

but merely different phases of one life-history, the lake fish being slimy and dark and the sea fish clean and shining blue. On the east coast there is a continuous movement from the southern rivers into those north of them, and there must be recruitment from the north as there are apparently no separate races, and there is probably one intermingling stock. Thus the problem is one for a single uniform policy.

The mullet is a bottom feeder and eats the sandy and muddy slime of the fresh and brackish waters, taking in the organic substances in it. Presumably, feeding ceases when the fish move to the sea. The larval development is unknown, but there are reasons to believe that the egg is pelagic and hatches within a short period, spawning probably occurring at or near the mouths of the estuaries in the surf zone. The young fish are still within a few miles of the estuary at the end of the first year, but after that they move farther up the rivers or lakes and spend their second and third year there.

NEW ZEALAND EARTHQUAKES DURING 1941

ACCORDING to the report on seismology for the year ended December 31, 1941, which has recently been received from the acting director, R. C. Hayes, the total number of earthquakes reported felt in New Zealand during 1941 was 107, the smallest number in any year since 1928 (Dominion Observatory Bulletin No. R.27, extracted from the Annual Report of the Department of Scientific and Industrial Research, 1941-42, Dominion Observatory, Wellington, New Zealand). The earthquakes, in addition to being reported by numerous individuals as having been felt, were recorded by instruments as follows, the situation of the instrument being given first, and the type of instrument in parenthesis afterwards: Auckland (Milne-Shaw), Arapuni (Milne), Rotorua (Jaggar), Tuai (Wood-Anderson), New Plymouth (Wood-Anderson), Hastings (Jaggar), Bunnythorpe (Jaggar), Wellington Central Station (Galitzin-Wilip, Milne-Shaw, Wood-Anderson, Jones, Imamura), Takaka (Imamura), Greymouth (Jaggar), Christchurch (Galitzin three components, Wood-Anderson), and Monowai (Jaggar). Milne-Shaw seismograph No. 36 was installed at the Auckland Museum early in April. However, it was not until November that the necessary apparatus was obtained for maintaining accurate time. There was considerable delay in establishing a Wood-Anderson seismograph at Kaimata near Greymouth owing to the war, but some progress has been made. The public works officials at Rotorua have developed a method of obtaining records on blueprint paper instead of on smoked cardboard. The seismograph at Chatham Islands has been temporarily suspended owing to the War.

Of the 107 shocks in 1941, 61 were felt in some part of the North Island and 55 in some part of the South Island. Nine were felt in both Islands. The maximum intensity reported felt was Rossi-Forel (*R.F.*) 8. Although the number of shocks felt was small, seismograph records indicate that minor activity was much the same as in previous years. Earthquakes were comparatively frequent in the far north-eastern part of the North Island and in the central districts; and there was more activity than usual in Canterbury. On the other hand, most of

Hawke's Bay was comparatively free from earthquakes. Occasional shocks originated in the far south-west. The only two outstanding seismic events occurred early in the year. These were (1) a shock of *R.F.* 8 originating near Taneatua, in the Bay of Plenty, on January 9; and (2) one of *R.F.* 6-7 near Lake Coleridge, in Canterbury, on February 7. The Taneatua shock was of very shallow origin, and in spite of the high intensity in the epicentral region the maximum radius of the 'felt' area did not exceed 70 miles. The Lake Coleridge shock was of normal depth and its 'felt' area was also small (maximum radius about 100 miles). After-shocks of the Lake Coleridge disturbance continued at intervals throughout the remainder of the year. Both these earthquakes were approximately 5 on the instrumental magnitude scale. Other shocks with *R.F.* intensity 6 or greater than 6 were: April 6d. 18h. 46-8m. *U.T.* from Taumarunui and Hastings to Queenstown and Dunedin (6), May 29d. 11h. 17-1m. *U.T.* parts of southern Hawke's Bay (6+), August 10d. 10h. 05-2m. *U.T.* Southland, parts of Otago (6), and September 24d. 11h. 39-5m. *U.T.* Otago to Wanganui and Waipawa (6). Four further shocks had scale 5 or rather greater, and one had scale 3 intensity.

Two notable features of the 1941 results were: (1) a prevailing tendency for activity to be concentrated towards the north-western side of the general seismic region; and (2) the occurrence of shocks slightly deeper than normal in the submarine region between Taranaki and Nelson and beneath the northern part of the South Island. This has been confirmed by a recent revision of the earthquake records of previous years.

NUTRITION IN RELATION TO BONE GROWTH AND THE NERVOUS SYSTEM

THE problem had its origin in observations made in 1918, when an experimental study of rickets was in progress. Some of the animals developed severe inco-ordination of movement, independently of rickets, and the condition clearly involved a different etiological factor. The latter differentiation of the anti-rachitic vitamin from vitamin A made it possible to show that the inco-ordination of movement in young animals was due to vitamin A deficiency.

Examination of the peripheral and central nervous system revealed widespread degeneration of afferent nerves (cranial and spinal) and ascending fibres in the central nervous system. The interpretation of the results at this period was that vitamin A deficiency produced degenerative changes in most nerve cells of afferent and ascending nerves, but left those of the descending and efferent nerves intact. Here the position was left for some years, but the unsatisfactory nature of the explanation impelled a return to the investigation. Since the 8th nerve was obviously particularly affected, serial sections of the labyrinthine capsules were studied. This examination led to the finding of abnormal bone growth in the internal auditory meatus, which was clearly pressing on both divisions of the 8th nerve. A similar

* Substance of the Croonian Lecture delivered by Sir Edward Mellanby, K.C.B., F.R.S., before the Royal Society on July 15.

overgrowth of periosteal bone was found to explain destruction of other peripheral afferent nerves. Many other abnormalities of the nervous system resulted from the same cause, including deformity of the cerebellum and medulla, increased intracranial pressure, internal hydrocephalus, reduction of the sub-arachnoid space and of the cerebrospinal fluid, and the squeezing of the whole of the central nervous system in its bony covering.

The investigation had now come back to its starting point, namely, bone development, since it was obvious that the essential problem, although associated with such drastic nervous defects, was largely one of abnormal bone growth. In the absence of vitamin A and carotene, bone growth in certain positions was excessive. Whereas it was shown in the earlier work that the antirachitic vitamin (now vitamin D) controlled the hardening of bone, it was now evident that vitamin A restrained the bone cell elements in some way, so that in its absence there was loss of normal bone shape and also of co-ordination of its growth in relation to that of the enclosed central nervous system. Although many of the essential facts of the relation of vitamin A to bone morphogenesis are still unknown, some recent results on this problem were described.

FORTHCOMING EVENTS

(Meetings marked with an asterisk * are open to the public)

Saturday, July 24

INSTITUTE OF PHYSICS (Midland Branch) (at the University, Edmund Street, Birmingham), at 2.30 p.m.—Lectures by Prof. R. Peierls and Dr. L. Jánossy on "The Meson".*

Wednesday, July 28

ZOOLOGICAL SOCIETY OF LONDON (in the Meeting Room, Regent's Park, London, N.W.8), at 3 p.m.—Sir John Graham Kerr, F.R.S.: "A Naturalist in the Gran Chaco, South America".*

APPOINTMENTS VACANT

APPLICATIONS are invited for the following appointments on or before the dates mentioned:

ASSISTANT MASTER OR MISTRESS TO TEACH MAINLY GENERAL SCIENCE in the Junior Technical Schools, Bath Technical College—The Director of Education, Education Department, Guildhall, Bath (July 30).

JOHNSTON CHAIR OF BIOCHEMISTRY—The Registrar, The University, Liverpool (July 31).

LECTURER IN THE DEPARTMENT OF CHEMISTRY—The Principal, Derby Technical College, Normanton Road, Derby (July 31).

VETERINARY INSPECTORS (TEMPORARY) in the Ministry of Agriculture and Fisheries—The Ministry of Labour and National Service, Central (Technical and Scientific) Register (Reference No. ONF. 1399), Alexandra House, Kingsway, London, W.C.2 (August 2).

DEMONSTRATOR (MALE OR FEMALE) IN ANATOMY—The Registrar, The University, Sheffield (August 2).

SPEECH THERAPIST—The Secretary to the Chesterfield and Mansfield Education Committees, Education Offices, Mansfield (August 3).

HEAD OF THE BUILDING DEPARTMENT—The Registrar, Technical College, Sunderland (August 6).

LECTURER (MAN) IN SCIENCE (PHYSICS AND CHEMISTRY)—The Principal, Borough Road College, Isleworth, Middlesex.

TEACHER OF ENGINEERING WORKSHOP PRACTICE in the Smethwick Junior Technical School—The Chief Education Officer, Education Offices, 215 High Street, Smethwick 41.

SCIENCE MASTER TO TEACH MAINLY BIOLOGY in connexion with a Pre-Agricultural Course for Boys at the Maidstone Technical Institute—The District Secretary, Kent Education Committee, 13 Tonbridge Road, Maidstone.

RESEARCH CHEMISTS, PHYSICISTS AND FUEL TECHNOLOGISTS for research and development work in connexion with the Ceramic Industry—The Director of Research, British Pottery Research Association, Queens Road, Penkhull, Stoke-on-Trent.

LECTURER IN THE MATHEMATICS DEPARTMENT—The Principal, Heriot-Watt College, Edinburgh.

VISITING LECTURER IN PSYCHOLOGY—The Secretary, King's College of Household and Social Science, c/o University College, Leicester.

REPORTS and other PUBLICATIONS

(not included in the monthly Books Supplement)

Great Britain and Ireland

Education and Training for Engineers. Pp. ii+22. (London: Institution of Electrical Engineers.) [226]

Geological Survey of Great Britain: Scotland, Wartime Pamphlet No. 34: Commercial Mica in Scotland. Part 1: Characteristics of Commercial Mica. By Dr. W. Q. Kennedy. Pp. 14. (London: Geological Survey and Museum.) 9d. [286]

Lister Institute of Preventive Medicine. Report of the Governing Body, 1943. Pp. 24. (London: Lister Institute.) [286]

Association of Polish University Professors and Lecturers in Great Britain. Professor Bronislaw Malinowski: an Account of the Memorial Meeting held at the Royal Institution in London on July 13th, 1942. Pp. 24. (London: Oxford University Press.) 1s. net. [296]

The British Council. Report for 1942-1943. Pp. 108. (London: British Council.) [306]

Colonial Office. Labour Supervision in the Colonial Empire, 1937-1943. (Colonial No. 185.) Pp. ii+26. (London: H.M. Stationery Office.) 6d. net. [127]

Abstracts of Dissertations approved for the Ph.D., M.Sc., and M.Litt. Degrees in the University of Cambridge during the Academic Year 1941-1942. Pp. 72. (Cambridge: At the University Press.) [137]

Ministry of Fuel and Power: Committee on the Efficient Use of Fuel. Fuel Efficiency Bulletin No. 20: Cooling Firebars in Industrial Furnaces and Boilers. (F.E.C.172.) Pp. 12. (London: Ministry of Fuel and Power.) [137]

The Farm Tractor. Pp. 40. (York: National Institute of Agricultural Engineering.) 9d. [137]

W.E.A. Educational Pamphlets. No. 1: Plan for Education; a Programme of Educational Reconstruction. Pp. 34. 6d. No. 3: The Education and Training of Teachers; a Memorandum submitted in Evidence to the Departmental Committee under the Chairmanship of Dr. A. D. McNair by the Workers' Educational Association. Pp. 20. 6d. No. 4: Agriculture and Rural Education; a Statement submitted to Mr. Justice Luxmoore's Committee. Pp. 22. 6d. (London: Workers' Educational Association.) [137]

Other Countries

Ministry of Public Works, Egypt: Physical Department. Physical Department Paper No. 44: Notes on the Flow of Viscous Fluids; a Series of Six Notes presenting New Lines of Approach to Various Aspects of Fluid Motion, mainly with reference to the Flow of Water. By A. Fathy, Dr. S. Bishara and S. A. M. Hassanein. Pp. xi+90. (Cairo: Government Press.) [256]

Commonwealth of Australia: Council for Scientific and Industrial Research. Bulletin No. 154: The Handling and Storage of Australian Oranges, Mandarins, and Grapefruit. Compiled by Dr. F. E. Huelin. (Report of Investigations carried out under the direction of the Citrus Preservation Technical Committee from 1935 to 1941.) Pp. 60+3 plates. Bulletin No. 156: Standardized Plant Names; a List of Standard Common Names for the More Important Australian Grasses, other Pasture Plants, and Weeds. Pp. 99. (Melbourne: Government Printer.) [286]

Brooklyn Botanic Garden Record. Vol. 32, No. 2: Thirty-second Annual Report of the Brooklyn Botanic Garden, 1942. Pp. viii+43-164. (Brooklyn, N.Y.: Brooklyn Institute of Arts and Sciences.) [137]

Jamaica. Annual Report of Forest Division, Department of Agriculture, for Year ending March 31st, 1942 (Abbreviated Report). Pp. 8. (Kingston: Department of Agriculture.) [137]

Bulletin of the Experiment Station of the Hawaiian Sugar Planters' Association. Entomological Series, Bulletin No. 22: The Coccinellidae or Ladybeetles of the Koebele Collection, Part 1. By P. H. Timberlake. Pp. 67. (Honolulu: Hawaiian Sugar Planters' Association.) [137]

U.S. Department of Agriculture. Circular No. 671: Sampling Technique for Determining Populations of the Citrus Red Mite and its Predators. By Chas. F. Henderson and Horace V. McBurnie. Pp. 12. 5 cents. Farmers' Bulletin No. 1930: Prevention and Control of Alfalfa Weevil Damage. By J. C. Hamlin, W. C. McDuffie and F. V. Lieberman, and R. W. Bunn. Pp. ii+14. 5 cents. Leaflet No. 226: The Pepper Weevil. By J. C. Elmore. Pp. 8. (Washington, D.C.: Government Printing Office.) [137]

Annals of the New York Academy of Sciences. Vol. 44, Art. 1: Boundary-Layer Problems in the Atmosphere and Ocean. By C.-G. Rossby, B. Haurwitz, Benjamin Holzman, Woodrow C. Jacobs, A. A. Kohnske, Phillip Light, R. B. Montgomery and H. U. Sverdrup. Pp. 104. (New York: New York Academy of Sciences.) [137]

Cornell University Agricultural Experiment Station. Bulletin 786: Population Trends in New York State, 1900 to 1940. By W. A. Anderson. Pp. 72. Bulletin 787: Effects of Daylength and Temperature on Growth and Flowering of some Florist Crops. By Kenneth Post. Pp. 70. Bulletin 788: Fusarium Wilt of Carnations caused by *Fusarium Dianthi* Prill. et Del. By J. M. Bickerton. Pp. 32. Bulletin 789: Soil and Field-Crop Management for the Catskill-Mohawk Area of New York. By A. F. Gustafson. Pp. 32. Memoir 248: Studies with Silver Compounds and Mixtures as Fungicidal Sprays. By Lowell W. Nielsen. Pp. 44. Memoir 249: The Effect of Various Dilutors, Cooling Rate, Temperature of Storage, and some other Factors, on the Livability of Spermatozoa in Stored Samples of Bull Semen. By E. L. Willett and G. W. Salisbury. Pp. 46. (Ithaca, N.Y.: Cornell University Agricultural Experiment Station.) [137]

Catalogue

Scientific and Medical Books, with an Interesting Collection of Newtoniana and many Items of General Interest. (Catalogue N.S. 52.) Pp. 36. (London: Wm. Dawson and Sons, Ltd.)