

ing as these do on immense and fundamental scientific problems. Any fishery agreement is useless unless all neighbouring countries are signatories, and the matter is one of the food of a vast number of the human race. Furthermore, in the extension of such international institutions lies the best hope of permanent peace.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

CAMBRIDGE.—Prof. Albert C. Seward, professor of botany in the University, has been elected master of Downing College, in succession to the late Prof. Howard Marsh.

THE Medical College of the University of Cincinnati received several large donations during July. We learn from *Science* that Mrs. Mary M. Emery promised the University the sum of 50,000*l.* for a new medical college building, on the condition that an additional 50,000*l.* be raised by July 1 for its equipment and maintenance. At the appointed time, Dean C. R. Holmes, of the College of Medicine, announced that the 50,000*l.* had been secured. The sum of 6000*l.* has just been raised by citizens of Cincinnati for the purpose of maintaining for three years a chair of medicine in the Medical College. The chair will be known as the Frederick Forchheimer chair of medicine, in honour of the late Dr. Frederick Forchheimer, who was for years professor of medicine at the Medical College.

THE new metallurgical buildings at the University College of South Wales and Monmouthshire, Cardiff, were formally opened on Monday, July 26, by Sir Clifford J. Cory, Bart., M.P. The building which has been erected forms an important addition to the present department of metallurgy, and provides accommodation for assaying, analysis of fuels, metallography, and photomicrographic work, lecture theatre, professors' private room, balance- and reading-rooms, etc. The laboratories are of considerable size, lofty, well lighted and ventilated, and contain the most modern and up-to-date equipment for teaching these branches of metallurgy. The erection of this new building is due to the generosity of the South Wales and Monmouthshire Coalowners' Association, in acknowledging which, Prof. Read directed attention to the fact that to enable the college to help, as it should, the industrial progress of the works in the district, provision would have to be made in the near future for putting down experimental furnaces for smelting and other operations, so as to be able to provide a thorough practical training for metallurgical students.

THE Department of Technology of the City and Guilds of London Institute has issued through Mr. John Murray, Albemarle Street, London, W., at the price of ninepence net, its programme for the session 1915-16. The programme contains the regulations for the registration, conduct, and inspection of classes, the examination of candidates in technological subjects, and the award of teachers' certificates in manual training and domestic subjects. We notice that the syllabuses in both coal-tar distillation and intermediate products and in electro-metallurgy have been revised, that in boot and shoe manufacture has been redrafted, and the revised syllabus in mechanical engineering issued separately last session is now included in the programme. The conditions governing the award of full technological certificates in painters' and decorators' work, cabinet-making, bookbinding, and embroidery have been modified, and the lists of works of reference have been revised. The department now

examines in more than eighty separate branches of technology, and the constitution of the examinations board, the representative character of the panel of consultative examiners, and the large number of practical men among the acting examiners, all provide convincing evidence of the pains taken by the executive committee to ensure that thoroughly practical teaching, based consistently upon sound scientific knowledge, shall be given in the technical institutions throughout the country.

THE Board of Education has issued its Regulations for Technical Schools, etc., in England and Wales for the session 1915-16. They are not, except for minor matters, materially different from those of last year. The arrangement as to the payment of a fixed, or inclusive (as it is now termed), annual grant in respect of any efficient school occupying a definite educational place in the area and providing approved courses of instruction covering five or more years, is now extended to apply to senior or advanced courses, and the Board will also under certain conditions pay an inclusive grant to a local authority in respect of all courses carried on under its direction for the year 1915-16, and grants may be paid for the year 1914-15 calculated upon the same basis. Examinations upon the courses of study must be held by the teachers in each year, and in the final year an external assessor must be associated with the teachers, but other arrangements may be approved for students taking senior part-time courses. Certain new conditions are attached to the endorsement of certificates. The onerous condition still remains in the regulations for junior technical schools whereby the pupil must enter upon the employment for which the school provides, thus debarring a clever pupil from entering upon the advanced courses of a higher technical school, and recognition will be refused to a school unless the pupils so enter. Classes in university tutorial courses may be duplicated so as to enable artisan students to attend the one or the other, and arrangements will be approved for special advanced courses of instruction, where adequate provision exists for tutorial classes of the ordinary standard, for students who have passed through the three years' course satisfactorily. The exigencies of the war have caused the Board to sanction short courses suitable for recruits, and for housewives in economical cookery.

IN October next the *Athenaeum* proposes to start a subject index to periodicals as a regular monthly issue. The index is to embrace bibliography, theology, philosophy, sociology, geography, history, the fine arts, *belles-lettres*, and the science of everyday life. Pure science, law, and medicine will not be included. A preliminary notice of the scheme appeared in the issue of our contemporary for July 3, and specimens of the proposed lists have been given in succeeding issues in the form of an index to publications relating to science and technology, with special reference to the war. A very large number of cross-references make it easy to find one's way about the index already published. The *Athenaeum* proposes to index more than two hundred periodicals—English, American, and Continental—with occasional selections from a much wider field. We imagine it will be found extremely difficult to decide which periodicals are to be favoured by inclusion among the two hundred. The short specimen index published already contains references to more than sixty periodicals. The International Catalogue of Scientific Literature, which has been indexing the literature of science for the past ten or twelve years, indexes not fewer than 8000 periodicals. So long as authors continue to publish important papers in little-known periodicals, it will be impossible to produce a complete index without taking the less

important journals into consideration. If all who are engaged in preparing general subject-indexes were to agree as to which periodicals should be indexed, and were to publish beforehand the names of the periodicals they proposed to index, it is possible that such action might have influence upon authors who have not yet decided where they should publish. Unfortunately the periodicals excluded from the list will immediately show cause why they should be included. We have no doubt that the *Athenaeum* will find a way of dealing with this difficulty, and we wish our contemporary success in its new undertaking.

SOCIETIES AND ACADEMIES.

EDINBURGH.

Royal Society, June 28.—Dr. Peach, F.R.S., vice-president, in the chair.—Prof. J. W. Gregory: Contributions to the geology of Benguella and some Cretaceous Echinoidea from the north of Lobito Bay.—G. W. Tyrrell: Notes on rocks obtained in Angola by Prof. Gregory.—R. B. Newton: Some Cretaceous shells from Angola.—G. C. Crick: Some Cephalopoda from Benguella.—Mrs. Margaret F. Romanes: Notes on an Algal Limestone from Angola. These six connected papers were based on the visit in 1912 of Prof. Gregory to Angola and Benguella, Portuguese West Africa, and on the material collected and brought home by him. The earliest explorers of this region were Livingstone, who described the chief features of the physiography, and Cameron, who discovered Cretaceous rocks as well as widespread distributions of granite and gneiss. The Cretaceous rocks begin on the coast and end inland in great conglomerates at the floor of the old plateau of gneiss. The following conditions were recognised and described: Bihé Sandstones consisting of soft beds giving rise to the wastes known as the "hungry country"; Oendolongo sandstones, rhyolites, and tuffs, often like the Old Red Sandstone, referred by some to the Devonian, by others to the Torridonian; Lepi greywackes with cherts, tuffs, and slates; Huambo Quartzites, pre-Torridonian. The coast is traversed by numerous step faults, cutting through the Cretaceous rocks. The fossils of these rocks are described by R. B. Newton. A number of the species are new to the area.—W. F. P. M'Lintock: The zeolites and associated minerals from the tertiary lavas around Ben More, Mull. The peculiar facies of vesicle-minerals in a belt of lavas traceable from areas free from contact metamorphism up to the margin of one of the big acid intrusions is described. The non-metamorphosed rocks are albitised olivine basalts, in which the olivine is completely, and the augite partially, chloritised. The vesicles are filled with chlorite, albite, epidote, prehnite, and scolecite deposited in the order named. Frequently these minerals are seated upon a coarsely crystalline layer of albite, augite, magnetite, and chlorite, with which the vesicle is lined, and it is concluded that the cavities were filled during the cooling of the lava. By contact metamorphism the contents of the amygdalae of the lavas around the margins of the intrusion have been altered; the chlorite has gone to hornblende, the scolecite to prehnite, epidote, and ultimately to garnet; the prehnite, to epidote and garnet; whilst the epidote is replaced by garnet and apophane. The effect of the metamorphism has been generally to build up the minerals in the reverse order to that in which they were originally deposited in the vesicles.—R. C. Mossman: A see-saw of atmospheric pressure, temperature, and wind velocity between the Weddell and Ross Seas. By a comparison of the departures from the normal for each of these data during the years 1902-4, 1910-12 evidence was obtained of an opposite

phase relationship or see-saw of meteorological conditions over these seas. The discussion formed part of a much wider inquiry into the meteorology of antarctic regions.—W. J. Walker: The magnetic quality of iron and steel as affected by transverse pressure. The compressing force acted perpendicular to the direction of magnetisation. The induction was measured ballistically. The general result was diminution of susceptibility with increase of transverse pressure; but there were variations from this general result which demanded further investigation.—W. Hill: Chalk boulders from Aberdeen and fragments from the sea-floor off the Scottish coast; and notes on the structure of the chalk occurring in the west of Scotland. These important papers were found among the author's possessions after his death.—Prof. E. Topsent: Supplementary paper on the sponges collected by the Scotia Scottish National Antarctic Expedition.—Dr. R. Kidston: The fossil plants of the Forest of Wyre and Titterston Clee Hills coalfields. With remarks on the geology of the coalfields by T. C. Cantrill and E. Dixon.

PARIS.

Academy of Sciences, July 26.—M. Ed Perrier in the chair.—G. Bigourdan: The unpublished correspondence of the astronomer, J. N. Delisle.—J. Boussinesq: The importance of the rudimentary dynamics of Aristotle in the progress of Mediterranean civilisation.—C. Gutton: An induction balance designed for the detection of buried shells in ground under cultivation. Owing to the danger to agriculturists due to the presence of unexploded shells buried in the soil and the liability of explosion owing to contact with a plough, the author has devised a modification of the Hughes induction balance by means of which two persons can thoroughly explore a hectare of land in about three hours.—J. Maloin: The retarding action of sugar in the development of photographic negatives and the permeability of gelatine to the metolhydroquinone developer, used alone or with sugar. A plate giving a complete image in five seconds under the influence of the developer alone can be retarded by the addition of sugar, the addition of 60 grams of sugar per 100 c.c. of developer causing a retardation of from three to five minutes. The action appears to be due to physical causes, the increased viscosity of the solution rendering the penetration of the gelatine emulsion slower.

WASHINGTON, D.C.

National Academy of Sciences, July 15 (Proceedings No. 7, vol. i.).—W. S. Adams and F. G. Pease: Nova Geminorum No. 2 as a Wolf-Rayet star. A continuous series of observations on Nova Geminorum No. 2 has shown the development of the spectrum of this star through the successive stages characteristic of novæ into one very strongly resembling that of planetary nebulae; and then, by the gradual elimination of the nebular lines and their replacement by Wolf-Rayet bands, into a spectrum identical with this characteristic type of stellar spectra.—A. A. Michelson: The ruling and performance of a 10-in. diffraction grating. A 10-in. grating (actual ruled surface 9.4 in. by 28 in.) having a theoretical resolving power of about 660,000, shows an actual power of about 600,000. The methods of obtaining exact ruling is also discussed.—E. E. Barnard: A singular dark marking on the sky. From a dark object in Cepheus and those in Taurus the author gets the impression that the interstellar spaces are suffused with a feeble nebulosity and that the dark marks are due to the projection upon this background of nearer dark, opaque objects.—A. L. Parson: A highly sensitive electrometer. The principle of working in a condition approaching instability is used to increase greatly the sensitiveness