

A FUND of 100,000*l.*, which the Knights of Columbus of the United States have been collecting for more than two years for the Catholic University at Washington, has been completed. The gift, says *Science*, will be presented to the institution some time during the Christmas holidays. From the same source we learn that the board of regents of the University of California has announced the completion of the additional fund of 120,000*l.* for the erection of the hospital building which is to be a part of the college of medicine of the University.

THE late Right Hon. G. W. Palmer bequeathed 10,000*l.* to University College, Reading. We learn from the *Reading University College Review* for December that Mr. Alfred Palmer has suggested that this legacy should be devoted to building a university library, and on behalf of Mrs. G. W. Palmer, his sisters, and himself, has offered to supplement it to such extent as will be necessary to enable a suitable library to be built on the site reserved for the purpose, and also to provide an endowment fund for maintenance. The library would thus become a memorial to Mr. G. W. Palmer. The council of the college has approved the proposal gratefully.

THE Eugenics Education Society is organising a course of instruction on the groundwork of eugenics which will be given during the spring and summer of 1914. Dr. L. Doncaster will deliver eight lectures on evolution and heredity at the Imperial College of Science, South Kensington, on Fridays, at 5.30 p.m., beginning January 23, and Dr. M. Greenwood, Jun., will give instruction in statistical methods as applied to problems in eugenics, at the Lister Institute, Chelsea Bridge Road, S.W., on Fridays at 5.30 p.m., beginning May 1. Dr. Doncaster will discuss the general evidence for evolution and the more important theories of evolution, variation, and mutation, theories of heredity, old and new, the relation between heredity and sex, and the facts of heredity in man, together with the bearing of all these things on human improvement. Dr. Greenwood will give an outline of statistical work and theories bearing on heredity, and will explain the principal statistical constants, such as means, standard deviations, and coefficients of correlation. Their calculation will be illustrated on suitable data. The fee for the combined courses will be one guinea, to be paid in advance to the hon. secretary, Eugenics Education Society, Kingsway House, Kingsway, W.C., to whom all inquiries should be addressed.

THE report of the work of the department of technology of the City and Guilds of London Institute for the session 1912-13 has now been published by Mr. John Murray. At the recent examinations 21,878 candidates were presented in technology from 448 centres in the United Kingdom, and of these 13,618 passed. By including 812 candidates from India, from the overseas Dominions, and from other parts of the British Empire, and all candidates for special examinations, the total number examined was 25,339. During the session ninety-one centres were visited by the institute's inspectors, several centres receiving two or three visits in order to complete the inspection. It is satisfactory to find the report stating that there can be no doubt that the teaching of technology has greatly improved during the past few years; but it is noted that the examiners have still to direct attention to the insufficient knowledge that some candidates possess of the principles of their subjects, and to the lack of practical knowledge shown by others. The inability of candidates to express themselves clearly is, the report says, perhaps not so noticeable as in past years, but in no fewer than

ten subjects the examiners have to direct attention to the difficulty that simple arithmetical calculations present to many candidates—a defect which can only be attributed to insufficient preliminary training.

THE December number of *The Popular Science Monthly* contains an article on the place of study in the college curriculum, by Dr. P. H. Churchman, of Clark University. In it he points out that a renaissance of the old belief in the value of strenuous intellectual work for the young man of eighteen to twenty-two seems to be coming, and that the older universities of the United States are beginning to weed out the incompetents who for several generations have used them as social clubs. For a time this step will mean a decrease in numbers, and to those who only look at the surface of things numbers mean success. The idea that it is not necessary to insist that all those in residence at a college should be real students is called "Oxonian" by the author, and he admits that it has the advantage over the Continental idea of much learning and nothing else. He values highly all those college institutions of a non-intellectual type which contribute to the production of the "college-bred man," but he points out that the college loafer who is up for social reasons avoids strenuous effort even of the non-intellectual kind. He has no confidence in the annual or semi-annual college examinations as a means of discrimination between the idler and the earnest student, and reminds his readers of well-known candidates at Princeton who, after idling away the session, obtained respectively a first class in psychology after two hours' grind at some printed notes and a second class in zoology after five hours' coaching. No examination of the usual type has ever been invented which cannot be circumvented by the aid of an intelligent crammer. He advocates the less formal monthly examination or the better plan of imposing examination tests at any moment without warning and frequently. Such examinations afford the best test of that gradual growth of intellectual power which comes from steady and sustained effort over a long period, and from intercourse and discussion with superiors and colleagues developing along the same or similar lines.

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, December 11.—Sir William Crookes, O.M., president, in the chair.—A. Mallock: Intermittent vision. When a wheel turns so rapidly that the separate spokes cannot be seen or easily followed by the eye, and if at the same time the observer receives a small mechanical shock of almost any kind, the spokes appear almost stationary for a fraction of a second. The appearances depend on the speed of rotation, on the brightness of the illumination, and, to a lesser degree, on the nature of the shock. Suitable shocks are given by the contact of the feet with the ground, as in walking, by tapping the head or body, and in many other ways. Experiments are described bearing on the relation between the appearances and the speed of rotation, and an explanation is suggested depending on an assumed variation of sensibility produced by a slight shock. This variation, which it appears is rapidly extinguished, has a periodic time of about $1/18$ second, but this differs slightly for different individuals.—Prof. R. J. Strutt: Attempts to observe the production of neon or helium by electric discharge. The present experiments were begun in the hope of confirming the work of Collie and Patterson (*Trans. Chem. Soc.*, 1913, vol. ciii., p. 419, and *Proc. Chem. Soc.*, 1913, vol. xxix., p. 217). The results have been negative, whether from a failure to

appreciate the proper conditions for the production of neon by electric discharge through hydrogen or from some other cause.—Walter Wahl: The relations between the crystal-symmetry of the simpler organic compounds and their molecular constitution. Part iii.—Prof. G. G. Henderson and I. M. Heilbron: The selective absorption of ketones. The authors have found that the selective absorption of a large number of simple ketones is of the same type, since the absorption bands of all are practically identical. They suggest that the absorption of these compounds may be due to electronic disturbances accompanying oscillations which arise from the alternate formation and breaking down of unstable ring systems within the molecule.—F. E. Smith: Absolute measurements of a resistance by a method based on that of Lorenz. The instrument employed differs from all other forms of apparatus based on the method of Lorenz, inasmuch as two discs are employed instead of one. The disturbing effect of the earth's magnetic field is thus practically eliminated. The result of the experiments is that a resistance of one international ohm is equal to 1.00052 ± 0.00004 ohms (10^9 cm./sec.).—A. N. Shaw: A determination of the electromotive force of the Weston normal cell in semi-absolute volts. With a preface by Prof. H. L. Callendar. This paper represents the completion of work commenced by Prof. H. L. Callendar and Mr. R. O. King in the years 1894 to 1898. The final result for the E.M.F. of the Weston cell in semi-absolute volts comes out 1.01827 at 20° C., which agrees closely with the mean of the best recent determinations, namely 1.01824.—F. E. Rowett: Elastic hysteresis in steel. A thin-walled steel tube was coupled to a coaxial tube of greater section and length. The compound tube was twisted, and the twist in each component measured by spirit levels. The twist of the large tube, in which the stress and therefore also the hysteresis was small, measured the torque applied to the small tube. The elastic hysteresis in hard-drawn tubes was about one-eighth of that in the same tube after annealing.—F. W. Aston: A simple form of micro-balance for determining the densities of small quantities of gases. (1) A simple micro-balance is described, by which the densities of gases may be determined relative to some standard gas, using a null method; (2) about half a cubic centimetre only of the gas is required; (3) the determination can be performed in a few minutes, with an accuracy of 0.1 per cent; (4) possibilities of its use in other fields of research are indicated.—T. R. Merton: A second spectrum of neon. The spectrum of neon has been investigated under different conditions of electrical excitation. It has been found that with a condensed discharge a second spectrum is developed, as in the case of argon, krypton, and xenon. The strongest lines of the ordinary spectrum are also feebly visible when a condensed discharge is used.

DUBLIN.

Royal Dublin Society, November 25.—Prof. James Wilson in the chair.—Prof. T. Johnson: *Ginkgophyllum kiltorkense*, sp. nov. The author described a stalked leaf of a *Ginkgophyllum* from the Yellow Sandstone beds of Kiltorcan, county Kilkenny. The bilobed leaf is 5×7 cm., and shows forking venation clearly in its dichotomising segments. It suggests comparison and affinity with *G. Grasseti*, Saporta, from the Permian of Lodève. The specimen indicates that the *Ginkgoaceæ* occurred in the Devonian epoch. Impressions of the stem, showing distant leaf-scars arranged spirally, and intervening Lyginodendron-like cortical fibres, were also described, as well as certain seed-like impressions.—W. R. G. Atkins: Oxydases and their inhibitors in plant tissues. Part ii., The leaves and flowers of Iris. These gave the indirect

oxydase reaction throughout, though not in many instances until after the removal of inhibitors by hydrogen cyanide. Prolonged darkness has no decided effect upon the distribution of enzyme or inhibitor. The occurrence of the natural sap pigments in the flowers of about thirty varieties of Iris has been correlated with the presence of oxydase and inhibitor.

PARIS.

Academy of Sciences, December 8.—M. F. Guyon in the chair.—H. Deslandres and V. Burson: The action of the magnetic field on the lines of the arithmetical series in a band of lighting gas. Variation of the number of the lines with the intensity of the field. A study of the violet band $\lambda 3889$ in the spectrum of coal gas. The lines of a given arithmetical series are all either divided or displaced in the same manner, the magnitude only of the divisions or displacements being variable from one line to another.—G. Gouy: The absence of sensible refraction in the sun's atmosphere. A discussion of the possible effects of abnormal dispersion in lines of emission or absorption from the sun, with especial reference to the views of W. H. Julius.—Ph. Barbier and R. Locquin: The transformation of citronellol into rhodinol. It is shown that pure rhodinol, the main constituent of essence of roses, can be obtained from citronellol.—M. Duhem was elected a non-resident member.—J. Guillaume: Observations of the sun made at the Observatory of Lyons during the third quarter of 1913. The results are given in three tables showing the number of spots, their distribution in latitude, and the distribution of the faculæ in latitude.—Maurice Gevrey: Indefinitely derivable functions of given class and their rôle in the theory of partial equations.—G. Bouligand: The problem of Dirichlet in an indefinite cylinder.—MM. Maurian and de Moismont: Comparative measurements of the friction of air on surfaces of different natures.—P. Idrac: Observations on the flight of gulls behind ships. In the hovering flight of birds in the neighbourhood of moving ships, the birds are sustained by ascending air currents due to the motion of the vessel.—Victor Valcovici: The hydrodynamical resistance of an obstacle in a movement with surfaces of slipping.—A. Bilimovitch: Special canonical transformations.—Marcel Brillouin: The propagation of sound in a non-absorbent heterogeneous fluid.—Edouard Guillaume: The velocity of light and Carnot's principle.—P. Vaillant: The polarisation capacity of an electrode submitted to an alternating electromotive force and a method for its determination. The polarisation capacity appears to start from a very high value for zero polarisation, decreases rapidly to a minimum, and again increases continuously. Its order of magnitude is 10 microfarads per sq. mm. for a difference of potential of 0.5 volt between the electrode and the electrolyte.—Marius Hartog and Philip E. Belas: The trajectory of a permeable particle moving without inertia in a bipolar Newtonian field of force.—G. Foex: Molecular fields in crystals and energy at the absolute zero.—E. Tassilly: Determination of the velocity of formation of the diazo-compounds. Since a colouring matter was the product of the reaction studied, the reaction velocity was followed with the Féry spectrophotometer. The reaction is shown to be bimolecular.—René Dubrisay: The neutralisation of periodic acid. Periodic acid in solution behaves as a tribasic acid.—J. Barlot and Ed. Chauvenet: The action of carbonyl chloride upon phosphates and the natural silicates.—P. Brenans: The nitration of paraiodoacetanilide.—L. Moreau and E. Vinet: Remarks on the use of wine traps for capturing the moths of *Cochylis*. These traps, although useful as supplementary means of destruction, cannot be relied upon

as the sole protection against *Cochylis*.—Mme. Marie **Phisalix**: The independence of the toxic and vaccine properties in the cutaneous mucous secretion of Batrachians and some fishes.—L. **Lapicque** and R. **Legendre**: Relation between the diameter of nerve fibres and their functional rapidity.—Jacques **Pellegrin**: The presence of deep-sea fishes on the Paris market. Owing to the increasing depths, up to 200 metres, at which trawling operations are now carried out, numerous specimens of fish considered as very rare are occasionally sold for food in the Paris markets. A list of the rarer forms is given, including *Pterycombus brama*, an archaic fish not represented in the Paris Museum.—J. **Athanasiu** and J. **Dragoju**: The aërial capillaries of the muscular fibres in insects.—H. **Dominici** and M. **Ostrovsky**: The action of the diffusible poisons of the Koch bacillus upon normal tissues. The results of these experiments invalidate the commonly accepted theory with regard to the pathogeny of the lesions caused by the Koch bacillus.—M. **Javillier** and Mme. H. **Tchernoroutsky**: The comparative influence of zinc, cadmium, and glucinum on the growth of some Hypomycetes. Three moulds were examined—*Poecilomyces varioti*, *Penicillium caseicolum*, and *Penicillium glaucum*—and in each case there was marked catalytic action of zinc salts in stimulating growth. Cadmium showed a similar but much smaller activity, whilst glucinum salts are inert.—Ph. **Glangeaud**: The dislocations and the amethyst-quartz lodes of Livradois. The old extension of the coal basin of Brassac.—G. **Vasseur**: New palæontological discoveries in the upper Aquitanian in the neighbourhood of Laugnac (Lot-et-Garonne). This region is remarkably rich in fossil vertebrates.—Ph. **Flajolet**: Perturbations of the magnetic declination at Lyons (Saint Genis Laval) during the third quarter of 1913.

BOOKS RECEIVED.

Die Vitamine: ihre Bedeutung für die Physiologie und Pathologie. By C. Funk. Pp. viii+193+ii. plates. (Wiesbaden: J. F. Bergmann.) 8.60 marks.

Scientific Memoirs by Officers of the Medical and Sanitary Departments of the Government of India. (New Series.) No. 60. Studies on the Mouth Parts and Sucking Apparatus of the Blood Sucking Diptera. No. 4. The Comparative Anatomy of the Proboscis in the Blood-Sucking Muscidae. By Capt. F. W. Cragg. Pp. 56+v plates. (Calcutta: Superintendent Government Printing, India.) 1s. 9d.

Recueil de l'Institut Botanique Léo Errera. By J. Massart. Tome ix. Pp. viii+408+iv plates. (Bruxelles: H. Lamertin.)

The Freedom of the Press in Egypt. By K. Mikhail. Pp. xii+37. (London: Smith, Elder and Co.) 1s. net.

The Purpose of Education. By St. G. Lane Fox Pitt. Pp. ix+83. (Cambridge University Press.) 2s. 6d. net.

Genera of British Plants. By H. G. Carter. Pp. xviii+121. (Cambridge University Press.) 4s. net.

A Practical Manual of Autogenous Welding (Oxy-Acetylene). With a Chapter on the Cutting of Metals with the Blowpipe. By R. Granjon and P. Rosemberg. Translated by D. Richardson. Pp. xxii+234. (London: C. Griffin and Co., Ltd.) 5s. net.

Elementary Graphic Statics. By J. T. Wright. Pp. xii+227. (London: Whittaker and Co.) 4s. net.

Artificial Parthenogenesis and Fertilisation. By J. Loeb. Originally translated from the German by W. O. R. King. Supplemented and revised by the author. Pp. x+312. (Chicago: University of Chicago Press; London: Cambridge University Press.) 10s. net.

Proceedings of the London Mathematical Society. Second Series. Vol. xii. Pp. lix+488. (London: F. Hodgson.)

Elementary Practical Chemistry. Part i., General Chemistry. By Prof. F. Clowes and J. B. Coleman. Sixth edition. Pp. xvi+241. (London: J. and A. Churchill.) 3s. 6d. net.

The Foundations of Science. By H. Poincaré. Translated by G. B. Halsted. Pp. xi+553. (New York and Garrison, N.Y.: The Science Press.)

Social Insurance, with Special Reference to American Conditions. By I. M. Rubinow. Pp. vii+525. (New York: H. Holt and Co.) 3 dollars net.

Handbuch der vergleichenden Physiologie. Edited by H. Winterstein. 39 Lief. (Jena: G. Fischer.) 5 marks.

Handwörterbuch der Naturwissenschaften. Edited by E. Korschelt. Lief. 69 and 70. (Jena: G. Fischer.) 2.50 marks each Lief.

CONTENTS.

	PAGE
The Peopling of Melanesia. By Sidney H. Ray	471
Regional and General Geography. By Prof. Grenville A. J. Cole	471
Text-books of Physics	473
Our Bookshelf	474
Letters to the Editor:—	
The Plumage Bill.—Dr. Henry O. Forbes	476
Intra-atomic Charge and the Structure of the Atom. (With Diagram.)—A. van den Broek	476
Wind Provinces. (Illustrated.)—R. M. Deeley	478
Amœbocytes in Calcareous Sponges.—Geo. P. Bidder; Prof. Arthur Dendy, F.R.S.	479
Reversibility of Ferment Action.—Dr. Arthur Croft Hill	479
The Origin of Climatic Changes	479
Biology of the Lake of Tiberias. By Rev. T. R. R. Stebbing, F.R.S.	480
Prof. P. V. Bevan. By A. W.	481
Notes	481
Our Astronomical Column:—	
Astronomical Occurrences for January, 1914	486
A Faint New Comet	486
The Earth's Albedo	486
Annuaire de l'Observatoire Royal de Belgique	486
Distribution of Elements in the Solar Atmosphere	486
Science in Agriculture. (Illustrated.)	487
The Chank Bangle Industry in India	487
Botany at the British Association. By C. E. M.	488
Education at the British Association	491
Beit Memorial Fellowships	492
Scientific Papers in the Smithsonian Report for 1912	493
University and Educational Intelligence	493
Societies and Academies	494
Books Received	496

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