

the maintenance of the chair. The chairs and laboratory will be named after the munificent donor.

THE annual Degree Congregation of Sheffield University took place on July 11. Mr. Balfour was, among others, the recipient of an honorary degree, and during the proceedings addressed the students. He said the great development which has taken place of recent years in universities has been wholly on the right side. The functions of a university are extraordinarily various, dealing with every kind of object in life, and not confined to one sex or one kind of learning. Those who regret that the old curriculum is not maintained in its simplicity are quite wrong from the point of view of general culture, let alone the necessity of giving the opportunity to students to learn those things which may be most useful to them in life. It is, relatively speaking, only in recent years that high scientific training has had a direct and necessary bearing upon every kind of industrial success. The old days of rule of thumb have passed, and the most elaborate scientific training is required in order that we may keep abreast with other countries, and also that all countries may use the powers and resources possessed to the best advantage of mankind. With the advent of this new period have come new functions for our great teaching centres, and there is no place where this high scientific training is likely to produce more fruitful results than Sheffield, and no place where scientific and technical training has been more successfully developed. Speaking subsequently at a luncheon, Mr. Balfour pointed out that the conjunction of those engaged in academic pursuits and the leaders of industry and commerce will produce in the future fruits of university training of which our forefathers never dreamed. Probably when the great university movement started in Europe many centuries ago, the idea of a great industrial centre was in itself alien to the thoughts of men, and the idea of combining industry with university culture, although it did happen in some great Continental cities like Bologna, is nevertheless a relatively modern idea. In these modern days there is no class more sensible of the enormous debt which civic and industrial life owes to university teaching, properly understood, than the great leaders of industry.

SOCIETIES AND ACADEMIES.

LONDON.

Challenger Society, June 26.—Dr. A. E. Shipley, F.R.S., in the chair.—Dr. W. S. Bruce: Twenty-three new species of invertebrates taken by the *Scotia* were exhibited. The collection included four alcyonarians, thirteen echinoderms—asteroids, ophiuroids, and holothurians, two nematodes, two pycnogons, and two amphipods. The author also showed two known species, namely, the interesting pycnogon, *Decalopoda australis* of Eights, and his interesting large isopod, *Glyptonotus antarcticus*. The interest of the collection lay mainly in the fact that most of these species had been taken in deep water and in high southern latitudes. A very high percentage of those taken in deep water were new to science. The *Scotia* collections practically disposed of a theory of bi-polarity. Except where species were of universal distribution, Antarctic species were markedly different from those of the Arctic regions.—C. Tate **Regan**: Antarctic fish-fauna: material from the *Scotia* collections. The Nototheniidæ and related families form a natural group characteristic of and peculiar to the Antarctic and sub-Antarctic seas, and about seventy species are known, mostly littoral, but some pelagic or abyssal; some of the

species seem to have a circumpolar distribution. Other abyssal and pelagic fishes of the Antarctic are mostly con-generic with forms already known from the Atlantic or Indo-Pacific; the littoral fishes are related to those of New Zealand and Patagonia. The fishes do not support the theory of bi-polarity, and throw little light on the question of a former extension of the Antarctic continent.—H. J. B. **Wollaston**: A new method of working vertical tow-nets. The line from the net, after passing over blocks attached to boat davits, is attached to a weight; the sinking of the weight supplies the hauling power for the net, which rises to the surface at an even speed, readily regulated by the weight used. The advantages of the method are that constancy of speed of hauling is independent of the operator, and nearly independent of the movements of the ship, being approximately uniform even in bad weather.

DUBLIN.

Royal Irish Academy, June 24.—Rev. Dr. Mahaffy, president, in the chair.—J. A. **McClelland** and H. **Kennedy**: Large ions in the atmosphere. Observations are recorded of the number of large ions in the atmosphere for a period of more than a year, with accompanying notes on certain weather conditions. The number per cent. varied between a minimum of 3700 and a maximum of 60,000.—J. A. **McClelland** and J. J. **Nolan**: The electric charge on rain. The observations discussed in the paper cover the period from October, 1911, to May, 1912, and, with results previously published, cover a period of more than a year. Of all the rain examined in the later period 82.6 per cent. was positively charged, the remaining 17.4 per cent. negatively. The positive electricity was 76.9 per cent. of the whole.—G. A. J. **Cole**: The problem of the Liffey Valley. The immature gorge of the Liffey near Pollaphuca is contrasted with the highly mature valleys, which are now practically devoid of streams, to the north near Brittas, and it is suggested that the drainage has become reversed, through the deepening of the floor of the upland near Pollaphuca, by glacial scour. Such a reversal is supported by the northerly courses of the King's River and the Liffey in the upper reaches of their valleys.—A. D. **Cotton**: Marine algæ (Clare Island Survey). An account is given of the algal vegetation found within the Survey area, three formations and a large number of associations and societies being recognised.—G. E. H. **Barrett-Hamilton**: Mammalia (Clare Island Survey). Only two species of strictly terrestrial mammals, viz. the wood mouse (*Apodemus sylvaticus*) and the pigmy shrew (*Sorex minutus*), occur on Clare Island. The hare and rabbit have been recently introduced, and the rat and house mouse probably owe their existence on the island to the same cause.—R. F. **Scharif**: Reptilia and amphibia (Clare Island Survey). Only a single species of reptile and two amphibians, viz. the common lizard (*Lacerta vivipara*), the frog (*Rana temporaria*), and the newt (*Molge vulgaris*), are found within the area of the Survey.—G. P. **Farran**: Fishes (Clare Island Survey). Only a single strictly fresh-water fish occurs on Clare Island, namely the river trout.—W. F. **Johnson** and J. N. **Halbert**: Coleoptera (Clare Island Survey). In this paper there are records of 524 species, of which about 203 were found on Clare Island. At least four of the species are additions to the known Irish fauna.—J. N. **Halbert**: Hemiptera (Clare Island Survey). One hundred and seventy species of Heteroptera and Cicadina are recorded.—J. N. **Halbert**: Neuroptera (Clare Island Survey). The Neuroptera are represented by 120 species, or exactly half the total number recorded from Ireland.—G. H. **Carpenter**: Orthoptera (Clare Island

Survey). The Orthoptera of Clare Island comprise only the common earwig and three widespread acridiid grasshoppers.

GÖTTINGEN.

Royal Society of Sciences.—The *Nachrichten* (physico-mathematical section), parts iii. and iv. for 1912, contains the following memoirs contributed to the society:—

July 15, 1911.—K. Wegener: Seismic records at the Samoa Observatory of the Göttingen Royal Society in 1909 and 1910.

February 3, 1912.—W. Voigt and P. Collet: Further communication on the polarisation of light diffracted from the Rowland grating.

February 17, 1912.—O. Wallach: Researches (xxv.) from the Göttingen University Chemical Laboratory: (i) the preparation of a new simple bicyclic terpene and tricyclic sesquiterpene; (ii) on ascaridol; (iii) on Δ^4 -menthenone-3; (iv) on the constitution of so-called "isocamphor" ($C_{10}H_{16}O$) and its reduction-product ($C_{10}H_{18}O$); (v) on the condensation-products of cyclic ketones with acetone.—G. Tamman: The phase-diagram of carbonic anhydride.

March 2, 1912.—E. Study: Groups of bilateral collineations.—H. Schottky: The changes in heated metallic films due to surface-forces.—J. Stark and G. Wendt: Serial spectral emission from solid metallic compounds exposed to canal-rays; minimal value of the exciting energy; band-spectral emission under canal-rays.—M. Lewitskaja: Some observations on the absorption of light in andalusite.

BOOKS RECEIVED.

Die Veränderungen in der allgemeinen Zirkulation der Atmosphäre in den gemässigten Breiten der Erde. By Dr. A. Defaut. Pp. 208. (Wien: A. Holder.)

Handbuch der regionalen Geologie. Edited by Profs. G. Steinmann and O. Wilckens. v. Band, 3 Abteilung—Armenien. By Dr. F. Oswald. Pp. 40+4 Taf. (Heidelberg: C. Winter.) 2.80 marks.

Nigeria and its Tin Fields. By A. F. Calvert. Pp. xvi+488+plates. (London: E. Stanford.) 5s.

Regional Geography—The World. By J. B. Reynolds. Pp. vii+360. (London: A. and C. Black.) 3s. 6d.

Botany. Chapters on the Study of Plants. By Prof. G. S. Boulger. Pp. viii+120. (Halifax: Milner and Co.) 1s. net.

Visvakarma: Examples of Indian Architecture, Sculpture, Painting, Handicraft, chosen by Dr. A. K. Coomaraswamy. First Series: One Hundred Examples of Indian Sculpture. Twelve plates. (London: The Author, 39 Brookfield, West Hill, N.; Luzac and Co.) 2s. 6d.

Monograph on the Sub-Oceanic Physiography of the North Atlantic Ocean. By Dr. E. Hull. With a Chapter on the Sub-Oceanic Physical Features off the Coast of North America and the West Indian Islands. By Prof. J. W. W. Spencer. Pp. viii+41+plates xi. (London: E. Stanford.) 21s. net.

Methods of Organic Analysis. By Prof. H. C. Sherman. Second edition. Pp. xvi+407. (London: Macmillan and Co., Ltd.) 10s. 6d. net.

A New System for Preventing Collisions at Sea. By Sir H. S. Maxim. Pp. xv+47. (London: Cassell and Co., Ltd.)

A Study of the Bronze Age Pottery of Great Britain and Ireland, and its Associated Grave-goods. By the Hon. J. Abercromby. Vol. i., pp. 163+plates i. to lxi.; vol. ii., pp. 128+plates lxii to cx. (Oxford: Clarendon Press.) 3l. 3s. net.

NO. 2229, VOL. 89]

Experimental Science. II. Chemistry. By S. E. Brown. Pp. vi+140. (Cambridge: University Press.) 2s.

Higher Algebra for Colleges and Secondary Schools. By Dr. C. Davison. Pp. vi+320. (Cambridge: University Press.) 6s.

Electromagnetic Radiation and the Mechanical Reactions arising from it. By Prof. G. A. Schott. Pp. xxii+330. (Cambridge: University Press.) 18s. net.

Gross Männer. Studien zur Biologie des Genies. Edited by W. Ostwald. Dritter Band—Jacobus Henricus van't Hoff. Sein Leben und Wirken. By Prof. E. Cohen. Pp. xv+638. (Leipzig: Akademische Verlagsgesellschaft, m.b.H.) 14.75 marks.

A Primer on Alternating Currents. By Dr. W. G. Rhodes. Pp. viii+145. (London: Longmans and Co.) 2s. 6d. net.

A Scheme for the Detection of the More Common Classes of Carbon Compounds. By F. E. Weston. Third edition. Pp. viii+108. (London: Longmans and Co.) 3s.

La Maladie du Sommeil au Katanga. By F. O. Stohr. Pp. 83. (London: Constable and Co., Ltd.) 4s. net.

Explanatory Notes to Accompany the Geological Map of Egypt, with Tables showing Distribution of Geological Formations and Economic Products. By Dr. W. F. Hume. Pp. ii+49+2 plates. (Cairo: Ministry of Finance, Survey Department.) 10 P.T.

Electric Lighting and Miscellaneous Applications of Electricity. By W. S. Franklin. Pp. viii+299. (New York: The Macmillan Co.; London: Macmillan and Co., Ltd.) 2.50 dollars net.

The Golden Bough: a Study in Magic and Religion. By Prof. J. G. Frazer. 3rd Edition. Part v., Spirits of the Corn and of the Wild, in two vols. Vol. i., pp. vii+319; vol. ii., pp. xii+371. (London: Macmillan and Co., Ltd.) 20s. net.

CONTENTS.

	PAGE
Botany and Gardening. By Dr. F. Cavers	497
Integral Equations. By G. B. M	499
Regional Geography. By J. W. G.	500
Agriculture in the East	500
Our Bookshelf	501
Letters to the Editor:—	
Experiments with Kathode Rays.—Sir William Ramsay, K.C.B., F.R.S.	502
<i>Merlia normani</i> and its Relation to Certain Palæozoic Fossils.—R. Kirkpatrick	502
Curie's Constant in the Ferromagnetic State.—J. R. Ashworth	503
The International Congress of Applied Chemistry.—Prof Alexander Smith	503
Crystallo chemical Analysis, a New Method of Chemical Analysis. By Dr. A. E. H. Tutton, F.R.S.	503
Malaria in India. By Sir Ronald Ross, K.C.B., F.R.S.	505
The 25th Anniversary of the Royal Society	505
Notes	508
Our Astronomical Column:—	
The Masses of Double Stars	511
Solar Prominences in 1911	511
The Minor Planet 1911 MT	512
The Variation of Latitude	512
Reports of Observatories	512
Recent Work in Mineralogy and Petrography. By G. A. J. C.	512
Very High Temperatures. (Illustrated.) By Dr. J. A. Harker, F.R.S.	514
University Education in Germany. By Prof. Wilhelm Munch	518
University and Educational Intelligence	520
Societies and Academies	521
Books Received	522