UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

IN reply to an inquiry, official confirmation has reached us of the announcement made by the registrar at the meeting of the council of the University College of Wales, Aberystwyth, on December 15, to the effect that friends of the college had expressed their intention of contributing the sum of 100,000*l.* to the funds of the college, subject to a reservation of their right to make such proposals as they may deem expedient to the council, either as to the capital or as to the income therefrom. The sum of 20,000*l.* will be set aside annually by the donors for this purpose for the next five years.

THE annual meetings of the Geographical Association will be held on Friday and Saturday, January 5–6, at the London Day Training College, Southampton Row, W.C. After the presidential address a discussion on the value of modelling in the early teaching of geography will be opened by Miss N. Catty, and a lecture on regions in human geography, with special reference to Europe, will be given by Prof. H. J. Fleure. There will also be a discussion on the resolutions drawn up by the Five Associations (now the Council for Humanistic Studies), to be opened by Mr. H. J. Mackinder. On January 6 a joint meeting of the Geographical and Mathematical Associations will be held to discuss "The Teaching of Map Projections." This discussion will be opened by Prof. T. P. Nunn.

THE Journal of the British Science Guild for November contains several reports and memoranda on the organisation of science and the improvement of facilities for education. In the "Memorandum on the Encouragement of Teaching and Research in Science in British Universities" attention is directed to the great variations in the salaries of professors in the faculty of science at different institutions. Liverpool and Manchester head the list with average salaries of 853*l.* and 888*l.* respectively, Southampton and Aberystwyth coming last with 325*l.* and 320*l.* Reference is particularly made to the inadequate arrangements as regards salaries and facilities for scientific education in the University and colleges of Wales, and it is suggested that such institutions should receive additional State support. Other suggestions include the elimination of temporary and associate professorships at State-aided universities, and the substitution of "Regius Professorships," appointment and dismissal resting with the Crown or with a body appointed by the Crown. Another important matter is the provision of an adequate scale of pensions. The "Report on Reforms necessary in National Education" covers wide ground, a series of concrete recommendations being made. Various steps are suggested to eliminate the gaps between elementary schools, secondary and technical schools, and the universities. It should be incumbent on employers to provide facilities for persons between the ages of fourteen and seventeen to attend continuation schools for six hours per week within the hours of employment, "leaving certificates" should be established at elementary and secondary schools, and scientific method and training should be more generally encouraged. Teachers at training colleges should be given a larger measure of freedom and responsibility. Here again salaries, superannuation schemes, and conditions of tenure require to be placed on a more satisfactory footing. In elementary schools the physical development of the children and the encouragement of manual and other work developing initiative should be given especial attention.

THE Proceedings of the Institute of Chemistry, part iv. (November, 1916), contains the proposed new regulations for the admission of fellows and associates, originally promulgated in the 1914–15 report, as amended in the light of conditions resulting from the war. For admission to the associateship a candidate may proceed under either Regulations A or B. The former comprise (1) an approved preliminary examination of matriculation standard; (2) (*a*) four years' day training at a recognised university or college, or (*b*) three years' such training and two years under a fellow of the institute, or (*c*) a degree in chemistry and physics taken at a recognised university, with, in the case of pass graduates, a subsequent year's training in chemistry at a recognised university or college, or two years' experience under a fellow; and (3) an examination in general, theoretical, and practical chemistry conducted by the institute, the candidate having in every case produced satisfactory evidence of training in physics and mathematics. Under Regulations B a candidate is to be admitted if he has a degree with first- or second-class honours in chemistry, or a degree or diploma recognised by the council as equivalent, obtained after a three years' day course, with three years' subsequent experience of a standard and character approved by the council, or such degree or diploma obtained after a four years' day course, with two years' subsequent experience. The regulation as to training in physics and mathematics is again applicable. The qualifications for the fellowship are to consist of three years' continuous occupation in the study and practical work of applied chemistry since admission as associate, and either the production of records of original research, or the devising of processes or inventions of sufficient merit in the opinion of the council, or the production of evidence of knowledge and ability equivalent to such conditions, or the passing of an examination in a special branch of chemistry.

SOCIETIES AND ACADEMIES.

LONDON.

Royal Anthropological Institute, November 28.—Prof. A. Keith, president, in the chair.—Prof. G. Elliot **Smith**: The common objections to the reality of the migrations of early culture. After citing a series of instances which proved the reality of the cultural migrations, and exposing the lack of cogency in the arguments commonly brought forward in opposition to the admission of the only possible explanation of the facts, the fashionable speculation of the present generation of ethnologists was then examined, that, "in order to meet similar needs" and "in similar circumstances," two peoples "in a similar stage of culture" may independently develop essentially identical customs, arts, and beliefs. Attention was directed to the fact that such cultural identities frequently occur among peoples whose "needs," "circumstances," and "states of culture" are as dissimilar as it was possible for them to be. Moreover, of kindred peoples—even members of the same race—living side by side for many centuries, in similar circumstances and with identical needs, one of them may possess the whole of the complex outfit of the megalithic culture, whereas the other may be totally free from any trace of it. As W. J. Perry has shown, the coincidence of the presence of ancient mines or pearl-beds reveals the fact that the stone-using culture-complex was introduced by immigrants who came to exploit these sources of wealth.

Linnean Society, December 14.—Sir David Prain, president, in the chair.—Miss I. **McClatchie**: Observations on the root-system of *Impatiens Roylei*, Walp. The primary root-system of *Impatiens Roylei* consists of a somewhat short tap-root, a whorl of four robust lateral roots, and a number of accessory laterals. These soon become obsolete and are replaced by a

large superficial root-system of adventitious origin derived from the lower half of the hypocotyl. In plants in which the first and subsequent nodes trail along the ground, additional roots are produced from these. Abortive roots commonly arise at the bases of lateral branches, and further development can be induced also in these by suitable manipulation. Various other factors, such as wounding, increasing the height of the soil, etc., also induce accessory root-formation.—Miss A. J. **Davey** and Miss M. **Gibson**: The distribution of monœcious plants, and the occurrence of hermaphrodite flowers in *Myrica Gale*, with observations on variations of sex. *M. Gale*, the common bog myrtle, is described as being typically dioecious, but mention has been made by several authors of the occasional occurrence of the monœcious condition. Observations during several successive years on a large area of Myrica in the peat moors of Somerset show that there is always a small proportion of monœcious plants, which present all gradations between the normal pistillate and staminate types. Further, it has been found that the sex of a plant may vary from year to year.

Optical Society, December 14.—Mr. F. J. Cheshire, president, in the chair.—L. C. **Martin**: The refractometry and identification of glass specimens, especially lenses. The determination of the refractive index generally requires at least one plane-polished surface in the specimen, but the method described could be used for lenticular, irregular, or unpolished pieces of glass. By immersing the specimen in a liquid of equal refractive index the system became optically homogeneous for light of a particular wave-length. The liquid, which may be a mixture of carbon disulphide and alcohol or a solution of mercuric potassium iodide, is contained in a prism cell on the table of a spectrometer, and is kept mechanically stirred. Spectra from the usual sources are observed by refraction through the prism, of which the sides are plane parallel glass. The introduction of the specimen diffuses the light, but any particular spectrum line may be focussed by adjustment of the strength of the liquid. The refractive index of the liquid and specimen is then found in the usual manner.—Dr. R. S. **Clay**: A workshop method of determining the refractive index of a block of glass of which only one face is polished. The method was shown to be based, as are the Abbe and Pulfrich refractometers, upon the determination of the critical angle when light passes from the medium of which the refractive index is to be found into one of which the index is known. The hemispherical ball of Abbe or the cube of the Pulfrich refractometer is replaced by an isosceles right-angle prism. This must, of course, have a higher refractive index than that of the substance it is required to measure. A simple telescope, composed of two spectacle lenses with a cross-wire at their common focal plane, is used to take the readings. A drop of liquid of high refractive index (*e.g.* quinoline or oil of cassia) is placed on the hypotenuse face of the prism, and this is placed upon the polished face of the glass of which the refractive index is required. Sodium light is caused to fall on one side of the block of glass, and the light emerging from one face of the prism is received by the telescope. The latter is turned until the critical angle is obtained, shown by one-half of the field of the telescope becoming black, and the dividing line of the field being on the cross-wire of the telescope. The observation is repeated for light falling on the opposite side of the glass block, and emerging from the other face of the prism. The angular distance between the two positions of the telescope determines the refractive index of the glass by a simple calculation, or the scale can be divided to give the refractive index directly.

Royal Meteorological Society, December 20.—Major H. G. Lyons, president, in the chair.—C. **Salter**: The measurement of rainfall duration. Save for an article by Mr. Baldwin Latham in 1880, practically no attention appeared to have been paid to this subject until 1903, when Dr. H. R. Mill commenced collecting records for the British Isles, the number of which has grown until, in "British Rainfall, 1915," as many as forty-eight records were published. An examination of these records revealed certain inconsistencies which were probably due to personal and instrumental causes. The differences appeared to be due principally to the varying degrees of sensitiveness of the recording instruments to very light rain, and the suggestion had been made that if rain of very low intensity were omitted from the records a closer approximation to homogeneity would be attained.—Prof. H. H. **Turner**: Discontinuities in meteorological phenomena: third note. In two previous papers it has been suggested that meteorological history is divided into definite chapters of average length 6⅔ years, the separating dates being assigned according to a regular law. Further, that if these chapters are numbered consecutively those with even numbers differ in certain essential respects from those with odd numbers. The present paper gives the systematic analysis of fifty-five years' monthly rainfalls at twenty-eight European stations. The division into alternating chapters is clearly brought out, and it is apparently possible to assign the separating dates from this material within a month. This precision is made possible by the existence of a five-monthly periodicity, for which some evidence was given in a former communication, but which is clearly established by the mass of evidence here submitted. The division into chapters has been connected in a former paper with the movements of the earth's axis. In the present paper some earthquake statistics are put forward which appear to be favourable to this view.

MANCHESTER.

Literary and Philosophical Society, November 28.—Mr. T. A. Coward, vice-president, in the chair.—H. **Bolton**: The Mark Stirrup collection of fossil insects from Commentry, Central France. This collection of insects is now in the Manchester Museum, and was obtained by the late Mr. Mark Stirrup from his friend, Charles Brongniart, author of the classical memoir, "Recherches pour servir à l'histoire des Insectes Fossiles des Temps Primaires." It consists of nine specimens, of which five are blattoids, one is a fragmentary wing of *Goldenbergia* (*Microdictya*) *hamyi*, two belong to new genera and species, and one is indeterminable. All the insect remains occur in a compact and thin flaggy mudstone. The blattoid wings belong to five species, of which two are referable to the genus Necymylacris, and three to the genus Phylloblatta. Four of the species are new; the fifth is an example of *Phylloblatta brongniarti* of Handlirsch. Of the two new genera, one is considered to have close relationships with the family Perlidæ, whilst the second is regarded as an archaic type of the family Panorpidæ.—J. W. **Jackson**: Faceted pebbles from Pendleton, Lancashire.—Dr. F. E. **Bradley**: Presence of arsenic in baking-powder.—W. H. **Todd**: Behaviour of a blackbird.

DUBLIN.

Royal Dublin Society, November 28.—Prof. G. H. Carpenter in the chair.—Prof. W. **Brown**: The fatigue of nickel and iron wires when subjected to the influence of transverse alternating magnetic fields. The fatigue under these conditions is less than that due to longitudinal alternating magnetic fields by 8·5 per cent. for nickel and 25 per cent. for iron, and in both

cases the time taken to attain the maximum value of fatigue with the transverse field was about double that with the longitudinal field.—Prof. E. A. **Letts**: The chemistry of foul mud deposits. The sulphides and carbonates usually present in foul mud deposits are those of iron, calcium, and, more rarely, magnesium and sodium. It has been stated, but also denied, that the action of hydrogen sulphide on carbonates, and the opposite, namely, that of carbon dioxide on sulphides, is a reversible reaction, *e.g.*:

$$FeS + \overbrace{2CO_2 + 2H_2O}^{\text{Excess}} \rightleftharpoons Fe(HCO_3)_2 + \underbrace{H_2S}_{\text{Excess}}.$$

In the first part of their paper the authors prove that the actions are reversible. The second part of the paper deals with actual analyses of foul mud deposits before and after keeping.—E. J. **Sheehy**: Abnormality in arterial arches in a rabbit. The right subclavian artery is absent. A blood-vessel which originates from the aorta behind the left subclavian runs dorsal to the œsophagus and trachea, and appears on the right side, where it serves as a subclavian, *i.e.* it branches into the right vertebral artery and blood-vessels to the arm. The recurrent laryngeal nerve associated with the abnormal blood-vessel is quite normal, even though the vessel which it usually embraces is absent. Persistence of an unusual portion of the embryological blood system, namely, the right descending aorta, explains this exceptional condition, and the normal position of the recurrent nerve suggests that the nervous system was well developed previous to the obliteration of the embryonic arches.

PARIS.

Academy of Sciences, December 4.—M. Camille Jordan in the chair.—W. **Kilian** and J. **Révil**: Discontinuities of sedimentation and the levels of the breccias in the French Alps.—W. **Sierpinski**: The *rôle* of Zermelo's axiom in modern analysis.—G. **Julia**: The forms of Dirichlet and the loxodromic substitutions of the Picard group.—M. **Brillouin**: Fundamental solution in a heavy liquid with free surface.—M. **Baticle**: The calculation of thick arches submitted to uniform pressure.—B. **Globa-Mikhailenko**: A new figure of equilibrium of a fluid mass in rotation.—L. **Roy**: The problem of the wall and its application to the discharge of a condenser on its own dielectric.—L. **Gentil**: The "Trouée de Taza," northern Morocco. The Miocene deposits found at Taza confirm the view put forward in earlier papers, that there was communication between the Mediterranean and the Atlantic during the Neogene epoch, the narrowest point being at the gap of Taza.—J. **Boussac**: The existence, between Modane and the Col de Chavière, of a *fenêtre* showing the Trias under the Permian.—P. de **Sousa**: The earthquakes of the eighteenth century in the neighbourhood of the oval Lusitania-Spain-Morocco depression.—F. **Baco**: Variations of a sexual hybrid of the vine by grafting on one of its parents.—C. **Sauvageau**: A Laminaria new for the French coast, *Laminaria Lejolisii*.—J. **Georgévitch**: The various forms of *Ceratomyxa Herouardi*.—A. **Lumière** and E. **Astier**: Tetanus and frost-bite. Evidence that precautions against tetanus should be taken in cases of lesions caused by frost-bite.—A. **Arnoux**: The mechanical protection and preservation of eggs. The newly laid egg is wrapped up in layers of a material impregnated with a solution of sodium silicate, and air-dried for twelve hours. The preservative properties of the alkaline silicate are well known. The above method of applying it gives mechanical strength; the treated eggs can be allowed to roll down a flight of stairs without breaking.

BOOKS RECEIVED.

Fertilizers. By the late Dr. E. B. Voorhees. Revised edition by J. H. Voorhees. Pp. xv+365. (New York: The Macmillan Co.; London: Macmillan and Co., Ltd.) 6*s.* 6*d.* net.

The Fauna of British India, including Ceylon and Burma. Coleoptera, Rhynchophora, Curculionidæ. By Dr. G. R. K. Marshall. Pp. xv+367. (London: Taylor and Francis.) 15*s.*

A Memoir on British Resources of Sands suitable for Glass-making. By Dr. P. G. H. Boswell, with Chemical Analyses by Dr. H. T. Harwood. (London: Longmans and Co.) 1*s.* 6*d.*

The Principles of Electric Wave Telegraphy and Telephony. By Prof. J. A. Fleming. Third edition. Pp. xvi+911. (London: Longmans and Co.) 30*s.* net.

The "Wellcome" Photographic Exposure Record and Diary, 1917. Northern Hemisphere and Tropical Edition. Pp. 256. (London: Burroughs, Wellcome and Co.) 1*s.*

DIARY OF SOCIETIES.

TUESDAY, JANUARY 2.

RÖNTGEN SOCIETY, at 8.15.—A Spectroscopic Investigation of Some Sources of Ultra-violet Radiation in Relation to Treatment by Ultra-violet Rays: C. A. Schunk.

SATURDAY, JANUARY 6.

GEOLOGISTS' ASSOCIATION, at 3.—The Age of the Chief Intrusions of the Lake District: J. F. N. Green.—The Ibex-zone at Charmouth: W. D. Lang.

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