THE Technical Education Board of the London County Council invite applications for a scholarship in sanitary science of the value ot £150 a year, tenable in the pathological laboratory of Claybury Asylum. Candidates must be ordinarily resident within the administrative county of London. In making the selection, preference will be given to a candidate who is a qualified and registered practitioner, and has completed his academic course. The scholar must make such arrangements as to residence as will enable him to devote his whole time to the study of the working and effects of preventable, social and industrial causes of insanity.

DR. M. W. NENCKI, director of the chemical department of the Institute for Experimental Medicine, has, states the *British Medical Journal*, recently celebrated the twenty-fifth anniversary of his appointment as Professor of Pathological Chemistry in the University of St. Petersburg. He was presented by his friends and former pupils with a *Festschrift*, which contains, amongst others, papers by Prof. Thomas Arthus, of Freiburg, and Dr. Kostanecky, of Bern. The Council of the University of Kasan, with which Prof. Nencki was connected at the commencement of his professional career, has elected him honorary member, a distinction which is considered a very high compliment in Russia.

THE following are among recent announcements :—Dr. Pompecki to be curator of the State palæontological collection at Munich; Dr. Noll to be professor of botany at Bonn; Prof. E. Wernicke has been invited to the chair of hygiene at Marburg; Dr. Franz Lafar has been invited to the chair of bacteriology and fermentation-physiology in the Technical High School at Vienna; Mr. Charles D. Walcott to be acting assistant secretary in charge of the U.S. National Museum; Mr. Richard Rathbun to be assistant secretary in charge of the office and exchanges of the Smithsonian Institution; Dr. Julius Aparicio to be director of the meteorological and astronomical observatory at San Salvador; Prof. J. Franz to be director of the observatory at Breslau, and professor of astronomy in the University there.

MAY the many instances of large benefactions to research and education in America, recorded by Mr. George Iles in *The Century* for March, act persuasively upon millionaires, and stimulate a desire to emulate the example. Mr. Iles points out that the first large gift for original research in the United States is that of 500,000 dols. received in 1838 as a bequest from James Smithson, an Englishman, who, strange to say, never set his foot in America; in 1891, another Englishman, Thomas Hodgkins, gave the Smithsonian Institution 200,000 dols. more. In bringing the results of research to the service of the public on the lines of an industrial university, the Pratt Institute in Brooklyn is instanced as doing notable work. With its endowment of 3,500,000 dols. it represents a total gift of about 4,000,000 dols. On a plane of yet higher educational activity stands the Johns Hopkins University in Baltimore, to which Johns Hopkins gave 3,500,000 dols. The University of Chicago, opened but five years ago, has already received about 12,000,000 dols. as gifts, more than half of it being from Mr. John D. Rockefeller. In 1895 Mr. Rockefeller offered this University 2,000,000 dols. in addition to his previous gifts, on condition that an equal sum should be given to it by 1900. His offer has already resulted in a gift of 1,025,000 dols. from Miss Helen Culver. Mr. Ezra Cornell gave 670,000 dols. to the University which bears his name, and the Hon. Henry W. Sage 1,171,000 dols. The cash gifts to the University aggregate 2,738,000 dols. Columbia University, New York, asked for 4,000,000 dols. to erect new buildings when removing to a new site. It received 350,000 dols. from Mr. W. C. Schermerhorn for a natural science building; 1,000,000 dols. from President Seth Low for a library; and 400,000 dols. from members of the Havemeyer family for the erection of a memorial hall. Before the new wants of the university had been declared, its medical departments received 1,970,000 dols. from the Vanderbilt family. Mr. Anthony J. Drexel gave more than 3,000,000 dols. for the foundation of the Drexel College of art, science, and industry; Mr. Marshall Field gave 1,000,000 dols. for the foundation of the Field Columbian Museum; Clark University was established by a gift of 1,500,000 dols. from Mr. Jonas G. Clark; and many other instances of generosity are mentioned by Mr. Iles. It is pointed out, however, that American science still awaits its adequate physical and chemical laboratory for pure research. Judging from the generous spirit shown by past gifts, the waiting time should not be long.

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, February 18.—"On the Significance of Bravais' Formulæ for Regression, &c., in the case of Skew Correlation." By G. Udny Yule. Received December 14, 1896.

If two variables, x and y, be normally correlated, the means of arrays of x's associated with successive types of y's lie on a straight line, called the line of regression. In the general case of skew correlation, this straight line becomes a curve. If, however, a straight line be fitted to the curve by the method of least squares, the equation to this straight line is identical with the equation to the "line of regression" of normal correlation. Hence the formulæ given by Bravais still remain significant whatever the form of the correlation. If the regression of x on y be positive, large values of x correspond, on the whole, to large values of y, and *vice versâ*. The expression for the standard deviation of the array in normal correlation is, in the general case, interpretable as the standard deviation of the whole series of observations from the line of regression.

Similar interpretations hold good for the cases of correlation between three, four, or more variables.

"On the Iron Lines present in the Hottest Stars. Preliminary Note." By J. Norman Lockyer, C.B., F.R.S. Received January 25.

In continuation of investigations communicated to the Royal Society in 1879 (*Roy. Soc. Proc.* 1879, vol. xxx. p. 22), and 1881 (*ibid.*, 1881, vol. xxxii. p. 204), on the effect of high-tension electricity on the line spectra of metals, I have recently used a more powerful current and larger jar surface than that I formerly employed.

The former work consisted in noting (1) the lines brightened in passing a spark in a flame charged with metallic vapours, and (2) the lines brightened on passing from the arc to the spark. It was found, in the case of iron, that two lines in the visible spectrum at 4924·1 and 5018·6, on Rowland's scale, were greatly enhanced in brightness, and were very important in solar phenomena.

The recent work carries these results into the photographic region. The result is interesting and important, since seven additional lines have been found to have their brightness enhanced at the highest temperature. These, as well as the two previously observed, are shown in the following table, which also indicates the behaviour of the lines under different conditions, as observed by Kayser and Runge (K. and R.) and myself (L.) in the arc, and by Thalèn (T.) and myself in sparks :—

Lines of Iron which are enhanced in Spark.

Wave-length.	Intensity in flame.	Intensity in arc (K and R). Max.=10.	Length in arc (L). Max.=10.	Intensity in spark (T). Max.=10.	Intensity in hot spark (L). Max.=10.
4233·3	—	1	—	—	4
4508·5	—	1	—	—	4
4515·5	—	1	—	—	4
4520·4	—	1	—	—	2
4522·8	—	1	3	—	4
4549·6	—	4	5	—	6
4584·0	—	2	4	—	7
4924·1	—	1	3	6	6
5018·6	—	4	—	—	6

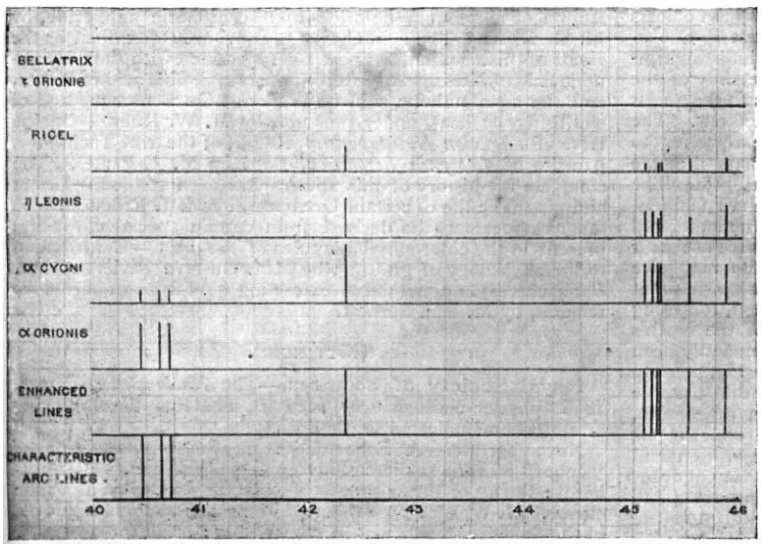
Combining this with former results, we seem justified in concluding that, in a space heated to the temperature of the hottest spark, and shielded from a lower temperature, these lines would constitute the spectrum of iron.

Defining the hottest stars as those in which the ultra-violet spectrum is most extended, it is known that absorption is indicated by few lines only. In these stars iron is practically represented by the enhanced lines alone; those which build up, for the most part, the arc spectrum are almost or entirely absent.

The intensities of the enhanced lines in some of the hottest stars are shown in the appended diagram, and for the sake of comparison, the behaviour of a group of three lines which are among the most marked at lower temperatures, is also indicated. In

addition, the diagram shows the inversion in intensities of the spark and arc lines in the spectrum of a relatively cool star—such as α-Orionis.

The facts illustrated by the diagram indicate that the enhanced lines may be absent from the spectrum of a star, either on account of too low or too high a temperature. In the case of low temperature, however, iron is represented among the lines in the spectrum, but at the highest temperature all visible indications of its presence seem to have vanished.



This result affords a valuable confirmation of my view, that the arc spectrum of the metallic elements is produced by molecules of different complexities, and it also indicates that the temperature of the hottest stars is sufficient to produce simplifications beyond those which have so far been produced in our laboratories.

CAMBRIDGE.

Philosophical Society, February 8.—Mr. F. Darwin, President, in the chair.—On the kathode rays, by Prof. J. J. Thomson. The experiments described in this paper were of two kinds: the first set were on the electric charges carried along the rays, the second on the deflection produced in these rays when they traversed a uniform magnetic field. In the experiments on the electrical effects produced by the rays, the kathode, a plane disc, was placed in a small side tube fused on to a large bulb; between this tube and the bulb there was a thick earth-connected metal disc with a slit in it; a pencil of kathode rays shot through this slit into the bulb. In the bulb on the side opposite to the slit there was an arrangement similar to that used by Perrin in his experiments on the charges carried by the kathode rays; it consisted of two cylinders, one inside the other; the outer cylinder was connected with the earth, and the inner cylinder (which was insulated from the outer) was connected with one pair of quadrants of an electrometer. Slits were cut in the cylinder so that the kathode rays could pass through the slits into the inside of the inner cylinder. The cylinders were placed at a considerable distance from the direct line of the rays, so that unless the rays were deflected by a magnet they did not enter the cylinder. The charge in the cylinder produced by each make and break of the coil was investigated. A slight charge was found to pass into the cylinder even when it was not in the direct line of the rays, due probably to a diffused charge sent out from the tube through the slit into the bulb at each discharge of the coil; this charge was small; it was generally negative, but at high exhaustions was frequently positive. When the rays were deflected by a magnet so as to pass inside the cylinder, the cylinder received a strong negative charge; the charge was large as long as the phosphorescent patch was stopped by the cylinder, small when by the motion of the magnet the patch was removed to one side or another of the cylinder. This experiment seems conclusively to show that there is a flow of negative electricity along the kathode rays. The following experiments show, however, that there must be something besides a stream of negatively electrified particles along the kathode rays. If the coil is kept running the negative charge in the cylinder does not increase indefinitely, it reaches a certain limit and then remains constant, though the kathode rays keep pouring into the cylinder; and further, if the inner cylinder be charged negatively to begin with, then if this charge exceeds a certain amount, though the insulation is perfect when the rays are not playing upon the cylinder, yet as soon as the rays fall upon it some of the *negative* charge escapes. In the experiments on the magnetic deflection of the rays, the rays were produced in a side tube and sent into a large bell jar through a slit in a metallic plate. The bell jar was placed between two coils arranged as in a Helmholtz galvanometer so as to produce a uniform magnetic field. The rays in their course through the bell passed in front of a glass plate ruled into squares. A large number of photographs of the rays were taken in different gases and at various degrees of exhaustion. The following were some of the results obtained. The magnetic deflection of the kathode rays in air, hydrogen, carbonic acid gas and methyl iodide is the same provided the mean potential difference between the kathode and the anode is the same. Coming through the slit there are certain "rays" which are not deflected by a magnet: these have little if any power of producing phosphorescence. The path of the rays for the first part of their course was very approximately circular.—On electricity in gases and the formation of clouds in charged gases, by J. S. Townsend. In the paper on this subject it is shown that the gases, given off when certain chemical actions are going on, have sometimes a very large electrostatic charge. The oxygen and hydrogen given off when a current is sent through a sulphuric acid electrolyte carry with them a positive charge, and when these gases are prepared in a similar manner from a caustic potash cell they carry with them negative electricity. The gases have the property of retaining their electricity in a very striking manner, the fraction of the charge lost when the gas is bubbled through a liquid being very small. When put into vessels and shaken up with sulphuric acid, a large proportion of the electricity still remains in the gas. If a charged gas be left in a flask it loses its charge slowly, for after the space of two hours it is found that $\frac{1}{5}$th of the original charge remains. These gases have the property of condensing a cloud when they get into a moist atmosphere, which can be completely removed by sulphuric acid. The whole process of bubbling through water and forming a cloud and again bubbling through sulphuric acid and removing it can be gone through without losing more than 21 per cent. of the original charge on the gas. The dry gas when it gets into the air of the room will form a perfectly stable cloud in the unsaturated atmosphere. These clouds are very heavy and are easily weighed, and it was found that the weight of the cloud is proportional to the charge; but the proportionality changes with the sign of the charge, the cloud being much heavier in negative oxygen than in positive oxygen, the quantity of electricity being the same in each case.

DUBLIN.

Royal Dublin Society, January 20.—Dr. J. Joly, F.R.S., in the chair.—The Committee, consisting of Prof. W. J. Sollas, F.R.S., Mr. R. Lloyd Praeger, Dr. A. F. Dixon, and Mr. Alfred Delap, appointed by the Royal Dublin Society to investigate the recent bog-flow in Kerry, presented their report, which was communicated by Prof. W. J. Sollas. The report was illustrated by photographs taken on the spot by Dr. A. F. Dixon.—Mr. T. Preston made two communications: (*a*) The parallelogram of forces and the laws of motion; (*b*) Applications of a fundamental method in kinematics and dynamics.—Prof. Hartley, F.R.S., and Mr. Hugh Ramage exhibited specimens of photographs of spectra which illustrate the use of the spectrograph in the minute and accurate analysis of minerals and metallurgical products.

February 17.—Prof. G. F. Fitzgerald, F.R.S., in the chair.—The following paper was read:—On the geology of Slieve

Gallion, in the County of Londonderry, by Prof. Grenville A. J. Cole. The author arrives at the following conclusions: (1) The series of hornblendic and pyroxenic rocks on Slieve Gallion, hitherto described as of metamorphic origin, include a volcanic series of andesite-tuffs and vesicular and compact andesites, together with their deep-seated representatives. The age of this series is "Dalradian," using that term in its widest sense. (2) The granite, also once held to be of metamorphic origin, is an intrusive mass, which has absorbed some of the basic rocks, and has produced quartz-diorites by a process of intermingling. The period of its intrusion was pre-Carboniferous, and probably Middle Devonian, as stated by the officers of the Geological Survey. (3) The basic series west of Cookstown, including the volcanic tuffs of Beaghbeg, is indistinguishable from that of Slieve Gallion, and is almost certainly of the same geological age. The relations of this series to the gneiss that underlies it, have yet to be satisfactorily worked out. The suggestion of Mr. Nolan, that the gneiss became remelted to provide the granite veins above it and the granite mass of Slieve Gallion, deserves the most careful consideration. (4) The occurrence of aplitic granites and eurites on Slieve Gallion, associated with varieties rich in biotite and in hornblende, and the discovery of intrusive veins of pure soda-orthoclase near Oritor, suggest that even the biotite in the granite may have resulted from the absorption of the basic series by a magma that would have otherwise crystallised as an aplite; and, following on this, it is urged that the underlying magmas of the earth's crust may be of far simpler character than has commonly been supposed. Prof. Sollas's investigations at Barnavave, seem to point to the same conclusion. It is then suggested that plutonic rocks, as we ordinarily know them, are phenomena of contact, produced in what are, comparatively speaking, the upper layers of the earth's crust. (5) By a combination of absorption and concomitant or subsequent differentiation, an invading igneous rock may come to occupy the place of a pre-existing rock, and may, in fact, represent it as a pseudomorph, the absorbed matter being drawn off through the molten mass to lower levels.—Dr. F. T. Trouton exhibited photographs taken by Becquerel's new radiation.

PARIS.

Academy of Sciences, March 1.—M. A. Chatin in the chair.—The election of M. Violle, in the Section of Physics, was confirmed by the President of the Republic.—The Perpetual Secretary announced to the Academy the loss it had sustained by the death of M. Weierstrass, Foreign Associate.—Notice on M. Weierstrass, by M. Hermite.—On the residues of some double integrals of rational functions, by M. Émile Picard.—Researches on the uranic rays, by M. Henri Becquerel. Uranium has the property of discharging electrified bodies in air at a distance, the time of discharge being the same for both positive and negative charges. The potential of the charged body was varied between one volt and three thousand volts. For potentials under fifteen volts, the velocity of discharge by the uranium appears to be proportional to the potential, analogous to the law of cooling; but this law is not followed even approximately for very high potentials. Thus, for values between 1500 and 2000 volts, the velocity of discharge is practically constant.—On the histological mechanism of cicatrisation, and on some new fibres, "synaptic fibres," by M. L. Ranvier. The name, "synaptic fibres" is given to fibres special to a cicatrix. These are always firmly attached to the bundles of conjunctive tissue, whatever their origin may have been, have a very variable diameter, and possess the singular property of retraction. Three organic elements appear to be concerned in the formation of synaptic fibres, fibrin, the endothelial cells, and the lymphatic cells. A new theory of cicatrisation is based on these observations.—Remarks by M. Guyon on his work on the therapeutics of urinary diseases.—Observations on the sun, made at the Observatory of Lyons with the Brunner equatorial, during the fourth quarter of 1896, by M. J. Guillaume. The results are summarised in three tables, of which the first two deal with sun-spots, and the other with the distribution of faculæ.—On the theory of surfaces, by M. A. Pellet.—Discharge by the Röntgen rays, by M. Jean Perrin. The effect produced upon a charged conductor by the Röntgen rays is shown to consist of two effects, one depending upon the nature of the gas alone, the other upon the nature of the metal.—Existence of anode rays, analogous to the kathode rays of Lénard and Crookes, by M. P. de Heen.—Photography of the electric radiations of the sun and of its atmosphere, by M. P. de Heen (see p. 447).—Estimation of atmospheric ozone on Mount Blanc, by M. Maurice de Thierry. The air at the summit of Mount Blanc having, on several occasions, showed presence of ozone by qualitative reactions, an attempt was made to estimate the amount quantitatively. The estimation was carried out at Chamonix and at the Grands-Mulets by means of the oxidising action upon an alkaline arsenite in presence of potassium iodide. The amounts found were from two to four times greater than at Montsouris.—Action of dilute nitric acid upon certain metallic nitrates in presence of ether, by M. Tanret.—The commercial transformation of oleic acid into stearolactone and monoxystearic acid, by M. David.—Action of aluminium chloride upon camphoric anhydride, by M. G. Blanc. The acid $C_9H_{14}O_2$, previously described as the result of this reaction, has now been identified with the isolauronolic acid of Kœnigs and Hœrlin, the campholitic acid of Noyes, and the camphothetic acid of Walker.—On a new method of sterilising by heat, under pressure, by M. W. Kühn.—On the larva of *Thrixion Halidayanum*, Rond., of the tribe Tachininæ, parasite of *Leptynia hispanica*, Bol., by M. J. Pautel. The complete life-history of this species has been studied.—Latent and plasmatic life of certain Uredineæ, by M. J. Eriksson. The fungus appears to be derived from certain special corpuscles present in the chlorophyll granules of the host.—Contribution to the physiology of grafting, by MM. Gustave Rivière and G. Bailhache.—On a method of extracting gold from an auriferous mineral, by M. Ém. Serrant.

GÖTTINGEN.

Royal Society of Sciences.—The *Nachrichten*, Part 4, 1896 (physico-mathematical section), contains the following memoirs communicated to the Society.

November 21.—A. Schoenflies: on the representation of "cubes" of various dimensions upon one another. H. Burkhardt: theory of linear groups of point-aggregates on algebraic curves. H. Weber: on a theorem in integral calculus employed in the theory of numbers. E. von Weber: on linear connexes. W. F. Osgood: on non-uniform convergence and the integration of series term by term. W. Voigt: kinetic considerations relating to the theory of evaporation, &c.

December 5.—P. Stäckel: on Goldbach's empirical theorem that every even number may be presented as the sum of two primes.

December 19.—P. Bachmetjew: results of an inquiry on the dependence of electrical earth-currents on the fluctuations in the level of the ground-water in Bulgaria. O. Wallach: researches made in the Göttingen University Chemical Laboratory; (1) on the absorption of violet rays by certain non-saturated ketones; (2) on new compounds of the fenchon-series; (3) on certain condensation-products of cyclic ketones; (4) synthesis of a partially-hydrated methyl-fluorine. A. Hurwitz: on the quaternionic theory of numbers. Vice-Admiral de Jonquières: two errata in vol. ii. of Gauss s Works.

ST. LOUIS.

Academy of Science, January 4.—Dr. Amand Ravold gave a microscopic demonstration of Widal's test for typhoid fever, demonstrating that after the disease has existed for four days or more the blood of typhoid patients, probably because of some contained antitoxine, possesses the power of inhibiting the motion of typhoid bacilli from a pure culture introduced into it within a period of one hour or less, whereas in normal blood similar bacilli retain their power of locomotion for an indefinite length of time. It was stated that typhoid blood possesses this property, even after having been dried for a period of four weeks or more, so that a few drops obtained from a person suspected of having the disease may be sent to suitable places for applying the test, thus rendering comparatively easy the early diagnosis of a disease which in its early stages presents many clinical difficulties.—Prof. F. E. Nipher gave preliminary results of partially completed experiments, made through the courtesy of the Burlington and Illinois Central Railroads, to determine the frictional effect of trains of cars on the air near them. His apparatus consists of a cup collector supported on a bar capable of sliding in guides on a clamp attached to the window-sill of the car. The bar is thrust out to varying distances up to 30 inches. The mouth of the collector is turned in the direction of motion of the train. The pressure due to the motion is conveyed through a rubber tube attached to the rear of the collector, and passing lengthwise through the bar to a water

manometer. The manometer has a tube with a rise of 4 or 5 in 100, and is provided with a pivotal mounting and a level. The pressure near the train is comparatively small, and increases as the collector is thrust further out. It approaches a limit corresponding to the train velocity at the instant. Prof. Nipher finds the relation between the limiting pressure and velocity to agree exactly with the formula

$$P = \frac{\delta}{2} v^2$$

where v is the train velocity in centimetres per second, P is the pressure in dynes to the square centimetre, and δ is the density of air in C.G. units at the temperature and pressure of the observations. He finds the pressure a maximum when the axis of the collector is parallel to the direction of motion with the mouth to the wind. Turning the collector until its axis makes an angle of about 60° with this position, the pressure reduces to zero. At greater angles the pressure becomes less than atmospheric pressure by an amount which reaches a maximum at an angle of 90°, and passes through a minimum at an angle of 180°, when the collector is in a trailing position. The sum of the coefficients for the two positions of maximum compression and minimum exhaust is almost exactly the same as Langley obtained with a pressure board when exposed normally to the wind. The result shows that a large amount of air is dragged along with the train, the motion being communicated to air many feet away. This air is a source of danger to one standing too near the train when at full speed. One is likely to be toppled over, and the blow of the air communicates a motion of rotation which may cause one to roll under the train if the nature of the ground does not prevent such a result. It was remarked, however, that where trains have a right to run at any speed, no prudent person would stand so near to a train as is necessary in order to be in danger from this source.—The following officers were declared elected for the year 1897 :—President: M. L. Gray. First Vice-President: E. A. Engler. Second Vice-President: Charles R. Sanger. Recording Secretary: William Trelease. Corresponding Secretary, E. C. Runge. Treasurer: Enno Sander. Librarian: G. Hambach. Curators: Julius Hurter, J. H. Kinealy, E. Evers. Directors: M. H. Post, Joseph Grindon. (Signed) William Trelease, Recording Secretary.

AMSTERDAM.

Royal Academy of Sciences, January 2.—Prof. Stokvis in the chair.—Mr. Jan de Vries on accelerations of plane motion.—Mr. Jan de Vries read a second paper on geometrical proofs of arithmetical theorems.—On behalf of Mr. Gegenbauer, of Vienna, on the resultant of two consecutive denominators of a certain regular continuous fraction.—Prof. J. A. C. Oudemans made a communication concerning the contents of the fifth section of his report on the triangulation of Java. Of all the sides, both the primary and the secondary ones, it contains the azimuths and the distances. According to the author's calculations, the latter ought to be increased by about two-millionths, to be reduced to mètres des Archives, but by about four-millionth, to reduce them to mètres Internationaux. It is true that the "Comité International," trusting to measurements executed by the "Commission mixte," assumes the above-mentioned standards to be equal in length (though this equality has not been controlled by direct comparison), but the measurements carried out by the Netherlands Committee for the mètre led to the result that the mètre International is shorter than the mètre des Archives by more than 2 μ. At the close of the work the wish is uttered "that the Comité mixte may as yet decide to execute a series of direct comparisons at 0° C. and at high temperatures, between the mètre International and the mètre des Archives.—Prof. Lorentz, on behalf of (*a*) Mr. A. Smits: Measurements with the micromanometer. This instrument, with which differences of pressure as small as 1/4000 mm. of mercury can be observed, consists of a U-shaped tube, the upper parts of whose legs are widened. It contains two fluids, viz. aniline in the lower and narrower part, and upon it, on either side, a quantity of water, whose surface is in the wider part of the tube; the position of the plane separating the two fluids is read with a kathetometer. The object of the research (conducted in the Utrecht Physical Laboratory) was to determine the difference between the vapour pressure at 0° C. of pure water and that of very dilute solutions. For this purpose it was necessary to exhaust the manometer with a mercurial air-pump, some oil being poured on the water on both sides, and to arrange suitable connections either between the two legs or between them and bulbs containing water and a solution. For all these connections mercury joints were employed. Bulbs containing P_2O_5 and H_2SO_4 served for drying, the latter substance at the same time for the absorption of aniline vapour. The measurements were made with solutions of NaCl, KOH, and cane-sugar, the number of gramme molecules in 1000 gr. of water varying in the first case from 1·83 to 0·020, in the second case from 2·64 to 0·013, and in the last case from 1·88 to 0·021. The coefficient i in Van 't Hoff's well-known formula was found to be constant, by 1 for the sugar solutions, but the two other substances yielded values diminishing with decreasing concentration. The extreme numbers were 1·77 and 1·40 for NaCl and 2·17 and 1·5 for KOH. (*b*) Prof. V. A. Julius (Utrecht) on the question: Is the maximum vapour pressure solely a function of temperature? After having discovered the causes of the irregularities presented by the micromanometer in the first stage of Mr. Smit's experiments (a trace of aniline vapour sufficed to prevent the regular condensation of the vapour of water), the author could put to a very severe test the opinion expressed by Wüllner and Grotrian (*Wied. Ann.*, vol. xi. p. 545), according to which a vapour can be compressed above what is commonly called its maximum tension, even though a certain quantity of the liquid be present. Experiments with water and a solution of NaCl at 0° C. did not confirm this view. A space containing a sufficient amount of the liquid and filled for the remainder with saturated vapour, could be diminished by $\frac{1}{6}$ of its original volume. In this way a temporary elevation of pressure was produced, but in a short time the original pressure was re-established by condensation. A change of pressure as small as 1/18000 of its value could have been detected.—Prof. Van der Waals presented for publication in the Academy's *Proceedings:* (1) On behalf of Prof. Kamerlingh Onnes a paper, by Mr. L. H. Siertsema, on an investigation carried out in the Leyden Physical Laboratory, concerning the influence of pressure upon the natural rotation of the plane of polarisation in solutions of cane-sugar. (2) On behalf of Prof. C. A. Lobry de Bruyn and Mr. W. Alberda van Ekenstein, a communication to the effect that the chitosamine from chitin (hitherto wrongly called glucosamine) can be obtained in the free and the crystallised state from the hydrochloric salt and methylalcoholic sodium. It easily changes into another crystalline body, which can be prepared direct from fructose (levulose) and methylalcoholic ammonia. Consequently there is a relation between the last-mentioned sugar and that from which chitosamine is obtained. With silver carbonate HCl chitosamine yields through oxidation a substance, which with phenyl-hydrazine directly gives abundant glucosazon at about 70°, and so it may be glucoson (which is a keton-aldehyde). (3) On behalf of Mr. D. F. Tollenaar, a paper on some experiments with two kathodes, square aluminium plates, the distance of which could be varied. The phosphorescence figures on the wall of the globular screen consisted of a zone of very intense green, bordered on either side by two rings. By changing the intensity of the current towards one of the kathodes, the motion of one of the rings was found to obey the rules of deflexion figures given by Goldstein, but the other ring behaved quite differently. When a triangular or square plate was used, and a metal globe as screen, remarkable shadows were obtained, viz. a triangle and a square respectively, which looked as if turned through angles of 60° and 45° with respect to the kathode. (4) On behalf of Mr. S. Krüger, S.J., a paper on the ellipsoidal forms of equilibrium of a revolving homogeneous liquid body. Prof. G. H. Darwin (*Proc.* Roy. Soc., xli.) does not sufficiently account for the method of disregarding errors, which he proposed in the case of very elongate ellipsoids. The kinetic energy of the revolving motion in the case of Jacobi's ellipsoid does not become a maximum "when the length of the ellipsoid is about five times its diameter" (*l.c.*, p. 334), but when the ratio of the longest to the shortest axis is about $9\frac{1}{2}$. When the halves of the axes of Jacobi's ellipsoid are represented by a, b, and c, and this series of forms of equilibrium is continuous, so that $a^2 - b^2/a^2 - c^2$ increases from 0 to 1, then an infinitely great number of bifurcation forms (Poincaré, *Acta mathem.*, vii.) are met with, but *not any one of these figures is found as long as* $a^2 - b^2/a^2 - c^2 \leqq \frac{3}{4}$. The limit form of the ellipsoids of revolution is at the same time a bifurcation form, with a series of non-ellipsoidal forms of equilibrium.