

THE Board of Agriculture and Fisheries proposes to award the following scholarships, tenable for three years from October 1 next. Three agricultural science scholarships of the value of 150*l.* per annum, open to students who have graduated with honours in science at a British University; two veterinary research scholarships of the value of 150*l.* per annum, open to students who have obtained the diploma of the Royal College of Veterinary Surgeons; three veterinary scholarships of the value of 100*l.* per annum, open to students who have graduated with honours in science at a British university, and tenable for three years at a veterinary college in the United Kingdom. Applications for any of the foregoing scholarships must be made not later than July 17, on a form to be obtained on application from the secretary, Board of Agriculture and Fisheries, Whitehall Place, London, S.W.

THE Education Committee of the London County Council has recently had under consideration the recommendations of the Royal Commission on University Education in London. Two questions in particular have received careful attention: the constitution of the governing body of the University and its relation to the teaching institutions, and in particular to the Imperial College of Science and Technology; and the provision to be made for the education and examination of persons who are unable to devote their whole time to study. The committee approves generally the proposals of the Commission with reference to the government of the University of London, and is of opinion that no scheme for the reorganisation of the University will be satisfactory which does not provide that the Senate shall have full and effective control over the work of the University in the constituent colleges. The committee considers it essential that the Imperial College of Science and Technology shall become a constituent college of the University. It is also of opinion that the University of London should continue to confer degrees in honours as well as ordinary degrees on all British subjects in all faculties other than the faculty of medicine on the results of examination only, without regard to the course of training the candidate has pursued, or in the case of the higher degrees, on the submission of original work.

SOCIETIES AND ACADEMIES.

LONDON.

Zoological Society, June 9.—Prof. E. A. Minchin, vice-president, in the chair.—P. D. Montague: Report on the fauna of the Monte Bello Islands. The islands are barren limestone with a limited vegetation and some mangroves. The collections prove conclusively the entire dependence of the islands for their fauna on the neighbouring continent. Partial depopulations of the islands owing to drought are suggested, succeeded by repopulations by means of wind-borne forms from the south.—Dr. W. A. Cunningham: Parasitic Eucopepoda collected by the third Tanganyika Expedition in 1904-5. The collection consisted of a very small number of specimens, these forms being evidently much rarer than the Argulidæ, which are also external parasitic Copepods infesting fish.—Dr. F. E. Beddard: A new species of avian Cestodes and a further discussion of the paruterine organ in Otitidænia.—R. I. Pocock: The facial vibrissæ of mammalia. In all the principal orders of the class, with one or two exceptions, the following groups of vibrissæ are present in some genera:—Mystaciale on the upper lip, submental on the chin and lower lip, superciliary over the eyes, gonial on the cheeks, and interramal on the throat behind the symphysis of the

jaw. Within the limits of the orders these tufts are present in the primitive genera, but more or fewer of them may be lost in the more specialised types. This fact, coupled with their prevalence in widely different types, points to the arrangement of the vibrissæ above indicated being exceedingly primitive.—R. I. Pocock: The feet and other external features of the Canidæ and Ursidæ. The paper dealt with the rhinaria, the facial vibrissæ, and the pads and interdigital integument of the feet in many of the genera of Canidæ and all the admitted genera of Ursidæ.—Dr. G. A. Boulenger: A second collection of batrachians and reptiles made by Dr. H. G. F. Spurrell in the Choco, Colombia.—D. M. S. Watson: *Procolophon trigoniceps*, a cotylosaurian reptile from South Africa.—A. W. Waters: Marine fauna of British East Africa and Zanzibar, from collections made by Cyril Crossland in the years 1901-2: Bryozoa—Cyclostomata, Ctenostomata, and Endoprocta. Out of the twenty-four species from these three groups, four are new; and, as the species mentioned are all from 10 fathoms or under, it will not occasion surprise that the number of Cyclostomata is but small.

Physical Society, June 12.—Prof. T. Mather, vice-president, in the chair.—Prof. C. H. Lees: Note on the connection between the method of least squares and the Fourier method of calculating the coefficients of a trigonometrical series to represent a given function or series of observations. In view of the number of alternative methods which have been suggested for calculating the coefficients of the terms of a Fourier series to represent a number of observations of a variable quantity, the author points out that the Fourier method gives the most probable values of the coefficients, since it makes the sum of the squares of the errors at the points of observation a minimum.—F. E. Smith: A magnetograph for measuring variations in the horizontal intensity of the earth's magnetic field. In the case of unifilar instruments for recording variations in H, if θ is the angle which the magnetic system makes with the magnetic meridian, M the moment of the magnet, and H the horizontal intensity of the earth's field, equilibrium results when $MH \sin \theta = T\phi$, where ϕ is the torsion on the fibre and T is a constant. In the instrument described ϕ may be made great or small, but high sensitiveness is secured by making ϕ great.—G. Shrimpton: The atomic weight of copper by electrolysis. Four copper cells separating two silver cells were run in series. The areas of the four copper kathodes increased from 10 to 50 s.cs. By plotting the weights of the copper deposits against the corresponding areas of the kathodes, and extrapolating to zero area, the weight of the deposit is corrected for under experimental conditions. The atomic weight of copper

$$= \frac{\text{corrected weight of Cu}}{\text{mean weight of Ag}} \times 107.88 \times 2.$$

The mean atomic weight for ten determinations + 63.563, with a mean error of ± 0.003 .—W. H. Apthorpe: Note on an improvement in the Einthoven string galvanometer.

Mineralogical Society, June 16.—Dr. A. E. H. Tutton, president, in the chair.—Dr. J. Drugman: Childrenite from Crinnis mine, Cornwall, and eosphorite from Poland, Maine. Analyses of childrenite from Crinnis mine showed it to contain even less manganese than the specimens from George and Charlotte mine. Eosphorite from Poland is richer in manganese than that from Branchville, the only occurrence previously known. It is well crystallised, unlike the Crinnis mine childrenite.—R. H. Solly: Sartorite. From a goniometrical examination of two hundred crystals it is concluded that Dr. Trechmann's crystals, Nos 1

and 2, belong to a new species closely allied to sartorite and smithite. Many new forms for sartorite were found.—Dr. G. T. **Prior**: Re-determination of nickel in the Baroti and Wittekrantz meteorites. Precipitation with ammonia was found not to separate iron from nickel completely, however often the operation was repeated. Re-determination showed that the proportion of iron to nickel in the case of both the meteorites in question was nearer 6:1 than 10:1, as previously stated.—Dr. L. L. **Fermor**: Ice crystals from Switzerland. Last winter the surface of the snow in shady situations near Zweisimmen and Lenk was often characterised by a dense growth of hollow prisms formed of a thin shell of ice coiled spirally parallel to the face of a hexagonal prism.—Dr. L. L. **Fermor**: Hematite from the Kallidongri manganese mine, India. The crystals, which had the habit of corundum, and were marked with three sets of striations due to twin lamellation parallel to 100, showed the forms 111 and $6\bar{1}\bar{4}$ well developed, together with 100, $22\bar{1}$, $28.28.13$ (a new rhombohedron), $5\bar{1}\bar{3}$, $7\bar{1}\bar{5}$, and 101, less prominent.—H. B. **Cronshaw**: A variety of epidote from the Sudan. A mineral discovered by Mr. G. W. Grabham in a pegmatite vein closely resembles allanite in appearance, but is free from rare earths and agrees in composition with epidote; in its pleochroism and negative sign it also resembles the latter, but has an abnormally low optic-axial angle of about 54° . In thin section it presents a well-marked zonal structure.

Royal Meteorological Society, June 17.—Mr. C. J. P. Cave, president, in the chair.—B. C. **Wallis**: The rainfall of the southern Pennines. This inquiry had been undertaken with the view of attempting to find a scientific justification of the claim made for the wetness and humidity of Lancashire suitable to the manufacture of cotton. In summarising the distribution of the rainfall of the Pennine district, the author said it may be asserted that the west is wetter than the east on the whole and as a rule, although the difference between the two areas is least marked during the dry season from March to May. In June and July, however, the lowland of the Trent and Ouse valleys receives a relative excess of rainfall which is compensated by the relative dryness in December and January. The uplands are absolutely wetter than the neighbouring lowlands, and the western slopes are wetter than the eastern slopes, but the difference in rainfall between upland and lowland is least marked during the warm weather and most marked during the cold weather. Throughout the whole district, on the average, the rainfall decreases in intensity from January until April, increases from April to August, shows a drop in relative quantity for September, rises to a maximum in October, and then declines until December. The local relief of the Pennine uplift gives to the cotton towns their characteristic climate, and is the dominant factor which has made Lancashire supreme in the cotton industry.—H. J. **Bartlett**: The relation between wind direction and rainfall. This was a discussion of wind and rain records at the four observatories Valencia, Aberdeen, Falmouth, and Kew for the ten-year period 1901–10. It was shown that a large proportion of the total rainfall falls with winds in the south-east and south-west quadrants, except in the case of Aberdeen, where the amount in the north-west quadrant is relatively high. The greatest amounts at Kew and Falmouth are, with a south-west wind, respectively 22 and 28 per cent. At Aberdeen the south-east wind brings the highest amount, 20 per cent., while Valencia receives 30 per cent. with south, 20 per cent. with south-east, and 15 per cent. with the south-west wind during the year. At each observatory there are two

months during the year when the proportion of rain occurring normally in one or more quadrants diminishes considerably. For Valencia, Falmouth, and Kew this feature is strongly marked in June and September, while for Aberdeen, where it is less obvious, the months are May and November.—E. H. **Chapman**: Barometer changes and rainfall: a statistical study.

PARIS.

Academy of Sciences, June 22.—M. P. Appell in the chair.—G. **Humbert**: Some remarkable numerical functions.—J. **Boussinesq**: The mean velocity, or the flow and the maximum or axial velocity, in a prismatic tube, of regular section with any number (m) of sides.—H. **Deslandres** and V. **Burson**: The exact study of band spectra, the so-called Swan spectrum, in the magnetic field. The division and polarisation of the lines of the spectrum. The study of the Swan band spectrum has given results in general agreement with the work previously published on other band spectra. Comparing with line spectra the deviation of the Zeeman components is much smaller and the circular vibrations do not show the negative effect exclusively, but, nearly as often, the positive effect. These facts can be explained by assuming the presence of both positive as well as negative particles, of a mass much larger than the electron. A very powerful magnetic field is necessary in these researches.—Charles **Depéret**: The reconstitution of a skeleton of *Felsinotherium serresi*, from the Montpellier sands. A photograph is shown of the skeleton which has been reconstructed from the remains of several individuals. It is slightly longer than the present dugong.—P. **Chofardet**: Observations and remarks on the Kritzinger comet, 1914a, made at the Observatory of Besançon. Positions given for May 22, June 17 and 20. The peculiarities in the variations in magnitude of this comet are discussed.—Ch. H. **Müntz**: A property of Bernoulli's polynomials.—C. **Popovici**: A functional equation.—J. E. **Littlewood**: The distribution of the prime numbers.—Ludwig **Schlesinger**: Integro-differential equations.—K. **Bartel**: A geometrical method of formation of some ruled surfaces of higher order.—G. **Koenigs**: A new formula expressing the power indicated by a four-cycle motor as a function of the experimental elements. A recalculation of some results by M. Lumet.—Jacques **Duclaux**: The mechanism of light radiation and the entropy quantum.—F. **Bourcier**: The propagation of Hertzian waves along a wire wound as a helix.—A. **Defretin**: The Foucault currents in a soft iron core and the influence of hysteresis. The effective value of the mean induction for a given ring and magnetising current varies inversely as the square root of the frequency, if this is moderately large.—Otto **Scheuer**: A reduction of carbon monoxide by hydrogen caused by the radium emanation (see page 463).—Z. **Klemensiewicz**: The electrochemical properties of radium-B and thorium-B. The method is based on the determination of the distribution ratio of a radio-active body between an amalgam of the metal supposed to be isotopic with it and an aqueous solution of one of these salts. It was found that the normal electrolytic potentials $E_N = 0.029 \log P$ of radium-B and of thorium-B are equal to that of lead within $2 \cdot 10^{-5}$ volt. This confirms the view that the radio-active metal and its isotope are chemically inseparable.—Victor **Henri**: Study of the dispersion of the ultra-violet rays by organic bodies. For the numerous organic substances studied it was found that for a wave-length up to about $\lambda = 2600$, the radio-active power of CH_2 is as additive as in the visible spectrum; for shorter waves the additivity subsists only as a first approximation.—Paul **Pascal**: The diamagnetic properties of the

elements follow a periodic law.—H. **Pélabon**: The thermo-electric power of the selenides of tin. The curve representing the thermo-electric power of the tin-selenium alloys as a function of the composition shows a marked angular point corresponding with the compound SnSe , but there is no discontinuity at the composition SnSe_2 .—R. **Cornubert**: The allylcyclohexanones and the methylallylcyclohexanones. A tabulated statement of the physical properties of nineteen substituted cyclohexanones.—E. **Léger**: A new method of transformation of barbaloin into β -barbaloin. The conversion is readily effected by heating with acetic anhydride in the presence of sodium acetate.—E. **Gourdon**: The mineralogical constitution of the Southern Shetlands (Antarctic).—M. **Chouchak**: The influence of a continuous electric current on the absorption of nutritive substances by plants. Under the action of an electric current the velocity of absorption of nutritive materials by plants depends on the concentration of the nutritive materials and on the electric state of the roots of the plants. The facility with which the last factor can be altered has an important practical application on plant growth.—E. **Bataillon**: A reagent of activation and fecundation on the eggs of Batrachians cleaned with cyanide.—J. M. **Lahy**: The comparative effects on the blood pressure of physical fatigue produced by a long walk and psychical fatigue resulting from work requiring close attention. With soldiers performing long marches there is no notable increase in the blood pressure, but with work requiring concentrated mental attention there is an increase.—Mlle. G. **Koenigs**: Researches on the excitability of the motor pigment fibres.—J. E. **Abelous** and C. **Soula**: The modifications of the urea in anaphylaxy.—Pierre **Robin**: Circumduction cannot exist in temporo-maxillo-dental articulation.—Y. **Manouélian**: Cytological researches in human tetanus. A histological study of the modifications caused by tetanotoxin in the peripheral motor neurones.—J. **Tissot**: The function of the dissociation of soaps in the mechanism of the inactivation of serums by the addition of salts, dilute acids, carbonic acid, and globulin.—Edm. **Sergent** and H. **Foley**: The latent periods of the spirilla in the patient attacked by recurring fever. M. **Lécaillon**: The existence of phenomena of rudimentary natural parthenogenesis in the common toad, *Bufo vulgaris*.—L. **Bordas**: Propulsive vibration. Gliding and beating flight in birds.—Maurice **Piettre**: Crystallised tyrosine in microbial fermentations. The presence of tyrosine in the muscles or in other organs not normally containing products of digestion is an indication of putrefaction of the meat.—J. **Blayac**: The sands of the Landes in their relations with the Adour terraces. Contribution to the study of their origin and age.—Michel **Longchambon**: The distinction of the two secondary series of strata superposed in the neighbourhood of Vicdessos, Ariège.—E. **Maury**: The tectonic signification of the folds between Nice and Mentone.—Jean **Groth**: The tectonic of the Sierra Morena.

NEW SOUTH WALES.

Linnean Society, March 25.—Mr. W. S. Dun, president, in the chair.—R. J. **Tillyard**: The study of zoogeographical regions by means of specific contours, with an application to the Odonata of Australia.—H. J. **Carter**: Revision of the subfamily Tenebrioninæ (family Tenebrionidæ). Australian species: with descriptions of new species of Tenebrioninæ and Cyphaleinæ.

April 29.—Mr. C. Hedley, vice-president, in the chair.—L. **Kesteven**: The venom of the fish, *Notesthes robusta*. Tenison-Woods ("Fish and Fisheries of New South Wales," 1882, p. 48) has given a fairly

accurate account of the symptoms following upon wounds inflicted by the spines about the head of this fish. The opportunity of treating professionally a number of cases of persons suffering from such wounds, has enabled the author to confirm and amplify Tenison-Woods's statements that the symptoms are not compatible with non-toxic wounds, but are undoubtedly venomous (contrary to the contention of Ogilby).—G. I. **Playfair**: Contribution to a knowledge of the biology of the Richmond River.—A. G. **Hamilton**: The xerophilous characters of *Hakea dactyloides*, Cav. (N.O. Proteaceæ).

CALCUTTA.

Asiatic Society of Bengal, June 3.—Dr. N. **Annandale** and S. W. **Kemp**: Fauna of the Chilka Lake in Orissa and Ganjam. The Chilka Lake is a shallow lagoon on the east coast of India, some thirty miles long and ten miles broad. It is connected with the sea by a narrow mouth which opens into a channel separated from the main body of the lake by a series of peninsulas and islands running parallel to the coast. The salinity of the water differs greatly at different seasons, but that of the outer channel is always much higher than that of the rest of the lake. The fauna consists of a mixture of marine and fresh-water types with a certain element that appears to be peculiar to brackish water.—Dr. E. P. **Harrison**: The "Gore effect" in iron. An anomaly in the expansion coefficient of iron at a dull red heat was discovered by Gore in 1869. The phenomenon is attributed to an obscure structural change in the metal and is probably closely associated with changes in magnetic quality and in electric resistance which are known to occur at high temperatures. A similar peculiarity affects the expansion coefficient of nickel.

BOOKS RECEIVED.

Ancient India. By Prof. E. J. Rapson. Pp. viii+199. (Cambridge University Press.) 3s. net.

Die Insekten Mitteleuropas insbesondere Deutschlands. Edited by Prof. C. Schröder. Band iii. Hymenopteren (Dritter Teil). Die Gallwespen (Cynipidæ). By Prof. J. J. Kieffer. Die Blatt- und Holzwespen (Tenthredinoidea). By Dr. E. Enslin. Pp. viii+213+8 plates. (Stuttgart: Franckh.) 7.20 marks.

Argyllshire and Buteshire. By P. Macnair. Pp. x+161. (Cambridge University Press.) 1s. 6d. net.

A Practical Handbook of the Tropical Diseases of Asia and Africa. By Dr. H. C. Lambart. Pp. xv+324+plates. (London: C. Griffin and Co., Ltd.) 8s. 6d. net.

The Examination and Thermal Value of Fuel: Gaseous, Liquid, and Solid. By J. H. Coste and E. R. Andrews. Pp. xvi+278. (London: C. Griffin and Co., Ltd.) 6s. net.

The Metallurgy of the Non-Ferrous Metals. By Prof. W. Gowland. Pp. xxvii+496. (London: C. Griffin and Co., Ltd.) 18s. net.

Tierbau und Tierleben in ihrem Zusammenhang betrachtet. By Profs. R. Hesse and F. Doflein. Band ii. Das Tier als Glied des Naturganzen. By F. Doflein. Pp. xv+960+plates. (Leipzig and Berlin: B. G. Teubner.) 20 marks.

A Reconstruction of the Nuclear Masses in the Lower Portion of the Human Brain-stem. By L. H. Weed. Pp. 76+vi plates. (Washington, D.C.: Carnegie Institution.)

The Climatic Factor, as Illustrated in Arid America. By Prof. E. Huntington and others. Pp. vii+341. (Washington, D.C.: Carnegie Institution.)