UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

PROF. J. W. JUDD, C.B., F.R.S., has been appointed Dean of the Royal College of Science, in succession to the late Prof. Huxley.

THE following list of Royal scholarships, medals, and prizes awarded last month in connection with the Royal College of Science, London, has just been issued by the Department of Science and Art. Royal scholarships:—First year's Royal scholarships, Ernest Smith, George Marks Russell, Frank Fisher, Norton Baron; second year's Royal scholarships, Robert Sowter, Joe Crowther. Medals and prizes:—"Edward Forbes" medal and prize of books for Biology, William George Freeman; "Murchison" medal and prize of books for Geology, John Caspell; "Tyndall" prize of books for Physics, Part I., William Herbert White; "De la Beche" medal for Mining, Robert William Pringle; "Bessemer" medal and prize of books for Metallurgy, John Collet Moulden; "Frank Hatton" prize of books for Chemistry, William Longshaw. Prizes of books given by the Department of Science and Art:—Mechanics, Cecil Alwyne Selpram Baxter; Astronomical Physics, Ernest Edward Leslie Dixon, William Herbert White; Practical Chemistry, Henry William Hutchin; Mining, Robert William Pringle; Principles of Agriculture, William Williams.

THE University of Pennsylvania has issued an appeal (says *Science*) asking for an endowment fund of £1,000,000 to meet the immediate requirements of the University. Mr. Thomas McKean has given without restrictions a sum of £10,000 in addition to the £10,000 given a few months ago. A contribution of £2000 has also been received from Mr. Richard F. Loper. It is stated that this is the thirteenth contribution of a similar kind that has been received. We learn from the same source that the University of Cincinnati has received a gift of £9000 from Mr. Henry Hanna, to be used in the erection of a wing in the new University building.

SOCIETIES AND ACADEMIES.

DUBLIN.

Royal Dublin Society, April 24.—Prof. J. Mallet Purser in the chair. The following communications were read:—Dr. E. J. M'Weeney on a temporary variation in the quality of the Vartry water. [This is the water-supply of the city of Dublin.]—Dr. David Hepburn (of Edinburgh), on the papillary ridges on the hands and feet of monkeys and men. The material for this paper was supplied by the anthropological laboratory of Trinity College, Dublin, and the paper was communicated by Prof. D. J. Cunningham, F.R.S.—Mr. Walter E. Adeney, on the course and nature of fermentative changes in natural and polluted waters, and in artificial solutions, as indicated by the composition of the gases in solution.

May 22.—Mr. Thomas Preston in the chair.—The following communications were presented:—Prof Emerson Reynolds, F.R.S., note on the spectrum of argon.—Mr. W. E. Adeney, on the chemical examination of organic matters in river water.—Mr. Richard J. Moss, on the preparation of helium.—Mr. Moss also exhibited a simple form of apparatus for the distillation of mercury in vacuo; and Dr. W. Frazer showed some photographs of the natives of Formosa.

June 26.—Dr. J. Joly, F.R.S., in the chair.—The following papers were read:—Mr. Thomas Preston, on the rectilinear propagation of light.—Dr. J. Joly, on photography in natural colours.—Sir J. William Dawson, F.R.S., note on a paper on "Eozoonal structure of the ejected blocks of Monte Somma," by Dr. H. J. Johnston-Lavis and Dr. J. W. Gregory, and reply to the note by the last-named authors.—Dr. G. Johnstone Stoney, F.R.S., criticism of the kinetic theory of gases regarded as illustrating nature.—Dr. E. J. M'Weeney, further observations on the Vartry water.—Dr. M. Weeney exhibited cultivations of *Phoma Betæ*, a fungus that produces a disease of the mangold wurzel.

PARIS.

Academy of Sciences, July 29.—M. Marey in the chair.—On the presence of water vapour in the atmosphere of the planet Mars, by M. J. Janssen. Mr. W. W. Campbell has recently asserted that the atmosphere of Mars does not contain water vapour, and has requested further details concerning the author's observations, from which the presence of water vapour had been supposed to be proved. These details are now supplied; the author particularly points out that his Etna observations were carried out under exceptionally favourable conditions, and that the definite and convincing evidence they afforded was confirmed by observations carried out at Palermo and at Marseilles.—On groups of substitutions of the same order and degree, by M. Levavasseur.—On algebraical surfaces admitting of a continuous group of internal birational transformations, by MM. G. Castelnuovo and F. Enriques.—On algebraical machines, by M. Léonardo Torres.—Vibrations of the tuning-fork in a magnetic field, by M. Maurain.—New photographs of lightning flashes, by M. N. Piltschikoff. Several types of lightning flash are defined, and the dimensions are given for certain flashes; for instance, a photograph taken during a storm at Odessa on June 13, shows a luminous band 0·75 mm. wide, caused by a flash at a greater distance than 10 kilometres; the actual width of the flash was therefore more than 62 metres. A new voltaic cell, by M. Morisot. The cell consists of a carbon pole immersed in 1:4 sulphuric acid saturated with potassium bichromate and a zinc pole within a porous cell containing concentrated caustic soda solution (sp. gr. 1·25), this cell being separated from the depolarising acid solution by a second larger porous cell containing dilute caustic soda (sp. gr. 1·05). The E.M.F. of this cell is to begin with 2·5 volts, and remains above 2·4 volts during at least ten hours of uninterrupted action, and with variable external resistance remains constant. The intermediate bath of dilute alkali diminishes the action across the porous diaphragm between the soda and the sulphuric and chromic acids without materially increasing the resistance. The zinc is less attacked than with an acid bath, and may readily be brought into good condition after long use by a short immersion in acid.—Action of aniline on mercurous iodide, by M. Maurice François. The aniline decomposes the mercurous iodide with the formation of the substance diphenylmercurodiammonium iodide $(C_6H_5NH_2)_2HgI_2$, and metallic mercury. The reaction is incomplete and exactly similar to the action of water on bismuth sulphate or mercuric sulphate. The boiling saturated aniline solution dissolves mercurous iodide and redeposits it on cooling in the crystalline form.—Action of nitric peroxide on campholenic acid, by MM. A. Behal and Blaise.—On the products of the condensation of isovaleric aldehyde, by M. L. Kohn.—On the estimation of boric acid, by MM. H. Jay and Dupasquier. The boric acid is distilled over into soda by the aid of methyl alcohol used continuously and the residual soda determined by titration.—On the elimination of lime among those affected with rickets, by M. Oechsner de Coninck.—On the utility of injections of oxysparteïne before anæsthesia by means of chloroform, by MM. P. Langlois and G. Maurange. The injection, an hour before the operation, of 4 to 5 cgr. of sparteïne or 3 to 4 cgr. of oxysparteïne, together with 1 cgr. of morphine, gave rapid narcosis easily maintained with little chloroform and a regular pulse, energetic even when the respiration became superficial.—Influence of toxines on progeny, by M. A. Charrin. Bacterial poisons derived from the mother, like those introduced otherwise into the system, retard the growth of infants by rendering assimilation less perfect.—On the structure of the ectoderm and of the nervous system of parasitic Plathelminthes (Trématodes et Cestodes), by M. Léon Jammes.—Contributions to the embryogeny of simple Ascidians, by M. Antoine Pizon.—On the composition of the monazite sands of Carolina, by M. Boudouard.—Discovery of gigantic remains of fossil elephants, made by M. Le Blanc, in "la ballastière de Tilloux (Charente)," by M. Marcellin Boule.

BERLIN.

Physical Society, June 14.—Prof. du Bois Reymond, President, in the chair.—Dr. F. Kurlbaum gave an account of his determination of the unit of light made in conjunction with Prof. Lummer. The unit was based on the light emitted by white-hot platinum foil. Since the radiant energy varies with the temperature, it was necessary to keep the latter constant for a prolonged period, and to be able to re-establish it at any time. This result was arrived at bolometrically by measuring the ratio of the total radiant energy from the glowing foil to the radiation taking place across an absorbing medium. This ratio is dependent upon the temperature of the radiating body, and provides a trustworthy measure of its temperature. It was necessary to find some covering for the bolometer which should absorb all rays as uniformly as possible; after many experiments a layer of

platinum black was found most suitable for this purpose. The absorbing medium employed consisted of a thin layer of water in a quartz cell. The energy radiated from the heated foil passed through a diaphragm of known aperture, whose temperature was the same as that of the bolometer. The errors in determining the unit of light amounted to one per cent., due chiefly to the air currents on the surface of the foil. The unit can now be established at any time in the Imperial Physico-technical Institute (Berlin); but in order to facilitate its accurate establishment at any other place, experiments are being made to determine the temperature of the glowing foil from ratio of the radiation over the range of the visible spectrum.

June 28.—Prof. von Bezold, President, in the chair.—Dr. Raps exhibited and described some new electric meters constructed by Siemens and Halske, which by the use of constant magnets provide an accurate measure for technical purposes, and are uninfluenced by ordinary variations of temperature. Dr. du Bois described experiments made by Dr. E. T. Jones on magnetic lifting-power. He had already showed that Maxwell's formula holds good for a field whose strength is up to 500 C.G.S., and now passed on to fields of greater strength. In the last set of experiments electro-magnets were employed with a sectional surface of an iron bar passed through the armatures. A magnetic lifting power of 52 kilogrammes per square centimetre of surface was thus for the first time obtained, and Maxwell's formula was found to hold good up to this maximal value; the error was at most five per cent., due as yet to insufficient introduction of corrections. Stephan's formula did not in any way correspond with the results of the above experiments. It further appeared that a lifting power of 150 kilogrammes per square centimetre should be obtainable.

AMSTERDAM.

Royal Academy of Sciences, June 29.—Prof. Van der Waals in the chair.—Prof. Martin presented a work, written by him, and entitled "Die Fossilien von Java." Basing his arguments on the presence of these fossils, the author showed that in Java there are found Upper Miocene, Pliocene and Quaternary sediments. When the distribution of these formations is considered, it appears that in general the newer strata have been formed on the outer side of the older ones, and there can be no doubt that since the time of the Upper Miocene formation a continuous and very slow elevation of the coast ("negativ strandverschiebung") took place, in consequence of which the Upper Miocene, Pliocene and Quaternary sediments of the coast were laid dry. That this shifting of the coast was very considerable, is proved by the Njaliendoeng fossils, found 910 m. above the level of the sea, and this fact further tallies with what is known about Sumatra, where in the "Padangsche Bovenlanden" Neogene sediments have been found up to a height of 1088 m. Not long ago the author showed that during the Quaternary period a considerable movement took place in the eastern part of the archipelago, and numerous facts show that the whole of the Indian archipelago was subjected to this. The author further remarked that he had received interesting fossils from Western Borneo. Among them are: *Perisphinctes* (Waag.), *Protocardia*, and *Corbula*. All these fossils have been found in strata that were formerly known as "ancient schists," which, however, on account of the above-mentioned fossils, can only be reckoned to belong to the Mesozoic period; more particularly they ought to be classed either with the Jurassic or with the Cretaceous formation. In accordance with the present state of our knowledge it is highly probable that the fossils in question have been taken from Jurassic formations. It appears, then, that Mesozoic strata have a very wide distribution in the Indian archipelago.—Prof. Beyerinck read a paper on *Cynips calycis*. The *Cynips calycis* gall-nut, very common in Austria-Hungary on *Quercus pedunculata*, is appreciated in commerce as a first-rate tanning material. In the Netherlands two or three small localities are known where this gall is to be found.—The dehydration, rehydration and re-dehydration of colloidal silicic acid, by Prof. van Bemmelen.—Prof. Stokvis presented some pamphlets by himself and some of his pupils, and, with reference to Dr. Langemeyer's dissertation, discussed the influence of the use of sugar upon muscular labour. From experiments, made with the ergograph, it is deduced that it has not yet in any way been proved that sugar has a favourable influence upon muscular labour.—At the request of Dr. C. A. Lobry de Bruyn, Prof. Franchimont communicated that free hydrazine had been prepared by the former in two ways: 1° from N_2H_4HCl with sodium methylate in a methyl alcoholic solution, and 2° by heating the hydrate to 100° with barium oxide. Free hydrazine is a somewhat thick fluid with the smell of the hydrate. It boils without decomposition at 113°·5 and a pressure of 761 m.m., and at 56° if the pressure is 71 m.m. When cooled, it becomes solid, and then melts again at 2°; its density at 23° is 1·0075 and does not, therefore, differ much from that of the hydrate (boiling at 119°). In ordinary air it forms strong vapours and is easily oxidised by oxygen with the formation of nitrogen. In the air it will burn, but not explode, like hydroxylamine, and consequently it is much more stable.—Prof. Kamerlingh Onnes communicated measurements on the capillarity of liquid gases, made by Dr. Verschaffelt in the Leyden laboratory. Carbonic acid and nitrous oxide obey the law of corresponding states; their capillary equation has an exponent approaching the theoretical value given by Van der Waals, and they are not associated fluids.—Prof. Van der Waals presented a paper intended for the report of the meeting, and entitled: "On the critical circumstances of a mixture," being a sequel to what was communicated in the meeting of the section held in May.

BOOKS, PAMPHLETS, and SERIALS RECEIVED.

BOOKS.—Bouches a Feu: E. Hennebert (Paris, Gauthier-Villars).—Balistique Extérieure: E. Vallier (Paris, Gauthier-Villars).—Geological Survey of Canada, Annual Report, new series, Vol. 6 (Ottawa).—Science Readers, Book iv.: V. T. Murché (Macmillan).—A Text-book of the Principles of Physics: Dr. A. Daniell, 3rd edition (Macmillan).—Pan-Gnosticism: N. Winter (Transatlantic Publishing Company).—A Handbook to the Flora of Ceylon: Dr. H. Trimen, Part 3 and plates (Dulau).

PAMPHLETS.—Geogenetische Beiträge: Dr. O. Kuntze (Leipzig, Gressner).—Sobre Peces de Agua Dulce: C. Berg (Buenos Aires, Alsina).—The Grimsby Trawl Fishery, &c.: E. W. L. Holt (Plymouth).

SERIALS.—Journal of the Institution of Electrical Engineers, July (Spon).—Quarterly Journal of the Geological Society, August (Longmans).—Fortnightly Review, August (Chapman).—Macmillan's Magazine, August (Macmillan).—Scribner's Magazine, August (Low).—Verhandlungen des Naturhistorischen Vereins, &c., Einundfünfzigster Jahrg., Sechste Folge, 1 Jahrg., Zweite Hälfte (Bonn).—Bulletins de la Société D'Anthropologie de Paris, tome vi. 4e serie (Paris, Masson).—Geological Magazine, August (Dulau).—Geographical Magazine, August (Stanford).—Transactions and Proceedings of the New Zealand Institute, 1894, Vol. xxvii. (Wellington, Costall).—Science Progress, August (Scientific Press, Ltd.).

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