

not allow mention of the other reports, all of which contain matter of interest.

DR. T. K. MONRO has been appointed professor of practice of medicine in the University of Glasgow, in succession to the late Prof. S. Gemmell.

MR. P. F. KENDALL, junior assistant curator of the zoological museum of the University of Sheffield, has been appointed lecturer in zoology and geology in the South-Eastern Agricultural College at Wye.

THE widow of the late Dr. Hervieux, who died six years ago, has given 400*l.* to found two bursaries for poor students. We learn from the *Revue Scientifique* that Mme. Hervieux has also bequeathed to the Paris Academy of Medicine a bust of her late husband.

UNDER the auspices of the Edinburgh Mathematical Society, a mathematical colloquium will be held in Edinburgh during the week beginning Monday, August 4, and lasting five days. The following courses of lectures have been arranged:—"The Theory of Relativity and the New Physical Ideas of Space and Time," Prof. A. W. Conway; "Non-Euclidean Geometry and the Foundations of Geometry," Dr. D. M. Y. Sommerville; "Practical Harmonic Analysis and Periodogram Analysis: an Illustration of Mathematical Laboratory Practice," Prof. E. T. Whittaker, F.R.S. Further particulars may be obtained from the honorary secretary of the Edinburgh Mathematical Society, 19 Craighouse Terrace, Edinburgh.

THE prospect of early educational legislation has led lately to much discussion and to many speeches by prominent persons on various aspects of the problem of providing an adequate and properly organised system of education. Opening the new buildings on June 6 of the Newcomen's Foundation Domestic Trade School for Girls in London, the President of the Board of Education, Mr. Pease, said that when the history of the past fifty years comes to be written it will show that there has been too great an effort to make individuals read books. The result has been that people too often take their opinions from books, instead of forming them for themselves as the result of their own experience, their own thought, and their own work.—On June 6 and 7 the annual meeting of the Association of Education Committees was held, and resolutions were passed (a) declaring that it is imperative that a revision of the incidence of the cost of education as between the national and the local contributions shall precede any further legislation or administrative action which will increase the cost of education; (b) expressing the opinion that a new form of State contribution should be substituted for the very unsatisfactory system of grants to local education authorities, and that the Exchequer grants should increase automatically as new and increased responsibilities were put upon local education authorities; (c) expressing the opinion that the time has arrived when the strongest possible protest should be offered to local authorities undertaking any further financial obligations until the Government has redeemed its promise of further financial aid. Mr. Pease, who attended the meeting, said it is realised that more money ought to be given by the State in support of education, and that education committees should cooperate one with another with the view of coordinating the whole system of education in the country and making it more perfect.

COMMEMORATION Day at Livingstone College, Leyton, was held on June 7, and formed the centenary celebration of David Livingstone's birth. After a preliminary statement by the principal (Dr. C. T. Harford), the chairman (Bishop Montgomery) addressed the meeting. He emphasised the importance of medi-

cal training for missionaries, especially for those who had to go to tropical countries. Sir A. Pearce Gould said that the life of Livingstone was an outstanding contradiction to and repudiation of materialism. He spoke of the value of the college training for all missionary students, and urged the advantage of the course for missionaries on furlough, who would thus be brought into touch with recent medical researches. He referred to Livingstone's skill as a physician, and to his anticipations of modern research. Livingstone clearly saw the close connection between mosquitoes and malaria, and that there was an absence of malaria in the highlands where there were no mosquitoes, but in the lowlands where they swarmed malaria was prevalent. Livingstone recognised that the bite poisoned the blood, and noted that "the germ which enters when the proboscis is inserted to draw blood, the poison germ, is capable of reproducing itself." Livingstone also saw clearly the high importance of quinine in cases of fever. The Rev. W. D. Armstrong, who had been fifteen years on the Congo, spoke of the extreme value of his medical training in the maintenance of his own health whilst he was sampling Congo diseases, and in the valuable work he was able to do for his wife and fellow-missionaries at critical times. He spoke of the frequent call for help from traders, who were often entirely dependent on the missionary for medical help. This relationship had been an efficient means of establishing good relations between traders and missionaries in the troublous times of the rubber controversy. At the conclusion of the meeting the visitors had opportunities of examining the college laboratory for research in tropical diseases and the Livingstone relics which were on exhibition.

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, June 5.—Sir Archibald Geikie, K.C.B., president, in the chair.—Dr. R. Broom: The origin of mammals (Croonian Lecture). An endeavour is made to trace the evolution of mammals from Cotylosaurian ancestors through the carnivorous Therapsida.—Dr. E. A. Newell Arber: The fossil floras of the Wyre Forest, with special reference to the geology of the coalfield and its relationships to the neighbouring Coal Measure areas.

Zoological Society, May 20.—Prof. E. A. Minchin, F.R.S., vice-president, in the chair.—Dr. R. Broom: The South African pseudosuchian reptile *Euparkeria* and allied genera. Besides giving an account of the very completely known South African form, the author also discussed the structure of the Elgin allied forms, *Ornithosuchus* and others. The group of pseudosuchians he regarded as an extremely important primitive reptilian order, as there is good reason to believe that not only does it contain the ancestor of the dinosaurs, but also the ancestors of the pterodactyles and birds. *Euparkeria* and *Ornithosuchus* are, in structure, almost dinosaurs, and it is held that when the bipedal habit was more fully acquired the few characters not quite dinosaurian would become dinosaurian. Birds are held to have originated from a pseudosuchian which, by a bipedal habit, had acquired a dinosaur-like hind limb, and had then become arboreal in habit and acquired the peculiar power of flight.—E. G. Boulenger: Experiments on the metamorphosis of the Mexican axolotl (*Amblystoma tigrinum*). A detailed description was given of the changes that take place in the course of transformation. The author also exhibited a number of specimens in the perfect or amblystome condition. The conclusions arrived at, as a result of

his experiments, were that, in accordance with Mlle. de Chauvin's experiments, and contrary to those of Dr. Powers, the axolotl will, with a few exceptions, transform if placed under special conditions which force it to breathe air more frequently than usual; that starvation, irregular feeding, and temperature have no influence on the metamorphosis; that the elimination of oxygen from the water has likewise no bearing on the point, as the animal will not, in the circumstances, rise to the surface and make use of its lungs at more frequent intervals than animals placed under normal conditions.—G. E. **Bullen**: Some cases of blindness in marine fishes. Work hitherto performed, e.g. that of Hofer, de Drouin de Bouville, and others, upon the pathology of fishes has been directed largely upon species of fresh-water habitat. The present author has found, in certain specific cases of blindness in marine fishes, pathological conditions similar to those described, and others with slight modifications, in several fresh-water species. The examples dealt with in detail are traumatic corneal opacities in a conger-eel, corneal opacitis, &c., in a greater weaver, and corneal opacitis and cataract in a pollack. Dr. R. W. **Shufeldt**: The patella in the Phalacrocoracidae. From a study of the patella in a number of species of this family, the author had found that in adult individuals that bone was composed of the true patella solidly fused with the proximal portion of the cnemial process of the tibiotarsus, which became dissociated from the latter early in the life of the bird. Late in life this fusion obliterated the tendon of the ambiens muscle, which heretofore had been described as passing through the patella and persisting through life.

Royal Meteorological Society, May 21.—Mr. C. J. **P. Cave**, president, in the chair.—E. **Gold**: Determination of the radiation of the air from meteorological observations. The theory of the cooling of the air during the night hours was developed and applied to observations made near the earth's surface and 130 ft. above it, in order to obtain an estimate of the radiating power of the atmosphere. The results obtained show that even on calm, clear nights, when the air at the higher level is warmer than that near the surface, the cooling of the air is affected by convection, and the observations available do not suffice for the determination of the correction to the value of the radiating power necessary on this account.—S. C. **Russell**: Results of monthly and hourly cloud-form frequencies at Epsom, 1903-10. The author had made hourly records of the varieties of cloud observed each day throughout the eight years, and these he has grouped under fifteen forms of cloud. The total number of individual records approximates to 100,000. The cumulus cloud yielded the greatest number of daily values (1622), the stratus coming next (1155). The upper clouds, which include the cirrus, cirro-stratus, and cirro-macula, showed a marked prevalence during the summer with minima during the winter. Morning and evening maxima, with a mid-day decline, are common to all these varieties. The intermediate clouds, which include cirro-cumulus, alto-stratus, alto-cumulus, and cumulo-stratus, are also more prevalent in the summer than in the winter. The lower forms, which include strato-cumulus, nimbus, fracto-nimbus, fracto-cumulus, stratus, and fog, attain their maxima in the winter months, their minimum frequency being in the summer. The clouds of diurnal ascending currents, cumulus and cumulo-nimbus, are independent of any seasonal variation in hourly frequency, the maxima at noon and 3 p.m. respectively, taking place at these hours in every month of the year.

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Geological Society, May 28.—Dr. Aubrey Strahan, president, in the chair.—P. G. H. **Boswell**: The age of the Suffolk valleys, with notes on the buried channels of drift. The main watershed of Suffolk follows generally the Chalk Escarpment. Suffolk forms a plateau, dissected by a valley-system which is palmate in form. The strata cut through by the valleys, and the mantle of glacial deposits which more or less covers the whole county, are described briefly. Reasons are given for thinking that the Contorted Drift does not extend far south of the Waveney. The valleys, although they may have been etched earlier, are on direct evidence post-Pliocene in age; but, by analogy with the Waveney and the Norfolk rivers, they may be younger than the Contorted Drift. The Upper Boulder Clay covers much of the plateau, and wraps down into the valleys. The Glacial Sands, &c., below it also appear at times to lie on the valley-slopes. Intense glacial disturbances are found to be situated always on "bluffs" or "spurs" of the plateau, which were in existence before the advent of the valley-glaciers to the action of which the disturbances have been attributed. In each of the main valleys occur one or more buried channels of drift; borings made recently allow these to be described in detail, and the deposits filling them to be discussed. These buried channels were probably eroded by sub-glacial water-streams. The evidence indicates that the pre-Glacial or early Glacial contours of Suffolk were in the main much as they are now.—D. E. **Innes**: The internal structure of Upper Silurian rugose corals from the Grindrod collection, Oxford Museum.

Physical Society, May 30.—Prof. A. Schuster, F.R.S., president, in the chair.—Prof. A. W. **Bickerton**: The origin of new stars. The author gave an account of a theory which he has held for many years. He points out that the energy developed by mutual fall of colliding suns is so great that shearing must ensue. Hence the problem of oblique impact of all suns is taken in two divisions—first, the actually colliding parts that are torn away and coalesce, and, secondly, the parts that escape the collision but are profoundly influenced by it. The impact of meteoric swarms, nebulae, and sidereal systems may similarly be taken in two parts. The coalesced part is called the third body. The properties of this new body are best studied in the third star resulting from grazing suns. The third star is thermodynamically unstable, and selectively sorts its atoms into ensphering shells. It rotates, and has at its formation a special distribution of its elements. It will produce a new star. Its deduced properties correspond with the three criteria of thermodynamic intensity, complex light curve, and the physical peculiarities shown in each series of the spectrograms of novae.—Dr. W. H. **Eccles**: Electro-thermal phenomena at the contact of two conductors with a theory of a class of radio-telegraph detectors. The paper deduces mathematically the laws connecting the current and the applied E.M.F. in a circuit containing a light contact of two conductors. When an electric current passes across a light contact of two different substances, heat is liberated or absorbed in accordance with the law of Peltier, heat is generated in accordance with the law of Joule, and, in the regions of the conductors where there is a temperature gradient, heat is liberated or absorbed in accordance with the laws of the Thomson effect. These thermal actions are very noticeable in contacts made of badly conducting natural oxides or sulphides on account of the high resistivity and the large thermoelectric effects in these substances. The low thermal conductivities of these substances exalt the electrical consequences by conserving the heat. The bulk of the wireless tele-

graphy of the world is carried on by such contacts as these, and the present paper, therefore, constitutes a theory of the action of these detectors.—**J. Walker**: The extraordinary ray resulting from the internal reflection of an extraordinary ray at the surface of a uniaxial crystal. By the principle of least time it is shown that the diameter of the extraordinary wave-surface described round the point of incidence, that is, conjugate to the reflecting surface, is coplanar with the incident and reflected extraordinary rays, and is the median of the triangle formed by these rays and a parallel to the reflecting surface. The direction-cosines of the reflected ray are then obtained in terms of those of the incident ray and the said diameter of the wave-surface.—**S. Butterworth**: The evaluation of certain combinations of the ber, bei, and allied functions.

NEW SOUTH WALES.

Linnean Society, March 26.—**Mr. W. W. Froggatt**, retiring president, in the chair.—*Annual General Meeting*.—Presidential address: "A Century of Australian Civilisation, from a Zoologist's Point of View." The address was devoted to a consideration of the great changes that have been wrought by the advent of the white man with his domestic animals, in the displacement of the aboriginal population and the original fauna, in the course of a hundred years' civilisation.—*Ordinary Monthly Meeting*.—**Mr. W. S. Dun**, president, in the chair.—**A. H. S. Lucas**: Notes on Australian marine algæ. No. 1.—**H. J. Carter**: Revision of the Australian species of the subfamilies Cyphaleinæ and Cnodaloninæ (family Tenebrionidæ).

April 30.—**Mr. W. S. Dun**, president, in the chair.—**A. B. Walkom**: Stratigraphical geology of the Permo-Carboniferous system in the Maitland-Branxton district, with some notes on the Permo-Carboniferous palæogeography in New South Wales. The vertical succession of the formations represented in the area under consideration—Lower Marine Series, Greta Coal Measures, and Upper Marine Series—has been worked out in some detail. Vertical sections of the Lower Marine Series were obtained in three localities, showing a thickness of nearly 4800 ft. In his important monograph on the geology of the Hunter River Coal Measures of New South Wales (1907), Prof. David mapped the outcrop of this series and gave numerous detailed sections of the coal seams developed at many points along the outcrop; but, at this time, very little was known about the development between Branxton and Pokolbin. Additional data now available show that in four localities, as elsewhere, the main Greta seam is split, and that the upper split has been struck in each case; the lower split seems to be entire at Rothbury, but splits again further north.—**A. B. Walkom**: The geology of the Permo-Carboniferous system in the Glendonbrook district, near Singleton. The Glendonbrook district lies from five to fifteen miles E. by N. from Singleton. Permo-Carboniferous rocks are developed there in a small isolated basin. They consist chiefly of sandstones, conglomerates, and shales belonging to the Lower Marine Series, Greta Coal Measures, and Upper Marine Series. The whole basin is only some three miles in diameter, and is surrounded by rocks of Carboniferous age. Further to the west, nearer Singleton, owing to heavy faulting, rocks belonging to the Upper Coal Measures and Upper Marine Series also appear. All these rocks are described more or less in detail, and their relations to one another discussed. A coal seam about 10 ft. thick occurs in the Greta Coal Measures in the basin mentioned above.—**A. B. Walkom**: Notes on some recently discovered occurrences of the pseudomorph, glendonite. Glendonite, a pseudomorph after

glauconite, has been recorded from seven horizons in New South Wales and Tasmania, all, however, in the Upper Marine Series. In this paper, the occurrence of the mineral in rocks of the Lower Marine Series is recorded for the first time, with details of a comparison of crystals from both series.

BOOKS RECEIVED.

- "J." A Memoir of John Willis Clark. By A. E. Shipley. Pp. xi+362. (London: Smith, Elder and Co.) 10s. 6d. net.
- The Essence of Buddhism. By P. L. Narasu. Second edition. Pp. xx+359. (Madras: S. Varadachari and Co.)
- The Posture of School Children. By J. H. Bancroft. Pp. xii+327. (London: Macmillan and Co., Ltd.) 6s. 6d. net.
- Jesus Christus und sein Stern. By A. Stentzel. Pp. vi+240+16 plates. (Hamburg: Astronomischen Korrespondenz.) 6 marks.
- Schriften der Naturforschenden Gesellschaft in Danzig. Neue Folge. Dreizehnten Bandes. Zweites Heft. Pp. 1+167. (Danzig.)
- 34 Bericht des Westpreussischen Botanisch-Zoologischen Vereins. Pp. 20+268. (Danzig.)
- Le Système du Monde des Chaldéens à Newton. By J. Sageret. Pp. 280. (Paris: F. Alcan.) 3.50 francs.
- Determinative Mineralogy, with Tables. By Prof. J. V. Lewis. Pp. iv+151. (New York: J. Wiley and Sons; London: Chapman and Hall, Ltd.) 6s. 6d. net.
- The Textile Fibres. By Dr. J. M. Matthews. Third edition. Pp. xi+630. (New York: J. Wiley and Sons; London: Chapman and Hall, Ltd.) 17s. net.
- A Monograph on Johne's Disease (Enteritis Chronica Pseudotuberculosis Bovis). By F. W. Twort and G. L. Y. Ingram. Pp. ix+179+9 plates. (London: Baillière, Tindall and Cox.) 6s. net.
- Cambridge County Geographies. Lincolnshire. By Dr. E. M. Sympson. Pp. viii+193+2 maps. (London: Cambridge University Press.) 1s. 6d.
- The Control of Water, as Applied to Irrigation, Power, and Town Water Supply Purposes. By P. A. M. Parker. Pp. vii+1055. (London: G. Routledge and Sons, Ltd.) 21s. net.
- Pflanzenmikrochemie. By Dr. O. Tunmann. Pp. xx+631. (Berlin: Gebrüder Borntraeger.) 18.50 marks.
- Grundzüge der geologischen Formations- und Gebirgskunde. By Prof. A. Tornquist. Pp. iv+296. (Berlin: Gebrüder Borntraeger.) 6.80 marks.
- The Venom of Heloderma. By L. Loeb, with the collaboration of C. L. Alsberg, E. Cooke, E. P. Corson-White, and others. Pp. vi+244. (Washington, D.C.: Carnegie Institution.)
- The Food of Some British Wild Birds. By W. E. Collinge. Pp. vii+109. (London: Dulau and Co., Ltd.)
- Human Behavior. By Profs. S. S. Colvin and W. C. Bagley. Pp. xvi+336. (London: Macmillan and Co., Ltd.) 4s. 6d. net.
- The Science of the Sciences. By H. Jamyn Brooks. Pp. 312+ix. (London: D. Nutt.) 3s. 6d. net.
- Maps and Survey. By A. R. Hinks. Pp. xvi+206+xxiv plates. (London: Cambridge University Press.) 6s. net.
- Hampstead Heath: its Geology and Natural History. Prepared under the auspices of the Hampstead Scientific Society. Pp. 328+xi plates+3 maps. (London: T. Fisher Unwin.) 10s. 6d. net.