

doctrine that terrestrial substances exist in the heavenly bodies, while the discovery of particular lines in a celestial spectrum which do not coincide with any line in a terrestrial spectrum does not much weaken the general argument, but rather indicates either that a substance exists in the heavenly body not yet detected by chemists on earth, or that the temperature of the heavenly body is such that some substance, undecomposable by our methods, is there split up into components unknown to us in their separate state.

We are thus led to believe that in widely-separated parts of the visible universe molecules exist of various kinds, the molecules of each kind having their various periods of vibration either identical, or so nearly identical that our spectroscopes cannot distinguish them. We might argue from this that these molecules are alike in all other respects, as, for instance, in mass. But it is sufficient for our present purpose to observe that the same kind of molecule, say that of hydrogen, has the same set of periods of vibration, whether we procure the hydrogen from water, from coal, or from meteoric iron, and that light, having the same set of periods of vibration, comes to us from the sun, from Sirius, and from Arcturus.

The same kind of reasoning which led us to believe that hydrogen exists in the sun and stars, also leads us to believe that the molecules of hydrogen in all these bodies had a common origin. For a material system capable of vibration may have its periods of vibration any set of values whatever. The probability, therefore, that two material systems, quite independent of each other, shall have, to the degree of accuracy of modern spectroscopic measurements, the same set of periods of vibration, is so very small that we are forced to believe that the two systems are not independent of each other. When, instead of two such systems, we have innumerable multitudes all having the same set of periods, the argument is immensely strengthened.

Admitting, then, that there is a real relation between any two molecules of hydrogen, let us consider what this relation may be.

We may conceive of a mutual action between one body and another tending to assimilate them. Two clocks, for instance, will keep time with each other if connected by a wooden rod, though they have different rates if they were disconnected. But even if the properties of a molecule were as capable of modification as those of a clock, there is no physical connection of a sufficient kind between Sirius and Arcturus.

There are also methods by which a large number of bodies differing from each other may be sorted into sets, so that those in each set more or less resemble each other. In the manufacture of small shot this is done by making the shot roll down an inclined plane. The largest specimens acquire the greatest velocities, and are projected farther than the smaller ones. In this way the various pellets, which differ both in size and in roundness, are sorted into different kinds, those belonging to each kind being nearly of the same size, and those which are not tolerably spherical being rejected altogether.

If the molecules were originally as various as these leaden pellets, and were afterwards sorted into kinds, we should have to account for the disappearance of all the molecules which did not fall under one of the very limited number of kinds known to us; and to get rid of a number of indestructible bodies, exceeding by far the number of the molecules of all the recognised kinds, would be one of the severest labours ever proposed to a cosmogonist.

It is well known that living beings may be grouped into a certain number of species, defined with more or less precision, and that it is difficult or impossible to find a series of individuals forming the links of a continuous chain between one species and another. In the case of living beings,

however, the generation of individuals is always going on, each individual differing more or less from its parents. Each individual during its whole life is undergoing modification, and it either survives and propagates its species, or dies early, accordingly as it is more or less adapted to the circumstances of its environment. Hence, it has been found possible to frame a theory of the distribution of organisms into species by means of generation, variation, and discriminative destruction. But a theory of evolution of this kind cannot be applied to the case of molecules, for the individual molecules neither are born nor die, they have neither parents nor offspring, and so far from being modified by their environment, we find that two molecules of the same kind, say of hydrogen, have the same properties, though one has been compounded with carbon and buried in the earth as coal for untold ages, while the other has been "occluded" in the iron of a meteorite, and after unknown wanderings in the heavens has at last fallen into the hands of some terrestrial chemist.

The process by which the molecules become distributed into distinct species is not one of which we know any instances going on at present, or of which we have as yet been able to form any mental representation. If we suppose that the molecules known to us are built up each of some moderate number of atoms, these atoms being all of them exactly alike, then we may attribute the limited number of molecular species to the limited number of ways in which the primitive atoms may be combined so as to form a permanent system.

But though this hypothesis gets rid of the difficulty of accounting for the independent origin of different species of molecules, it merely transfers the difficulty from the known molecules to the primitive atoms. How did the atoms come to be all alike in those properties which are in themselves capable of assuming any value?

If we adopt the theory of Boscovich, and assert that the primitive atom is a mere centre of force, having a certain definite mass, we may get over the difficulty about the equality of the mass of all atoms by laying it down as a doctrine which cannot be disproved by experiment, that mass is not a quantity capable of continuous increase or diminution, but that it is in its own nature discontinuous, like number, the atom being the unit, and all masses being multiples of that unit. We have no evidence that it is possible for the ratio of two masses to be an incommensurable quantity, for the incommensurable quantities in geometry are supposed to be traced out in a continuous medium. If matter is atomic, and therefore discontinuous, it is unfitted for the construction of perfect geometrical models, but in other respects it may fulfil its functions.

But even if we adopt a theory which makes the equality of the mass of different atoms a result depending on the nature of mass rather than on any quantitative adjustment, the correspondence of the periods of vibration of actual molecules is a fact of a different order.

We know that radiations exist having periods of vibration of every value between those corresponding to the limits of the visible spectrum, and probably far beyond these limits on both sides. The most powerful spectroscope can detect no gap or discontinuity in the spectrum of the light emitted by incandescent lime.

The period of vibration of a luminous particle is therefore a quantity which in itself is capable of assuming any one of a series of values, which, if not mathematically continuous, is such that consecutive observed values differ from each other by less than the ten thousandth part of either. There is, therefore, nothing in the nature of time itself to prevent the period of vibration of a molecule from assuming any one of many thousand different observable

values. That which determines the period of any particular kind of vibration is the relation which subsists between the corresponding type of displacement and the force of restitution thereby called into play, a relation involving constants of space and time as well as of mass.

It is the equality of these space- and time-constants for all molecules of the same kind which we have next to consider. We have seen that the very different circumstances in which different molecules of the same kind have been placed have not, even in the course of many ages, produced any appreciable difference in the values of these constants. If, then, the various processes of nature to which these molecules have been subjected since the world began have not been able in all that time to produce any appreciable difference between the constants of one molecule and those of another, we are forced to conclude that it is not to the operation of any of these processes that the uniformity of the constants is due.

The formation of the molecule is therefore an event not belonging to that order of nature under which we live. It is an operation of a kind which is not, so far as we are aware, going on on earth or in the sun or the stars, either now or since these bodies began to be formed. It must be referred to the epoch, not of the formation of the earth or of the solar system, but of the establishment of the existing order of nature, and till not only these worlds and systems, but the very order of nature itself is dissolved, we have no reason to expect the occurrence of any operation of a similar kind.

In the present state of science, therefore, we have strong reasons for believing that in a molecule, or if not in a molecule, in one of its component atoms, we have something which has existed either from eternity or at least from times anterior to the existing order of nature. But besides this atom, there are immense numbers of other atoms of the same kind, and the constants of each of these atoms are incapable of adjustment by any process now in action. Each is physically independent of all the others.

Whether or not the conception of a multitude of beings existing from all eternity is in itself self-contradictory, the conception becomes palpably absurd when we attribute a relation of quantitative equality to all these beings. We are then forced to look beyond them to some common cause or common origin to explain why this singular relation of equality exists, rather than any one of the infinite number of possible relations of inequality.

Science is incompetent to reason upon the creation of matter itself out of nothing. We have reached the utmost limit of our thinking faculties when we have admitted that, because matter cannot be eternal and self-existent, it must have been created. It is only when we contemplate not matter in itself, but the form in which it actually exists, that our mind finds something on which it can lay hold.

That matter, as such, should have certain fundamental properties, that it should have a continuous existence in space and time, that all action should be between two portions of matter, and so on, are truths which may, for aught we know, be of the kind which metaphysicians call necessary. We may use our knowledge of such truths for purposes of deduction, but we have no data for speculating on their origin.

ATOOL, one of the larger Sandwich islands, in the North Pacific Ocean. Towards the N.E. and N.W. the country is rugged and broken, but to the southward it is more level. The hills rise from the sea with a gentle acclivity, and, at a little distance back, are covered with wood; the central peaks attain an elevation of 7000 feet.

But the equality of the constants of the molecules is a fact of a very different order. It arises from a particular distribution of matter, a *collocation*, to use the expression of Dr Chalmers, of things which we have no difficulty in imagining to have been arranged otherwise. But many of the ordinary instances of collocation are adjustments of constants, which are not only arbitrary in their own nature, but in which variations actually occur; and when it is pointed out that these adjustments are beneficial to living beings, and are therefore instances of benevolent design, it is replied that those variations which are not conducive to the growth and multiplication of living beings tend to their destruction, and to the removal thereby of the evidence of any adjustment not beneficial.

The constitution of an atom, however, is such as to render it, so far as we can judge, independent of all the dangers arising from the struggle for existence. Plausible reasons may, no doubt, be assigned for believing that if the constants had varied from atom to atom through any sensible range, the bodies formed by aggregates of such atoms would not have been so well fitted for the construction of the world as the bodies which actually exist. But as we have no experience of bodies formed of such variable atoms this must remain a bare conjecture.

Atoms have been compared by Sir J. Herschel to manufactured articles, on account of their uniformity. The uniformity of manufactured articles may be traced to very different motives on the part of the manufacturer. In certain cases it is found to be less expensive as regards trouble, as well as cost, to make a great many objects exactly alike than to adapt each to its special requirements. Thus, shoes for soldiers are made in large numbers without any designed adaptation to the feet of particular men. In another class of cases the uniformity is intentional, and is designed to make the manufactured article more valuable. Thus, Whitworth's bolts are made in a certain number of sizes, so that if one bolt is lost, another may be got at once, and accurately fitted to its place. The identity of the arrangement of the words in the different copies of a document or book is a matter of great practical importance, and it is more perfectly secured by the process of printing than by that of manuscript copying.

In a third class not a part only but the whole of the value of the object arises from its exact conformity to a given standard. Weights and measures belong to this class, and the existence of many well-adjusted material standards of weight and measure in any country furnishes evidence of the existence of a system of law regulating the transactions of the inhabitants, and enjoining in all professed measures a conformity to the national standard.

There are thus three kinds of usefulness in manufactured articles—cheapness, serviceableness, and quantitative accuracy. Which of these was present to the mind of Sir J. Herschel we cannot now positively affirm, but it was at least as likely to have been the last as the first, though it seems more probable that he meant to assert that a number of exactly similar things cannot be each of them eternal and self-existent, and must therefore have been made, and that he used the phrase "manufactured article" to suggest the idea of their being made in great numbers.

(J. C. M.)

The chief ports are Waimea and Hanalei. The island was one of the stations chosen for the observation of the transit of Venus in 1874. It is nearly 40 miles in length, and contains about 10,000 inhabitants. Long. 159° 40' W., lat. 21° 57' N.

ATRATO, a river of Colombia, South America, which,
III. — 3

after a course of 250 miles, almost due N., for the most part through a low and swampy region, falls into the Gulf of Uraba or Darien. The gold and platinum mines of Choco were on some of its affluents, and its sands are still auriferous. The river has attracted considerable attention in connection with schemes for the construction of a ship-canal across the isthmus. It is navigable for small vessels for about 140 miles.

ATREK or ATTRUCK, a river which rises in the mountains of Khorasan, and flows W. along the borders of Persia and the Russian possessions, till it falls in the south-eastern corner of the Caspian, a short distance to the N. of Ashurada.

ATREUS, in *Greek Legend*, a son of Pelops, had, with his brother Thyestes, settled in Mycenæ, where he succeeded Eurystheus in the sovereignty, in which he was secured by the possession of a lamb or ram with a golden fleece. His wife Aërope, a daughter of Minos, bribed by Thyestes, assisted the latter to carry off the ram. But Zeus, in the interest of Atreus, wrought a miracle, causing the sun which before had risen in the west to rise in the east. Thyestes was driven from Mycenæ, but returned to his brother begging to be forgiven. Atreus, appearing to welcome him, invited him to a banquet to eat of his own son, whom he had slain. From this crime followed the ills which befel Agamemnon, the son of Atreus (*Æschylus, Agam.* 1583, *fol.*)

ATRI or ATRIA, the ancient *Iadria*, a town of Naples, in the province of Abruzzo Ulteriore I., situated on a steep mountain 5 miles from the Adriatic, and 18 miles S.E. of Teramo. It is the see of a bishop, and has a cathedral, a parish church, and several convents and hospitals. It contains 9877 inhabitants. Remains of the ancient city have been discovered to the S. of the present site, consisting of the ruins of a theatre and baths, with pavements, and vases of Greek manufacture. It was a very flourishing commercial port at an early period, but had declined into a small town in the time of Strabo. Its modern revival has been furthered by the excavation of new canals.

ATRIUM, the principal apartment in a Roman house, was entered through the *ostium* or *janua*, which opened off the *vestibulum*, a clear space between the middle of the house and the street, formed by the projection of the two sides. It was generally quadrangular in shape, and was roofed all over, with the exception of a square opening, called *compluvium*, towards which the roofs sloped, and by which the rain-water was conducted down to a basin (*impluvium*) fixed in the floor. The opening in the roof seems sometimes to have been called *impluvium* (*Terence, Eun.*, iii. 5; *Phorm.*, iv. 4). In the early periods of Roman civilisation, the atrium was the common public apartment, and was used for the reception of visitors and clients, and for ordinary domestic purposes, as cooking and dining. In it were placed the ancestral pictures, the marriage-couch, the *focus*, or hearth, and generally a small altar. Here, too, were kept the looms at which the mistress of the house sat and span with her maid-servants. At a somewhat later period, and among the wealthy, separate apartments were built for kitchens and dining-rooms, and the atrium was kept as a general reception room for clients and visitors. It appears sometimes to have been called *cavadium*, but the relation of these two is somewhat obscure. According to some authorities, the *cavadium* was simply the open space formed when the *impluvium* was surrounded with pillars to support the roof; according to others, the *cavadium* was really the principal room, to which the atrium served as an antechamber.

ATRIUM, in *Ecclesiastical Antiquities*, denotes an open place or court before a church. It consisted of a large area or square plat of ground, surrounded with a portico or

cloister, situated between the porch or vestibule and the body of the church. In the centre was placed a fountain, wherein the worshippers washed their hands before entering church. In the atrium those who were not suffered to advance farther, and more particularly the first class of penitents, stood to solicit the prayers of the faithful as they went into the church. It was also used as a burying-ground, at first only for distinguished persons, but afterwards for all believers.

ATROPHY (*a priv.*, τροφή, nourishment), a term in medicine used to describe a state of wasting due to some interference with the function of healthy nutrition. In the living organism there are ever at work changes involving the waste of its component tissues, which render necessary, in order to the preservation of life, the supply and proper assimilation of nutritive material. It is also essential for the maintenance of health that a due relation exist between these processes of waste and repair, so that the one may not be in excess of the other. When the appropriation of nutriment exceeds the waste, hypertrophy or increase in bulk of the tissues takes place. (See *HYPER-TROPHY*.) When, on the other hand, the supply of nutritive matter is suspended or diminished, or when the power of assimilation is impaired, atrophy or wasting is the result. Thus the whole body becomes atrophied in many diseases; and in old age every part of the frame, with the single exception of the heart, undergoes atrophic change. Atrophy may, however, affect single organs or parts of the body, irrespective of the general state of nutrition, and this may be brought about in a variety of ways. One of the most frequently observed of such instances is atrophy from disuse, or cessation of function. Thus, when a limb is deprived of the natural power of motion, either by paralysis or by painful joint disease, the condition of exercise essential to its nutrition being no longer fulfilled, atrophy of all its textures sooner or later takes place. The brain in imbeciles is frequently observed to be shrivelled, and in many cases of blindness there is atrophy of the optic nerve and optic tract. This form of atrophy is likewise well exemplified in the case of those organs and structures of the body which subservise important ends during fetal life, but which, ceasing to be necessary after birth, undergo a sort of natural atrophy, such as the thymus gland, and certain vessels specially concerned in the fetal circulation. The uterus after parturition undergoes a certain amount of atrophy, and the ovaries, after the child-bearing period, become shrunken. Atrophy of a part may also be caused by interruption to its normal blood supply, as in the case of the ligature or obstruction of an artery. Again, long standing disease, by affecting the nutrition of an organ and by inducing the deposit of morbid products, may result in atrophy, as frequently happens in affections of the liver and kidneys. Parts that are subjected to continuous pressure are liable to become atrophied, as is sometimes seen in internal organs which have been pressed upon by tumours or other morbid growths, and is well illustrated in the case of the feet of Chinese ladies, which are prevented from growing by persistent compression exercised from birth. Atrophy may manifest itself simply by loss of substance; but, on the other hand, it is often found to co-exist with degenerative changes in the textures affected and the formation of adventitious growth, so that the part may not be reduced in bulk although atrophied as regards its proper structure. Thus, in the case of the heart, when affected with fatty degeneration, there is atrophy of the proper muscular texture, which, however, being largely replaced by fatty matter, the organ may undergo no diminution in volume, but may, on the contrary, be increased in size. Atrophy is usually a gradual and slow process, but sometimes it proceeds rapidly. In the disease known by the

name of *acute yellow atrophy of the liver*, that organ undergoes such rapidly destructive change as results in its shrinking to half, or one-third, of its normal size in the course of a few days.

The term *progressive muscular atrophy* (synonyms, *wasting or creeping palsy*) is applied to an affection of the muscular system, which is characterised by the atrophy and subsequent paralysis of certain muscles, or groups of muscles, and is associated with morbid changes in the anterior roots of the nerves of the spinal cord. This disease begins insidiously, and is often first observed to affect the muscles of one hand, generally the right. The attention of the sufferer is first attracted by the power of the hand becoming weakened, and then there is found to be a wasting of certain of its muscles, particularly those of the ball of the thumb. Gradually other muscles in the arms and legs become affected in a similar manner, their atrophy being attended with a corresponding diminution in power. Although sometimes arrested, this disease tends to progress, involving additional muscles, until in course of time the greater part of the muscular system is implicated, and a fatal result ensues. (J. O. A.)

ATROPOS (*a priv.*, and τρέπω, to turn), the eldest of the three Moirai, Parca, or Fates. Her name, The Unalterable, indicates the part generally played by her, viz., that of rendering the decisions of her sisters irreversible or immutable. This is the function ascribed to her by Plato (*Rep.*, x. 620), who also assigns to her supremacy over future events (617). Ancient authorities, however, are not unanimous in their distribution of the parts of the three sisters. Atropos is most frequently represented with scales, a sun-dial, or a cutting instrument, the "abhorred shears," with which she slits the thin-spun thread of life that has been placed on the spindle by Clotho and drawn off by Lachesis. See *PARCE*.

ATTACHMENT, in *English Law*, is a process from a court of record, awarded by the justices at their discretion, on a bare suggestion, or on their own knowledge, and is properly grantable in cases of contempt. It differs from arrest, in that he who arrests a man carries him to a person of higher power to be forthwith disposed of; but he that attaches keeps the party attached, and presents him in court at the day assigned, as appears by the words of the writ. Another difference is, that arrest is only upon the body of a man, whereas an attachment is often upon his goods. It is distinguished from distress in not extending to lands, as the latter does; nor does a distress touch the body, as an attachment does. Every court of record has power to fine and imprison for contempt of its authority. Attachment being merely a process to bring the defendant before the court, is not necessary in cases of contempt in the presence of the court itself. Attachment will be granted against peers and members of Parliament, only for such gross contempts as rescues, disobedience to the Queen's writs, and the like. Attachment will not lie against a corporation. The County Courts in this respect are regulated by the 9 and 10 Vict. c. 95, § 113, and the 12 and 13 Vict. c. 101, § 2. They can only punish for contempts committed in presence of the court. (See *CONTEMPT OF COURT*.) Attachments are granted on a rule in the first instance to show cause, which must be personally served before it can be made absolute, except for non-payment of costs on a master's allocatur, and against a sheriff for not obeying a rule to return a writ or to bring in the body. The offender is then arrested, and when committed will be compelled to answer interrogatories, exhibited against him by the party at whose instance the proceedings have been had; and the examination when taken is referred to the master, who reports thereon, and on the contempt being reported, the court gives judgment according to its dis-

cretion, in the same manner as upon a conviction for a misdemeanour at common law. Sir W. Blackstone observes that "this method of making the defendant answer upon oath to a criminal charge is not agreeable to the genius of the common law in any other instance," and it may be added that the elasticity of the legal definitions of contempt of court, especially with respect to comments on judicial proceedings, is the subject of much complaint.

ATTACHMENT OUT OF CHANCERY enforced answers and obedience to decrees and orders of that court, now merged in the High Court of Justice under the Judicature Act, 1873, and was made out without order upon an affidavit of the due service of the process, &c., with whose requirements compliance was sought. A corporation, however, is proceeded against by distringas and not by attachment. It was formerly competent to the plaintiff to compel the appearance of a defendant in Chancery by attachment, but the usual course was to enter appearance for him in case of default. By the proposed rules under the Judicature Act, 1873, a writ of attachment is to have the same force and effect as the old attachment out of Chancery. It is one of the modes of execution allowed for the recovery of property other than land or money.

ATTACHMENT OF THE FOREST is the proceeding in the Courts of Attachments, Woodmote, or Forty Days' Courts. These courts have now fallen into absolute desuetude. They were held before the verderers of the royal forests in different parts of the kingdom once in every forty days, for the purpose of inquiring into all offences against "vert and venison." The attachment is by the bodies of the offenders, if taken in the very act of killing venison, or stealing wood, or preparing so to do, or by fresh and immediate pursuit after the act is done; else they must be attached by their goods. These attachments were received by the verderers and enrolled, and certified under their seals to the Court of Justice seat, or Swainmote, which formed the two superior of the forest courts.

ATTACHMENT, FOREIGN, is an important custom prevailing in the city of London, whereby a creditor may attach money owing to his debtor, or property belonging to him in the possession of third parties. The person holding the property or owing the money must be within the city at the time of being served with the process, but all persons are entitled to the benefit of the custom. The plaintiff having commenced his action, and made a satisfactory affidavit of his debt, is entitled to issue attachment, which thereupon affects all the money or property of the defendant in the hands of the third party, who in these proceedings is called the *garnishee*. The garnishee, of course, has as against the attachment all the defences which would be available to him against the defendant, his alleged creditor. The garnishee may plead payment under the attachment, if there has been no fraud or collusion, in bar to an action by the defendant for his debt or property. The court to which this process belongs is the Mayor's Court of London, the procedure in which is regulated by 20 and 21 Vict. c. 157. This custom, and a. proceedings relating thereto, are expressly exempted from the operation of the Debtor's Act, 1869. Similar customs exist in Bristol and a few other towns in England, and also in Scotland. See *ARREST* and *ARRESTMENT*.

ATTACHMENT OF DEBTS.—It was suggested by the common law commissioners in 1853 that a remedy analogous to that of Foreign Attachment might be made available to creditors, after judgment, against debts due to their debtors. Accordingly, the Common Law Procedure Act, 1854, enacted that any creditor, having obtained judgment in the superior courts, should have an order that

the judgment debtor might be examined as to any debts due and owing to him before a master of the court. On affidavit that the judgment was still unsatisfied, and that any other person within the jurisdiction was indebted to the judgment debtor, the judge was empowered to attach all debts due from such third person (called the *garnishee*) to the judgment debtor, to answer the judgment debt. This order binds the debts in the hands of the garnishee, and if he does not dispute his liability execution issues against him at once. If he disputes his liability the question must be tried. Payment by the garnishee or execution against him is a complete discharge as against the judgment debtor. These provisions were, by an order in Council of 18th Nov. 1867, extended to the County Courts. (By 33 and 34 Vict. c. 30, it is enacted that no order for the attachment of the wages of any servant, labourer, or workman shall be made by the judge of any court of record or inferior court.) The proposed rules and regulations under the Judicature Act, 1873, retain the process for attachment of debts as established by the Procedure Act of 1854.

ATTAINDER, in the *Law of England*, was the immediate and inseparable consequence from the common law upon the sentence of death. When it was clear beyond all dispute that the criminal was no longer fit to live, he was called *attaint*, *attinctus*, stained or blackened, and could not, before the 6 and 7 Vict. c. 85, § 1, be a witness in any court. This attainder took place after judgment of death, or upon such circumstances as were equivalent to judgment of death, such as judgment of outlawry on a capital crime, pronounced for absconding from justice. Conviction without judgment was not followed by attainder. The consequences of attainder were—1st, Forfeiture; 2d, Corruption of blood. On attainder for treason, the criminal forfeited to the Crown his lands, rights of entry on lands, and any interest he might have in lands for his own life or a term of years. For murder, the offender forfeited to the Crown the profit of his freeholds during life, and in the case of lands held in fee-simple, the lands themselves for a year and a day; subject to this, the lands escheated to the lord of the fee. These forfeitures related back to the time of the offence committed. Forfeitures of goods and chattels ensued not only on attainder, but on conviction for a felony of any kind, or on flight from justice, and had no relation backwards to the time of the offence committed. By *corruption of blood*, "both upwards and downwards," the attainted person could neither inherit nor transmit lands. The lands escheated to the lord of the fee, subject to the Crown's right of forfeiture. The doctrine of attainder has, however, ceased to be of much importance. By the 33 and 34 Vict. c. 23, it is enacted that henceforth no confession, verdict, inquest, conviction, or judgment of or for any treason or felony, or *felo de se*, shall cause any attainder or corruption of blood, or any forfeiture or escheat. Sentence of death, penal servitude, or imprisonment with hard labour for more than twelve months, after conviction for treason or felony, disqualifies from holding or retaining a seat in Parliament, public offices under the Crown or otherwise, right to vote at elections, &c., and such disability is to remain until the punishment has been suffered or a pardon obtained. Provision is made for the due administration of convicts' estates, in the interests of themselves and their families. Forfeiture consequent on outlawry is exempted from the provisions of the Act.

Bills of Attainder in Parliament ordinarily commence in the House of Lords; the proceedings are the same as on other bills, but the parties affected by them may appear by counsel and witnesses in both Houses. In the case of an impeachment, the House of Commons is prosecutor and the House of Lords judge; but proceedings by Bill of

Attainder are *legislative* in form, and the consent of Crown, Lords, and Commons is therefore necessary.

ATTALIA, an ancient city of Pamphylia, which derived its name from Attalus II., king of Pergamus. It seems to have been a place of considerable importance, and is most probably to be identified with the modern Adalia, Antalia, or Sataliah, as it is variously called. See SATALIAH.

ATTAR, or OTTO, of ROSES, a well-known perfume of great strength, is an essential oil of roses, prepared chiefly in Hindustan and Persia. See OILS and PERFUMERY.

ATTENTION, in *Psychology*, may be defined as the concentration of consciousness, or the direction of mental energy upon a definite object or objects. By means of it we either bring within the circle of our conscious life perceptions and ideas which would not otherwise have risen from their obscurity, or render clearer and more distinct some of those already under notice. Its mode of operation and the effects produced by it may be compared with the concentration of visual activity on some definite part of the field of vision, and the clearer perception of the limited portion which is thereby attained. In both cases the result is brought about, not by effecting any change in the perceptions themselves, but simply by isolating them, and considering them to the exclusion of all other objects. Since all consciousness involves discrimination, *i.e.*, isolation of one object from others, it involves attention, which might therefore be defined as the necessary condition of consciousness. Such a definition is, however, too general, and throws no light upon the nature of the process whereby our mental energy is strengthened in particular cases. This increase of force, when consciousness is directed to any one object to the exclusion of others, is partly to be explained by reference to the general law that, as the amount of intellectual energy at our disposal is limited, the greater the number of objects over which it is spread; the less will each receive, *pluribus intentus, minor est ad singula sensus*; and conversely, the greater the concentration, the fewer must be the objects attended to. In addition to this general law of limitation, there are special circumstances which determine the amount of consciousness we shall bestow on any object. In the first place, there are certain mechanical influences only partly subject to the will, such are the force or vividness of the impression, the interest attaching to an object, the trains of associated ideas excited, or the emotions roused by its contemplation. There is, secondly, an exercise of volition employed in fixing the mind upon some definite object; this is a purely voluntary act, which can be strengthened by habit, is variable in different individuals, and to which, as being its highest stage, the name Attention is sometimes restricted. The general law of the limitation of conscious activity, pointed out above, throws considerable light on the nature of abstraction, and its relation to Attention. It is clear that concentration of consciousness upon any one attribute or attributes of an object involves withdrawal of consciousness from all other attributes. This withdrawal is, logically and etymologically, Abstraction, which is thus the negative side of Attention, or, as Hamilton expresses it, the two processes form the negative and positive poles of the same mental act.

ATTERBOM, PER DANIEL AMADEUS, a Swedish poet, was born in Ostergöthland in 1790, studied in the University of Upsala from 1805 to 1815, became Professor of Philosophy there in 1828, and died in 1855. He was the leader in the great romantic movement which revolutionised Swedish literature. In 1807, when in his 17th year, he founded at Upsala an artistic society, called the Aurora League, the members of which included Palmblad, Elgström, Hedborn, and other youths, whose names were destined to

take a foremost rank in the belles-lettres of their generation. Their first newspaper, *Polyxem*, was a crude effort, soon abandoned, but in 1810 there began to appear a journal, *Fosforus*, edited by Atterbom, which lasted for a considerable time, and finds a place in classic Swedish literature. It consisted entirely of poetry and æsthetic-polemical essays; it introduced the study of the newly-arisen Romantic school of Germany, and formed a vehicle for the early works, not of Atterbom only, but of Hammarsköld, Dahlgren, Palmblad, and other eminent poets. Among Atterbom's independent works the most celebrated is *Lycksalighetens ö* (*The Fortunate Island*), a romantic drama of extraordinary beauty, published in 1823. Before this he had published a cycle of lyrics, *The Flowers*, of a mystical character, somewhat in the manner of Novalis. Of a great drama, *Fogel blå* (*The Blue Bird*), only a fragment is preserved, but what exists is among the most exquisite of his writings. As a purely lyrical poet he has not been excelled in Sweden, but his popularity has been endangered, partly by his weakness for allegory and symbolism, partly by his consistent adoption of the mannerisms of Tieck and Novalis. His renown during his lifetime was unbounded.

ATTERBURY, FRANCIS, a man who holds a conspicuous place in the political, ecclesiastical, and literary history of England, was born in the year 1662, at Middleton in Buckinghamshire, a parish of which his father was rector. Francis was educated at Westminster School, and carried thence to Christ Church a stock of learning which, though really scanty, he through life exhibited with such judicious ostentation that superficial observers believed his attainments to be immense. At Oxford, his parts, his taste, and his bold, contemptuous, and imperious spirit soon made him conspicuous. Here he published, at twenty, his first work, a translation of the noble poem of *Absalom and Aithophel* into Latin verse. Neither the style nor the versification of the young scholar was that of the Augustan age. In English composition he succeeded much better. In 1687 he distinguished himself among many able men who wrote in defence of the Church of England, then persecuted by James II., and calumniated by apostates who had for lucre quitted her communion. Among these apostates none was more active or malignant than Obadiah Walker, who was master of University College, and who had set up there, under the royal patronage, a press for printing tracts against the established religion. In one of these tracts, written apparently by Walker himself, many aspersions were thrown on Martin Luther. Atterbury undertook to defend the great Saxon Reformer, and performed that task in a manner singularly characteristic. Whoever examines his reply to Walker will be struck by the contrast between the feebleness of those parts which are argumentative and defensive, and the vigour of those parts which are rhetorical and aggressive. The Papists were so much galled by the sarcasms and invectives of the young polemic, that they raised a cry of treason, and accused him of having, by implication, called King James a Judas.

After the Revolution, Atterbury, though bred in the doctrines of non-resistance and passive obedience, readily swore fealty to the new Government. In no long time he took holy orders. He occasionally preached in London with an eloquence which raised his reputation, and soon had the honour of being appointed one of the royal chaplains. But he ordinarily resided at Oxford, where he took an active part in academical business, directed the classical studies of the undergraduates of his college, and was the chief adviser and assistant of Dean Aldrich, a divine now chiefly remembered by his catches, but renowned among his contemporaries as a scholar, a Tory, and a High-

Churchman. It was the practice, not a very judicious practice, of Aldrich, to employ the most promising youths of his college in editing Greek and Latin books. Among the studious and well-disposed lads who were, unfortunately for themselves, induced to become teachers of philology when they should have been content to be learners, was Charles Boyle, son of the earl of Orrery, and nephew of Robert Boyle, the great experimental philosopher. The task assigned to Charles Boyle was to prepare a new edition of one of the most worthless books in existence. It was a fashion among those Greeks and Romans who cultivated rhetoric as an art, to compose epistles and harangues in the names of eminent men. Some of these counterfeits are fabricated with such exquisite taste and skill, that it is the highest achievement of criticism to distinguish them from originals. Others are so feebly and rudely executed, that they can hardly impose on an intelligent schoolboy. The best specimen which has come down to us is perhaps the *Oration for Marcellus*, such an imitation of Tully's eloquence as Tully would himself have read with wonder and delight. The worst specimen is perhaps a collection of letters purporting to have been written by that Phalaris who governed Agrigentum more than 500 years before the Christian era. The evidence, both internal and external, against the genuineness of these letters is overwhelming. When, in the 15th century, they emerged, in company with much that was far more valuable, from their obscurity, they were pronounced spurious by Politian, the greatest scholar of Italy, and by Erasmus, the greatest scholar on our side of the Alps. In truth, it would be as easy to persuade an educated Englishman, that one of Johnson's *Ramblers* was the work of William Wallace, as to persuade a man like Erasmus, that a pedantic exercise, composed in the trim and artificial Attic of the time of Julian, was a despatch written by a crafty and ferocious Dorian, who reared people alive many years before there existed a volume of prose in the Greek language. But though Christ Church could boast of many good Latinists, of many good English writers, and of a greater number of clever and fashionable men of the world than belonged to any other academic body, there was not then in the college a single man capable of distinguishing between the infancy and the dotage of Greek literature. So superficial, indeed, was the learning of the rulers of this celebrated society, that they were charmed by an essay which Sir William Temple published in praise of the ancient writers. It now seems strange, that even the eminent public services, the deserved popularity, and the graceful style of Temple, should have saved so silly a performance from universal contempt. Of the books which he most vehemently eulogised, his eulogies proved that he knew nothing. In fact, he could not read a line of the language in which they were written. Among many other foolish things, he said that the letters of Phalaris were the oldest letters and also the best in the world. Whatever Temple wrote attracted notice. People who had never heard of the *Epistles of Phalaris* began to inquire about them. Aldrich, who knew very little Greek, took the word of Temple who knew none, and desired Boyle to prepare a new edition of these admirable compositions which, having long slept in obscurity, had become on a sudden objects of general interest.

The edition was prepared with the help of Atterbury, who was Boyle's tutor, and of some other members of the college. It was an edition such as might be expected from people who would stoop to edit such a book. The notes were worthy of the text; the Latin version worthy of the Greek original. The volume would have been forgotten in a month, had not a misunderstanding about a manuscript arisen between the young editor and the