United States and in Germany. In the United States there are 10 students at universities and technical institutions per 10,000 of population, in Germany 14, and in the United Kingdom only 6; Scotland, however, is more favourably situated, the value being 17. According to Sir J. J. Thomson's committee, the total annual output of first and second class honours men in science and engineering from all the universities in this country is little more than 500. The number of men students entering universities and colleges of England and Wales during 1913–14 was about 4400, about half this number being from public schools. Of youths leaving public schools about 25–30 per cent. pass on to universities; of boys leaving State-aided schools at ages over sixteen years, probably only 10 per cent. Whereas the income from endowments of the eighteen State-aided universities and colleges of England and Wales amounts to about 100,000*l.*, a third of the income being from Parliamentary grants, the total gifts and endowments of universities and colleges in the United States in a single year, 1913–14 (excluding grants from States, the Federal Government, or municipalities) was equivalent to an income exceeding 200,000*l.* The bequests to universities and colleges in the United Kingdom in the same year amounted to, roughly, 5 per cent. of the American endowments, *i.e.* to about the same value as the income derived. The Journal also contains the report of the organising committee of the British Scientific Products Exhibition and a list of donors. The success of the 1918 exhibition is regarded as of hopeful augury for the corresponding exhibition arranged to take place this year.

SOCIETIES AND ACADEMIES.

LONDON.

Geological Society, June 4.—Mr. G. W. Lamplugh, president, in the chair.—Dr. A. S. **Woodward**: The dentition of the Petalodont shark, Climaxodus. The author describes the nearly complete dentition of a new species of Climaxodus from the Calciferous Sandstone of Calderside, near East Kilbride (Lanarkshire), now in the Royal Scottish Museum, Edinburgh. Climaxodus and Janassa are shown to be two distinct genera. These Petalodonts are especially noteworthy among the Elasmobranchii, because during the greater part of the life of each individual there cannot have been more than six or eight teeth in succession, a condition remarkably different from that in all ordinary sharks and skates, in which the successional teeth are always very numerous and rapidly replaced. The same limited tooth-succession is to be observed in the Carboniferous Cochliodontidæ, and perhaps also in the contemporaneous Psammodontidæ. —F. **Debenham**: A new theory of transportation by ice: the raised marine muds of South Victoria Land (Antarctica). A series of deposits of marine muds are found on the surface of floating "land-ice" in the deep bays of Ross Sea (Antarctica). Similar deposits are also found on land up to a height of 200 ft., in some cases on old ice, in other cases on moraine. The deposits are briefly described, and former theories concerning them are discussed. A new theory is put forward, prefaced by an account of the nature of the typical ice-sheet which bears them. The upper surface of the sheet is known to suffer a net annual decrease, and evidence is given to show that the lower surface has a net increase by freezing from below. The theory is that the sheet will freeze to the bottom in severe seasons, and enclose portions of the sea-floor. Owing to the method of growth of the sheet by increments from below, the enclosed portions will ultimately appear on the surface, thus being raised vertically as well as translated horizontally.

Linnean Society, June 5.—Dr. A. Smith Woodward, president, in the chair.—H. N. **Dixon**: Mosses from Deception Island. The mosses were collected on Deception Island, South Shetlands, by Mr. James C. Robins. Deception Island is in lat. 63° S., long. 60° 30′ W., closely adjoining the Antarctic continent (Graham Land). It has been very little visited, and until the present century only two plants—an unnamed moss and a lichen—had been observed. Two mosses were collected there in the second French Antarctic Expedition (1908–10) by MM. Gain and Gourdon. The present collection consists of eight species, one known from most of the colder regions of the world, one hitherto recorded only from the South Orkneys, three of general Antarctic distribution, two hitherto known only from the Antarctic continent, and one new species. The interior of the island is a vast crater, into which the sea has irrupted, and is about five miles across. Connected with this is a small lagoon, some 500 yards in diameter; Mr. Robins describes it as giving no bottom at 200 fathoms, and as fed by warm or hot springs from the volcano. The whole crater would seem, in the middle of extreme glacial surroundings, to afford an almost unique example of an isolated biological area, and would appear to deserve a careful survey as regards its fauna and flora, especially in so far as concerns that of the warm springs and the lagoon fed by these.—Miss Alwen M. **Evans**: The structure and occurrence of maxillulæ in the orders of insects. This paper embodies the results of the author's investigation into the structure and distribution amongst insect orders of those vestigial mouth-parts which Hansen (1903) homologised with the maxillulæ of Crustacea. In it is included, as completely as space will allow, what has hitherto been written as to the presence and form of these structures of the Insecta, since Hansen's theory was put forward.—E. E. **Unwin**: Notes upon the reproduction of *Asellus aquaticus*. The intimate relationship between the moulting of the cuticle and the reproductive processes is clearly shown, and the details of the marriage-clasp, copulation, release of the oostegites, egg-laying, and fertilisation are described. The appendages associated with these operations are also described. The aeration of the eggs in the brood-pouch is effected by a periodic movement of the oostegites and by the flapping action of the maxillipedes. The eggs are prevented from escaping at the anterior end of the pouch by the position and movement of the first pair of legs, and by a special coxal lobe carried by the maxillipedes.

PARIS.

Academy of Sciences, May 26.—M. Léon Guignard in the chair.—G. **Bigourdan**: The observatory of the Hôtel de Cluny, afterwards the Nautical Observatory. —H. **Douvillé**: Concerning a memoir of J. de Lapparent on the breccias of the neighbourhood of Hendaye.—P. **Termier** and G. **Friedel**: The *débris* of strata, or "Klippes," of the Alais plain; fragments of mylonitic Urgonian limestone placed on the Oligocene.—H. **de Chardonnet**: An application of the eight-hour day. An account of the successful introduction of the eight-hour day in Hungary in the artificial silk industry. The machines are run continuously, women taking two shifts during the day, and men the shift from 10 p.m. to 6 a.m.—L. E. J. **Brouwer**: The invariant points of the topological transformations of surfaces.—F. **Vlès**: Remarks on the serial constitution of absorption spectra. Several absorption spectra can be represented by the relation

$$\lambda=\lambda_0+An+Bn^2+Cn^3,$$

where n is an integer. Examples are given for the absorption spectra of potassium permanganate,

hæmoglobins, chlorophyll, and neodymium chloride.—A. **Colson**: Reduction of cryoscopy to the general laws of solubility.—A. **Noyes**: The counter e.m.f. of polarisation in sulphuric acid. The counter e.m.f. of a solution of sulphuric acid at first diminishes with the temperature, proportionally to the reciprocal of the absolute temperature. From 60° to 120° C. the fall is more rapid, and above 120° it scarcely varies at all. The change may be attributed to a difference in the mode of ionisation.—G. **Langlois**: A new synthesis of benzylidene-acetone. Cinnamene is condensed with acetyl chloride in presence of diethylaniline. The product was characterised as benzylidene-acetone by its oxidation products, formation of dibromide and semicarbazone, and by elementary analysis.—J. **Guyot** and L. J. **Simon**: The action of heat on the methylsulphates of the alkalis and alkaline earths. At 220°–280° C. sodium and potassium methylsulphates give methyl ether and a pyrosulphate, some methylsulphate being formed as a by-product. With barium and calcium methylsulphates methyl sulphate is the main product of the reaction, with minimal proportions of methyl ether.—P. **Pelseneer**: Production of hybrids in molluscs.—L. **Roule**: The first phases of embryonic development in *Palemon serratus*. Criticism of a recent communication to the *Comptes rendus* by M. E. Sollaud on the development of *Leander-Palemon squilla*.—C. **Vaney** and A. **Allemand-Martin**: The action of *Hippospongia equina* of the coasts of Tunis on the Posidonia.—H. **Coutière**: The morphology of the limb of the Crustacea.—E. **Fernández-Galiano**: The conjunctive tissue of the heart of the snail.—C. **Gessard**: An achromogenic variety of the pyocyanic bacillus. This new type gives pyocyanine on glycerine gelose-peptone, but gives no pigment when cultivated in aqueous peptone. M. **Ménard** and C. **Delval**: The action of the X-rays on fibro-myomas of the uterus in woman.—A. **Robin**: The hydration, soluble residue, and insoluble residue in cancer of the liver. A new theory on the genesis of cancer.

BOOKS RECEIVED.

An Introduction to the Study of Science. By W. P. Smith and E. G. Jewett. Pp. xi+620. (New York: The Macmillan Co.; London: Macmillan and Co., Ltd.) 7*s*. 6*d*. net.

The Foundations of Geography in the Twentieth Century. By F. Schrader. (Herbertson Memorial Lecture, 1919.) Pp. 26. (Oxford: At the Clarendon Press.) 2*s*. 6*d*. net.

The Analysis of Minerals and Ores of the Rarer Elements. By Dr. W. R. Schoeller and A. R. Powell. Pp. x+239. (London: C. Griffin and Co., Ltd.) 16*s*. net.

A Handbook of Medical Jurisprudence and Toxicology. By Dr. A. Brend. Pp. xiii+317. (London: C. Griffin and Co., Ltd.) 10*s*. 6*d*. net.

An Arithmetic for Preparatory Schools, with Answers. By T. Dennis. Second edition. Pp. xiv+376. (London: G. Bell and Sons, Ltd.) 4*s*. 6*d*.

Differential Calculus for Colleges and Secondary Schools. By Dr. C. Davison. Pp. viii+309. (London: G. Bell and Sons, Ltd.) 6*s*.

DIARY OF SOCIETIES.

THURSDAY, JUNE 19.

INSTITUTION OF MINING ENGINEERS, at 11.—Lt.-Col. D. Dale Logan: (*a*) The Difficulties and Dangers of Mine-rescue Work on the Western Front, and Mining Operations carried out by Men wearing Rescue-apparatus; (*b*) Accidents due to Structural Defects of Apparatus or Injury to Apparatus, and the Future of the Proto Apparatus.—M. W. Blyth and L. T. O'Shea: The Examination of Coal in Relation to Coal-washing.—Prof. F. W. Hardwick: Reply to the Discussion on his Paper on the Training of Students in Coal-mining, with Special Reference to the Scheme of the Engineering Training Organisation.—W. Maurice: The Education of Colliery Managers for Administrative and Social Responsibilities.

ROYAL SOCIETY, at 4.30.—Bakerian Lecture. Hon. R. J. Strutt: A Study of the Line Spectrum of Sodium as Excited by Fluorescence.

LINNEAN SOCIETY, at 5.—T. A. Dymes: Notes on the Life-history of the Yellow Flag, *Iris pseudacorus*, Linn., with Special Reference to the Seeds and Seedlings during their First Year.—Dr. G. H. Rodman: Egg-case of a Spider from the South of France—*Cyrtarachne tuberculifera*.—S. L. Moore: A Contribution to the Flora of Australia.—A. W. Waters: Observations on Certain Species of Bryozoa, chiefly belonging to the Selenariadæ, Coneschariellinidæ, etc.—Dr. E. Penard: Studies on some Flagellata.—Dr. W. M. Tattersall: Report on the Stomatopoda and Macrurous Decapoda Collected by Mr. Cyril Crossland in the Sudanese Red Sea.

INSTITUTION OF MINING AND METALLURGY, at 5.30.—W. H. Goodchild: The Genesis of Igneous Ore Deposits.

CHEMICAL SOCIETY, at 8.

WEDNESDAY, JUNE 25.

GEOLOGICAL SOCIETY, at 5.30.—A. E. Kitson: Outlines of the Geology of Southern Nigeria (British West Africa), with Especial Reference to the Tertiary Deposits.—Prof. J. B. Harrison and C. B. W. Anderson: Notes on the Extraneous Minerals in the Coral-Limestones of Barbados.

THURSDAY, JUNE 26.

ROYAL SOCIETY, at 4.30.—*Probable Papers*: Dr. A. E. H. Tutton: Monoclinic Double Selenates of the Cobalt Group.—Bertha Ayrton: A New Method of Driving off Poisonous Gases.—Dr. F. W. Aston: Experiments with Perforated Electrodes on the Nature of the Discharge in Gases at Low Pressure.—Mary Seegar and Prof. Karl Pearson: De Saint-Venant Solution for the Flexure of Cantilevers of Cross-section in the Form of Complete and Curtate Circular Sectors; and on the Influence of the Manner of Fixing the Built-in End of the Cantilever on its Deflection.—Dr. H. Jeffreys: The Relation between Wind and the Distribution of Pressure.

FRIDAY, JUNE 27.

PHYSICAL SOCIETY, at 5.—Prof. C. L. Fortescue: The Current-Voltage Characteristics of High-Voltage Thermionic Rectifiers.—Prof. Ernest Wilson: The Measurement of Small Susceptibilities by a Portable Instrument.

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