

in the Atlantic; and this able author's experiences range to the marking of turtles in the West Indies. He also furnished an account of the European, American, and Japanese eels. Finding no racial differences in the common eel, he selected the viviparous blenny to illustrate this feature, those in the inner waters of a fjord having a reduced number of vertebrae, and the number of the rays in the breast-fin being increased from the mouth to the inner waters of the fjord. Kramp, again, reported on the eggs and larvæ of common fishes collected by the *Thor* in the Belt Sea. Wingo (1915) regards locality as a factor in determining the value of the rings on the scales of the cod, and is of opinion that there is no great distinction between summer and winter rings, whether the examples come from Danish or Icelandic seas. Struberg (1916), by marking experiments at the Farøes, found that the cod at the end of the first year were 16 cm. (about 6½ in.) long, at the end of the second year 30-35 cm. (about 12-14 in.), at the end of the third year 15 cm. (6 in.) longer, and the weight doubled and quadrupled; at the end of the fifth year an increment of only 5-6 cm. took place. The growth in all was distinctly retarded between October and January, but this varied according to locality. The cod remain in the neighbourhood, undergo no great migration, and reach maturity at the fourth year.

This work of the Danes is an example to the theoretical workers in other countries, since the zoologists were personally in touch with the sea and searched Nature for themselves; and it would appear that, by the skilful adjustment of the resources of a single nation, more satisfactory advances might be made than by any other means. Even international co-operation has its limits.

(To be continued.)

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

BRISTOL.—With the concurrence of the Society of Merchant Venturers, the council has appointed Major Andrew Robertson to the vacant chair of mechanical engineering. Prof. Robertson was demonstrator in engineering in the University of Manchester from 1908 to 1912; Vulcan research fellow, 1912-15; lieutenant in the R.N.V.R., 1915, and for some time has been head of the mechanical testing laboratory for the R.A.F. at Farnborough. The present occupant of the chair, Prof. J. Munro, has been granted the title of emeritus professor in mechanical engineering.

GLASGOW.—The following were among the degrees conferred on June 25:—*Doctor of Laws (LL.D.)*: The Very Rev. Principal Sir John Herkless, St. Andrews; Prof. Magnus Maclean, the Royal Technical College, Glasgow; and H. F. Stockdale, director of the Royal Technical College, Glasgow. *Doctor of Philosophy (D.Phil.)*: J. W. Scott—thesis, "Recent Philosophy and Recent Social Movements." *Doctor of Science (D.Sc.)*: W. M. Alexander—thesis, "A Research in Egyptology: The Ancient Egyptian Canals between the Mediterranean and the Red Sea, their Problems for the Sciences of Geology, Geography, Engineering, and History"; J. M. Campbell—thesis, "Laterite: Its Origin, Structure, and Minerals"; W. J. Goudie—thesis, "Steam Turbines (Text-book for Engineering Students)," with other papers; I. M. Heilbron—thesis, "A Contribution to the Study of Semi-carbazones: Their Reactions and Spectrographic Examination," with other papers; R. G. A. Holmes—thesis, "Design and Construction of H.M.S. *Argus*"; and H. G. Wigg—thesis, "The Balancing of Rotating Bodies."

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LONDON.—Mr. Thomas Baillie Johnston has been appointed the first incumbent of the University chair of anatomy tenable at Guy's Hospital Medical School. Mr. Johnston received his medical training at the University of Edinburgh, graduating M.B., Ch.B., with First Class honours. In 1907 he was appointed demonstrator, and in 1911 lecturer, in anatomy at Edinburgh University. Since 1914 he has been lecturer on anatomy at University College, London, and has also acted as superintendent of dissections to the Conjoint Board.

Dr. Alfred Joseph Clark has been appointed, as from September 1, 1919, to the University chair of pharmacology tenable at University College. Dr. Clark was educated at King's College, Cambridge, and at St. Bartholomew's Hospital; was demonstrator in pharmacology at King's College, 1911-12; assistant in pharmacology at University College, 1912-13; and lecturer in pharmacology at Guy's Hospital, 1913-14. Since December, 1918, he has been professor of pharmacology in the University of Cape Town.

The following doctorates have been conferred by the Senate:—*D.Sc. (Engineering)*: Mr. O. S. Sinnatt, an internal student of King's College, for a thesis entitled "Thermo-dynamics of Metal Bars." *D.Sc. in Physics*: Mr. F. L. Hopwood, an external student, for a thesis on acoustics.

The thanks of the Senate have been accorded to Mrs. Row for her donation of 1000l. for the department of zoology at King's College in memory of her son, Harold Row, who was lecturer in zoology at the College from 1911-19. The income from this donation is to be devoted to the purposes of a scholarship for the promotion of zoological research, to be called "The Harold Row Scholarship."

The syllabuses for the Intermediate Science Examination for external students were approved as alternative syllabuses for the Higher School Examination, and resolutions were passed regarding the award of the higher school certificates.

MR. W. ELLIOTT has been appointed principal of the Technical Institute, Rathmines, Dublin, in succession to the late Mr. A. Williamson.

THE U.S. General Education Board has, says *Science*, made a grant of 100,000l. towards a fund of 400,000l. to be raised to endow a graduate school of education for Harvard University. The new fund will be named in honour of Dr. Charles W. Eliot, president emeritus of Harvard University.

MR. J. B. ROBERTSON, assistant in the chemistry department, University of Edinburgh, has been appointed lecturer in chemistry in the South African School of Mines, Johannesburg. Mr. A. E. Walden, also an assistant in the same department, has been appointed professor of chemistry in the Wilson College, Bombay.

Two scholarships of the value of 150l. per annum each, and tenable for three years, will be offered by the Institution of Naval Architects this summer, viz. the Cammell Laird scholarship in naval architecture and the Parsons scholarship in marine engineering. Candidates must be British apprentices in shipyard or marine-engine works, between the ages of nineteen and twenty-five. Entries close on August 11. Full particulars can be obtained from the Secretary, Institution of Naval Architects, 5 Adelphi Terrace, London, W.C.2.

THE Gilchrist Trustees offer, through the council of the London (Royal Free Hospital) School of Medicine for Women, a special scholarship tenable at the Medical School by a woman who has served under an organisation directly connected with the war during not less than three years since August, 1914. The

scholarship is of the value of 50*l.* per annum for five years. Applications must reach the Warden and Secretary of the Medical School, 8 Hunter Street, Brunswick Square, W.C.1, not later than July 12.

WE learn from *Science* that the Washington School of Medicine, St. Louis, has been offered the sum of 30,000*l.* by the General Education Board on condition that an equal amount be raised by subscription. This fund of 60,000*l.* is to be used for the endowment of the department of pharmacology. From the same source we learn that the board of trustees of the University of Tennessee have voted 20,000*l.* to the medical school to be used for a new laboratory building to be erected in the rear of the Memphis City Hospital. The new building will have laboratories for pathology, bacteriology, chemistry, and physiology.

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, June 19.—Sir J. J. Thomson, president, in the chair.—The Hon. R. J. Strutt: Bakerian lecture: A study of the line-spectrum of sodium as excited by fluorescence. An improved form of sodium vapour lamp, in quartz, was described, giving an intensely bright sodium spectrum, admirably adapted for exciting sodium vapour to resonance. It is found that excitation of sodium vapour by the second line of the principal series leads to the emission of both λ 3303 and the D line. On the other hand, as might be expected, excitation by the D line leads to the emission of the D line only, without 3303. If only one of the components of the doublet 3303 is stimulated, both the D lines are emitted. When D light falls on sodium vapour of appropriate density, it is known that an intense surface emission occurs from the front layer, and a weaker one from succeeding layers. Analysis by absorption in an independent layer of sodium vapour shows that the superficial emission is more absorbable, and therefore nearer the centre of the D lines. The breadth of the D lines in superficial resonance has been estimated by interferometer methods. It is found to correspond with the breadth conditioned by the Doppler effect, calculated on the assumption that the luminous centre is the sodium atom. Polarisation could not be detected in the ultraviolet resonance radiation, though, in accordance with previous observers, it was readily observed in D resonance.

Mineralogical Society, June 17.—Dr. A. E. H. Tutton, past-president, in the chair. A. E. Kitson: Diamonds from the Gold Coast. The crystals and their occurrence were described.—A. Brammall: Andalusite (chiastolite): its genesis, morphology, and inclusions. In a survey of thermometamorphic "spotted" rocks, evidence based on structural features, optical properties, and microchemical reactions is adduced to show that certain types of spots, convergent towards such minerals as chiastolite, andalusite, cordierite, mica, and chloritoid, record arrested development, and that they are probably ontogenetically related. The spot is a complex system containing a volatile phase, water, and its development involves metamorphic diffusion and differentiation, controlled by changing conditions of temperature and stress, the tendency being towards the attainment of an equilibrium end-point in a metastable mineral. Thermal and stress conditions adequate to initiate the tendency may be inadequate to sustain it, the time factor also being involved; development may be arrested and abortive effort recorded as a mineral "spot," the nature of which is determinable, but is often vague or wholly conjectural. The chemical and physical characters of argillaceous sediments

are considered, with special reference to the genesis of chiastolite. Clays contain a high proportion of hydrated silicates of alumina, readily soluble and in part probably colloidal. On rise of temperature diffusion effects the segregation of the primary clot; diffusion inwards of allied molecules and diffusion outwards of alien substances tend to promote homogeneity and reconstitution within the spot, the peripheral zone being maintained for a time in a relatively high state of hydration. In this connection the peripheral zone of yellow-brown, non-pleochroic, and isotropic stain is significant; microchemical tests show that it is due to ferric hydrates, which are known to be liable to spontaneous dehydration, and it is suggested that the ferric hydrate in the peripheral stain acts as a catalyst, assisting dehydration within the spot and transmitting water to the base. For chiastolite (andalusite), a mechanism of formation is suggested to cover the observed facts, to explain the characteristic distribution of its opaque inclusions, and to account for crystals which have the superficial aspect of cruciform twins.—R. H. Rastall: The mineral composition of oolitic ironstones. In many oolitic ironstones the ooliths contain more iron or are more highly oxidised than the matrix. Assuming that the iron-content of such rocks is introduced by metasomatism of calcium carbonate, this may be explained in the following way: Many ooliths and organic fragments in limestones consist of aragonite, while the cement is calcite. Aragonite is less stable than calcite and more readily decomposed by iron-bearing solutions, which therefore attack the aragonite first, while the calcite is replaced later. Hence we have the following scheme in successive stages:—

Ooliths. aragonite \rightarrow chalybite \rightarrow limonite.
Matrix. calcite \rightarrow calcite \rightarrow chalybite.

The ooliths are always a stage ahead of the matrix in replacement and oxidation. The origin of the green silicate of iron, found in many ironstones, requires further investigation.—L. J. Spencer: Eighth list of mineral names.

Royal Anthropological Institute, June 17.—Prof. A. Keith, past president, in the chair.—J. Reid Moir: Flint implements from Glacial gravel north of Ipswich. This gravel is covered by a definite Glacial boulder clay, and is therefore of Glacial age. Mr. W. Whitaker states that the gravel is what is usually called "Middle Glacial," and this view is shared by the author. As, however, Lower Glacial deposits do not occur in the Ipswich district, the use of the term Middle Glacial is deprecated. The flint implements comprise small platessiform specimens, very similar in their outlines to some of the Early Chellian artefacts, points, *radoirs*, and well-made scrapers. These and the numerous flakes recovered exhibit all the usual characteristics of flints ascribed to human workmanship. Quartzite hammer-stones and burnt flints occur in the gravel, and the deposit probably represents, in part, a land surface broken up and re-deposited by water resulting from melting ice. It is not at present possible to correlate the Ipswich gravel with others in different parts of the country containing similar implements, but further investigation may enable this to be done.

Zoological Society, June 17.—Prof. E. W. MacBride, vice-president, in the chair.—J. T. Carter: Occurrence of denticles on the snout of Xiphias.—Dr. C. W. Andrews: New species of Zeuglodon and a leathery turtle from the Eocene of Southern Nigeria.—E. Heron-Alen and A. Earland: Experiments on the cultivation of *Verneuilina polystropha* Reuss, in hypertonic sea-water and gem sand.—C. Morley: Equatorial