mt. Etna, 9 m. N.E. of Catania; has warm sulphur baths, and is visited for sea-bathing. Linen, cotton, and filigree work are manufactured. Pop. 35,000.

Acis, a Sicilian youth, beloved by the nymph Galatea, was crushed under a huge rock by the Cyclops Polyphemus, who was his rival. His blood was changed by the nymph into the river Acis, at the foot of Mt. Ætna. Handel composed an opera on the subject.

Ackermann. (I.) KONRAD ERNST (1712–71), a German actor

of the first rank, both in tragic and comic parts. He married Sophie Charlotte Schröder (1714-92), herself a very able actress. (2.) LOUISE VICTOIRE, née CHOQUET (1813-90), French poetess. Her works include *Contes* (1855), *Contes et Poésies* (1863), and *Poésies, Premières Poésies, Poésies Philosophiques* (1874); and, in prose, *Pensées d'une Solitaire*, with Autobiog. (1883). (3.) RUDOLPH (1764-1834), German printseller and lithographer in London; greatly developed artistic illustration; published *Forget-me-not*, an annual (1823 ff.), *Microcosm of London* (1808), *Westminster Abbey* (1812), *World in Miniature*, etc.

Acklin, or ACKLIN'S ISLAND (45 m. by 1 to 2 m.), one of the S. Bahamas (largest of Crooked I. group).

Acknowledgment. See LIMITATION, STATUTES OF; and MARRIAGE.

Acland, RT. HON. ARTHUR HERBERT DYKE (1847), second son of Sir Thomas Dyke Acland; M.P. for the Rotherham div. of Yorkshire (1885-99); vice-president of the Council of Education, August 1892 to July 1895; and Honorary Fellow of Balliol. He has published (with C. Ransome) *Handbook of Eng. Politics for the Last Half-Century* (1882), *Skeleton Outline of the Hist. of Eng.* (1882; new ed. 1887), *Outlines of the Political Hist. of Eng. to 1881* (2nd ed. 1881); and, with Benjamin Jones, *Working-men Co-operators* (1884).

Acland, SIR CHARLES THOMAS DYKE (1842), 12th Bart., succeeded his father, Rt. Hon. Sir Thomas Dyke Acland, in 1898; M.P. for East Cornwall (1882-5), and North Cornwall (1885-92); parliamentary secretary to the Board of Trade (Feb. to Aug. 1886); Sheriff of Devon (1903-4).

Acland, LADY CHRISTIAN HENRIETTA CAROLINE, generally called LADY HARRIET (1750-1815), daughter of Stephen, first Earl of Ilchester, and wife of John Dyke Acland

(1770), whom she accompanied to Canada. See *Lippincott's Mag.*, xxiv. 452-8 (1879); Burgoyne's *State of the Expedition from Canada* (1780); *Gent. Mag.*, 1815, ii. 186.

Acland, SIR HENRY WENTWORTH DYKE (1815-1900), Bart. (1890); Radcliffe librarian, Oxford, for more than forty years; regius professor of medicine, Oxford (1857-94). The formation of the Oxford University Museum was largely due to his labours. Among his works are *Oxford Museum*, with letters from Ruskin (1859; re-pub. 1893); *Memoir on the Cholera in 1854*; *Village Health* (1884). See *Life* by J. B. Atlay (1903).

Acland, JOHN DYKE (d. 1778), soldier and politician, eldest son of Sir Thomas Acland; M.P. for the Cornish borough of Callington (1774); was a strong adherent of Lord North's policy; accompanied Burgoyne's expedition to America (1775). His portrait was painted by Sir Joshua Reynolds.

Aclinic Line, or MAGNETIC EQUATOR, an irregular and varying line passing through those points on the globe at which the needle does not dip. See MAGNETISM.

Aclis (Lat. 'a spear'), a throwing spear or javelin used by the Greeks and Romans. It was iron-tipped, with a wooden shaft about two feet long, to which was attached a cord.

Acne. (1.) *A. rosacea*, or *gutta rosea*, a congestion of the blood-vessels of the face, resulting in red patches and the formation of pimples. The most severe form occurs on the nose, after long over-indulgence in alcohol, and leads to hypertrophy of the skin. A milder chronic flush, often seen in women, is alleviated by general attention to health, and the local application of sulphur ointment. (2.) *A. vulgaris*, characterized by the occurrence of papules or pustules, chiefly on the skin of the face, neck, and back; specially prone to

occur about puberty. It is due to a special bacillus (*Acne bacillus*), the lesions being aggravated by the presence of other bacteria (*cocci*). The treatment consists in attention to the bowels, simple diet, and genial tonics, with, in obstinate cases, vaccine treatment, the results of which have in recent years been very remarkable.

Accœmetæ, or **ACEMITES** ('the Sleepless Ones'), communities of monks who in the 5th and 6th centuries, in Constantinople and elsewhere, carried on devotions 'without ceasing' day or night. Excommunicated in 534.

Acollas, EMILE (1826-91), French professor of law and politician; advocated extreme revolutionary ideas. Chief works: *Manuel de Droit Civil* (1869-74); *Les Droits du Peuple*, *Cours de Droit Politique* (1873); *Philosophie de la Science Politique* (1877).

Acolytes, youths in the Roman Catholic Church who have received the highest of the four minor orders. Their functions are now freely performed by laymen called clerks—servers at mass or altar boys.

Aconcagua. (1.) The most mountainous prov. of Central Chile, between the Pacific and the crest of the Andes, watered by river of same name; bounded on the N. by Coquimbo, and on the S. by Valparaiso and Santiago. Area, 5,485 sq. m. Pop. 130,000. Cap. San Felipe. (2.) Volcano, the highest summit of the Andes and of the New World, in prov. Mendoza, Argentina. Alt. 23,080 ft. The first ascent was made in 1897, by Zurbriegen. See Fitz-Gerald's *Highest Andes* (1899).

Aconcio, ACONZIO, or ACONTIUS, GIACOMO (1492-1556), Tyrolean philosopher, theologian, and engineer; reclaimed large tracts of waste land along the banks of the Thames, part of which he received from Elizabeth as a reward.

He dedicated to his patroness his *Stratagemata Satanæ* (1565).

Aconite (*Aconitum*), MONKSHOOD, WOLFSBANE, or BLUE ROCKET, a genus of the order Ranunculaceæ, common in temperate regions of Europe and Asia. *A. napellus*, supposed native of Britain, and often cultivated in gardens, is a perennial plant from two to six feet high, and has dark-green, deeply-cleft leaves, and a long branched head of deep-blue flowers; the sepals are petaloid, and resemble a hood, whence the popular name. All parts of the plant are very poisonous. The root has often been mistaken for horse-radish; but while the latter is cylindrical, and is often branched, the aconite root is tapering, pointed, and unbranched. Aconite applied to the skin and mucous membranes produces first tingling, then numbness. In medicinal doses it acts as an antipyretic, lessening the force, frequency, and volume of the pulse, and causing perspiration. It is also used externally and internally for neuralgia, lumbago, and rheumatic pains. Its effects are due to the three alkaloids, aconitine, benz-aconine, and aconine, each of which possesses some quality peculiar to itself, and sometimes antagonistic to those of the other two. For fuller details of these, see Dr. Cash's article, *Brit. Med. Jour.*, Oct. 8, 1898. The symptoms of poisoning are first tingling of the tongue and general numbness of the mouth, then cold sweats and giddiness, followed perhaps by insensibility, with failing circulation and respiration. Treatment is first emptying the stomach with either a stomach-tube or an emetic. Stimulants should be given freely afterwards, and the sufferer put into a bed, with hot bottles to the extremities if they are cold. Artificial respiration with friction must be used if necessary, and the medical man



Atopos, the highest summit of the Andes (23,080 feet).

will use hypodermic injections of strychnine or digitalis.—WINTER ACONITE (*Eranthis hyemalis*), a small herbaceous plant of the order Ranunculaceæ, with buttercup-like flowers, grows freely in gardens, thrives well under the shade of trees, and flowers with the snowdrop.

Acorn. See OAK.

Acorn-shells (*Balanus*), marine crustaceans found in vast numbers attached to rocks between tide-marks. Owing to their white shell, composed of a series of limy plates, and their sedentary habit, they were long supposed to be molluscs; but the life-history proves definitely their relation to the lower Crustacea. Save for the six pairs of two-branched feet, the adult displays few crustacean characters, and the life-history affords a remarkable example of degeneration. The food consists of minute particles, filtered from the water by means of the legs. The most notable difference from the allied barnacle is the absence of a stalk.

Acosta, GABRIEL D' (c. 1594–1640), also known as URIEL D'ACOSTA, a Portuguese of noble birth; born at Oporto; brought up a Roman Catholic; adopted Judaism, but was afterwards excommunicated for opposing the teaching of the rabbis. For the publication of his *Examen dos Tradiçoens Phariseas* (1624) he suffered fine and imprisonment. See his autobiography, *Exemplar Humanæ Vitæ* (1847). Gutzkow made him the hero of a tragedy, *Uriel Acosta*.

Acosta, JOAQUIM (d. 1852), explorer and geographer, who penetrated the northern districts of S. America (1834–45), giving special attention to the history of the early Spanish settlements, as in the book *Compendio Historico del Descubrimiento y Colonizacion de la Nueva Granada* (1848), and *Semenario de la Nueva Granada* (1849).

Acosta, JOSE D' (1539–1600), Spanish Jesuit and historian; only known by his famous *Historia Natural y Moral de las Indias*, written originally in Latin, but first published in Spanish in Seville (1590). It was published in London in English, translated by Edward Grimstone, in 1603, and a French version by Robert Regnault appeared in Paris in 1606.

Acoustics, strictly speaking, is the science of sound in relation to hearing. (For a discussion of the physical characteristics of the aerial vibrations which produce the sensation of noise see SOUND, and for the more purely physiological side of the question see EAR.) The conditions under which an aerial disturbance is audible as sound cannot be described with accuracy. If we confine our attention to musical sounds, or sounds of definite pitch, we know that the number of vibrations per second must lie between two limits; but the limits differ for different ears. Roughly speaking, the lower limit may be set at from 20 to 30 vibrations per second, and the upper limit at about 70,000. Cases have been observed in which the ear was not sensitive to a certain range of high-pitched notes, but could hear notes both of lower and of higher pitch. When the sound has no definite pitch, the condition of audibility seems to be a certain abruptness of change of pressure, such as we have in a tap or a blow. The change may be very slight, but it must be sufficiently abrupt. In judging of the direction from which a sound comes, we require the ears to be at different distances from the source of sound; or, to express it more accurately, the ears must be affected simultaneously by the same disturbance in different phase. For example, if a sound be produced at a point in the plane which passes medially through the head and bisects

at right angles the line joining the ears, it is impossible for the hearer to say where the sound comes from.

An important practical branch of acoustics is the construction of musical instruments, the aim being to produce tones pleasing to the ear. It is here that the far-reaching principle of resonance finds its earliest and most familiar illustrations. By suitably-constructed cavities or tubes, within which the air vibrates naturally in definite periods, sounds having these periods are powerfully reinforced. In this way we produce the various qualities of tone associated with trumpets, organ pipes, flutes, and wind instruments generally. It is well to distinguish between true resonance, in which the body, sympathetically vibrating to the original sound, absorbs energy and gives it forth again, and ordinary reflection or echoing, in which the sound is simply thrown back from a surface, such as the walls of a hall, a rock, or a forest. The application of acoustic principles in the construction of a large hall is still little understood. Experience has led to the construction of rectangular halls, and the reason is obvious. A hall with part of its walls in a circular form must of necessity give rise to focal concentration of rays of sound after reflection; and if the hall is large, a person placed at such a focus will hear the original sound and an echo separated distinctly in time. Lord Rayleigh's *Theory of Sound* (2 vols., 2nd ed. 1894-6) is the most complete treatise on the subject. Helmholtz's *Tonempfindungen, or Sensations of Tone* (Eng. trans., 2nd ed. 1885), is one of the classics of scientific literature, and discusses in a masterly manner many of the most profound problems connected with the sense of hearing.

Acoyapo, or SAN SEBASTIAN, tn., Nicaragua, dep. Chontales, Central America. Pop. 6,000.

Acquapendente, tn., Italy, prov. Rome, 25 m. n.w. of Viterbo; has a fine cathedral. Pop. 6,200.

Acquaviva delle Fonti, tn., Apulia, S. Italy, at the foot of the Apennines, 18 m. s.w. of Bari. Pop. 11,000.

Acqui, tn. and episc. see, prov. Alessandria, Italy, on the Bormida, 21 m. s.s.w. of Alessandria, with hot sulphur springs; temp. 115°-167° F. The Gothic cathedral dates from the 12th century. Pop. 14,000.

Acquiescence, a term somewhat vaguely used to express an equitable principle applied both by English and Scottish courts. If, with full knowledge of his rights, a man sees another person about to commit, or in the course of committing, an act infringing those rights, and he stands by in such a manner as to induce that person to believe that he assents to what is being done, he will not afterwards be heard in complaint of the act. In this sense acquiescence may be defined as quiescence under such circumstances as that assent may be reasonably inferred from it. It is an instance of the law of estoppel by words or conduct. But if the injury is completed without his knowledge or assent, mere submission does not take away his right of action. See *De Bussche v. Alt*, 8 Ch. D. p. 314; also **ESTOPPEL**, **LACHES**, and **MORA**.

Acquired Characters. See **HEREDITY** and **WEISMANN**.

Acquittal, the absolving by order of the court of a person tried for a criminal offence. In England there must first be a verdict of not guilty, or a successful plea of pardon or of *autrefois acquit* or *autrefois convict*; and in Scotland a verdict of not guilty or not proven, or a successful plea of pardon or *tholed an assize*.

Acquittance, in English law a release or written discharge of a sum of money or debt due.

Acre (cognate with Lat. *ager*, Gr. *agros*, a field), a British and American land measure, equal to 4,840 sq. yds. or $\frac{1}{160}$ sq. m. Forty rods (Rom. *quarentena*; Eng. *furrow-long*—i.e. 'furrow-long') by one rod make one *rood*; the acre was made up of 4 roods lying side by side. An early law (33 Ed. I.) defined the acre as 40 perches in length and 4 in breadth; by Geo. IV. c. v. s. 74, the imperial acre was established for land measurement throughout the United Kingdom. The old Scottish and Irish acres were larger than the imperial acre. A table of land measures of the world will be found under WEIGHTS AND MEASURES. The ancient expression 'God's acre' (Ger. *Gottesacker*) referred to the churchyard. The formula 'Three acres and a cow' held before the British cottager as an ideal of prosperity to be attained by political means, originated on a Birmingham handbill, and was much used during the general election of Nov.—Dec. 1885.

Acre, ST. JEAN D' (Turk. *Akka*; O.T. *Accho*; N.T. *Ptolemais*; the *Ace* of Strabo), city and seaport, Syria, on promontory at foot of Mt. Carmel. The city is famous for its many sieges:—(1) 1104, taken by first crusaders, and retaken by Saracens (1187); (2) 1191, taken by third crusaders, under Richard Cœur de Lion and Philip Augustus, and handed over to Knights of St. John (Fr. *St. Jean*, whence its modern name), and retaken by Saracens (1291); (3) 1517, captured by the Turks; (4) 1799, besieged for sixty-one days by Bonaparte, who failed to take it owing to the heroic defence made by Sir Sidney Smith and Jezzar Pasha; (5) 1832, taken by Ibrahim Pasha, and held by him for eight years; (6) 1840, captured by combined British, Austrian, and Turk-

ish fleets. The older fortifications, much breached, may be traced outside later ones. Pop. 11,000.

Acri, tn. and prov., Calabria, S. Italy. The town is on the Mucone, 15 m. N.N.E. of Cosenza. Pop. 13,000.

Acrisius, king of Argos, and father of Danaë, whom he shut up in a tower, because an oracle had foretold that her child would kill him. See DANAË and PERSEUS.

Acrobat, literally one who walks on tiptoe, but commonly applied to a person who practises feats of personal agility, such as tumbling, vaulting, and particularly walking, dancing, etc., on rolling balls, pyramids of chairs, etc., and especially on the slack or tight rope, a feat which was popular among the ancient Greeks and Romans. The Chiarinis and Kolter were famous in this line, and, in the 19th century, Farioso, Madame Saqui, Diavolo, and Blondin. See Morton's ed. of Le Roux and Garnier's *Acrobats and Mountebanks* (1890).

Acroceraunian or CERAUNIAN MOUNTAINS, Albania, on Adriatic coast, European Turkey, lat. 40° 15' N.; highest peak, Tchika (6,300 ft.); forms Cape Linguetta or Glossa (Acroceraunia), 40 m. E.N.E. of Otranto.

Acrography is one of the numerous modern methods of reproducing pictures or designs. By means of a hydraulic press a mass of finely-powdered chalk is converted into a coherent block with a slightly shining surface. On this surface the design is drawn with a finely-pointed brush dipped in a gelatinous ink. By means of a velvet pad or light brush the loose chalk is removed from the surface of the plate, leaving the parts covered with the ink, which now stand up on the surface as if the plate were an engraved wood block. After it has been dipped in a solution of silica, the chalk

plate is used for the production of a stereotype or electrotype plate by the usual process, and that in turn for reproducing the original picture or design.

Acrolein, or ACRYLIC ALDEHYDE, $\text{CH}_2\text{CH}\cdot\text{CHO}$, is a colourless liquid (b.p. 52°C .; sp. gr. 0.84 at 20°C .), with a most pungent odour, and violent action on the mucous membrane. It is prepared by distilling glycerin with a dehydrating agent, and its presence is the partial cause of the peculiar odour of burnt fat. On oxidation it yields acrylic acid.

Acroliths, ancient Greek statues of wood, or of ordinary stone, with marble head, arms, and legs. They were frequently covered with thin plates of gold.

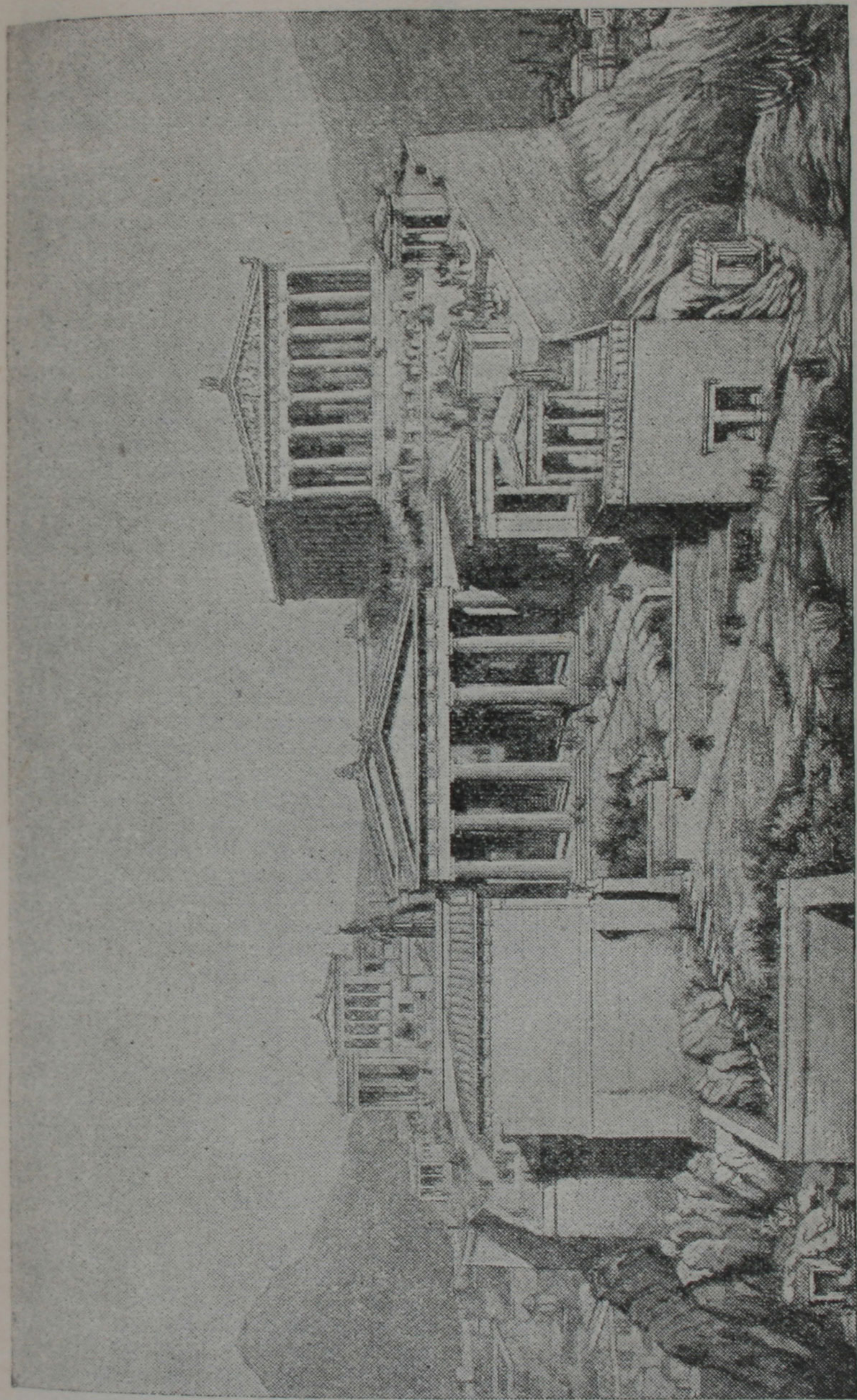
Acromegaly, a disease characterized by general enlargement of the bones, especially those of the head, feet, and hands; usually occurring between the ages of twenty and forty, most frequently in females, and lasting for ten or twenty years before death. The cause is still uncertain, though disease of the pituitary body is generally found associated with it. No effective treatment has been discovered. The intellect is generally unimpaired. See Hinsdale's *Acromegaly* (1899); also GIANTISM.

Acromion, the distal end (*i.e.* the end farthest removed from the point of attachment) of the spine of the scapula or shoulder-blade. It receives the extreme part of the clavicle or collar-bone, and gives attachment to the deltoid and trapezoid muscles. In man it is an enlarged process, called the acromial process, which forms the summit of the shoulder.

Acrophony, a term applied to a stage in the development of alphabetical writing—*viz.* to the use of a picture of an object, or of a symbolical picture of an object, to represent the first syllable of

the name of that object, and (later) to represent the first sound of that syllable. See Isaac Taylor's *The Alphabet*.

Acropolis, THE (Gr. *akros*, 'lofty'; *polis*, 'a city'), was the name given by the Greeks to the fortified eminences round which so many of their towns were built. The acropolis served also as a sacred enclosure, in which were placed the principal temples and works of art. Among the most famous are the Acropolis of Mycenæ, Tiryns, Argos, Corinth, Thebes, Pergamus, and in particular Athens, the last being generally referred to as 'the Acropolis' without qualification. The Acropolis of Athens (called also Cecropia, from its reputed Pelasgian founder, King Cecrops) is a rocky eminence, precipitous on all sides except the west, rising about 150 ft. from the Attic plain, and enclosing on its summit a plateau of an irregular oval shape, measuring from east to west about 1,000 ft., and from north to south 430 ft. Prior to the 5th century B.C. an ancient Pelasgian wall surrounded the plateau; but this had fallen into ruin, except on the north side, and was replaced along the south escarpment by the wall of Cimon. Round the base of the hill, especially on the south, were grouped numerous temples and theatres, the chief of these being the Temple of Æsculapius, the Theatre of Dionysus, and the Odeon of Herod Atticus. The whole area of the summit was occupied by a series of edifices, the most famous and the most important artistically in the world's history. These were the outcome of the creative spirit of Athens when at the height of her fame. Pericles gave the impetus; Phidias, with a band of architects—Mnesicles, Ictinus, Callicrates, and others—were the creators. Among these buildings were the Propylæa, the Pinaco-



The Acropolis, Athens, as it was in the time of Pericles (450 B.C.).

theca, the Temple of Nikē Apteros, the Erechtheum, the Parthenon, etc. See ATHENS; also Penrose's *Principles of Athenian Architecture* (new ed. 1889); Burnouf's *L'Acropole* (1877); Bötticher's *Die Akropolis von Athens* (1888); Curtius's *Stadtgeschichte von Athen* (1891); and E. Gardiner's *Athens* (1903).

Acropyrum is a genus of grasses of which the well-known weed couch-grass or quitch-grass (*A. repens*) is the most important species. This plant is somewhat difficult to abolish in cultivated land, on account of its creeping, jointed, underground stem. The only way is to follow the plough at each cultivation, and pick out the couch-grass and burn it.

Acrostic, a verse or verses in which the initial letters of the lines, when read in order, spell a name, word, or phrase. Specimens exist from the 4th century. Some sacred Greek verses, quoted by Eusebius, bishop of Cæsarea, in the 4th century, are written so that the initial letters spell the phrase, 'Jesus Christ, the Son of God, the Saviour.' The first letters of the five Greek words of this phrase spell the word *ichthus*, 'a fish;' hence the use of the fish as a symbol for the Saviour. The Hebrew form of acrostic, as seen in several of the psalms, is alphabetical. In the 119th Psalm, each of the eight verses of the first division begins with *aleph*; each of the eight verses of the second division begins with the second letter, *beth*; and so on. The best known English acrostics are an ingenious collection by Sir John Davies, called *Astræa*, written to Queen Elizabeth, the initial letters of each forming the words 'Elizabetha Regina.' Addison has a paper (*Spectator*, No. 60) on 'Wit of the Monkish Ages, in Modern Times,' in which he includes the acrostic among 'several kinds of false wit.' For a useful

acrostic dictionary, see that by Mrs. A. C. Pearson (1901), which contains 40,000 words with their initials and finals alphabetically arranged.

Acroteria, or ACROTERS, small pedestals on buildings, on which are placed statues or ornamental finials; also the statues or ornaments thus placed.

Act. (1.) The division of a drama into acts, unknown to the Greeks, was employed first by the Romans; all the comedies of Plautus and Terence had five acts. Shakespeare never departed from that number; but modern plays have three, four, or five. The conclusion of an act is marked by the fall of the act drop, and by a pause of a few minutes called the *entr'acte*.

(2.) IN LAW. A juristic act has been defined as 'a manifestation of the will of a private individual directed to the origin, termination, or alteration of rights.' (See Holland. *Jurisprudence*, p. 98.) It has other technical meanings, such as a legal document in writing which a party executes as his act and deed. The terms 'act of party' and 'act of law' distinguish a voluntary act from a mere external event, as a bankruptcy, death of an intestate, etc., which involuntarily transfer rights. An "act of state" is an exercise of sovereign power—*e.g.* a declaration of war or an annexation of territory—which the ordinary courts cannot challenge or interfere with, but must accept without question. See *Salaman v. Secretary of State for India* (L.R. 1906, 1 K.B. 613).

(3.) OF BANKRUPTCY. See BANKRUPTCY.

(4.) OF GOD. In English law an accident is said to be due to the act of God when, without human intervention, it arises from natural causes of such a kind or degree that no experience or care which can reasonably be expected could

have foreseen or guarded against them, such as storms, tempests and lightning, an extraordinarily high tide, or severe frost, or an exceptional fall of snow or rain. In the absence of a special contract, no person is held liable for damage caused by the act of God. See *Nugent v. Smith*, L.R. 1 C.P.D. 423; Broom's *Legal Maxims*; Pollock, *On Contracts*.

(5.) OF GRACE, an Act of the Scottish Parliament of 1696, c. 32 (amended by 6 Geo. IV. c. 62), compelling creditors to provide for the aliment of imprisoned debtors without means of support. By the Debtors (Scotland) Act, 1880, imprisonment for civil debt was, with exceptions, abolished. In the Imperial Parliament it is an act for general pardon, such as was passed in 1690. It originates from the crown, is read once only in each house, and cannot be amended. All members uncover when it is read, and the royal assent is given in special form.

(6.) OF PARLIAMENT, a law made by the King in Parliament. It must pass both houses of Parliament, and receive the royal assent, which may be given either in person or by commission. It may be introduced in either house; but by practice and usage, based upon resolutions of the Commons of 1671 and 1678, the House of Lords neither initiates nor amends money bills. An act begins as a bill, and a bill is either public or private. Public bills are introduced by a member by motion for leave. Private bills, which include all bills for the particular interest or benefit of individuals or corporations, are introduced on the petition of the parties interested. Public bills pass through the stages of first and second reading, committee, report, and third reading in both houses, and afterwards receive the royal assent. Private bills pass through the same stages;

but after the second reading in each house they are sent to a special committee, and unless the committee find the preamble of the bill proved, it proceeds no further, but is thrown out. When bills have received the royal assent, and become acts, they are more elaborately divided. Public bills become public and general acts, cited by the regnal year or years (and session 1 or 2), and chapter numbers in arabic. Private bills become (a) local and personal acts, with the chapter numbers in roman; (b) private acts, printed by the King's printer, with arabic italic numbers; and (c) private acts not so printed. The acts of the session form one statute; but since 1488 the particular chapters have been given titles, and since 1793 an act comes into force from the date at which it receives the royal assent, unless some other date is specified by the act itself. Acts require no promulgation, though there is a list, sometimes called the *Promulgation List*, of departments and officials to whom copies are sent. Public acts are binding on all, and all are presumed to know what is in them, and the judges take cognizance of them. Since 1850 all acts are public, unless the contrary is stated. In the absence of any contrary intention, public acts extend to Great Britain and Ireland, but not to the Channel Islands or the Isle of Man. They do not affect the crown unless the crown is named. Nearly all acts now receive short titles (a practice which has grown up since 1845), and the Short Titles Act, 1896, provides them where not previously existing. Collective titles are also given to groups of acts dealing with the same subject. Acts are either permanent or temporary, but many (about 100) of the latter are continued every year by the Expiring Laws Continuance Act. Statutes may be repealed, either expressly

or by implication, as being inconsistent with more recent legislation. Since Lord Brougham's Act (1850) the repeal of a repealing act does not revive the enactment repealed. In England, acts are always in force until repealed; but by Scots law some old acts of the Scottish Parliament, which have never been repealed, are yet held to have lost their force by desuetude. The first complete authorized edition of the English statutes was printed by the Record Commissioners between 1810 and 1824; but there were several private editions before that. The acts of England extend from 1235 to 1706; those of Scotland from the reign of James I., about 1424, to 1706; those of Ireland from 1310 to 1800; those of Great Britain from 1706 to 1800; and those of the United Kingdom from 1801. See also ADOPTIVE ACTS, INTERPRETATION ACT, LOCUS STANDI, POYNINGS'S LAW, PARLIAMENT, PARLIAMENTARY COMMITTEES, PARLIAMENTARY DEPOSITS, REFEREES, and STATUTE LAW REVISION; Hardcastle, *On Statutes*; Maxwell, *On Statutes*; and May's *Parliamentary Practice*.

(7.) OF SEDERUNT, an enactment or ordinance of the Court of Session. Although at one time their scope was greater, Acts of Sederunt are now practically confined to regulating procedure, and making provision, under statutory authority, for giving effect to certain Acts of Parliament. To pass an Act of Sederunt a quorum of nine judges is required. See Green's *Encyc. of Scots Law*.

(8.) OF SETTLEMENT, THE, or, by title, the 'Act for the further Limitation of the Crown, and better Securing the Rights and Liberties of the Subject,' was passed in the session 1700-1, under a Tory ministry. The succession to the crown was an urgent question, owing to William and Mary having had no issue, and owing to

the death (July 1700) of the Duke of Gloucester, the Princess (later Queen) Anne's sole surviving child. It cut away the hereditary-right claim of the elder branch of the Stuart house, and gave parliamentary right to the house of Hanover, by providing that, on the death of Anne, and in the absence of issue, the crown should go to the Electress Sophia of Hanover, granddaughter of James I., and her descendants, 'being Protestants.' In eight articles, in addition to the succession arrangement, the act made important provisions:—The sovereign must be in communion with the Church of England; no war should be waged without consent of Parliament for the foreign dominions of the sovereign, if a foreigner (a clause due to the policy and wars of William III.); the sovereign should not go abroad without consent of Parliament (repealed after accession of George I.); the full Privy Council (not a mere committee or clique) should be recognized, consulted, and have weight, and members agreeing to the decisions should sign such resolutions (an artificial attempt, ended in 1705, to secure responsibility of ministers); no foreigner should become a Privy Councillor or a member of either house, or hold commission or office from the crown, or receive a grant of lands from the crown (a clause due to resentment of William III.'s Dutch favouritism); no holder of office or pension under the crown should sit in the House of Commons (a clause designed to prevent the house from being packed with royal nominees and supporters; but, as an implied remedy, really worse than the disease, for had it not been revised in 1705, it would have excluded ministers from the House of Commons, would thus have reduced its control over the executive and policy, and would have hampered the growth of the

cabinet as a link between executive and legislature, making it virtually, as in the presidential cabinet in the United States, a mere body of heads of departments); judges should hold their commissions during good conduct—*quam diu se bene gesserint*—should have fixed salaries, and should be removed only on petition of both houses (an important provision towards securing the purity and independence of the bench against royal and executive device and power, as under the Stuarts); no pardon under the Great Seal—*i.e.* from the crown and executive—should be pleaded as a bar to an impeachment by the Commons (a clause the significance of which is contained in its commentary on the impeachments of Danby, Somers, and others). Eighteenth century politicians, especially Whig, saw in the Act of Settlement part of the 'Bible of the Constitution.' See CABINET, CROWN; Stubbs's *Select Charters*, App., for text; Hallam's *Const. Hist. of Eng.*, Ranke's *Hist. of Eng. in 17th Cent.*, Lecky's *Hist. of Eng. in 18th Cent.*, and Bagehot's *Eng. Constitution*, for bearing on party and on political conditions.

(9.) OF SUPREMACY, THE, in 1559 declared Queen Elizabeth to be the supreme governor of the realm in all spiritual and ecclesiastical causes as well as temporal, and provided that no foreign potentate should exercise any ecclesiastical jurisdiction within the realm. A previous act of 1534, declaring King Henry VIII. to be the only supreme head on earth of the Church of England, had been repealed in the first year of Queen Mary. The Act of Supremacy was repealed by the Statute Law Revision Act, 1863.

(10.) OF TOLERATION (May 24, 1689), a title given specially to Act 1 Wm. and M. c. 18, confirmed by 10 An. c. 2, relaxing the stringency of the Act of Uni-

formity, the Five Mile Act, and the Conventicle Act. It gave religious freedom to all dissenters from the Church of England, except to Roman Catholics and Unitarians. The same freedom was extended to Scotland. Other Acts of Toleration are 53 Geo. III. c. 160, removing civil disabilities of Unitarians; 9 Geo. IV. c. 17, repealing provisions of the Test Act and Corporation Act; 10 Geo. IV. c. 7, the Roman Catholic Emancipation Act. See Hallam's *Const. Hist. of Eng.*

(11.) OF UNION. See SCOTLAND, *History*.

(12.) OF UNIFORMITY. See UNIFORMITY.

Acta (Lat. 'transactions') was a title given to various records, memorials, or minutes published in Roman times. They may be treated under the following heads:—(1.) *Acta populi*, or *acta diurna*, an official journal of important events, both public and private, which was published daily in ancient Rome after 59 B.C. The original *acta* were deposited in the state archives after a certain time. They contained imperial and magisterial notices and decrees, resolutions and discussions of the senate, possibly the results of chariot-races, advertisements of births, marriages, divorces, and deaths. No genuine *acta* are extant, though fifteen spurious fragments have been published by Pighius (1615). (2.) *Acta senatus*, the minutes of the transactions in the senate—the title *acta* is an abbreviation of *commentarii actorum*—first published by Julius Cæsar as consul in 59 B.C. They were kept in the imperial archives, being accessible only to senators; or in separate parts of public libraries, being then accessible only by special permission of the city prefect. (3.) *Acta fratrum Ævalium*, minutes of the Æval brotherhood, a priestly college in ancient Rome.

Important fragments covering the period from 14-241 A.D. have been found, and edited by Henzen (1874).

Acta Pilati, or *GESTA PILATI* ('Acts of Pilate'), the name of an apocryphal work giving, by way of an official report purporting to have been drawn up under Pilate's orders, an account of the trial, crucifixion, and resurrection of Jesus. It is, of course, by no means improbable that Pilate furnished the Emperor Tiberius with some record of his dealings with Jesus; but as it is extremely unlikely that such would ever become public property, the references made by Justin and Tertullian to such a writing probably attach themselves to some spurious composition designed to fill up the blank. Eusebius speaks of heathen *Acta Pilati* circulated in the Galerian persecution for the purpose of bringing the Christian passion story into disrepute, but knows nothing of a Christian writing under that title. The extant Acts of Pilate is written from a Christian standpoint; and although it was known in some form to Epiphanius towards the close of the 4th century, it has no claim to authenticity, but is probably connected in its origin both with the heathen acts (by way of confutation) and with the earlier narrative alluded to by Justin. It now forms ch. 1-13 of the Gospel of Nicodemus. See *PILATE*.

Acta Sanctorum (Lat. 'The Acts of the Saints'), also *ACTA MARTYRUM* ('Acts of the Martyrs'), is the title given to a vast collection of legends and histories of all the saints in both the ancient martyrologies of the Eastern and Western Churches and in the calendar of the modern Church of Rome. It was begun in 1643, and the work is still going on. The idea of making this exhaustive collection originated with a learned Jesuit, Heribert Rosweyd, of Bois le Duc, about

the end of the 16th century. At his death it was taken up by John van Bolland (1596-1665), and under his guidance a society of Jesuits, called *Bollandists* after their leader, was formed to carry on the work. Sixty-one volumes, most of which contain more than a thousand closely printed pages in double columns, have appeared, with an index (1875). The calendar from January to October has been overtaken, twelve volumes being required for October alone.

Actæon, in classic mythology a famous hunter, whom the goddess Artemis changed into a stag, because he saw her bathing; in this form his dogs tore him to pieces. See Ovid's *Metamorphoses*, bk. iii.

Acte Additionnel. *L'Acte additionnel aux Constitutions de l'Empire* was issued by Napoleon on April 23, 1815, during the 'Hundred Days,' as a concession to Liberal politicians. It contained provisions for individual liberty, a Parliament of two houses—a nominated Chamber of Peers and an elected Chamber of Representatives—and freedom of the press, and was an advance upon 'The Charter' of Louis XVIII., June 1814, based on English models. It was submitted to a plébiscite in every commune, but was not hailed with any enthusiasm. See *Cambridge Modern History*, ix. 20 (1907).

Actian Games, *THE*, were instituted by Octavius in commemoration of his great naval victory over Antony and Cleopatra (B.C. 31) at Actium. They included musical contests, wrestling, horse-racing, and, in memory of the battle, sea-fights. They were held every fifth year.

Actinaut, any vessel or torpedo which, propelled by self-contained power, can be steered on or beneath the surface of the water by a distant operator through the medium of a ray (Gr. *aktis*) or

electric current, without the intervention of wires. Patents for the direction of vessels in this manner have been granted to Messrs. Orling and Armstrong, Lieut. Fiske, U.S.N., Mr. A. A. Govan, and others; but experiments made hitherto cannot be said to have been conclusive in favour of the principle of wireless steering. See *New Liberal Review*, June 1901.

Acting. The art of acting, in its modern sense, is of comparatively recent development. Indeed, even until Shakespeare's day acting consisted of recitation rather than impersonation, and for long afterwards the nature of the stage—a promontory jutting out into the audience—forbade anything like histrionic realism. Realism was almost impossible in the huge theatres in which Betterton and Garrick, Mrs. Siddons and John Kemble, Kean and Macready played their parts.

But even in the 17th and 18th centuries the art of acting had come to have its two schools—the school of 'nature,' aiming at least at realism; and the school of 'art' or artificiality, whose chief object is impressiveness. John Philip Kemble was the personification of 'art' at his best, and 'artificiality' at his worst—stilted or stately, solemn or severe. Edmund Kean was the personification of 'nature'—fresh, unconventional, individual, but often crude and violent to excess. The majority of players, however, are not to be thus labelled. Mrs. Siddons, more stately than even Kemble, could be almost as unrestrained as Kean. Kemble's Brutus cannot have been more majestic than Irving's Charles the First. It may perhaps be said that the greatest actors are to be found among those who have been least fettered by the trammels of tradition.

The true actor, according to M.

Coquelin, can assume his *rôle* at a moment's notice. He has no need to attune his mind to it by preliminary meditation. Whether it be Romeo or Lear, provided only he is word-perfect, he can step on to the stage and produce the impression he desires. M. Coquelin holds, too, with Diderot, and against Horace, that an actor should not feel his part. Mr. William Archer, in his *Masks and Faces*, takes the opposite view, and the weight of testimony is all on his side. The vast majority of really great actors and actresses have placed on record their conviction that, in order to produce their greatest effects, they had to identify themselves body and soul with the characters they impersonated. Mrs. Siddons prepared herself for her great scene as Constance by deliberately concentrating her mind on her imaginary woes, remaining within earshot of the stage, that she might the better experience the queen's ecstasy of anger on hearing the 'sickening sound of that march to which the French and English enter the gates of Angiers.' Salvini deliberately devoted several hours to solitary brooding before his appearance on the stage; and on being asked once at a social gathering in America to give a short scene from *Othello*, he was obliged to refuse, on the ground that he could not do so acceptably without going through the whole play! Mrs. Kendal (to add a more modern instance), in order to achieve the stony rigidity of Claire in *The Ironmaster*, would shut herself up in her dressing-room and fix her thoughts 'upon all the old, unhappy, far-off things she could think of—the pains, losses, and disappointments of her life.' Talma, the great French actor, tells us how, as it were subconsciously, he stored each new feeling experienced in real life

for exploitation in due course in the theatre. Sensibility, then, we may take it, is in nearly all cases essential to great acting, though it must not go unbridled. '*Le cœur chaud, la tête froide,*' the motto of M. Albert Lambert, a modern French actor, happily expresses the requisite compromise between emotionalism and self-control.

Can acting be taught? Yes and no. That is to say, some of the various qualities enabling one to shine in the art may be acquired and improved by dint of study under an expert. Grace of carriage, appropriateness of gesture, the management of the voice, may well be learned from one's elders and betters; but the dramatic instinct, without which these things are as nothing, is, of course, a gift of nature. Like the poet, the actor is born, not made. Historic 'academies' have seldom justified their existence, least of all in England. The Paris Conservatoire has come nearest to being a success; but, as Macready said after visiting it in 1843, its tendency is 'to perpetuate the mannerism of the French stage Genius would be cramped, if not maimed and distorted, by such a course.'

It seems safe to prophesy that the art of acting, while it will always have its devotees, will always have its decriers. Even in ancient Greece, where actors enjoyed all civil rights, and the greatest dramatists appeared in their own plays, the 'profession' did not escape condemnation. Solon and Plato both pronounced the career unworthy. On the whole, however, in Greece the calling was held in higher esteem than it has ever been since. Actors seem to have had their disabilities in every other country, and at all times. The son of an actor (as of an executioner) is ineligible in China for the mandarinship; and in France

the rites of Christian burial were denied to Adrienne Lecouvreur. In England the stage has had its ups and downs. Dr. Johnson was spokesman for a large section of his race when he gave out his sneer about clapping a hump upon your back and calling yourself Richard III.; while from Cardinal Manning, hardly less typical an Englishman though a prelate of the Church of Rome, it drew that uncompromising phrase about 'the prostitution of a body purified by baptism.' On the other hand, our greatest actors have been signally honoured. The name of Garrick is conspicuous in Westminster Abbey. Mrs. Siddons, John Kemble, Kean, and Macready were on terms of intimate friendship with the greatest in the land. The dignity of knighthood was universally considered to sit well upon the shoulders of Henry Irving; and Sir Charles Wyndham and Sir Herbert Beerbohm Tree have received the same recognition of successful stage careers.

Though devoted primarily to the question as to how far an actor should be able to enter into the feelings of the character he is impersonating, Mr. Archer's volume, *Masks and Faces*, contains a good deal of general information about the art of acting. *The Art of Acting*, by Mr. J. A. Hammerton, is in part a skilful *résumé* of the best critical opinion, in part a symposium contributed to by living actors and actresses of note. See Diderot's *The Paradise of Acting*, and the article DRAMA; also A. Symons's *Plays, Acting, and Music* (1906).

Actiniaria, the true sea anemones; species without evident hard parts, which do not form colonies, and possess some slight power of locomotion.

Actinic Rays are the invisible rays given off by a highly-heated

body. They are, on the whole, more refrangible than the visible rays. They were first recognized by their photographic properties, but are most easily demonstrated by means of fluorescing materials. A fluorescent substance has the property of absorbing these invisible rays and giving them forth again as visible rays of a different refrangibility. For example, let a ray of sunlight be passed through a prism so as to be drawn out into a spectrum of rainbow tints, and let the spectrum so formed fall on a strip of canary glass or paper painted with a solution of sulphate of quinine, or a fluorescent screen of a substance like platino-cyanide of barium. At once the spectrum will appear to be extended well beyond the violet end, the invisible actinic rays being transformed into visible rays. For this reason the actinic rays are frequently called the ultra-violet rays. They differ from the violet rays in their shorter wave-length and more rapid frequency. See FLUORESCENCE, LIGHT, RADIANT ENERGY, and SPECTRUM.

Actinograph, a self-recording actinometer, the record being made by the chemical effect of the sun's rays on sensitized paper.

Actinolite, a kind of amphibole, distinguished by its dark-green colour. It occurs in large bladed crystals in metamorphic rocks, often forming whole rock masses known as actinolite rock or actinolite schist. It is often finely fibrous, and is abundant in Scotland, the Alps, Scandinavia, and all regions of archæan rocks.

Actinometer, an instrument for determining the amount of heat received from the sun on a surface of definite size in a given time. Herschel's actinometer, invented about 1824, consists of a large cylindrical thermometer bulb with a very open scale, so that small changes may be readily observed. The bulb is

of transparent glass filled with a deep-blue liquid, which is expanded when the sun's rays fall on it. When an observation is taken, the instrument is shaded for one minute and read off; it is then placed for one minute in sunshine, and its indication recorded; it is finally shaded again, and a reading made. The average of the two readings in the shade, subtracted from that in the sun, indicates the expansion of the liquid produced by the sun's rays in one minute of time. Leslie also showed how his differential thermometers could be used for the same purpose. In other forms of apparatus the chemical action of radiation is used. The best modern instruments for measuring solar radiation are constructed on quite a different plan—the absorbing body being a blackened wire, whose change of temperature is measured by its change in electric resistance. The generic name for this type of instrument is bolometer; so called by Langley, who has used it with great skill in the measurement of solar radiation.

More usually a photographic exposure meter is called an actinometer. The chemical activity of the light on any subject is measured by the time taken for a strip of photographic paper to darken to a certain colour, and from this time the length of exposure to be given to the plate or film is calculated.

Actinomycosis (Gr. 'ray-fungus'), a chronic infective disease, caused by the penetration into the tissues of a vegetable parasite, the *Actinomyces bovis*, or ray-fungus of the ox. The disease is common among cattle, and occurs also in the pig. It was first recognized in the ox by Bollinger in 1876, and is known in Britain as 'woody tongue,' and in America as 'big jaw.' The fungus, in the case of cattle, is probably taken in with the food; the chief source is believed to be infected grasses,

particularly those belonging to the genus *Hordeum*. Seventy-five per cent. of recorded cases in man have been in persons—such as farmers, millers, farm labourers, grooms, and others—whose occupation leads them to deal with cereals.

The seat of infection in man and animals is the mouth or the neighbouring passages, though almost any tissue and any organ of the body may be affected. In actinomycosis of the mouth and pharynx, the fungus is supposed to penetrate by means of carious teeth. The lower jaw is the most frequently affected, but the disease may involve the tongue, upper jaw, bones of the skull, and the vertebræ. When the disease attacks bone it produces periostitis, suppuration, and necrosis. In the tongue, actinomycotic nodules of fibrous tissue are formed under the mucous membrane, which becomes ulcerated. This is followed by atrophy of the muscular fibre and great hardness of the organ. Finally, suppuration occurs, and the pus discharged contains a large number of minute whitish or yellowish specks or granules, sometimes visible to the naked eye, the largest of which have a diameter of $\frac{1}{16}$ of an inch. In actinomycosis of the intestine, the large intestine is more frequently attacked than the small. Ulcers are formed, the peritoneum becomes involved, and abscesses result, which may open externally or discharge into the bladder, liver, etc. The liver is usually affected by extension from the intestine, and the lung may be primarily affected by the inhalation of infected vegetable dust. Treatment is largely surgical, with care of the general health.

Actinozoa, or ANTHOZOA, a division of the Cœlentera, or hollow-bodied animals, including the sea anemones, the corals, and allied forms. All are characterized by the fact that the life-

history is simple, and does not include a jelly-fish stage. There is a distinct gullet, connected with the body wall by divisions or septa, and the mouth is surrounded by tentacles. Digestive filaments are present on these septa, and the stinging cells are often very well developed.

Action, a civil proceeding in a court of law for the determination of the rights of the parties. Whenever a legal right has been infringed, whether by the breach of an agreement or by the infliction of an injury, a cause of action arises. The cause of action consists of all the facts which the plaintiff must prove in order to succeed in his claim. In certain cases actions may also be brought where no right has been infringed, but where the assistance of the court is required to determine the rights of different persons in the circumstances which have arisen, as in the case of the administration of the estates of deceased persons. Every one has a right to bring an action except a felon, an outlaw, or an alien enemy, though persons under disability, such as infants and lunatics, have to be represented by some one else, such as a guardian or a committee; and every one is liable to have an action brought against him, except the sovereign, foreign sovereigns, and foreign ambassadors.

In England actions are brought in the High Court of Justice, in the Chancery Courts of Lancaster and Durham, in county courts, and in inferior courts of record of local jurisdiction. In Scotland they are brought in the Court of Session, the sheriff courts, and in small debt courts.

An action in the High Court is defined by the Judicature Act, 1873, as a civil proceeding commenced by writ, or in such other manner as may be prescribed by rules of court. It includes an originating summons, but not di-

orce or bankruptcy proceedings, which are commenced by petition. It begins with the issue of a writ of summons, followed by service of the writ, appearance thereto, summons for directions, pleadings or not as directed, trial in open court, verdict, and judgment. Either party has the right to a trial by jury, except in causes assigned to the Chancery Division, and in certain other cases where, by Order 36 of the Rules of the Supreme Court, the judge has power to order that the case shall be tried without a jury. The old forms of action, by which rights had to be claimed by the form of writ and pleadings, appropriate to each cause of action, were finally abolished by the Judicature Acts, 1873 and 1875. The old division of common law actions into real, mixed, and personal is obsolete, and the most important division now is into actions of contract (or *ex contractu*) and actions for tort (or *ex delicto*). But in many cases actions are called after the nature of the relief sought, as an administration or a partition action, an action for specific performance, a foreclosure of redemption action, etc. In the Palatine Courts of Lancaster and Durham the proceedings, etc., in actions are much the same as in the High Court. For county court actions, see COUNTY COURTS. In inferior courts, such as the mayor's court, the procedure is special, but only in matters of detail.

In Scotland, in the Court of Session, an action may be brought to have practically any question of right or status determined and the proper remedy applied. Actions are generally classified according to the nature of the remedy asked for, or, as it is expressed, according to their conclusions. Upon this footing they are divided into declaratory actions, to have the nature or extent of some right defined; rescissory actions, to have a deed or contract rescinded or set

aside; petitory actions, such as actions on contracts for the payment of money; possessory actions, such as actions for interdict against interference with the possession of land; competitions, or actions to have the rights of several claimants to the same property determined; actions connected with diligence, in which, for example, execution against the property of a debtor is asked for. Another division is based upon the jurisdiction of the Ecclesiastical and Admiralty Courts, which now belong to the Court of Session. Thus consistorial actions—such as divorce, bastardy, and nullity of marriage—deal with matters formerly belonging to the Consistorial Courts; and actions relating to ships deal with matters formerly belonging to the Court of Admiralty. In the Court of Session an action is commenced by summons, which is accompanied by a condescendence, or statement of facts, and by pleas-in-law. The defender is cited by delivery to him of a copy of the summons, condescendence, and pleas-in-law, and if he enters appearance, he has time to deliver defences in the same form as the condescendence and pleas-in-law; and after the record has been printed, it is revised and adjusted before the Lord Ordinary, and the record is closed. When no material facts are at issue, the case is debated, and judgment given; otherwise a proof is taken, either before the Lord Ordinary (alone or with a jury) or by commission, counsel are heard, and judgment given. As to proofs, the Lord Ordinary, with the consent of the parties, or for cause shown, may dispense with a jury in any case; but proof may be taken by commission, except in cases appropriated to jury trial by the Judicature Act, 1825, and in consistorial actions. In practice, proofs are taken before a jury in actions of damages for accidents, defamation, or nuisance,

actions as to public rights of way, and certain actions of reduction. Actions in the sheriff courts are begun by petition, and the general outline of the procedure is similar to that in the Court of Session. In small debt courts the proceedings are summary, and the only documentary pleading is the summons.

Action, PREPARING FOR (Navy). It is the captain's duty to take care that all the guns are ready for firing, and that the mechanism of the quick-firing and machine guns is in working order. At the earliest opportunity after commissioning, he is to have a 'quarter bill' hung up in a conspicuous and public part of his ship, containing the names of officers and men, and their respective posts in the vessel. 'General quarters' are directed to take place once a week, and exercise of arming and manning boats, and resisting torpedo attacks, once a month. There is an allowance of powder and projectiles to be expended in the course of every three months, to keep the men in constant practice. Previous to action all temporary bulkheads, woodwork, etc., should be dispensed with. The stanchions and protective side chains are laid flat on the deck or swung outboard; everything that might come adrift is made fast, and splinter nets are hung round portions where officers might find it necessary to stand for the proper fighting of the ship. The watertight doors are in charge of the engineer officer, who is responsible for their efficiency, and for their being closed when not in use. In an action they would be closed as a matter of course. In the wardroom, or some other convenient place, the surgeons lay out their tables and instruments. The fire mains and hose are also made ready, and ammunition is brought from the magazines. All means of communication between various

parts of the ship are tested. To repel a torpedo attack, the torpedo nets would be got out if the ship is not under way.

Actium, tn. and prom. on the w. coast of Greece, s. of the mouth of the Ambracian Gulf. Off the point, on Sept. 2, 31 B.C., the fleet of Antony and Cleopatra was completely defeated by that of Octavian, who thus gained control of the whole Roman empire. Here also the Turkish corsair, Khair-ed-Din Barbarossa, defeated in 1538 the allied Spaniards, Venetians, and Papal forces.

Acton, metrop. suburban par. and tn., Middlesex, England, 7 m. w. of St. Paul's, London. Pop. 40,000.

Acton, CHARLES JANUARIUS EDWARD (1803-47), born at Naples. He entered the *Academia Ecclesiastica*, Rome; was made cardinal in 1842. See Cardinal Wiseman's *Recollections of Four Popes* (1858), pp. 475-80.

Acton, JOHN ADAMS, sculptor (1836-1910), was born at Acton, Middlesex; secured R.A. gold medal for *Eve supplicating Forgiveness at the Feet of Adam*. Subsequent works include *The Lady of the Lake*, statues of *Mr. Gladstone* (St. George's Hall, Liverpool), *Queen Victoria* (for Kingston and the Bahamas), *Lord Beaconsfield*, *Napier of Magdala*, bust of *Mr. Bright* (National Liberal Club), *Lord Brougham*, and various statues and busts for India, America, and the provinces.

Acton, SIR JOHN FRANCIS EDWARD (1736-1811), born at Besançon, where his father (an Englishman) was a physician. He served first in the French, then in the Tuscan navy, and was generalissimo and prime minister at Naples during the French revolution. After Napoleon's successes in the north of Italy in 1798, Acton fled with the king and queen to Palermo. He was soon restored to power, but his arbitrary rule caused a

Acton

reaction against the royal family. On the demand of France he was removed in 1804, but shortly afterwards was reinstated. When the French entered Naples in 1806, he fled with the royal family to Sicily, and died at Palermo.

Acton, JOHN EMERICH EDWARD DALBERG - ACTON, LORD (1834-1902), grandson of above; born at Naples; raised to the peerage as Baron Acton of Aldenham (1869); appointed to the chair of modern history, Cambridge (1895); died at Tegernsee, Bavaria. Lord Acton was a historian of great learning, and had profound influence, as a liberal Catholic, upon English religious thought. His writings include *The War of 1870; Wolsey and the Divorce of Henry VIII.* (1877); *Schools of Hist. in Germany* (1886); and *Lectures on Modern History* (ed. by Figgis and Laurence, 1906). He was for a time editor of *The Home and Foreign Review*, *The Weekly Chronicle*, and *The N. Brit. Review*. He planned *The Cambridge Modern History*, 1903, etc., written by several scholars in co-operation. After his death his vast library was presented by Mr. Carnegie to Lord Morley, who gave it to the University of Cambridge. See *Letters of Lord Acton to Mary Gladstone* (1904), with introduction by Herbert Paul.

Acton Burnell, THE STATUTE OF (1283), also called *De Mercatoribus*, was enacted by Edward I. and his council—not in a full Parliament. It provided for the recovery of merchants' debts by ordaining that, on the debt being acknowledged before royal officers in specified towns, distraint for debt might be enforced in default of payment. In 1285 the statute was made more explicit, and was extended in area of application by the *Statutum Mercatorum*. See Cunningham's *Growth of English Industry and Commerce* (2 vols. 1890-2).

Actors' Benevolent Fund, THE, established 1882, provides financial assistance to distressed actors, actresses, theatrical managers, and stage managers, and to their children, or to their widows and orphans, and also to choristers whose efforts are entirely devoted to theatrical work. Its office is at 8 Adam Street, Adelphi, W.C.

Acts, THE SIX, passed Nov.-Dec. 1819, were designed by Lord Sidmouth, Home Secretary, and his associates, to cope, through vigorous administrative process, with popular excesses (*e.g.* at Manchester, August 1819) that were due to economic conditions, to reactionary government, and to the demands of political reformers such as Cobbett and Hunt. The acts expedited trial for riot and sedition, increased the penalty for libel, regulated and restricted the press, prohibited the training of persons in the use of arms and military exercises, prevented seditious meetings, and empowered magistrates to search for and seize arms. The argument of necessity was adduced. See Spencer Walpole's *History of England since 1815*.

Acts of the Apostles, our most trustworthy source for the early history of the Christian Church. The book falls roughly into two parts: the first (ch. 1-12) narrates the spread of the church from Jerusalem outward to Judæa, Samaria, and Antioch, the central figure being St. Peter; while the second portion (ch. 13-28) carries the story to Asia Minor and Europe, being in the main a fragmentary biography of St. Paul, and detailing his missionary labours in company with Barnabas, and subsequently with Silas and others. It is generally admitted that the writer of the Acts is identical with the author of the third Gospel (Luke); but there is no little diversity of opinion regarding the date of the book. Baur subjected it to a most thoroughgoing criti-

cism, and, in accordance with his general theory of two opposing parties in the early church—the Petrine or Judaistic, and the Pauline or Universalistic—as also in view of certain supposed discrepancies between the Acts and the Epistle to the Galatians (*e.g.* Acts 15 and Gal. 2), assigned it to the 2nd century, maintaining that it was not so much a literal history as an ideal representation designed to unite the parties by ignoring or minimizing their differences. The theory in this extreme form has, however, been abandoned even by Baur's later adherents; while such recent critics as Blass and W. M. Ramsay advocate the traditional authorship and date. The more extreme criticism has at least brought out the fact that the Acts is a unity, artistically planned and executed; but this must be understood as being quite consonant with the writer's having had at his disposal, and having made considerable use of, one or more written sources. See *Acts*, Camb. New Testament; also *Acts*, Clark's Bible Class Handbooks; Baur's *Church Hist. of First Three Cents.* (Eng. trans. 1879), which, while antiquated, is always inspiring and brilliant; W. M. Ramsay's *St. Paul, the Traveller and the Roman Citizen* (1895); and the various commentaries—*e.g.* Holtzmann's (3rd ed. 1901), gives abundant literature.

Actuary. In the Roman empire the *actuarii* were clerks who recorded the *acta* or deeds of the senate and other bodies, and who kept the military accounts; and hence the English word actuary originally denoted a registrar or clerk. Later it was applied to an officer appointed to record the proceedings of a court, in which sense it is still used in the Convocation of the Province of Canterbury; and then to the managing secretary or accountant of a public company, in which sense it is now

obsolete, except in the case of a few banks still retaining an official with this title. At the present day the word means an official in an insurance company whose duties are to deal with statistics, deduce therefrom rates of mortality, and, by combining these with rates of interest, to calculate premiums for all kinds of insurances; also to estimate the liability of the company under its contracts, and advise what sum is required to meet these, how much may be safely regarded as surplus, and in what manner this surplus may be divided among the policy-holders as bonus; and generally to perform calculations of all kinds, and advise on all questions of accounting and finance. He has also, as a rule, to deal with many legal questions; and must have a certain amount of medical knowledge, in order to understand and benefit fully by the advice of the company's medical officer as to the acceptance or rejection of lives proposed for insurance. In 1819 the profession was recognized by government, by the creation of the office of Actuary to the Commissioners of the National Debt, an office which has been continued ever since. Though consulting actuaries were formerly deemed sufficient for the work of small companies, the growth of insurance business now necessitates a regularly-appointed actuary, with several fully-qualified assistants, on the staff of most companies. Many actuaries, in addition to holding a permanent appointment, undertake a certain amount of private work, and add considerably to their incomes by their consulting practice—partly in connection with friendly and benefit societies among the working classes, and pension, superannuation, and widows' funds of railway companies, banks, and churches, which all require periodical investigation; partly in connection with the purchase and

sale of, or grant of loans upon, reversionary or life interests; and partly in connection with probate purposes, an actuary's valuation being required in respect of any reversionary interest forming part of the estate of the deceased. According to the law of Scotland, the heir in possession of an entailed estate has, in certain circumstances, the right to bar the entail and acquire the estate in fee on paying compensation to certain of the subsequent heirs. The amount of the compensation must be equal to the expectant value of the interests which are defeated by the breaking of the entail, and the court usually remits to an actuary the duty of ascertaining these values.

In the United Kingdom there are two corporations empowered under royal charters to examine candidates, and grant diplomas as actuaries. The *Institute of Actuaries* was founded in 1848, and incorporated in 1884. Its headquarters are at Staple Inn Hall, Holborn, London. It issues the *Journal of the Institute of Actuaries and Assurance Magazine*. The *Faculty of Actuaries in Scotland* is a similar body, founded in 1856, and incorporated in 1868, with its headquarters at 14 Queen Street, Edinburgh. Fellows of these two corporations are entitled to the letters F.I.A. and F.F.A., respectively, after their names. International congresses have been held at Brussels, London, Paris, and New York, one of the most important results of these congresses being the adoption of a uniform system of notation for all countries.

Acupuncture, the insertion of needles into the body to a depth of one or two inches, generally until they pierce a nerve, where they are left for half an hour, to relieve lumbago and sciatica. It has been a specific surgical operation of the Chinese from very early times.

Acuto, GIOVANNI ('John of the Needle'), the Italian alias of Sir John de Hawkwood. See HAWKWOOD, SIR JOHN DE.

A.D., *Anno Domini*—in the year of our Lord—the chronological era now universally used in Christian countries, beginning with the supposed date of the birth of Christ.

Ada, tn., N. Hungary, Bacs-Bodrog co., on the r. bk. of the Theiss, 8 m. s. of Zenta. Cattle, fish, and cereals. Pop. 12,000.

Ada-Bazar ('island-bazaar'), tn., Anatolia, Asia Minor, on the Sakaria, 24 m. E. of Ismid; silk, tobacco, and walnut wood. Ada-Bazar stn. (5½ m.), on Anatolian Ry. Seat of an Armenian bishopric. Pop. 18,000 (Moslems, 10,000; Christians, 8,000).

Adagio (It.), as a time indication in music, signifies that the movement should be played slowly and expressively. The word is also used as the title of a piece of music, or as the name of a movement in a symphony or sonata, etc.

Adair, SIR ROBERT (1763–1855), diplomatist; M.P. for Appleby and Camelford (1802–6); afterwards on diplomatic service at Vienna, Constantinople, and Brussels. He published *Hist. Memoirs of a Mission to the Court of Vienna* (1844); *The Negotiations as to the Dardanelles, 1808–9* (2 vols. 1845); and *Letter to the Electors of Westminster in 1793*.

Adalbert (c. 1000–1072), German ecclesiastic; appointed archbishop of Bremen and Hamburg in 1043 by the Emperor Henry III. Over his successor, Henry IV., he exercised such influence as to be the virtual ruler of the empire. He introduced Christianity among the Wends, and endeavoured, ineffectually, to found an independent patriarchate in the north. See Dannonberg's *Adalbert* (1877).

Adalbert, HEINRICH WILHELM, PRINCE OF PRUSSIA (1811–73), the son of Prince Wilhelm, uncle of Friedrich-Wilhelm IV.; born at Berlin; entered the army; visited

Great Britain, Russia, Turkey, Greece, Brazil, etc.; took special interest in the formation of the German navy, and was made admiral in 1854; published *Aus meinem Reisetagebuch, 1842-3* (1847) *Denkschrift über die Bildung einer deutschen Flotte* (1848). See *Biography* by Admiral Batsch (1890).

Adalbert, St. (1.) An early English saint (c. 700), probably a grandson of Oswald, king of Deira. He is supposed to have been the first archbishop of Utrecht. (2.) 'The Apostle of Prussia;' became bishop of Prague, his native place, in 982; devoted himself to missionary work in N. Germany and Poland. He was murdered (997) in Pomerania while preaching to the Prussians. In 1880 his bones were found in a vault at Prague, and were reburied in the cathedral.

Adalia, or ANTALIA (anc. *Attalia*, founded by Attalus II.; the *Satalia* of the middle ages), a port of Anatolia, Asia Minor, at the head of the Gulf of Adalia. Exports timber, cattle, flour, grain, sesamum, and silk. Pop. 24,000.

Adam and Eve, the first human pair, are represented in the well-known story (see Gen. 1 ff.) as having been created by God and placed in the garden of Eden, where they lived in a state of happy innocence until the fall. To obtain anything like an adequate view of the relations and implications of this Biblical story, we must first of all subject it to literary analysis. It is now generally accepted that the narrative is a combination of two different accounts of the creation of man. (See HEXATEUCH.) The greater and by far the more picturesque portion, from ch. 2:4b onwards, is attributed to a writer who is distinguished as J (*i.e.* the Jahvist); while ch. 1-2:4a is assigned to P (*i.e.* the Priestly Code). The latter always speaks of the Deity as *Elohim* (God), while the former uses *Jahveh* (the LORD); the use

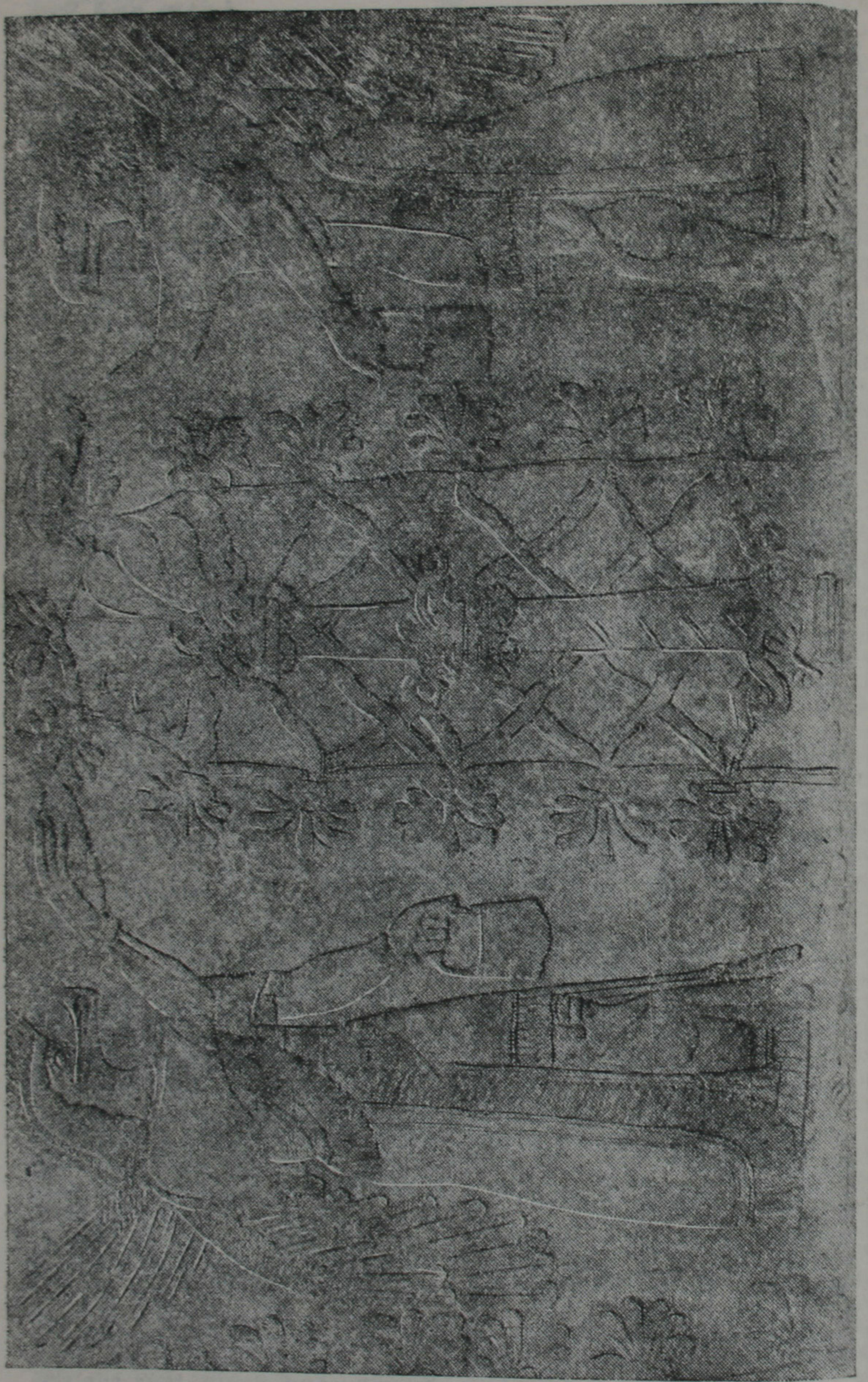
of the combination *Jahveh-Elohim* (the LORD God), in J's account, being explained on the hypothesis that some later compiler or editor added *Elohim* to *Jahveh*, in order to make the transition less abrupt. But, apart from this, and from other marked differences of form and style, the two writers diverge considerably in regard to the substance of the story. P speaks of man (Heb. 'adam) as having been created on the same (sixth) day as the animals: *Elohim* makes him in His own image, a male and a female; He blesses him, and gives him dominion over all other created things. J's narrative is much more detailed: it tells how *Jahveh* (-*Elohim*) formed the man (*ha-'adam*), placed him in Eden, and subsequently fashioned the woman out of a rib taken from the man's side. Both accounts, however, agree in representing man as the crown of creation, and imply that he possesses a community of nature with God, and a capacity for fellowship with Him. In P there is nothing corresponding to J's account of the serpent, the fall, or the expulsion from paradise, the former writer's more concise and abstract representation being (though it stands first) a product of later theological and philosophical reflection.

Origin of the Paradise Story.—It is naturally upon J's account, not P's, that the main interest centres. The story of the garden of Eden, having been taken as the historical basis of the doctrine of sin, has become in consequence the objective of the most trenchant attacks from the side of modern science. Before proceeding to consider these attacks, or the place of the fall in theology, let us ask what, if any, light is thrown upon the narrative by (1) philology, and (2) the study of comparative religion. (1.) The supposed proper name *Adam* is identical with the Hebrew word 'adam, meaning

'man.' In the English version of the Old Testament, Adam, the proper name, is used in passages where the generic term, 'the man,' would be undoubtedly more accurate. In some instances the name seems to waver between the proper and the generic usage; but there are indubitable instances of each—*e.g.* 'Adam' in Gen. 5:3-5, 'the man' in ch. 2 generally. The question then is, whether the common name became specialized into the proper, or whether the proper name was of independent origin, and merely happens to coincide with the common. Attempts to prove the latter alternative have decidedly failed to carry conviction. But since we have the Assyrian *admû*, meaning 'child,' and since, according to Sayce, *adam* is the common Babylonian word for 'man,' we may safely conclude that *adam* was originally a generic term that subsequently became a proper name. J's narrative employs the word in the sense of 'man,' or 'the man' as opposed to 'the woman.' Eve (Heb. *Havvah*) is, as the narrator (or editor) suggests in Gen. 3:20, connected with the Semitic root *ch-v-h*, 'to live,' and means 'life,' or the 'living one.' It is unquestionably used as a proper name, and may, in a somewhat changed form, be a reminiscence of the original or of some other legend. (2.) It has been supposed that the paradise story of Gen. 2 ff. is of Babylonian origin; but as yet investigators have not gathered from the cuneiform inscriptions any narrative sufficiently resembling the biblical account to be deemed the source of, or even a fair parallel to, the latter. Doubtless there are points of similarity between Gen. 2 ff. and certain elements in Babylonian mythology—*e.g.* the garden with its four rivers finds a parallel in the Babylonian isle of the blessed, which also has four streams, and the tree

of life may be compared with the herb of life which grew on the island—but there are good reasons for doubting that the four rivers and the tree of life (not tree of knowledge) are original to J. Then there is a Babylonian seal cylinder which shows a fruit-tree with two human figures and a serpent, and which has been supposed to represent the temptation; but this theory is now abandoned (see King's Printers' *Aids to Students of Bible*, Tablet 28, and notes by Sayce). We may mention that the cherubim which, according to Gen. 3:24, guard the gate of paradise correspond to the Babylonian and Assyrian figures of winged genii which protected houses (see King's Printers' *Aids*, Tablets 31-36). Finally, the serpent plays a great part in the mythology, not only of the Babylonians, but of many other peoples. The tree of life is also a widely-disseminated conception. Hence, even if these parallels and analogies were much more striking than they really are, the literature of Babylonia and Assyria has furnished as yet nothing to be compared, for richness of colouring or detail, with the paradise story of J. Nor have researches into other literatures brought to light any but obviously quite fortuitous resemblances to the biblical narrative.

The Writer's own Purpose.—It remains to inquire what the writer thought of his own narrative. Did he imagine that he was writing actual history? or shall we credit him with constructing a skilful allegory, or merely a picturesque story? Perhaps to neither of these questions can we give an unqualified yea or nay. Let us note, first, that the writer seems to be well aware that his story moves in a world other than the real—a world in which, for example, God is hardly more, and the serpent (an actual animal) hardly less, than human; and, again, that the ser-



Adam and Eve—Assyrian sculpture showing the Sacred Tree with Eagle-headed Deities

pent and the tree of knowledge (to say nothing of the tree of life, a somewhat irrelevant element) seem decidedly to indicate some older tradition lying at the basis of the narrative as we now have it. Taking these in connection with the fact that the writer speaks of 'the man' and 'the woman' rather than of 'Adam' and 'Eve,' our most probable conclusion will be that he found some popular tradition, richly laden, doubtless, with mythical elements, and idealized it—*i.e.* retold it so as to make it expressive of moral and spiritual truths. In his hands, therefore, the grosser and more fantastic features of the myth would be purged away; and, while preserving its dramatic form and quality, he permeated those truths as to God and man at which Israel under the divine discipline had arrived. It is just these embodied truths or ideas which constitute the real and permanent value of the story, and the psychological insight, the knowledge of human nature, displayed by the writer, must strike every attentive reader as remarkably penetrating and true. To note a few examples: the formation of the woman from the man's rib expresses her subordination to the stronger; the derivation of moral evil from man's pride and not from fleshly weakness is very noteworthy; the connection between sin and shame and between sin and suffering is implied in the hiding from God and the expulsion from paradise respectively; while the fact that the serpent is not asked to explain its action may signify that the writer did not consider it a moral agent, thus registering a clear distinction between man and even the most 'subtil' of the animals.

Scientific and Theological Relations.—If the above be a fair statement of the case, it is plain that the objections of modern science

to the paradise story of man's creation and fall are beside the mark. It follows, further, that discussions about the unity of the human race, and related questions, are entirely out of place in this connection. (See CREATION.) The parallelism between Adam and Christ which Paul draws in Rom. 5, and of which he found suggestions in Jewish contemporary theology, need not be considered as more than didactic, and loses nothing if we suppose Adam to be, in Paul's view, the typical head and representative of unredeemed human nature, as Christ is of regenerated mankind.

Later Developments.—The story of Adam and Eve has proved a fruitful theme for speculation in many directions. Leaving aside the theories of doctrinal theology as to the effects of the fall, we find the story of Adam's creation retold in the Talmud with much of the mythical grossness and dualism which the writer of Gen. 2 *ff.* was so careful to exclude. Thus, Adam is represented as a man-woman of monstrous size, a terror to the angels. Having cast him into a sleep, God took parts of all his members, which, when scattered abroad, developed into human beings. Again, Adam's first wife was Lilith—the word occurs in Isa. 34:14; not 'screech-owl,' but 'night-monster,' as in R.V.; 'harpy,' 'succuba'—who, becoming the mother of demons, flew away. Her place was taken by Eve, created from a rib. Adam was afterwards tempted by an envious seraph, Sammael, and, in consequence of his sin, driven forth to wander up and down in the earth. The Koran tells the story with other mythical variations. Also, in several of the Gnostic systems Adam occupies an important place, being made the earthly representative of the Demiurge. Finally ought to be mentioned the fact that the beau-

tiful garden, and the innocence and, later, the tragic experiences of its occupants have proved fruitful themes for pictorial and literary treatment—*e.g.* Michael Angelo's beautiful fresco in the Sistine Chapel of the Vatican, and Milton's *Paradise Lost*. For literature, see GENESIS.

Adam DE LA HALLE (1240–88), called '*Le Bossu d'Arras*' (Hunchback of Arras), author of *Le Jeu de Robin et de Marion*, the oldest French dramatic pastoral, or primitive comic opera, was a *trouvère* of Arras in Picardy, who found his way to the court of Charles of Anjou at Naples, where his piece was played in 1283. From another of his works, *Le Jeu de la Feuillée* (? 1262), a true mediæval medley of fantasy and satire, we glean hints of his early life. In 1282 he followed Robert II. of Artois to Italy. A complete edition of his works was published by Coussemaker (1879); there is an edition of *Le Jeu de Robin et de Marion* by E. Langlois (1896). See also Petit de Julleville's *Les Comédiens au Moyen Age* (1885), Strong and Barnett's *Hist. Reader of Early French* (1901), etc.

Adam OF BREMEN, born in the 11th century, in Upper Saxony, missionary, traveller, and canon of Bremen, is chiefly remembered by his historical and geographical writings, relating to N.W. Europe during the first millennium of the Christian era. His principal work, *Gesta Pontificum Hammenburgensium*, was edited by Lappenberg as vol. vii. of the *Monumenta Germanicæ*.

Adam, ADOLPHE CHARLES (1803–56), French musical composer, chiefly of comic opera, born and died at Paris. The *Postillon de Longjumeau* (1836) and the ballet *Giselle* (1841) were his most popular works.

Adam, ALBRECHT (1786–1862), a celebrated Bavarian military painter, lithographer, and en-

graver. His most important pictures are *The Battle of Moscow*, and *Episode at the Battle of Zorn-dorf*. The chief characteristics of his works are historical accuracy, detail, and good movement.

Adam, ALEXANDER (1741–1809), schoolmaster, born near Forres; became assistant-master at the High School, and rector, 1768–1809. Among his pupils were Scott, Brougham, and Jeffrey. He introduced the study of Greek into the school curriculum, and wrote a *Latin and English Grammar* (1772), which, being written in English instead of in Latin, was prohibited by the Town Council (1786). His most celebrated work was the *Roman Antiquities* (1791). See *Life* by Henderson (1810); Lockhart's *Life of Scott*; *Memorials of the High School*, by W. S. Dalgleish (1857).

Adam, JEAN (1710–65), poetess, was born and spent most of her life near Greenock. Left an orphan in early youth, she became nursery-governess and housemaid in a manse. After the publication of indifferent poems on religious subjects (*Miscellany Poems*, by Mrs. Jane Adams [*sic*], Glasgow, 1734), she started a girls' school, which, however, had soon to be closed; and Jean, after wandering about the country for some years as a hawker, died in the Glasgow poorhouse.

Adam, JOHN (1779–1825), Anglo-Indian statesman, son of William Adam of Blair-Adam. Going to India in 1796, he became secretary to the Marquis of Hastings, and was during part of 1823 acting governor-general of India. See the *Asiatic Journal*, Nov. 1825.

Adam, JULIETTE (1836), French writer, born at Verberie, department Oise, best known by the name of her second husband, Edmond Adam, prefect of the Paris police and life senator (d. 1877). Under the name of her first husband, 'Messine,' she published

(1858) her *Idées Antiproudhoniennes sur l'Amour, la Femme et le Mariage*; and thereafter, as 'Juliette Lamber,' *Mon Village* (1860), and other works. In 1879 she founded *La Nouvelle Revue*, in which appeared her various studies of European society, *La Société de Paris*, *La Sainte Russie*, etc., written under the pseudonym 'Paul Vasili.' See her *Romance of my Childhood and Youth* (Eng. trans. 1902); *My Literary Life* (Eng. trans. 1904); *Nos Sentiments et Nos Idées avant 1870* (1905); *Nos Illusions et Nos Souffrances pendant le Siège de Paris* (1906); and *Nos Angoisses et Nos Luttres* (1907).

Adam, LAMBERT SIGISBERT (1700-59), French sculptor; in 1723 gained the Prix de Rome. He became a member of the Academy in 1737, and a professor in 1744. His works, which are chiefly symbolic, adorned the gardens of St. Cloud and Versailles, and the Château de Choisy. In 1754 he published a *Recueil de Sculptures antiques*, taken from examples discovered at Rome.

Adam, ROBERT (1728-92), architect, son of William Adam (d. 1748), also an architect; was born at Kirkcaldy. In 1754 he visited Italy with Clérisseau, and going to Dalmatia made studies of Diocletian's ruined palace at Spalato (see his *Ruins of the Palace of Diocletian*, 1764). On his return he was made architect to the king and queen (1762), but resigned the office on becoming M.P. for Kinross-shire (1768). In 1769, Robert and his brother James, who acquired a considerable reputation for the classical elegance of their designs, began the building of the Adelphi in London. Among their chief works are the Register House and the University at Edinburgh; the screen to the Admiralty Office, and Lansdowne House in Berkeley Square, London; and Lord Mansfield's man-

sion, near Hampstead. Robert is buried in Westminster Abbey. They published *Works in Architecture* (1773-8), to which a posthumous volume was added in 1822. See Heaton's *Furniture and Decoration in 18th Century England* (1892); Batsford's *Architecture of R. and J. Adam* (1880); art. in *Architect. Rev.*, Aug. 1900.

Adam, WILLIAM, of Blair-Adam (1751-1839), nephew of Robert Adam; lawyer, politician, and friend of Sir Walter Scott. Entered Parliament (1774); was counsel in impeachment of Warren Hastings, and defended Viscount Melville (Lord Dundas); lord commissioner of the Scottish Jury Court (1816).

Adam, WILLIAM PATRICK, of Blair-Adam (1823-81), son of Sir Charles Adam; Liberal member for Clackmannan and Kinross (1859-80); a lord of the Treasury (1865-6 and 1868-73); Privy Councillor and First Commissioner of Works (1873-4); Liberal whip (1874-80); governor of Madras (1880); died at Ootacamund, India.

Adamant (Gr. 'invincible') does not refer to any mineral in particular, but is used rhetorically to signify a substance of incomparable hardness. It has been identified with the lodestone, emery stone, and the diamond.

Adamawa, a Central African state under the dominion of the Fula. North of Yola, on the Benue, the capital of the state, Adamawa stretches N. towards Bornu, and N.E. towards the Shari; on the S.E. it forms part of French territory. Its area is perhaps 100,000 sq. m. The central and northern part is a block land, rising to 4,250 to 6,500 ft. East of this the country is occupied partly by isolated groups of mountains, partly by undulating plains. The mean ann. temp. is 76°. Rain begins in June, and is very frequent in July and August.

The dry north-east wind (harmattan) blows from November to May. Arabs, Kanuri, Hausa, and Yoruba also dwell in Adamawa, the two latter races being engaged in industries and trade. Islamism is the dominant religion. Gum-arabic, rubber, ivory, skins, kola nuts, and a few slaves are exported in exchange for cotton cloth, silk, copper, salt, sulphur, and beads. Cotton, indigo, and henna, as well as cereals and vegetables, are cultivated. The territory of Adamawa has been divided by treaties between Britain, Germany, and France, without regard to natural boundaries or tribal divisions. See Passarge's *Adamawa* (1895).

Adamello (11,661 ft.), the central point of the vast glacier-covered region that rises between (w.) the Italian Val Camonica (watered by the Oglio) and (e.) the Austrian valleys of the Sole (watered by the Noce) and the Sarca. It lies between the Adda valley (w.) and the Adige valley (e.). First climbed in 1864 by Julius Payer, the Arctic explorer.

Adamites, an Antinomian Gnostic sect in N. Africa in the 2nd century, who professed to return to the innocence of Eden, abstained from marriage, and rejected clothing. The doctrine reappeared among a section of the Brethren of the Free Spirit, or Beghards, of the 14th century, some of whom lived naked and had wives in common; among a section of the Bohemian Taborites, who were cut to pieces by Ziska, leader of the Hussites (1421); and in 1848-9 there was a small sect in Austria, the nocturnal meetings of which were attended without clothing.

Adamnan (c. 625-704), Irish saint, and abbot of Iona (*Hii*)—ninth in the succession of that office from Columba, whose life he is credited with having written—was born in Donegal. In 679 he

was appointed abbot of Iona. In 686 Adamnan came to the court of Northumbria to beg for the release of certain Irish captives, and remained with King Aldfrith for a time, and (if tradition is to be believed) was there converted to the Roman usages in such matters as the date of celebrating Easter, the tonsure, etc. On completing his work, *De Locis Sanctis*, he presented it to Aldfrith. At the National Assembly of Tara in 692 there was enacted the 'Law of Adamnan,' or 'Law of the Innocents,' which freed Irish women from compulsory military service. The same assembly—one composed almost equally of churchmen and laymen—also decreed to the abbot of Iona and his successors an annual Irish tribute. Adamnan afterwards visited Ireland once again before his death at Iona in 704. The Latin *Life of Columba*, now generally accepted as Adamnan's, is almost the only record outside Bede's History of one of the most attractive portions of the life of the early church in Scotland. Although the *Vita Columbæ* was not printed before 1601 (by Canisius, in *Lectiones Antiquæ*, vol. i. pp. 674 *et seq.*), many editions have appeared since—*e.g.* by Surius (1617), Messingham (1624), Colgan (1647), the Bollandists in their *Acta Sanctorum* (1698), Basnage (1725), Pinkerton (1789), and by Reeves, for Irish Archæological Society (1857). The latest is that of Fowler (Ox. 1895). The work *De Locis Sanctis* owes its first publication (by Gretser, 1619) indirectly to Casaubon. There have been later editions—Paris (1672), and Ratisbon (1734). Adamnan also appears as a participant in one of those extraordinary and abundant mediæval Irish saints' visions whose general scheme grotesquely prefigures Dante's. There is a 12th century ms. of this, but we cannot ascribe the piece

to Adamnan himself. O'Donovan, in his *Irish Grammar* (1845), printed portions of a 14th century variant of the legend. See *Historians of Scotland*, vol. vi. (1874); H. Cotton's *Fasti Ecclesie Hibernicæ* (1849); A. P. Forbes's *Kalendars of Scottish Saints* (1872); Montalembert's *Les Moines d'Oc. cident* (1866), Eng. trans. by Mrs. Oliphant (1867).

Adams, tn., Berkshire co., Mass., U.S.A., 16 m. N.N.E. of Pittsfield, with paper, cotton, and woollen mills, and machine shops. Pop. 12,500.

Adams, CHARLES FRANCIS (1807-86), American statesman, son of John Quincy Adams; served (1831-6) in the legislature of Massachusetts; elected to Congress for that state in 1858. Appointed ambassador to London in 1861, he displayed great tact and diplomatic skill in the complications arising out of the civil war. He returned to Massachusetts in 1868, and was an arbitrator in the *Alabama* claims tribunal at Geneva (1870-2). He published *The Life and Works of John Adams* (10 vols. 1850-6); *John Adams's Letters to his Wife* (2 vols. 1841); *Diary of John Quincy Adams* (12 vols. 1874-7).

Adams, FRANCIS (1796-1861), a physician in Aberdeenshire; Greek scholar. His chief works are *Hermes Philologus* (1826); *The Seven Books of Paulus Ægineta*, with commentary (1844-7); and editions of *Hippocrates* (1849) and *Aræteus* (1856).

Adams, FRANCIS WILLIAM LAUDERDALE (1862-93), grandson of the above; born at Malta; emigrated to Australia in 1883, where he worked as journalist and author. His works include *Australian Essays* (1886); *Songs of the Army of the Night* (1888); *The New Egypt* (1893); *Tiberius: a Drama* (1894).

Adams, JOHN, the principal survivor of the mutineers of the

Bounty. His real name was Alexander Smith. See BOUNTY, MUTINY OF THE.

Adams, JOHN (1735-1826), American statesman, second president of the United States, born at Braintree (afterwards called Quincy), Massachusetts. He represented Massachusetts in the first Congress, and became one of its most active leaders. Adams proposed the appointment of Washington as commander-in-chief, and was a member of the committee which framed the Declaration of Independence. Appointed commissioner to France (1777-9), to Holland (1782), and ambassador to Britain (1785-88). On his return to America he became (1789) vice-president under Washington, whom he succeeded as president (1797). See his *Defence of the Constitution of the United States* (1787); *Observations on Paine's 'Rights of Man,' in a Series of Letters by Publicola* (1792); *Works*, ed. by grandson, C. F. Adams (1850-6); *Life* by J. Q. and C. F. Adams (1871). See also *Biography* by Morse (*American Statesmen Series*, 1884); Chamberlain's *John Adams* (1898).

Adams, JOHN COUCH (1819-92), astronomer, born near Launceston, Cornwall; senior wrangler (1843); discovered simultaneously with Leverrier that the irregularity of the motions of Uranus were due to another planet, afterwards observed by Galle at Berlin, 1846, and called Neptune. In 1858 Adams was appointed professor of mathematics, St. Andrews, and, later, Lowndean professor of astronomy, Cambridge. See *Life* by Glaisher (1896-8).

Adams, JOHN QUINCY (1767-1848), American statesman, sixth president of the United States, eldest son of John Adams above; born at Braintree, Massachusetts. He became a member of Congress in 1803. He was successively ambassador to the Hague (1794),

Berlin (1797), St. Petersburg (1809), and St. James's (1815). In 1817 he became secretary of state to President Monroe, and in 1825 was elected president. At the end of his term (1829) he was defeated by Jackson, and in 1830 returned to Congress. Adams had a wide knowledge of international law, and is claimed as the real author of the Monroe doctrine, which received its most explicit enunciation in President Monroe's seventh annual message to Congress. Publications: *Letters on Silesia*, written during a tour through that country in the years 1800, 1801 (1804); *Diary, 1795-1848*, ed. by his son, C. F. Adams, in 12 vols. (1874-7). See *Biography* by Morse (American Statesmen Series); *Our Presidents*, by V. F. Townsend.

Adams, SAMUEL (1722-1803), American statesman, born in Boston, Massachusetts. He was elected to the legislature of Massachusetts (1765), was a signatory of the Declaration of Independence (1776), and was lieutenant-governor (1789-94) and governor (1794-7) of Massachusetts. His *Writings* began to appear in 1905. See *Lives* by Wells (1865), Morse (1884), and Hosmer (1885).

Adams, SARAH, *née* FLOWER (1805-48), hymn writer; author of 'Nearer, my God, to Thee' (1840). Her principal work is *Vivia Perpetua*, a dramatic poem (1841). Her sister, ELIZA FLOWER, wrote the music of the popular chorus, 'Now pray we for our country.' Both sisters were early friends of Browning. See *Macmillan's Mag.*, Jan. 1898.

Adams, THOMAS, Puritan preacher, who held charges in Bedfordshire, Buckingham, and London between 1612 and 1653. His works were collected and printed by Joseph Angus and Thomas Smith (3 vols. 1862). Southey named him 'the prose Shakespeare of Puritan theolo-

gians.' He died before the restoration.

Adams, WILLIAM (1575-1620), English navigator, born at Gillingham, near Chatham. From 1600 till his death he resided in Japan. See vol. i. of *Purchas, his Pilgrimes*, and *Diary of Richard Cocks* (Hakluyt Soc. 1883).

Adam-Salomon, ANTONY SAMUEL (1818-81), French sculptor, deserted a commercial for an artistic career, and went to study in Paris, where he achieved a brilliant success with a bust of Béranger. He also executed busts of numerous well-known persons, including Rossini, Lamartine, George Sand, and Delphine Gay. The Duke of Padua's tomb is his work.

Adam's Apple, the protuberance in the throat caused by the thyroid cartilage.

Adam's Bridge, a ridge of sand and rocks, about 30 m. long, between the islands of Rameswaram and Manaar. It formed at one time a portion of an isthmus which connected India with Ceylon, and is referred to in the *Ramayana* as the bridge over which the god Rama passed to invade Ceylon. A railway across is projected.

Adam Scotus ('The Scot,' or 'The Premonstratensian'), d. 1180; entered the order of Premonstratensians (1158); became ultimately bishop of Whithorn in Galloway, and left numerous works.

Adam's Needle. See YUCCA.

Adamson, JOHN (d. 1653), born at Perth; professor in St. Andrews University; professor and then principal (1625-53) of Edinburgh University; editor of *The Muses' Welcome* 'to the high and mighty Prince James' (1618), containing poems by the author and many of his contemporaries.

Adamson, PATRICK (1537-92), Scottish prelate; born at Perth. He went to France as a tutor (1566), where he suffered imprisonment for referring in a Latin poem to Queen Mary's son as king

of France and England. He returned to Scotland (c. 1572), became minister of Paisley, chaplain to the Regent Morton, and in 1576 was appointed by the regent to the as yet unabolished archbishopric of St. Andrews. From this time he was at open war with the General Assembly, until his excommunication in 1588 on various charges. He was the author of many religious works, and ranks high as a Latin poet.

Adamson, ROBERT (1852-1902), professor of logic and rhetoric in Glasgow University. His chief philosophical works are, *Roger Bacon: The Philosophy of Science in the Middle Ages* (1876); *The Philosophy of Kant* (1879); *The Philosophy of Fichte* (1881); *Development of Modern Philosophy* (ed. Sorley, 1903).

Adamson, THOMAS, master gunner in Charles II.'s artillery; edited (1680), with additions, *England's Defence: a Treatise concerning Invasion*, by Digges.

Adam's Peak (7,420 ft.), called by the natives SAMANELLA, an isolated granite mountain on s.w. edge of the central highlands, Ceylon, and a place of pilgrimage for Buddhists and Moslems. At the summit is a depression in the rock, said by the former to have been made by Buddha's foot, and by the latter to be the scene of Adam's penitential exercise after his expulsion from Eden, when he stood for 1,000 years on one foot. A curious shadow has been noticed by many travellers at sunrise on the peak. The shadow, instead of lying on the ground, appears to rise up like a veil in front of the observer: it is due to the formation of thin wreaths of mist. See *Philosoph. Mag.*, Jan. 1887.

Adana, vilayet in s.e. of Anatolia, Asia Minor. Area 15,500 sq. m.; pop. 425,000. Also chief tn., on ther. bk. of the Sihun, 125 m. n.w. of Aleppo; present terminus of railway from Mersina. Pop. 75,000.

Adanson, MICHEL (1727-1806), botanist, was born at Aix in Provence; studied in Paris; published *Hist. naturelle du Sénégal* (1757); *Familles des Plantes* (1763); *Cours d'Histoire naturelle fait en 1772* (ed. by Payer, 2 vols. 1844-5); *Hist. de la Botanique et Plan des Familles naturelles des Plantes* (2 vols., ed. by his son, A. Adanson, and Payer, 1864). See Cuvier's *Eloge Hist.* (1819).

Adansonia. See BAOBAB.

Adaptation. One of the most striking characters of living things is their fitness for their surroundings. This fitness is never absolute, but where it is specially marked in any species, the members of that species tend to increase in number, such increase being at the expense of other forms less well-fitted for the given environment. Characters which obviously render an organism well suited to its peculiar environment are termed adaptive characters, or adaptations. But it is clear that organisms not nearly related may have a common environment, wherefore the term 'adaptive character' has a secondary significance in addition to that indicated above, and implies that the particular character is of no value in classification, but has been acquired as a consequence of a certain method of life. Thus, parasites tend to lose locomotor organs and sense organs, are usually hermaphrodite, invariably prolific, and have complex life-histories. But the possession of these common characters does not indicate that all parasites are nearly related; they are rather to be described as adaptations to the parasitic mode of life. In general, it may be said that every organism possesses two sets of characters—(1) those whose use it is often difficult to define clearly, which it has inherited from its ancestors, and which are of supreme importance in classifica-

tion; and (2) those which are adaptations to a particular mode of life, which have been acquired during the evolution of the stock, and are of no importance in classification. Such cases are spoken of as examples of "convergence." It is one of the great problems of systematic biology to distinguish between these two sets of characters, and to determine whether a given character is or is not of adaptive nature. The study of natural history in the broad sense is the study of adaptation; but Kerner's *Natural History of Plants* (trans. by Oliver, 1894) may be mentioned as a book which will afford an insight into the modern method regarding the subject. Otto Schmeil's *Text-book of Zoology* (trans. by Rosenstock, 1900) is similarly an attempt to point out the chief adaptations visible in the more familiar animals. *Evolution and Adaptation*, by Prof. T. H. Morgan, is another book which deals with the whole question in a comprehensive and scientific manner.

Adar, the twelfth month of the sacred (and the sixth of the civil) Hebrew year—end of February and beginning of March. As the months were lunar, a second *adar*, called *veadar*, was intercalated once in three years. The term occurs first after the exile in Esther 3:7.

Adascheff, or ADASCHEV. (1.) ALEXIS (d. 1561), Russian statesman and soldier, who distinguished himself at the taking of Kazan (1552). He was the minister of Ivan IV., but fell into disgrace, and died in prison at Dorpat. (2.) DANIEL ADASCHEFF, his brother, conducted a victorious campaign against the Tartars. He suffered imprisonment along with Alexis, and was executed at Moscow (1561).

A.D.C. See AIDE-DE-CAMP.

Adda, or ADA, a port on the Gold Coast, on the r. bk. of the

Volta, about 6 m. from its mouth, 62 m. E.N.E. of Accra. Pop. 13,000.

Adda, riv. of Italy, rises in the Bernina Alps, flows into L. Como; then s. through the Lombard plain, to enter the Po a few miles above Cremona. Length, 190 m., of which 77 are navigable.

Addax (*Addax nasomaculatus*), an antelope allied to the gemsbok, but having horns which ascend in an open spiral, instead of being straight, as in the latter. The horns are present in both sexes, are ringed throughout the greater part of their length, and, measured along the spiral, reach a length of nearly three feet. The addax is a desert animal, inhabiting N. Africa and Arabia, and is of a general yellowish-white tint, the head, neck, and mane being brown, save for a white band and spots on the muzzle. The height is rather over three feet.

Adder, or VIPER (*Pelias berus*), the only British venomous snake, readily recognized by the black zigzag line down the back and the black mark on the head. It attains a length of over two feet, feeds chiefly upon mice, and is viviparous. Its bite, although producing much local and constitutional disturbance, rarely proves fatal, unless to very weak persons and children. If bitten, the wound should be immediately sucked, or washed with ammonia, to get rid of the unabsorbed venom; deep incisions made, causing a free flow of blood; and ligatures applied to stop circulation; while stimulants may be given at short intervals. In the United States the term is applied to some poisonous snakes without rattles, as the moccasin or 'water-adder,' and the copperhead or 'red adder,' and also to the harmless hognose (*Heterodon*), which assumes the defensive attitude of a viper when disturbed.

Adder's Tongue (*Ophioglossum vulgatum*), a small fern distributed

throughout the N. Hemisphere, the Cape, and New Zealand. It forms each year one leaf, which divides into a flat, ovate, sterile portion, and an elongated, narrow, unbranched, spore-bearing part.

Addington, HENRY. See SIDMOUTH, LORD.

Addison, JOSEPH (1672–1719), one of the classics of English prose; born at Milston, near Amesbury, Wiltshire, where his father was rector. He was elected in 1689 to a demyship at Magdalen; and of that college he was a fellow from 1698 till 1711. Though in politics a Whig, Addison early made the acquaintance of Dryden, to whom he indited verses, and to whose *Virgil* (1697) he contributed an essay on the *Georgics*. In 1699, Charles Montague (afterwards Lord Halifax) obtained for Addison a travelling pension of £300 a year, after which Addison spent eighteen months in France (meeting Boileau, Malebranche, and others), a year in Italy, and some time in Switzerland. He continued his travels to Germany and Holland till late in 1703, when his father's death recalled him to England. Addison's first preferment—a commissionership of appeal in the excise—came in 1704; thus endowed, he entered upon the composition of *The Campaign*, which launched him on his career of state service—a career which, thanks to the magnanimity of Swift, whose close friendship he won when in Ireland as secretary to the lord-lieutenant (1709), was not altogether broken even by the Tory triumph in 1710. This Irish visit marks also the opening of Addison's true literary vein. He had just started for Dublin when (Apr. 12, 1709) Steele began *The Tatler*, and in No. 18 his first contribution appeared. But it was only with the more famous *Spectator* (March 1, 1711–Dec. 6, 1712) that Addison really

found himself, and left the imprint of his genius upon our literature. Under George I., Addison again became secretary to the lord-lieutenant of Ireland; then a commissioner for trade and the colonies; and finally (1717) Secretary of State, a post resigned in March 1718, owing to ill-health. He had been M.P. for Malmesbury since 1710, and this he remained till his death. On Aug. 3, 1716, Addison married Charlotte, Countess of Warwick, who bore him a daughter (1719). He died that same year (June 17) at Holland House, and was buried in Westminster Abbey. Apart from his Latin poems, Addison's writings fall under the heads of political journalism, verse, and miscellaneous prose. The first embraces *The Whig Examiner* (Sept.–Oct. 1710), an opposition sheet to *The Examiner*, in which first Prior, and afterwards Swift, fought under the Tory flag; *The Late Trial and Conviction of Count Tariff* (1713), a squib on the treaty of Utrecht; *The Freeholder* (55 numbers, 1715–16); *The Old Whig* (1719), a reply to Steele's *Plebeian*; etc. Of verse, besides *The Campaign*, a number of hymns are still remembered. But neither his opera, *Fair Rosamond* (1706), nor the celebrated *Cato* (1713), lives either as poetry or drama. *The Drummer*, a prose comedy, shares their oblivion. But in the sphere of the social essay Addison's art was consummate. To an unfailing tact of style he added a perception of character not at all dramatic but marked by well-bred humour and nice discrimination. Addison's works were first collected by Tickell in 4 vols. (1721). Notable editions: Bishop Hurd's, 6 vols. (1811), re-edited in Bohn's Library, 6 vols. (1856); and Green's, 6 vols. (1898). Reprints of the *Spectator* are many. *Life of Addison* by Lucy Aikin (1843), and by W. J. Courthope (Eng. Men of Letters Series)

(1884). See also Beljame's *Le Public et les Hommes de Lettres en Angleterre au XVIII^e Siècle* (1897).

Addison's Disease is associated with tuberculous infiltration of the suprarenal bodies, and their adhesion to neighbouring parts, and is characterized by depression of the circulation and respiration, increasing weakness, anæmia, and generally, though not always, by discoloration or browning of the skin. The disease was first described by Dr. Addison (1793-1860). The pigmentation begins usually on the face, neck, and hands. After death the adrenals are found adherent, and usually enlarged and nodulated; they are changed into a dense, grayish, translucent fibroid material enclosing opaque, yellow, cheesy masses, manifestly tuberculous. Before the use of extract of the suprarenal gland, the disease was invariably fatal; but since the use of the extract several cases are said to have been cured, and many have temporarily improved. The permanent efficacy of this treatment is doubted by many. Some cases die with no obvious change in the suprarenals, but with marked changes in the abdominal sympathetic. Rest, careful dieting, and general hygiene must not be neglected. The gland may be given hypodermically, or by the mouth in the form of raw adrenal gland, as a tincture, or in tabloids containing the dried extract of the glands of sheep.

Addled Parliament, the name given to the second Parliament of James I. of England, which sat from April 5 to June 7, 1614. The royal purpose of getting supplies was supported by court politicians known as 'undertakers;' but Parliament insisted on redress of grievances, especially court interference in elections and the control of customs duties by the king, whence the dissolution before any act was passed (hence the nickname), and the imprisonment of

the opposition leaders. See S. R. Gardiner's *Hist. of England from 1603 to 1649*.

Addo Bush, a tract of rough bush land (250 m. long) near Algoa Bay (50 m. N.E. of Port Elizabeth), adjoining the Zitzikamma and Knysna forests.

Addorsed, ADORSÉ, or EN-DORSED (in heraldry), said of figures placed back to back.

Adductors, those muscles which draw a limb toward the middle line of the body, or which bring together the shells of bivalves.

Adelaer, CURT SIVERTSEN (1622-75), Danish admiral, born at Brevig in Norway. As a youth he took part in the famous battle of the Downs (1639) under Van Tromp, and in 1645 entered the Venetian service, during the republic's warfare with the Turks. On his return to Copenhagen, in 1663, he was made an admiral, in 1666 admiral-general, and ennobled. He died of the plague while in command of the fleet, on the outbreak of the war with Sweden. See Bruun's *C. S. Adelaer* (1871).

Adelaide, cap. of S. Australia, 6 m. E. of St. Vincent G., and 7½ m. by rail from Port Adelaide, was founded 1837, and named after the queen of William IV. It stands on a large plain (alt. 154 ft.), bounded on E. and S. by the Mt. Lofty range (alt. 2,333 ft.), at a distance of 4 to 8 m. N. Adelaide, the residential quarter, is separated from S. Adelaide, the business quarter, by a park ½ m. wide, through which runs the Torrens R. Pop. 50,000, with suburbs 180,000. Public buildings are Government House; town hall; the houses of legislature; St. Peter's Cathedral (Anglican), and the (R.C.) Cathedral of St. Francis Xavier; the Adelaide University; the vice-regal summer residence at Marble Hill (alt. 2,000 ft.), 12½ m. from the city. The Adelaide

Exhibition was held in 1887, to celebrate the jubilee of the colony. The Botanic Gardens (40 ac.) are adjacent to the Botanic Park and Zoological Gardens (84 ac.). New waterworks (1899) bring water from the Onkaparinga R., near Clarendon. The transcontinental telegraph line runs from Adelaide to Palmerston—i.e. Port Darwin—and a transcontinental railway is proposed. See Worsnop's *Adelaide and its Environs* (1881).

Adelaide, QUEEN (1792–1849), daughter of George, Duke of Saxe-Meiningen; married William IV. (then Duke of Clarence) in 1818. She was careful not to interfere in politics, yet to her influence was attributed the dissolution of the Melbourne ministry in 1834. She did much to raise the social and moral level of the court, and after the accession of Victoria she devoted herself to benevolent works.

Adeler, MAX, pseudonym of CHARLES HEBER CLARK (1841), American journalist and writer, born at Berlin, Maryland. He was for ten years secretary of the Manufacturers' Club of Philadelphia, and, as editor of their magazine, *The Manufacturer*, has written some important papers on economic subjects; but he is best known by his humorous books, which, from their quaintness, exaggeration of ordinary points, and startling bathos, are of the pure American type. His works include *Out of the Hurly Burly*, *Elbow-room*, *Random Shots*, *Desperate Adventures*, and *The Quakeress*.

Adelphi Theatre, THE, was originally opened as the Sans Pareil in 1806, and acquired its present name in 1819. Two years later it enjoyed its first success in the production of *Tom and Jerry*, with which the comedian Robert Keeley was associated. Other distinguished actors and actresses connected with the earlier days of

the theatre were Madame Céleste, who was the first heroine of what has come to be known as Adelphi drama; Paul Bedford, the star comedian in those burlesques of grand opera so popular at the Adelphi in the 'forties; Benjamin Webster, the lessee for a quarter of a century, from 1845; J. L. Toole, who made his reputation as a comedian in Adelphi farce during the early 'sixties; Joseph Jefferson, the American actor, who produced *Rip Van Winkle* at the Adelphi in 1865; John S. Clarke, the original Major Wellington de Boots; Miss Kate Bateman; Mrs. Billington; and Fechter, who in 1868 made his last appearance in London in *No Thoroughfare*, a drama written for the Adelphi by Charles Dickens and Wilkie Collins in collaboration. In 1858 the old house was pulled down, and, after rebuilding, was reopened with Dion Boucicault's *Colleen Bawn*. In 1879 the Messrs. Gatti took over the Adelphi, and from that time, for nearly twenty years, it became the home of melodrama, provided in the earlier years by such writers as Robert Buchanan and Wilkie Collins, and from 1884 to 1893 by Messrs. G. R. Sims and Henry Pettitt in collaboration. This form of entertainment became inseparably associated with the name of William Terriss, a great popular favourite. In 1897 Mr. William Gillette, with his American company, produced the sensational drama *Secret Service*; and in the same year Madame Sarah Bernhardt had a London season at the Adelphi, repeated in 1899, when she first appeared in England as Hamlet. In that year, too, M. Coquelin's *Cyrano de Bergerac* was produced at the Adelphi. In 1901 the theatre was for the second time pulled down and rebuilt; and when it reopened, in 1902, its name was changed to the Century Theatre.

As the change failed to bring popularity, the old name was restored; but prosperity only returned with the production by Mr. Seymour Hicks, in 1903, of *The Earl and the Girl*, a musical comedy. In the same year both Madame Sarah Bernhardt and Signora Duse had London seasons at the Adelphi; and in 1904, under the management of Mr. Otho Stuart, the house was given over to Shakespearean revival, opening with *The Taming of the Shrew*, and followed by *Hamlet*, with H. B. Irving in the title-role. In 1908 Mr. George Edwardes took over the management, and in 1909 M. Lucien Guitry brought his company there for a brilliant season in June.

Adelsberg (in Slav. *Postojna*), tn. and summer resort of Carniola, Austria, 40 m. by rail s.w. of Laibach, with vast stalactite caves, the habitat of a newt-like amphibian (*Proteus anguinus*) with rudimentary eyes. Pop. 3,600.

Adelung. (1.) JOHANN CHRISTOPH (1732-1806), German philologist and lexicographer; wrote *Grammatisch-kritisches Wörterbuch der hochdeutschen Mundart* (1774-86); *Mithridates oder allgemeine Sprachkunde* (1806), completed by J. S. Vater. (2.) His nephew, FRIEDRICH VON ADELUNG (1768-1843), was an eminent philologist, Oriental scholar, and student of Russian history.

Ademption. See LEGACY.

Aden, British possession and strongly-fortified port on the s.e. coast of Yemen, Arabia, 105 m. E. of the Strait of Bab-el-Mandeb, 1,300 m. from Suez, and 1,650 m. from Bombay. It comprises the peninsula of Aden proper (21 sq. m.), the peninsula of Little Aden (15 sq. m.), and the district of Shaikh Othman (34 sq. m.), on the mainland, or, including the hinterland Protectorate, some 9,000 sq. m. The peninsula of Aden is an irregular oval, 5 m.

long E. to W. and 3 m. wide, connected with the mainland by a narrow sandy isthmus 1,350 yds. wide. The peninsula of Little Aden is a mass of granite 6 m. in length by 3 m. in breadth. Between them is the harbour, Aden West Bay, 8 m. E. to W. by 4 m. N. to S., and 3½ m. wide at its entrance. The town, or Aden Camp, is on the E. side, opposite the fortified island of Sira. The climate is hot, but not unhealthy; mean annual temperature, 83° in the shade, from 76° in January to 91° in June. The mean annual rainfall is 2.45 to 3 in. Snakes and scorpions are numerous. The outer harbour affords anchorage in 19 to 28 ft. of water; the inner harbour is dredged to a depth of 26 ft. Solyman the Magnificent fortified Aden, and it was afterwards occupied successively by the Portuguese and the Turks, until captured by the British in 1839. The pop.—over 40,000—is of a cosmopolitan character. Aden, along with the islands of Perim, Kuria-Muria, and Socotra, is under the government of Bombay. Aden is a port of call for all P. & O. liners. The imports, coal, cotton and silk fabrics, live stock, grain, provisions, tobacco, etc., excluding treasure, are valued at 3 millions sterling; and the exports, coffee, gums, spices, ivory, ostrich feathers, hides, pearls, etc., at 2¼ millions sterling. See Hunter's *Aden* (1877).

Aden, GULF OF, arm of the Arabian Sea, to the S. of the Red Sea, between S. Arabia and the Somali coast. Length 500 m., breadth 150-200 m.

Adenalgia and **Adenitis.** See GLANDS.

Adenoid Growths of the lymphatic tissues of the upper throat occur chiefly in children from four to fourteen years. The child breathes only through the mouth, suffers from nasal catarrh and slight deafness, and is stupid and

sluggish, with a characteristic facial expression. Cure is effected by a simple operation of removal. See MOUTH BREATHERS.

Aderno, tn., Catania, Sicily, on s.w. slope of Mt. Etna, 22 m. by rail n.w. of Catania; there are two Norman structures of Roger I.—a keep and a monastery (1157). Aderno stands on the site of *Hadranum*, famous for its temple of Hadranus. Pop. 26,000.

Adersbach Rocks, columns of Cretaceous sandstone, in a valley close to the Bohemian frontier, not far from Braunau. Varying widely in size, they generally resemble one another in shape, and cover an area of about 4 by 1½ m. The softer parts of the sandstone have been worn away by water, leaving the harder cores.

Adherence, ACTION OF, in Scots law, an action which may be raised by husband or wife if one deserts the other without cause and remains away for four years. The action generally contains conclusions for aliment as well as adherence. It is barred by cruelty or infidelity on the part of the pursuer.

Adhesion, in physics. See COHESION and FRICTION.

Adiabatic. See STEAM-ENGINE and THERMODYNAMICS.

Adiantum, a genus of ferns with marginal sori which run across the veins of the leaf, and are covered by an indusium formed by the edge of the frond. One, the maidenhair fern, *A. capillus Veneris*, is British.

Adiaphora (Gr. 'indifferent things'), in ethics, such actions as lie between the spheres of good and evil. The Stoics gave currency to the word in this sense, and Cicero, *De Finibus* (iii. 16), translates it by '*indifferens*.' The Adiaphoristic controversy troubled the Reformed Church in Germany for a few years subsequent to 1548. In that year the Emperor Charles v., desiring to heal the breach between Catholic

and Protestant, prescribed a certain rule of faith and ritual as binding on all, till some permanent form should be determined upon by a general council. Thereupon the Elector Moritz of Saxony urged Melanchthon and his followers to declare what portions of the document they were willing to accept, and they decided, in the Leipzig Interim, to regard certain customs and tenets (*e.g.* the use of candles, pictures, Latin hymns, but notably the doctrine of justification by faith) as indifferent—*adiaphora*. This was more than the stricter followers of Luther would allow, and there ensued a bitter controversy. See *Cambridge Modern Hist.*, vol. ii. 8 (1904).

Adige (Lat. *Athesis*, Ger. *Etsch*), riv., Austria and Italy, rises in the Rhætian Alps in Tyrol (alt. 5,005 ft.). After a swift descent to Glurns, it traverses the Vintschgau eastwards, but at Meran it bends s., flows past Botzen, Trent, and Roveredo, nearly as far as the s. end of Lake Garda; thence s.e. past Verona to Badia, and finally e. to the Adriatic (parallel to the Po). In its lower course the Adige is connected with the Po by several canals, and is itself canalized through alluvial deposits. Length, 250 m., of which 120 are in Italy; it is navigable up to the confluence of its chief trib., the Eisach.

Adi Granth, the sacred books of the Sikhs, first edited in the 16th century. See Trumpp's *Adi Granth* (1877), and *Die Religion der Sikhs* (1881).

Adigrat, ADIGHERAT, ADDI GARAHT, or ATEGERAT, tn., Tigré, Abyssinia, about 90 m. s. of Mas-sowah; important market at the centre of several routes. Alt. 8,500 ft. Mt. Aleghia (10,496 ft.) is near it. Pop. 2,000.

Adipocere is a yellowish-gray waxy substance, which is occasionally formed in corpses. It is