

THE London Polytechnic Council, a joint committee comprising representatives of the Council of the City and Guilds of London Institute, the Technical Education Board of the London County Council, and the central governing body of the City Parochial Foundation, adopted the following resolution at a specially convened meeting on Friday last:—"The London Polytechnic Council having had under their consideration the London University Commission Bill, and being satisfied that the students of London polytechnic institutes pursuing a course of study approved by the University under one or more of the recognised teachers of the University will enjoy equal facilities with students of a school of the University in graduating at the University, expresses its approval of the Bill and its hope that the Bill may be passed during the present Session, as affording a satisfactory solution of the London University question."

THE following are among recent appointments:—W. W. Watts, assistant geologist on the Geological Survey of the United Kingdom, to be assistant professor in Geology at the Mason College, Birmingham; Prof. R. C. Woodward to be president of the University of South Carolina; Dr. C. E. Beecher to be University professor of historical geology at Yale University; Dr. L. V. Pirsson to be professor of physical geology in the Lawrence Scientific School; Dr. F. E. Hull to be professor of physics in Colby University; Prof. William A. Rogers to be professor of physics in Alfred University at Alfred, N.Y.; Dr. Jaeger and Dr. Brodhun to be professors at the Reichsanstalt at Charlottenburg; Dr. Ignaz Zakezewski to be full professor of experimental physics at the University at Lemberg; Dr. H. Finger to be assistant professor of organic chemistry at the Polytechnic Institute in Darmstadt; Dr. A. L. Foley to be professor of physics in the University of Indiana; Dr. R. J. Aley to be professor of mathematics, and Mr. E. B. Copeland to be assistant professor of botany in the same University; Mr. T. I. Pocock to be assistant geologist on the Geological Survey of the United Kingdom; Dr. W. F. Hume and L. Gorringe to be assistants on the Geological Survey of Egypt.

THE London University Commission Bill passed through the House of Lords on Tuesday. The Duke of Devonshire, in moving the second reading on Friday last, said the Bill was substantially the same as the one which passed through the House with little discussion last Session, but for which, unfortunately, time did not allow full consideration in the other House. Certain modifications had been introduced which were the result of communications which had been in progress during almost the whole of the Session between those interested, and there was reason to hope that the difficulties which prevented the Bill from passing into law had been removed, and that it would pass now as practically an unopposed measure. He was sorry to say very considerable time had elapsed since Lord Cowper's Commission reported, and during that time a very great change had taken place in the higher education of the City of London, and this had caused the necessity for certain alterations of procedure in the Bill. Almost the only point discussed in the House last year was that which affected, or was supposed to affect, denominational colleges and principally King's College. The agreement which was arrived at last year had been embodied in somewhat different terms in the present Bill, and he believed it was now practically accepted by King's College and the principal bodies concerned, and was now not objected to by Lord Herschell, who took a strong line of opposition last year. The Earl of Kimberley said as he was a member of the Senate of the University he was aware of the circumstances to which the noble Duke had alluded, and which led to the introduction of this amended Bill. He did not think it was necessary or desirable to go into the provisions now; he would confine himself to saying the present form was the result of very careful consideration, he might say a compromise between the different interests. There was very sanguine hope, and he sincerely trusted it would be fulfilled, that the Bill in its present form was probably in the only form that would be acceptable to all parties concerned, and he hoped it might pass. The text of the Bill is printed in the *Times* of Saturday, July 24, from which we learn that the gentlemen who are to fill the statutory commission under the Bill are—Baron Davey, the Bishop of London, Lord Lister, Sir William Roberts, Sir Owen Roberts, Prof. Jebb, and Mr. E. H. Busk, the Chairman of Convocation of London University.

SCIENTIFIC SERIALS.

*Wiedemann's Annalen der Physik und Chemie*, No. 5.—Polarisation capacities, by C. M. Gordon. These were determined by a new arrangement of Wheatstone's bridge, in which a known capacity and resistance are introduced into one branch, and an electrolytic cell of unknown capacity and resistance in the other. A minimum is obtained in the telephone when the capacities are inversely as the resistances in the remaining branches. The author found that for small currents the polarisation is a reversible process, and that the counter E.M.F. is rigidly given by Kohlrausch's equation  $E = \frac{1}{c} \int idt$ . The best results were obtained with electrodes of "platinised" platinum.—Effect of concussion and heat upon magnetism, by Carl Fromme. Concussion exerts a well-defined effect upon magnetisation, which is independent of that produced by deformation, and of the magnetic history of the material. It acts directly upon the molecular magnets, probably by producing groupings of them, which reduce the magnetic moment and lower the susceptibility. The effects of concussion may be imitated by sending an alternating current through the magnetising coil and gradually reducing it to zero. Also, in the case of iron wires, by making them vibrate transversely.—Röntgen rays by A. Voller and B. Walter. As exhaustion is increased, less heat is developed in a discharge tube. The production of heat gives way before the production of Röntgen rays. The vacuum may be regulated by heating a small quantity of caustic potash in a side tube. The heating is best done by a small coil of wire carrying a current, wound on the outside of the side tube. The refractive index of diamond for X-rays does not differ from unity by more than 0.0002. This gives a limiting value for the wave-length of these rays. It is  $1 \mu\mu$ , or the 600th part of that of the D line, assuming, of course, that the waves are transverse.—Co-efficient of thermal expansion of the white marble of Carrara, by I. Fröhlich. This is important, in view of its frequent use for inductance standards. Between  $15^\circ$  and  $100^\circ$  the mean coefficient of linear expansion is 0.000012.—Change of length of wooden rods with moisture and heat, by H. Stadthagen. Deal rods cut along the fibre were impregnated with linseed oil and painted with shellac varnish. The impregnation was carried out under a pressure of  $1\frac{1}{2}$  atmospheres and a temperature of  $65^\circ$ . It was found that the process does not make the rods independent of moisture, since the smaller pores remain accessible to it. The coefficient of expansion for 1 per cent. of relative humidity is 0.00001. The American method of compression at  $200^\circ$  under 14 atmospheres would probably yield better results.

SOCIETIES AND ACADEMIES.

PARIS.

Academy of Sciences, July 19.—M. A. Chatin in the chair.—The election of M. Virchow as Foreign Associate, in the place of the late M. Tchebichef, was approved by the President of the Republic.—Establishment of a uniform state in a pipe of large rectangular section, by M. J. Boussinesq.—Researches on the state in which elements other than carbon are found in cast iron or steel, by MM. Ad. Carnot and Goutal. The attack of the metal by appropriate solvents shows that silicon is present chiefly as the silicide FeSi. If manganese is present, however, the silicon combines with it in preference to iron. Sulphur behaves similarly, all the manganese apparently being turned into sulphide before any iron sulphide is formed. Phosphorus and arsenic show remarkable differences in their behaviour towards the solvent employed (a solution of potassium-copper chloride), the phosphorus being combined with the iron forming Fe<sub>3</sub>P, while the arsenic is uncombined and simply dissolved in the casting.—Note relating to a memoir by M. D. Eginitis on the climate of Athens, by M. Lœwy.—Ephemeris of the periodic comet of D'Arrest, by M. G. Leveau.—On the quadratic integrals of dynamics, by M. P. Painlevé.—On the integration of systems of partial differential equations of the first order of several unknown functions, by M. Jules Beudon.—On surfaces referred to their lines of zero length, by M. Eugène Cosserat.—On a practical method of setting out gear teeth, by M. L. Lecornu.—On the phenomenon of the electric arc, by M. A. Blondel. In the experiments described, the passage of the current across the carbon poles was only broken

for 1/200th of a second, during which the back E.M.F. of the poles was opposed to a single cell. The effect of the cooling of the carbons was thus eliminated, and the conclusion is drawn from the experiments, that the arc behaves exactly like an ordinary resistance, and presents no counter electromotive force comparable in magnitude to the difference of potential of the carbon poles.—On the action of electric charges upon the discharging power given to air by the X-rays, by M. Émile Villari.—On the properties of gases traversed by the X-rays, and on the properties of luminescent or photographic bodies, by M. G. Sagnac. A connection is traced between the rapidity of discharge of a conductor by the gases exposed to the X-rays, and the luminescence of the same gases.—The penetration of metals by the Röntgen rays, by M. Radiguet.—On the spectrum of carbon, by M. A. de Gramont. A method is described for obtaining the spectrum of carbon free from foreign lines. Short intense sparks are passed through an alkaline carbonate, kept in a pasty state by a red-hot platinum spiral, the whole being placed in an atmosphere of dry carbonic acid or hydrogen. The spectrum obtained was identical with that given by Siberian graphite, with the exception of a doubtful ray in the red exhibited by the latter. Retort carbon, in spite of careful purification, gave numerous rays attributable to impurities such as calcium, barium, and iron.—Action of copper hydrate upon solutions of silver nitrate, by M. Paul Sabatier. The precipitation of cupric nitrate solutions by silver oxide appears to give rise to a basic nitrate of copper and silver.—Hydrobenzamide, amarine, and lophine, by M. Marcel Delépine. A thermochemical paper.—New syntheses with cyanosuccinic ether, by M. L. Barthe.—On some combinations of phenylhydrazine and metallic nitrates, by M. J. Moitessier.—On the aloins, by M. E. Léger.—The function of auto-intoxication in mechanism of the death of animals deprived of their subrenal capsules, by M. D. Gourfein.—Nuclear purification at the commencement of ontogenesis, by M. L. Cuénot.—Variations of the lower fungi under the influence of the medium, by M. Julien Ray.—On the germination of grains of Leguminosæ containing parasitic larvæ, by M. Edmond Gain.

## AMSTERDAM.

**Royal Academy of Sciences,** June 26.—Prof. van de Sande Bakhuyzen in the chair.—Prof. Bakhuis Roozeboom, on melting-lines of systems of two and three organic substances.—Mr. Hamburger read a paper on a method of separation and quantitative determination of diffusible and non-diffusible alkali in serous fluids.—Prof. van Bemmelen made, on behalf of F. Schreinemakers, a communication concerning an inquiry into equilibriums in systems of three components in which two liquid phases occur.—Prof. Kamerlingh Onnes presented a paper, by Mr. E. van Everdingen, on the Hall effect and the increase of magnetic resistance in bismuth; and, on behalf of Mr. A. van Eldik, measurements of the capillary ascent of the liquid phase of a mixture of two substances in equilibrium with the gaseous phase.—Prof. Haga presented, on behalf of Dr. C. H. Wind, a contribution entitled "On the influence of the dimensions of the source of light in Fresnel's diffraction phenomena, and on the diffraction of X-rays" (second paper). In this paper the theory developed in the first paper was applied to the case of a narrow rectangular screen for obstacle. The shadow must consist principally of a nucleus, surrounded by maxima, or else—if the screen is very narrow—an illuminated space in the middle between minima, again followed by maxima. The distance of these maxima and minima from each other renders it possible to estimate the wave-length. Experiments with rays of light, as well as with X-rays, yielded diffraction images as expected; and from this it follows—at any rate, that in the case of X-rays— $\lambda$  is very small.—Prof. Franchimont, on the action between methyl-nitramine and potassium nitrate in an aqueous solution at the ordinary temperature. The principal products are potassium nitrate, nitrogen and methylalcohol, besides dimethylnitramine and isodimethylnitramine. Secondary products are, among others, a little carbonic acid and a very volatile substance with a strong isonitril smell. The principal reaction is regarded by the author as an addition of methylnitramine to nitrous acid, followed by a decomposition of the product into nitric acid and diazomethyl hydrate; the latter then yields nitrogen and methylalcohol, and at the same time methylates a small portion of the methylnitramine. The author further states that all acid and all neutral aliphatic nitramines, and also nitro-urea, when treated with zinc in a solution of acetic acid, to which  $\alpha$  naphthylamine, dimethylaniline, aniline, metaphenyl-

enediamine, &c., yield colouring matters, and that these reactions closely resemble those of nitrous acid, though an examination of the colouring matters themselves gives rise to doubt whether they are due to those reactions.—Prof. van der Waals presented: (a) On behalf of Prof. C. A. J. A. Oudemans, a paper in which the author publishes the finding of some fungi, hitherto unknown and injurious to agriculture, as *Brachyspora pisi* on the leaves of green peas (*Pisum sativum*), *Marsonia secalis* on the leaves of rye (*Secale cereale*), *Hendersonia grossularia* on the leaves of the gooseberry (*Ribes grossularia*), and *Fusicladium fagopyri* on the leaves of buckwheat (*Fagopyrum esculentum*). The author further points out that the names *Helminthosporium gramineum*, Eriksson, *Helm. teres*, Sacc., and *Helm. gramineum*, Rabh., are synonymous; and that the last-mentioned, being the oldest, ought to be retained; and finally describes a new genus of *Verpa*, growing in Java on refuse of *Indigofera tinctoria*, from which the colouring matter has been extracted, and which plant is eaten by the Javanese; the author calls this genus *Verpa indigocala*. (b) On behalf of Prof. Lorentz, a paper by Dr. C. H. Wind, on the dispersion of magnetic rotation of the plane of polarisation, with a note added by Prof. Lorentz. (c) On behalf of Dr. P. Zeeman, a paper on doublets and triplets in the spectrum produced by external magnetic forces (ii.).

## BOOKS RECEIVED.

BOOKS.—A Course of Practical Chemistry: M. M. P. Muir. Part I. Elementary (Longmans).—Organic Chemical Manipulation: Dr. J. T. Hewitt (Whittaker).—Geographical Journal, Vol. ix. (Stanford).—A System of Medicine: edited by Dr. T. Clifford Allbutt, Vol. 3 (Macmillan).—The Potentiometer and its Adjuncts: W. C. Fisher (Electrician Company).—Cuirassés et Projectiles de Marine: E. Vallier (Paris, Gauthier-Villars).—Les Huiles Minérales: F. Miron (Paris, Gauthier-Villars).—Physikalisches Praktikum: E. Wiedemann and H. Ebert, Dritte Verbesserte und Vermehrte Auflage (Braunschweig, Vieweg).—La Cure d'Altitude: Dr. P. Regnard (Paris, Masson).

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