On the importance of geology it is needless here to dwell. Geology has its own place, and that a high one, among the sciences; without due provision for its study no university is complete. Geologists will be profoundly grateful, therefore, to Prof. and Mrs. Herdman for having completed the geological chairs in the English universities. Liverpool has long been such an active centre of geological work that the lack of a chair in the science at the University was a regrettable deficiency. New conditions of life have brought with them a growing demand for men whose scientific training shall include not only a knowledge of geological aspects of geography, but also of the earth's mineral resources. The war has cost science and the universities so much in life and brain, and also in wasted effort, that the example set by Prof. and Mrs. Herdman in establishing such a useful and appropriate memorial to their son will, we hope, be followed by others.

A PUBLIC lecture on "Chemistry and its Relation to National Affairs" will be delivered by Sir William A. Tilden, at Birkbeck College, Chancery Lane, on Tuesday, December 12 (Founder's Day), at 5.45 p.m. The chair will be taken by Sir Alfred Pearce Gould, Vice-Chancellor of the University of London. The lecture is open to the public without fee or ticket.

ACCORDING to the *Münchener medizinische Wochenschrift* the number of students during the summer semester of 1916 in the Austrian universities was as follows:—Vienna, 3472; Prague (Czech university), 1891; Cracow, 1281; Lemberg, 1174; Graz, 647; Prague (German university), 638; Innsbruck, 584. The proportion of medical students was highest at Vienna and at Graz (both about 30 per cent. of the total). At Vienna nearly two-fifths of the medical students were women.

THE evening classes held at University of London, King's College, Strand, W.C., will be open during the session 1916–17 to members of his Majesty's Forces of all ranks wearing uniform who have at any time passed the matriculation examination of the University of London, or any examination exempting therefrom, and are desirous of spending what time is available after their military duties in furthering their education in arts or science. In view of the fact that the attendance of such students will be liable to interruption, no tuition fee will be charged during the war for any classes or course of study entered upon. Those who attend these classes may be registered as internal students of the University of London.

THE General Medical Council on December 2 adopted by a majority a proposal to make Latin optional in the medical higher preliminary examination. The Education Committee of the council, in a report, expressed the opinion that the possession by a student of a senior leaving examination certificate or its equivalent, the matriculation certificate of the universities, affords ample evidence that all the objects of the council in prescribing a preliminary examination in general knowledge are fully realised. The report recommended the council to accept such certificates without further proviso than that they should embrace at least four subjects, including English and mathematics, the two or more additional to be chosen from among the principal subjects of the school curriculum. On the following day the question of making Latin optional in the preliminary examination of candidates for admission to the medical curriculum belonging to the junior class was discussed by the council, and eventually, at the suggestion of the president, Sir Donald Macalister, the question was referred back to committee.

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, November 23.—Sir J. J. Thomson, president, in the chair.—Sir Robert **Hadfield** and Dr. E. **Newbery**: The corrosion and electrical properties of steels. The condition that a metal shall dissolve in an acid with evolution of hydrogen is:—Single potential of metal + over-voltage < single potential of hydrogen electrode, all measurements being, of course, made in the given acid. If therefore we assume that the atmospheric corrosion of a metal is a process similar to that of dissolution in an acid, it should be possible to predict the corrosion-resisting power of a given metal by determining its single potential referred to a hydrogen electrode, together with its over-voltage in a suitable electrolyte. Experiments on a number of special steels have been carried out to test the validity of the above assumption. The over-voltage, single potential, and loss of weight in acid of each specimen were determined and compared with the atmospheric corrosion observed after exposing clean surfaces to the air for ten weeks. The results showed that the electrical method gives decidedly better estimates of the corrosion-resisting powers of steels than the acid method, and although neither method gives trustworthy estimates in all cases, yet the electrical method appears to rest upon a sound theoretical foundation, and is probably capable of further developments which may result in the formation of trustworthy corrosion data.—Dr. A. E. H. **Tutton**: Monoclinic double selenates of the nickel group. In this paper the results are given of the investigation of the double salts, potassium nickel selenate, rubidium nickel selenate, cæsium nickel selenate, and ammonium nickel selenate, each containing six molecules of water of crystallisation. The results are in line with all those already published for the complete monoclinic double sulphate series with $6H_2O$, and for the isomorphous magnesium and zinc double selenate groups. The morphological and physical properties exhibit the progression in accordance with the atomic weight of the alkali metal brought out by the previous work, and the ammonium salt is shown to belong to the isomorphous series, and to exhibit the peculiar traits described in connection with the other ammonium salts of this monoclinic series already dealt with.—Dr. A. E. H. **Tutton**: X-ray analysis and topic axes of the alkali sulphates and their bearing on the law of valency volumes. An X-ray spectrometric analysis, carried out with the author's crystals in the laboratory of Prof. W. H. Bragg by Prof. A. Ogg and Mr. F. Lloyd Hopwood, of the rhombic crystals of the alkali sulphates R_2SO_4, where R is K, Rb, Cs, and NH_4, has indicated that four molecules of R_2SO_4 are contained in the unit rectangular cell of the space-lattice, as suggested by the author in 1894. The atoms of sulphur occupy the corners of the rectangular cell and the middle point of each side. The planes of sulphur atoms parallel to the (001) face are of pseudo-hexagonal structure, the atomic centres being arranged in nearly regular hexagons, as suggested by Federov and adopted by the author. The metallic atoms are also probably arranged in nearly regular hexagons. It is fully substantiated that the constants, molecular volume, and topic axial ratios afford true indications of relative volume and dimensions of elementary space-lattice cells in the cases of crystal structures of isomorphous series.—Dr. T. J. I'a. **Bromwich**: The scattering of plane electric waves by spheres. The first section contains a very general solution of the electromagnetic equations in curvilinear co-ordinates, and it is proved that this solution contains as particular cases those previously obtained by Hertz, Fitzgerald, Rayleigh, Love, and Lamb. This general solution is then applied to the problem indicated in the title of the

paper, and the results are analysed further in two particular cases, corresponding to long waves and to short waves. The formulæ deduced here for the case of short waves have been tested numerically for the values given by $\kappa a = 9$ and 10—that is, for wave-lengths one-ninth and one-tenth of the perimeter of the sphere. —J. **Proudman**, A. T. **Doodson**, and G. **Kennedy**: Numerical results of the theory of the diffraction of a plane electromagnetic wave by a perfectly conducting sphere. This paper is entirely concerned with the computation, from quoted formulæ, of the electric disturbance at a great distance from the sphere. The length of the incident wave being $2\pi/\kappa$, and the radius of the sphere being a, results are obtained for $\kappa a = 1, 2, 9, 10$. Tables and curves are given of the results and also of the principal stages of the work. The methods of carrying out the computations, the means of securing accuracy and detecting errors, and an analysis of the results are also given.

Linnean Society, November 16.—Sir David Prain, president, in the chair.—A. W. **Waters**: Some collections of the littoral marine fauna of the Cape Verde Islands made by Cyril Crossland in the summer of 1904—Bryozoa. The collection made by Mr. Cyril Crossland consists of forty-five species or varieties, of which twenty-five were already known from the Atlantic, fifteen are British, twenty-four Mediterranean, probably seventeen Australasian. Of the forms in this collection seven are considered either new species or new varieties.

Zoological Society, November 21.—Dr. S. F. Harmer, vice-president, in the chair.—Dr. B. **Petronievics** and Dr. A. Smith **Woodward**: New parts of the pectoral and pelvic arches lately discovered in the London specimen of Archæopteryx. The coracoid bone most closely resembles that of the ratite birds and the Cretaceous Hesperornis. The pubic bones are twice as long as the ischia and meet distally in an extended symphysis, gradually tapering to a point, which seems to have been tipped by a mass of imperfectly ossified cartilage. —B. F. **Cummings**: Studies on the Anoplura and Mallophaga, being a report upon a collection from the mammals and birds in the society's gardens—Part II. This paper continues the account of the Mallophaga, and contains descriptions of five new genera and two new species. Some observations are made upon the spermatophores in a genus parasitising the ibises, and emphasis is laid on the frequently remarkable differences found in the structure of the internal organs, especially those of the male reproductive system.—Lieut.-Col. J. M. **Fawcett**: A collection of Heterocera made by Mr. W. Feather in British East Africa. Of the 124 forms dealt with, forty-five are described as new, together with seven new genera.

Geological Society, November 22.—Dr. Alfred Harker, president, in the chair.—C. **Reid** and J. **Groves**: Characeæ from the Lower Headon Beds. The investigations here recorded have been made at Hordle Cliffs (Hampshire), where the strata below the superficial gravel belong entirely to the Lower Headon Beds, and consist of fresh-water and brackish-water (more or less calcareous) deposits, laid down apparently in wide shallow lakes and lagoons. Such habitats are the most favourable to the growth of Characeæ, and several of the beds have yielded numerous remains of these plants. There is a great diversity in the fruits of Chara found, representing evidently a number of species belonging to several different sections or genera. Characeæ are found in still fresh or brackish water all over the world under widely different conditions as regards heat, etc., and may therefore be expected to occur in almost all fresh-water formations. For these reasons it is suggested that the fruits of this group of plants, when more widely collected, may prove of considerable value as zonal fossils for the correlation of lacustrine deposits lying in isolated basins. Doubtless, on account of their small size, the Characeæ have in the past often been overlooked.

MANCHESTER.

Literary and Philosophical Society, November 14.—Mr. T. A. Coward (vice-president) in the chair.—Dr. J. S. **Thomson**: The Gorgonacea of the Cape of Good Hope. The paper contains descriptions of twenty-nine species of Gorgonacea, of which twelve are new. The new species are as follows:—Family Briareidæ, *Anthotheta parviflora*, sp.n.; family Melitodidæ, *Melitodes fauri*, sp.n., *Melitodes grandis*, sp.n., *Mopsella singularis*, sp.n., *Wrightella trilineata*, sp.n., *Wrightella fragilis*, sp.n., *Wrightella furcata*, sp.n.; family Primnoidæ, *Stachyodes capensis*, sp.n.; family Gorgoniidæ, *Leptogorgia africana*, sp.n., *Leptogorgia aurata*, sp.n., *Eugorgia lineata*, sp.n., *Stenogorgia capensis*, sp.n.—Prof. F. E. **Weiss**: The manufacture of manure from peat. In 1815 a Scottish landowner described a method which consisted of spreading alternate layers, about 6 in. deep, of peat and fairly fresh dung, until a heap of about 4 or 5 ft. was constructed, which was then left for some months. The peat was transformed into a perfect compost as effective, weight for weight, as farmyard manure. Peat and seaweed have been similarly combined, and it was found unnecessary to add lime in the preparation of this manure, the acidity of the peat becoming neutralised by the ammonia contained in the dung, while decay-producing bacteria may percolate into the peat, in addition to those normally contained in it, but the activity of which is inhibited by the presence of humic acid. Dachowski's experiments with bog-water were dealt with. The method of preparation of "bacterised peat" (humogen) was also explained, and various experiments made to test the value of this manure were discussed.—J. **Barnes**: Sugar and starch in the banana (*Musa paradisiaea*).

NEW SOUTH WALES.

Linnean Society, September 27.—Mr. A. G. Hamilton, president, in the chair.—E. F. **Hallmann**: Revision of the genera with Microscleres included, or provisionally included, in the family Axinellidæ (Porifera); with descriptions of some Australian species. Part II.—The Australian species hitherto comprised in the genus Axinella have been re-examined, and have been found to belong to four distinct genera, Allantophora, Sigmaxinella (s.str.), and two others proposed as new. Reasons for the inclusion of the genera Tylodesma and Biemna in the family Axinellidæ are adduced.—T. **Whitelegge**: Preliminary note on the gametophyte of *Psilotum triquetrum*, Swartz. Spores were successfully grown on the rhizomes of *Davallia pyxidata*, but better results were obtained from spores germinated in the synangia.—F. H. **Taylor**: Contributions to a knowledge of Australian Culicidæ (Diptera). No. III. —Five species are described as new, and notes on synonymy and additional records for known species are given.—Dr. V. H. **Brotherus**: Some new species of Australian mosses. Thirty-seven species are described as new.—T. G. **Sloane**: New species of Australian Carabidæ belonging to the tribe Scaritini (Coleoptera). Twenty-three species and one genus are proposed as new; these include some interesting forms from the Murchison district of West Australia.

CALCUTTA.

Asiatic Society of Bengal, November 1.—Sir G. **Grierson**: Ōrmurī or Bargistā language: an account of a little-known Iranian dialect. The Ormurs or Baraki are a tribe living in Afghanistan in the midst of Afghans, but do not speak the Pastu language.

Their position and their language were long a problem with ethnographists and linguists. Sir G. Grierson has in this paper satisfactorily solved the problem by a careful examination of their language, which he declares to be western Iranian. A full grammar and vocabulary of the language will appear in the appropriate volume of the Linguistic Survey.—B. A. **Gupta**: Folklore in caste proverbs.—Sarat Chandra **Mitra**: Some Indian ceremonies for disease transference. In this paper the author has described and compared the different ceremonies, current in western and southern India, for conveying the disease-spirit, in a chariot, from one place to another.

BOOKS RECEIVED.

In Far North-East Siberia. By I. W. Shklovsky ("Dioneo"). Translated by L. Edwards and Z. Shklovsky. Pp. vii+264. (London: Macmillan and Co., Ltd.) 8*s*. 6*d*. net.

Geological Map of Mysore. (Bangalore: Department of Mines and Geology.)

Economic Geology. By Prof. H. Reis. Fourth edition. Pp. xviii+856+plates lxxv. (New York: J. Wiley and Sons, Inc.; London: Chapman and Hall, Ltd.) 17*s*. net.

The Canning of Fruits and Vegetables. By Z. P. Zavolla. Pp. xii+214. (New York: J. Wiley and Sons, Inc.; London: Chapman and Hall, Ltd.) 10*s*. 6*d*. net.

Stresses in Structures. By A. H. Heller. Revised by C. T. Morris. Third edition. Pp. xviii+374. (New York: J. Wiley and Sons, Inc.; London: Chapman and Hall, Ltd.) 11*s*. 6*d*. net.

A Treatise on Mine-Surveying. By B. H. Brough. Fourteenth edition, revised and enlarged by H. Dean. Pp. xviii+477. (London: C. Griffin and Co., Ltd.) 7*s*. 6*d*. net.

Studies in Animal Behavior. By Prof. S. J. Holmes. Pp. 266. (Boston, Mass.: R. G. Badger.) 2.50 dollars net.

Cambridge University Calendar for the Year 1916–1917. Pp. xxvi+1077. (Cambridge: At the University Press.) 7*s*. 6*d*. net.

The Anthocyanin Pigments of Plants. By M. Wheldale. Pp. x+318. (Cambridge: At the University Press.) 15*s*. net

At Suvla Bay. By J. Hargrave. Pp. x+182. (London: Constable and Co., Ltd.) 5*s*. net.

DIARY OF SOCIETIES.

THURSDAY, DECEMBER 7.

ROYAL SOCIETY, at 4.30.—The Cytomorphosis of the Marsupial Enamel-organ and its Significance in Relation to the Structure of the Completed Enamel: J. T. Carter.—The Development of the Pancreas, the Pancreatic and Hepatic Ducts in *Trichosurus vulpecula*: Margaret Tribe.—The Fossil Human Skull found at Talgai, Queensland: S. A. Smith.—The Typical Form of the Cochlea and its Variations: H. J. Watt.—The Structure and Biology of Archotermopsis, together with Descriptions of New Species of Intestinal Protozoa, and General Observations on the Isoptera: Dr. A. D. Imms.—Torsional Hysteresis of Mild Steel: J. J. Guest and F. C. Lea.

CHILD STUDY SOCIETY, at 6.—Psycho-analysis in Relation to Children: Dr. Constance E. Long.

CHEMICAL SOCIETY, at 8.—Spinacidene: A New Hydrocarbon from certain Fish-Liver Oils: A. Chaston Chapman.—The Nitration of 2-acetylamino-3:4-dimethoxybenzoic acid and 3-acetylamino-1:2-dimethoxybenzene: C. S. Gibson, J. L. Simonsen, and M. G. Rau.

FRIDAY, DECEMBER 8.

ROYAL ASTRONOMICAL SOCIETY, at 5.—Photographic Determination of the Parallax of Three Southern Binary Systems: J. Voûte.—Errata in the Double Star Measures of the *Monthly Notices*, vols. lxvi. to lxxv.: E. Doolittle.—The Choice of an Origin for Galactic Longitudes: C. D. Perrine.—The Radiative Equilibrium of the Sun and Stars: A. S. Eddington.—An Observation by Lamont of Prof. Barnard's Proper Motion Star: A. C. D. Crommelin.

MALACOLOGICAL SOCIETY, at 7.—A Revision of the Species of the Family Pleurotomidæ occurring in the Persian Gulf, Gulf of Oman, and Arabian Sea: Dr. J. Cosmo Melvill.—The Occurrence in England of *Helicella neglecta*: A. S. Kennard and B. B. Woodward, with Notes on the Anatomy by Dr. A. E. Boycott, and on the Radula by the Rev. E. W. Rowell.—The Occurrence of *Eulota fruticum* in a Living State in Kent: A. S. Kennard and B. B. Woodward.

MONDAY, DECEMBER 11.

SOCIETY OF ENGINEERS, at 3.—The Sources of the Minerals Required by the Iron and Steel Industries of the United Kingdom: Prof. W. G. Fearnsides.—The Mineral Resources of the British Empire as regards the Production of Non-Ferrous Industrial Metals: Prof. C. G. Cullis.

ROYAL SOCIETY OF ARTS, at 5.—Coal and its Economic Utilisation: Prof. J. S. S. Brame.

VICTORIA INSTITUTE, at 4.30.—The Influence of Christianity upon other Religious Systems: Rev. W. St. Clair Tisdall.

WEDNESDAY, DECEMBER 13.

ROYAL SOCIETY OF ARTS, at 4.30.—The Development of Imperial Resources: H. W. Fox.

THURSDAY, DECEMBER 14.

ROYAL SOCIETY, at 4.30.

INSTITUTION OF ELECTRICAL ENGINEERS, at 8.—Colonial Telegraphs and Telephones: R. W. Weightman.

MATHEMATICAL SOCIETY, at 5.30.—Orbits Asymptotic to an Isosceles Triangle Solution of the Problem of Three Bodies: Prof. D. Buchanan.—Diffraction of Waves by a Wedge of any Angle: Prof. H. S. Carslaw.—(1) Proof that almost all numbers n are composed of about $\log n \log\log n$ prime factors; (2) An Asymptotic Formula for the Number of Partitions of a Number: G. H. Hardy and S. Ramanujan.—Two Theorems of Combinatory Analysis and Two Allied Identities: Prof. L. J. Rogers.—The Harmonic Functions associated with the Parabolic Cylinder (second paper): C. N. Watson.—(1) The Internal Structure of a Set of Points in Space of any Number of Dimensions; (2) The Inherently Crystalline Structure of a Function of any Number of Variables: Prof. W. H. Young and Mrs. Young.

ROYAL GEOGRAPHICAL SOCIETY, at 5.—(*Discussion*): British and Metric Measures in Geographical Work, opened by the Secretary.

OPTICAL SOCIETY, at 8.—The Refractometry and Identification of Glass Specimens—especially Lenses: L. C. Martin.—A Workshop Method of Determining the Refractive Index of a Piece of Glass having one Flat Surface: Dr. R. S. Clay.

ROYAL SOCIETY OF ARTS, at 4.30.—The World's Cotton Supply and India's Share in it: Prof. J. A. Todd.

LINNEAN SOCIETY, at 5.—Observation on the Root System of *Impatiens Roylei*, Walp.: Miss Isabel McClatchie.—The Teeth of some Palæozoic Sharks: Dr. A. Smith Woodward.—Sex Distribution in *Myrica gale*, Linn.; Miss A. J. Davey and Miss M. Gibson.

FRIDAY, DECEMBER 15.

INSTITUTION OF MECHANICAL ENGINEERS, at 6.

ILLUMINATING ENGINEERING SOCIETY, at 5.—Suggestions regarding War Economies in Lighting: L. Gaster.

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