

State College, 248,000l.; University of Pennsylvania, 164,000l.; University of Pittsburgh, 80,000l.; and Temple University, 20,000l., making the total State grant for higher education 512,000l. From the same source we learn that Franklin College, Indiana, has secured pledges amounting to 50,000l. for additional endowment. Three-sixteenths of this amount is from the General Education Board in the United States.

THE Edinburgh Mathematical Colloquium was held during the first week of August in the mathematical department of the University. It was organised by the office-bearers of the Edinburgh Mathematical Society in response to a widely expressed desire on the part of mathematical teachers in England for a vacation course in the mathematical laboratory which Prof. Whittaker was instituting. In addition to five lectures by Prof. Whittaker on the periodogram and harmonic analysis, two other courses were provided. Prof. Conway, of University College, Dublin, lectured on the theory of relativity and the new ideas of space and time, and Dr. Sommerville, of St. Andrews, lectured on non-Euclidean geometry and the foundations of geometry. Nearly eighty members of the colloquium assembled from all parts of the United Kingdom, and two or three from Canada and the United States. The colloquium was in every way a great success, the novel features being the method by which Prof. Whittaker proposed to carry on the practical instruction in numerical evaluation of functions and the treatment of definite data. Each "student" sat at a specially designed desk for facilitating numerical work.

THE calendar of the Edinburgh and East of Scotland College of Agriculture for the session 1913-14 has now been issued. It contains full details of the various courses of instruction which are now available in the departments of agriculture, horticulture, and forestry. The aim of the college is to supply such training in agriculture and the sciences underlying it as is indispensable to all who intend to gain their living from the land as owners, or tenants, or agents. The calendar gives full guidance as to the curricula for the B.Sc. degree in agriculture and in forestry, the college diploma in agriculture, and the college certificate in horticulture. Special note may be made of the new course in horticultural science, which will appeal to young gardeners who have served their apprenticeship in the ordinary way, but desire to make themselves acquainted with the scientific as well as the practical aspects of horticulture. Under arrangement between Edinburgh University and the college there is now provided at Edinburgh a course of training in forestry. The preliminary course is intended specially for those who desire to get a knowledge of forestry for general purposes, and mainly from the practical point of view.

### SOCIETIES AND ACADEMIES.

#### LONDON.

**Geological Society**, June 25.—Dr. Aubrey Strahan, F.R.S., president, in the chair.—Dr. F. Oswald: The Miocene beds of the Victoria Nyanza and the geology of the country between the lake and the Kisii highlands; with appendices on the vertebrate remains, by Dr. C. W. Andrews; on the non-marine Mollusca, by R. B. Newton; and on the plant-remains, by Miss N. Bancroft. The Miocene beds of the eastern coast of the Victoria Nyanza, south-east of Karungu, form a narrow zone (covered with black earth) at the foot of cliffs of overlying nepheline-basalt, and are only exposed in a few gullies. The whole series is conform-

able, dipping 8° north by west. 1 (Beds 1-12). An upper group (about 70 ft. thick) of grey and brown clays and shales, with occasional current-bedded sandstones containing terrestrial shells (*Tropidophora*, *Cerastus*), as also calcified tree-stems in the uppermost bed. 2 (Beds 13-25). A middle group (about 30 ft. thick) of red and grey clays, with white sandstones in the lower half. No bone-bed, but fragmentary Chelonian and crocodilian remains occur sparsely throughout the series. Persistent horizons are a travertinous marlstone (No. 14) containing *Ampullaria* and *Lanistes*; a thin sandstone (No. 16) yielding Hyracoid jawbones; and a gravel (No. 24) yielding teeth of *Dinotherium*, *Protopterus*, crocodile, &c. 3 (Beds 26-37). A lower group (about 35 ft. thick) of current-bedded sandstones and gravels passing down into clays and marlstones. A conglomerate of calcareous nodules overlies gravelly sandstones (No. 31) containing isolated bones of *Dinotherium*, *Antracotheroids*, rhinoceros, giant tortoises, &c., indicating a Lower Miocene (Burdigalian) age, with *Ampullaria*, *Cleopatra*, and terrestrial shells (*Cerastus*). The vertebrate remains described by Dr. C. W. Andrews include Proboscidea, Hyracoida, Artiodactyla, Rodentia, and Reptilia, and fully support the suggested occurrence of Lower Miocene deposits on the shores of the Victoria Nyanza. A deposit of probably Pliocene age yielded a new (?) species of *Elephas*, also bones of antelopes and baboons. The non-marine Mollusca associated with the Miocene vertebrates are freshwater and terrestrial shells which all belong to existing species.

#### PARIS.

**Academy of Sciences**, August 11.—M. J. Boussinesq in the chair.—M. Baillaud gave an account of the recent meeting of the fifth congress of the International Union of Solar Research, held at Bonn.—L. E. Bertin: Concerning the origin of the double oscillograph for the simultaneous registration of pitching and rolling of ships.—A. Lacroix: The cipolin marbles of Madagascar and the associated silicate rocks.—A. Romieux: An attempt at gehyposographical exploration.—A. Guillet and M. Aubert: The direct expression of electrospherical functions; formation of differential equations verified by these functions.—E. Rothé and M. Guéritot: A method permitting the use of apparatus on a reduced scale in wireless telegraphy.—Jean Bielecki and Victor Henri: The quantitative study of the absorption of the ultra-violet rays by some acids of the ethylene series. In the acids studied the double bond produces an increase in the absorption of ultra-violet rays, and this increase is the more marked as the position of the double bond approaches the carboxyl group. Geometrical stereoisomers present different absorptions.—H. Giran: The molecular weight of sulphur trioxide. By the application of Trouton's formula, as modified by M. de Forcrand, the molecular weight of sulphur trioxide has been found to be 80, that is the simple formula  $SO_3$  of the gaseous anhydride.—J. Bougault: Phenyl- $\gamma$ -oxycrotonic acid.—A. Wahl and P. Bagard: The microscopical examination of coals. The chief difficulty has been the choice of a suitable etching material for the coal sections; pyridine was used with success for bringing out details of structure.—L. Lindet: The influence of calcium chloride on the curdling of milk.

#### CAPE TOWN.

**Royal Society of South Africa**, July 16.—The president in the chair.—R. Broom: Some fossil fishes from the diamond-bearing pipes of Kimberley. This paper describes three new types of Palæoniscid fishes now preserved in the McGregor Museum, Kimberley, for

which the author erects two new genera—*Disichthys* and *Peleichthys*—and three new species—*Acrolepis addamisi*, *Disichthys kimberleyensis*, and *Peleichthys kimberleyensis*. The fossils occur on slabs of sandstone which were taken from the Wesselton and De Beers Mines, and from the absence of conspicuous sandstones in the Ecce beds of the vicinity, and the occurrence in another slab of *Chelyosaurus williamsi*, they are in all probability of Beaufort age. Denudation has removed all trace of the parent rocks from the locality.—W. A. D. Rudge: The daily range of atmospheric potential gradient at Bloemfontein and the influence of dust storms. An account is given of observations at Bloemfontein between July and December, 1912, with a Bendorff recording electrometer. The values of the potential gradient at hourly intervals are given for the whole period, and curves showing the daily range of the potential gradient are given for selected cases. These curves show (1) the normal range on clear calm days; (2) that on days when some dust was observed; (3) that on very dusty days; and (4) some special cases. The normal curves are similar to those taken in other parts of the world, but those for dusty days show great differences. In class (2) the dust is present in quantity sufficient to keep the potential almost at zero whilst in (3) for a considerable part of the day there is a very strong negative potential gradient amounting to thousands of volts per metre. This negative result is caused by the clouds of fine siliceous dust raised by the wind, as has been shown by the author in previous communications. A negative potential gradient was never recorded unless dust was blowing or rain falling. Wind alone had practically no influence. The rain which fell during the period under observation was invariably negatively charged.—J. C. Beattie: Further magnetic observations in South Africa. Results of observations in various parts of South Africa during 1910-13. The greater number of the observations was carried out in the western Transvaal, British Bechuanaland, and Bushmanland. In addition a number of repeat stations were re-occupied.—J. C. Beattie: Magnetic maps of the western and northern parts of the Union of South Africa and of Great Namaqualand for the epoch July 1, 1908. Maps are given showing the true isogonics, the true isoclinals, and the true lines of equal horizontal intensity for the above region.—T. Muir: Note on Clebsch's theorem.

#### BOOKS RECEIVED.

The Microtometist's Vade-Mecum. By A. B. Lees. Seventh edition. Pp. x+526. (London: J. and A. Churchill.) 15s. 6d. net.

Handwörterbuch der Naturwissenschaften. Edited by E. Korschelt and others. Lief. 47-53. (Jena: Gustav Fischer.) 2.50 marks each.

Le Froid industriel. By Prof. L. Marchis. Pp. 328. (Paris: Félix Alcan.) 3.50 francs.

A Plea for the Younger Generation. By Cosmo Hamilton. Pp. 63. (London: Chatto and Windus.) 2s. 6d. net.

Coast Erosion and Protection. By E. R. Matthews. Pp. xiv+147+32 plates. (London: C. Griffin and Co., Ltd.) 10s. 6d. net.

A New School Geometry. By R. Deakin. Part ii. Pp. viii+161-292. (London: Mills and Boon, Ltd.) 1s. 6d.

The Theory and Design of Structures. By Ewart S. Andrews. Third edition. Pp. xii+618. (London: Chapman and Hall, Ltd.) 9s. net.

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General Chemistry Laboratory Manual. By Prof. J. C. Blake. Pp. x+166. (New York: The Macmillan Co.; London: Macmillan and Co., Ltd.) 8s. net.

The English Convict: a Statistical Study. By Dr. C. Goring. Pp. 440. (London: H.M. Stationery Office; Wyman and Sons, Ltd.) 9s.

A Text-Book of Biology. By Prof. W. M. Smallwood. Pp. 285+13 plates. (London: Baillière, Tindall, and Cox.) 10s. 6d. net.

Die Physik der bewegten Materie und die Relativitätstheorie. By Dr. Max B. Weinstein. Pp. xii+424. (Leipzig: J. A. Barth.) 17 marks.

The Principle of Least Action. By P. E. B. Jourdain. Pp. 83. (London and Chicago: Open Court Publishing Co.) 1s. 6d. net.

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