

back, she slips it again into the water. The skill and elegance of the movements of a sea-lion in the sea are not instinctive, but are learned by constant practice, and diving is acquired only with difficulty. In these respects the sea-lions differ from the true seals, where the ability to swim and dive come more naturally and less laboriously, as befits creatures which are more perfectly adapted to aquatic life.

Winter affects Mackerel-Fishing

Although mackerel-fishing at Monterey in California is carried on throughout the year, there are two seasonal periods when the number of fish caught shows a marked decline. One such period begins in autumn and reaches its lowest in December. The decline is not associated with cessation of fishing owing to winter storms, for the Bay is usually calm enough to permit fishing regardless of season, but it is thought that cold superficial temperatures drive the mackerel to deeper water where they are difficult to catch (R. S. Croker in *Fish Bulletin No. 40*, Division of Fish and Game of California, 1933). The second period of poor fishing, reaching its climax in April, appears to be due to a different cause; then the mackerel "are said to bite poorly, possibly because of an abundance of food". The Californian mackerel fishery has developed since 1880, an important advance having been made in 1927 when canned mackerel became commercially important. Almost a million cases were packed in 1928 and 1929, and production in 1930 and 1931 had to be curtailed.

Movements of Irish Sea Fish

In the report of the Lancashire Sea Fisheries Laboratory (1919), R. J. Daniel has summarised results of trawling experiments off the Mersey Estuary, and Johnstone (1927) has described the periodicities in the abundance of young fish in the area. Plaice, marked and released in Red Warfe Bay, Anglesey, have been found near the Isle of Man and in the south St. George's Channel, off Wexford and off Cornwall. Young plaice come into the Irish Sea through the St. George's Channel for a 'nursery' stage off the Lancashire and Dee coasts, returning for spawning to the Channel; there seems no proof of a second migration north. Soles spawn in the deeper and central parts of the region between the Isle of Man and the English coast. Whiting occur very abundantly in the Mersey estuary in late winter and spring, and though cod come into the northern region of the Irish Sea, where there are good though local fisheries, they are not abundant south of the Isle of Man. Codling are mostly found on the small fish grounds near the Mersey and Dee in the late autumn and winter, whiting are more abundant in summer and autumn, and plaice and dabs seem abundant at any time. Sometimes there are very big catches of the latter; in 1893, 10,407 plaice were taken in one haul of a shrimp trawl, and 14,697 plaice were taken in one haul on another occasion (Johnstone). Plaice were relatively abundant about 1895, 1910 and 1919, and relatively scarce about 1905, 1916 and 1927. Soles were relatively abundant about 1898 and 1905 and scarce about 1902 and since. Dabs were abundant in the Mersey estuary in 1897, 1902-5, 1910 and 1924, especially 1909-11, when single catches of 2,000-5,000 were frequently made; whiting were abundant in 1902, 1910, 1918 and 1925.

Societies and Academies

LONDON

Mineralogical Society, November 9 (Anniversary meeting). P. L. DRAVERT: Shower of meteoric stones in the neighbourhood of the village of Kuznetzova, West Siberia, on May 26, 1932. Between 5 and 6 p.m. in a cloudless sky, ten detonations were heard, and one stone of 2 kgm. was seen to fall, making a small oblique hole and then rebounding. Eight stones with a total weight of 23 kgm. (the largest 16 kgm.) were collected. Two of them, found 300 metres apart, can be fitted together on their flat crusted surfaces. The stone is a greyish-white friable chondrite with inclusions of troilite and grains of nickel-iron. The troilite was thought by the peasants to be gold, which led to the destruction of some of the material. P. A. CLAYTON and L. J. SPENCER: Silica-glass from the Libyan Desert. Clear, greenish-yellow silica-glass has been found in considerable amount as wind-worn masses up to 10 lb. in weight over an area of 80 km. \times 25 km. at about 500 km. southwest of Cairo near the border of Italian Cyrenaica. It is found lying on the surface of the Nubian Sandstone in the 'streets' between the north-south sand-dune ridges. Analysis by M. H. Hey shows SiO₂ 97.58 per cent with small amounts of aluminium, titanium, iron, calcium, sodium and a faint trace of nickel. Specific gravity 2.206, refractive index 1.4624 (sodium light), hardness 6. Some pieces are cloudy, due to presence of minute (0.1 mm.) bubbles. Effective gem-stones have been cut from the material. It shows certain relations to tektites and also to the silica-glass from meteoric craters, but no craters have been recognised at the locality. L. J. SPENCER: Fictitious occurrences of iron silicide (ferrosilicon). Bright, steel-grey nodules of iron silicide (FeSi), very resistant to acids (except hydrofluoric acid) and to weathering, are sometimes present in the calcium carbide residues from acetylene lamps. This waste material has been found at times in strange situations, and has on two occasions been described as a new mineral. It has also been thought to be meteoric. Occurrences in the gold dredgings in British Guiana and in the diamond fields of South Africa are readily explained by the use there of acetylene flares. ARTHUR RUSSELL: (1) Occurrence of wulfenite at Brandy Gill, Carrock Fell, Cumberland; and of leadhillite at Drumruck mine, Gatehouse of Fleet, Kirkcubrightshire. Wulfenite occurs here in small (1.5 mm.) honey yellow platy to scale-like crystals, often nearly circular in outline. Thirteen specimens were collected from an old trial level dump. Leadhillite, a single specimen showing six-sided tabular crystals up to 5 mm. in diameter, was collected during the working of the Drumruck mine in 1917. (2) Occurrence of harmotome at several new localities in the British Isles. The occurrence of harmotome at the following mines is described: Snailbeach mine, Minsterley, Shropshire; Cwm Orog mine, Llangynog, Montgomeryshire; Settlingstones mine and Stonycroft mine, Fourstones, Northumberland; Whitespots mine, Newtonards, Co. Down, and Foxrock mine, Glendasan, Co. Wicklow. C. E. TILLEY and A. R. ALDERMAN: Progressive metasomatism in the flint nodules of the Scawt Hill contact zone. The flint nodules of the Chalk of the Scawt Hill contact zone provide striking examples of progressive metasomatism. Various stages—of which analyses are given—from an original nodule composed wholly of quartz

to an assemblage built up essentially of wollastonite, melilite and alkali-pyroxene can be traced. In the successive stages of replacement the characteristic shape and form of the nodules is preserved. The assemblages thus provide a particularly convincing illustration of a replacement process unaccompanied by volume change. The nature and source of the replacing solutions is discussed. F. COLES PHILLIPS: (1) Some relationships between the reflectivities of sulphide ore-minerals. A review of the reflectivity data now available for a large number of opaque minerals has shown that the relative reflectivity of simple sulphides, selenides and tellurides increases with atomic number. 'Molecular refractivities' of more than forty complex sulphides calculated from the measured reflectivities agree well with values computed from the 'molecular refractivities' of the constituent simple sulphides, assuming additivity. This relation indicates a method of calculating the reflectivity of an ore-mineral and also affords a useful check on the specific gravity quoted in the literature. The 'molecular refractivities' of sulphur, selenium and tellurium calculated from reflectivities also agree with values derived from a study of transparent ionic compounds. (2) A critical list of the specific gravities of the sulphides and allied ore-minerals. Variations in the values of the specific gravities of ore minerals quoted in the literature are due to misprints, determinations on impure material or mixtures, and actual variation in composition of specimens owing to solid solution. The probable correctness of a specific gravity determination can be checked by comparison of calculated and computed 'molecular refractivities', by direct specific gravity determination of the synthetic mineral, and by the X-ray method. These criteria govern the author's choice of critical values, when correlated physical and chemical data on the same specimen are lacking. They are tabulated together with the maximum range of variation recorded in the literature.

PARIS

Academy of Sciences, November 6 (*C.R.*, 197, 1009-1072). H. DOUVILLÉ and TILHO: The geology of the region north of the Tchad. P. A. DANGÉARD: Observations on the vacuome of the Cyanophyceæ. Studies of vacuome formation in the Blue-green Algæ, utilising the two colouring matters, neutral red and cresyl blue. The conclusion is drawn that in the Cyanophyceæ the properties and evolution of the vacuome are not different from those already observed in other plant and animal cells. A. ROSENBLATT: The application of Picard's method of successive approximations to the study of certain non-linear equations of the fourth order. N. SALTYKOW: Semi-gauche functional groups, incomplete. ANDRÉ MACHIELS: Concerning an explanation of the outward velocities of nebulae. Criticism of the use of a modified Doppler-Fizeau formula by H. D. CURTIS: the conclusions drawn by the latter are, according to the author, invalid. G. BRUHAT and A. GUINIER: Photoelectric measurements of magnetic rotatory dispersion in the ultra-violet. The apparatus previously described by the authors has been applied to the measurement of the magnetic rotatory dispersion of heptane, heptene and heptine. A. A. GUNTZ: The theory of the phosphorogen. The concentration of phosphorogen is not sufficient, by itself, to characterise a phosphorescent body. A. ROUSSET: The diffusion of light and the rotations

of molecules in liquids. A. DA SILVEIRA: The Raman effect of aluminium salts. Mlle. C. CHAMIE: Contribution to the study of ThC". The special method used for the purification of the material is described and a curve is reproduced showing the quantity of ThC" collected on the receiving plate as a function of the field between 100 and 700 volts/cm. The period was determined as 3.1 minutes. E. TOPORESCU: The corrosion of iron. Experiments on the corrosion of iron in which the oxidation is not due to differential aeration, but depends on the surface tension. LETORT: The influence of traces of oxygen on the thermal decomposition of the vapour of acetaldehyde. The kinetic study of the thermal decomposition of acetaldehyde vapour showed irregularities which were ultimately traced to the effect of oxygen leaking in, and hence the effect of the presence of traces of oxygen has been systematically studied: traces of oxygen act as a catalyst. Mlle. SUZANNE VEIL: The electrical conduction of gelatine. Curves are given showing the change of electrical conductivity of gelatine as a function of the time and as a function of the applied electromotive force. PIERRE TAUZIN: The domain of inflammation of detonating gas at low pressure. The experimental results are given graphically. EDOUARD RENCKER: The point of transformation and softening of glass. The temperature of transformation coincides with the temperature at which the glass commences to soften. The sudden variation of the temperature coefficients of the physical properties is probably explained by the appearance of the viscous state. L. BERTHOIS: The presence of barytes in the sand of Alençon (Orne) granulite. JACQUES BOURCART: The existence of *Bubalus antiquus* in the muds of Oued Imar'ir'en (Marrakech Haut-Atlas) and the palaeontological significance of this find. RAYMOND FURON: Presentation of a stratigraphical scale for the palaeozoic strata of western Africa. J. P. ROTHÉ: Magnetic observations at Scoresby Sound during the polar year. Mlle. MADELEINE FRIANT: The affinities of *Issiodoromys*, a rodent from the European Oligocene. PIERRE LESAGE: Contribution to the study of the hereditary modifications produced in plants by heat. The precocity of plants grown under glass, or in a warm climate, is hereditary: the seeds sown in the open air show precocity for several generations. PAUL CHABANAUD: Do the great subdivisions of the order of heterosome fishes admit of a discriminating criterion? Mlle. ELIANE LE BRETON and GEORGES SCHAEFFER: The total utilisation of the heat of combustion of ethyl alcohol by the homeotherm with thermal neutrality. L. SILBERSTEIN: Sulphur in the animal organism. Summary of the results of determinations of sulphur in 27 species of animals. The figures range from 3.63 per cent in horse-hair to 0.04 per cent in the shells of Mollusca and Crustacea. E. and H. BIANCANI and A. DOGNON: Measurements of intensity in an ultrasound field of small extent.

WASHINGTON, D.C.

National Academy of Sciences (*Proc.* 19, 803-878, Sept. 15). W. S. STALLINGS, JR.: A tree-ring chronology for the Rio Grande drainage in northern New Mexico. The cultural span covered is from ruins of the Pueblo III horizon of south-western archæology (A.D. 1300) through later Pueblo and Spanish buildings to the present. The trees used are yellow pine (three-quarters of the record),

piñon and Douglas fir; the dating is by matching annual ring patterns in timber with those of recently cut trees. IAN CAMPBELL and JOHN H. MAXSON: Some observations on the Archean metamorphics of the Grand Canyon. Field work indicates that the great body of the Vishnu schist is sedimentary in nature, probably laid down in a shallow, subsiding geosyncline. The higher degree of metamorphism found may be due to contact rather than to regional effects. WILLIAM ALBERT SETCHELL: A preliminary survey of the species of *Zostera*. A discussion of the diagnostic features of the eel-grasses, with a provisional key. F. ZWICKY: Remarks on superconductivity. Superconductivity is connected with the structure-sensitive properties of crystals, and the occurrence of characteristic lengths of the order of 10^{-4} cm. and of one or more sharp transition points (co-operative phenomena). These phenomena can be discussed in terms of the interaction of ion-lattice and electron-lattice in a metal. F. A. MCJUNKIN and C. D. HARTMAN: Concentration and purification of a growth inhibitor extracted from kidney: a preliminary report. B. F. SKINNER: The abolishment of a discrimination. DONALD D. VAN SLYKE, ROBERT T. DILLON and ALMA HILLER: Crystallisation of a compound of hæmoglobin and carbon dioxide. BERWIND P. KAUFMANN: Interchange between X- and Y-chromosomes in attached X females of *Drosophila melanogaster*. G. F. SPRAGUE: Pollen tube establishment and the deficiency of waxy seeds in certain maize crosses. It has been shown experimentally that 'waxy' pollen takes longer to germinate and establish a pollen tube than 'non-waxy' pollen. E. M. EAST: The effect of homozygous genes for self-sterility. So-called incompatible matings in *Nicotiana* have been overcome by pollination of immature flowers; self-sterility was due to retardation of pollen-tube growth. It is concluded that self-sterility allelomorphs behave as ordinary non-lethal mutations, though playing a physiological rôle analogous to certain immunological reactions. CHARLES N. MOORE: On criteria for Fourier constants of *L* integrable functions. G. A. MILLER: Groups whose operators have no more than three distinct squares. H. BATEMAN: Logarithmic solutions of Bianchi's equation. LESLIE HELLERMAN, MARIE E. PERKINS and W. MANSFIELD CLARK: Urease activity as influenced by oxidation and reduction. Three types of reaction have been studied: effect of preparations of cuprous oxide and phenylmercuric hydroxide; aeration; effect of iodine. The results suggest that many observations on aspects of urease activity are linked with the oxidation and reduction of the sulphhydryl groups of the enzyme. L. O. BROCKWAY and LINUS PAULING: The electron-diffraction investigation of the structure of molecules of methyl azide and carbon suboxide. The results indicate a linear structure for the azide group of methyl azide, with the methyl group at an angle of 135° to the axis of the azide group; carbon suboxide is represented as a linear structure with bonds intermediate between double and triple bonds, thus: $O=C\equiv C\equiv O$. L. O. BROCKWAY: The electron-diffraction investigation of the molecular structure of cyanogen and diacetylene (with a note on chlorine dioxide). A criticism of Wierl's models; linear models, in which the single bond plays the most important rôle, are preferred. HENRY BORSOOK and GEOFFREY KEIGHLEY: Oxidation-reduction potential of ascorbic acid (vitamin C).

Forthcoming Events

Thursday, December 28

ROYAL INSTITUTION, at 3.—Sir James Jeans: "Through Space and Time" (Christmas Lectures. Succeeding lectures on December 30 and January 2, 4, 6 and 9).

Official Publications Received

GREAT BRITAIN AND IRELAND

The Scientific Proceedings of the Royal Dublin Society. Vol. 20, N.S., No. 41: The Trees of Ireland, Native and Introduced. By H. M. Fitzpatrick. Pp. 597-656. (Dublin: Hodges, Figgis and Co.; London: Williams and Norgate, Ltd.) 3s.

The H.E.A. Year Book: the Annual Publication of the Horticultural Education Association. Vol. 2, 1933. Pp. xxxiv+126. (Wye: South-Eastern Agricultural College.) 3s. 6d.

The Farmer's Guide to Agricultural Research in 1932. Pp. ii+236. (London: Royal Agricultural Society of England.)

The Pharmaceutical Society of Great Britain: Codex Revision Committee. Report of Pharmaceutical Chemistry Sub-Committee: Summary of the Principal Standards for Chemical Substances recommended by the Pharmaceutical Chemistry Sub-Committee and accepted, provisionally, for inclusion in the British Pharmaceutical Codex, 1934. Pp. 51. (London: Pharmaceutical Press.) 2s. 6d.

The Journal of the Chemical Society. November. Pp. iii+1421-1532+viii. (London: Chemical Society.)

The Quarterly Journal of the Geological Society of London. Vol. 89, Part 4, No. 356, November 28th. Pp. 357-526+x+plates 34-50. (London: Longmans, Green and Co., Ltd.) 7s. 6d.

British Medical Association. Report of Committee on Nutrition. Pp. 48. (London: British Medical Association.)

Philosophical Transactions of the Royal Society of London. Series B, Vol. 222, B 489: On some Pteridospermous Plants from the Mesozoic Rocks of South Africa. By Dr. H. Hamshaw Thomas. Pp. 193-265+plates 23-24. (London: Harrison and Sons, Ltd.)

OTHER COUNTRIES

U.S. Department of the Interior: Geological Survey. Water-Supply Paper 639: Geology and Ground-Water Resources of the Roswell Artesian Basin, New Mexico. By Albert G. Fiedler and S. Spencer Nye. Pp. xii+372+46 plates. (Washington, D.C.: Government Printing Office.) 1 dollar.

Bulletin of the National Research Council. No. 90: Physics of the Earth. 6: Seismology. Pp. viii+223. (Washington, D.C.: National Academy of Sciences.) Paper, 2 dollars; cloth, 2.50 dollars.

U.S. Department of Agriculture. Farmers' Bulletin No. 1712: The Harlequin Bug and Its Control. By W. H. White and L. W. Brannon. Pp. ii+10. (Washington, D.C.: Government Printing Office.) 5 cents.

University of California Publications in Zoology. Vol. 4, No. 2. Review of the Recent Mammal Fauna of California. By Joseph Grinnell. Pp. iii+71-234. 1.25 dollars. Vol. 40, No. 3: Mammals of the Pocatello Region of Southeastern Idaho. By Wayne B. Whitlow and E. Raymond Hall. Pp. iv+235-276. 35 cents. Vol. 40, No. 4: The Growth of some Young Raptorial Birds. By E. Lowell Sumner, Jr. Pp. iii+277-308. 50 cents. (Berkeley, Calif.: University of California Press; London: Cambridge University Press.)

Journal of the College of Agriculture, Tokyo Imperial University. Vol. 12, No. 1: On the Distribution of Decapod Crustaceans Inhabiting the Continental Shelf around Japan, chiefly based upon the Materials collected by S.S. *Syôbô-Maru* during the Years 1923-1930. By Yu Yokoya. Pp. 226. (Tokyo: Maruzen Co., Ltd.) 3.00 yen.

Royal Observatory, Hong Kong. Magnetic Results, 1884-1931. Prepared under the direction of C. W. Jeffries. Pp. 18. (Hong Kong: Government Printer.)

Ceylon Journal of Science. Section G: Archaeology, Ethnology, etc. Vol. 2, Part 3. Edited by S. Paranavitana. Pp. 149-240+plates 77-92. (Colombo: Colombo Museum; London: Dulau and Co., Ltd.) 3 rupees.

The Indian Forest Records. Vol. 15, Part 8: Multiple Yield Tables for Deodar (*Cedrus deodara* Loudon). By H. G. Champion and I. D. Mahendru. Pp. vii+116+11 plates. 4.8 rupees; 7s. 6d. Vol. 18, Part 11: Investigations on the Infestation of *Peridermium himalayense*, Bagchee, on *Pinus longifolia*. Part 2: *Cronartium himalayense*, n. sp., on *Suaeda* spp.; Distribution, Morphology of the Parasite, Pathological Study of the Infection, Biological Relationship with the Pine Rust, and Control. By Dr. K. Bagchee. Pp. iv+66+18 plates. 4.4 rupees; 7s. Vol. 19, Part 3: Regeneration and Management of *Sal* (*Shorea robusta*) Gaertn. f.: a Survey of the Problems presented and Proposals for necessary further Investigations. By H. G. Champion. Pp. v+159+24 plates. 5 rupees; 8s. 3d. (Delhi: Manager of Publications.)

Report of the Department of Industries, Madras, for the Year ending 31st March 1933. Pp. 84. (Madras: Government Press.) 10 annas.

Western Australia. Annual Progress Report of the Geological Survey for the Year 1932. Pp. 12. (Perth: Government Printer.)

U.S. Department of Agriculture. Circular No. 277: The Oriental Moth (*Cnidocampa flavescens* Walk.) and its Control. By C. W. Collins. Pp. 8. (Washington, D.C.: Government Printing Office.) 5 cents.

Bulletin of the American Museum of Natural History. Vol. 67, Article 3: Glossary and Correlation Charts of North American Tertiary Mammal-Bearing Formations. By George Gaylord Simpson. Pp. 79-121. (New York City.)

Forty-eighth Annual Report of the Bureau of American Ethnology to the Secretary of the Smithsonian Institution, 1930-1931. Pp. v+122. (Washington, D.C.: Government Printing Office.) 2 dollars.