cavities, and also imperfect quartz crystals resulting from the enlargement of quartz grains. A mineralogical relationship between the Narrabeen series and Kamilaroi system is suspected. F. P. DWYER and D. P. MELLOR : A note on the occurrence of β-cristobalite in Australian opals. Powder photographs have shown the existence of β (high) cristobalite in Australian opals of both the precious and common varieties. In only three cases, precious opal (*Tintenbar*), wood opal and altered diatomaceous earth, does the complete pattern of β-cristobalite appear. In all others a single broad band in the position of the most intense line of the β-cristobalite pattern appears. In these specimens the crystallites are extremely small. Scarcely any change in the diffraction pattern appears when the latter class of opal is heated at approximately 1,000° C. for several hours. When heated in the presence of potassium chloride, the crystals appear to grow, since after this treatment the broad band disappears and gives way to the sharp line pattern of β-cristobalite. M. B. WELCH : Moisture content of wood. It is essential, in order to avoid gaping joints and cracks, that wood should be thoroughly seasoned before use, and the only true indication of this condition is obtained by determination of the moisture content of the wood. Wood is continually in a state of swelling and shrinkage due to absorption or loss of moisture from the atmosphere, but only within small limits. The result of a large number of tests indicates that for Sydney an average moisture content of 13·5–14 per cent denotes properly seasoned timber. V. A. BAILEY. The quantitative theory of interaction between different species of animals. A mathematical theory of animal populations, arising out of the biological analysis of Dr. A. J. Nicholson, is described in outline. The fundamental equations of the theory are stated and certain of their consequences, biologically interesting, are mentioned. The variations of the animal densities near the steady state in a special non-continuous case are determined and shown to be represented by functions of the form $Ac^t \sin (\lambda t + B)$, where A and B are constants dependent on the initial densities, and c and λ are simple functions of the host-species' power of increase F, with $c > 1$

Forthcoming Events

Saturday, April 8

GILBERT WHITE FELLOWSHIP, at 2.30—(Annual General Meeting in the Hall of the Art-Worker's Guild, 6, Queen Square, W.C.1).—At 3, Sir John Russell : "Modern Trends in Agricultural Science".

Monday, April 10

ROYAL GEOGRAPHICAL SOCIETY, at 5.—Discussion on "The Use of the New Grid on Ordnance Survey Maps", to be opened by Brigadier H. L. Winterbotham.

INSTITUTION OF ELECTRICAL ENGINEERS, at 6 (Joint Meeting with the Institute of Transport).—C. J. Spencer : "Electric Trolley Omnibuses".

Wednesday, April 12

SOCIETY OF GLASS TECHNOLOGY, at 2—(in the Mappin Hall, The University, Sheffield).—Annual General Meeting.

Official Publications Received

GREAT BRITAIN AND IRELAND

Annals of the Solar Physics Observatory, Cambridge. Vol. 3, Part 2 : Microphotometry of the Solar Spectrum from 4040 to 4390A. By Dr. R. V. D. R. Woolley. Pp. v+79–118. (Cambridge : At the University Press.) 7s. 6d. net.

Report of the Marlborough College Natural History Society for the Year ending Christmas, 1932. (No. 81.) Pp. 72+7 plates. (Marlborough.) To Members, 3s. ; to Non-Members, 5s.

Researches published from the Wards and Laboratories of the London Hospital during 1932. 29 papers. (London : H. K. Lewis and Co., Ltd.) 7s. 6d. net.

City and County of Bristol : Bristol Museum and Art Gallery. Report of the Museum and Art Gallery Committee for the Period October 1st, 1931, to December 31st, 1932. Pp. 28+4 plates. (Bristol.) 2d.

Proceedings of the Edinburgh Mathematical Society. Series 2, Vol. 3, Part 3, February. Edited by Prof. H. W. Turnbull and Dr. E. T. Copson. Pp. 151–230. (London : G. Bell and Son, Ltd.)

National Joint Industrial Council for the Flour Milling Industry. Technical Education Series, Pamphlet No. 9 : The Wheats of Commerce. 1 : General Considerations. By Dr. E. A. Fisher and Dr. C. R. Jones. Pp. 51. 6d. net. Technical Education Series, Pamphlet No. 10 : The Wheats of Commerce. 2 : Commercial Wheat Classes. By Dr. E. A. Fisher and Dr. C. R. Jones. Pp. iii+53–104. 6d. net. (London.)

Biological Reviews and Biological Proceedings of the Cambridge Philosophical Society. Edited by H. Munro Fox. Vol. 8, No. 2, April. Pp. 107–240. (London : Cambridge University Press.) 12s. 6d. net.

OTHER COUNTRIES

Proceedings of the Imperial Academy. Vol. 9, No. 1, January. Pp. ii+30. (Tokyo.)

Japanese Journal of Physics. Transactions and Abstracts, Vol. 8, No. 2, February 10. Pp. iv+57–108+21–52. (Tokyo : National Research Council of Japan.)

Journal of Science of the Hiroshima University. Series A (Mathematics, Physics, Chemistry), Vol. 3, No. 1, December. Pp. 136. (Tokyo : Maruzen Co., Ltd.)

The Tôhoku Mathematical Journal. Vol. 36, Part 2, January. Pp. ii+189–397. (Sendai : Tôhoku Imperial University.)

University Observatory, Oslo. Publication No. 5 : On the Theory of the Chromosphere and the Corona. By Svein Rosseland. Pp. 37. (Oslo : A. W. Broggers Boktrykkeri A.-S.)

Publications of the Observatory of the University of Michigan. Vol. 5, No. 4 : The Elements and Ephemeris of Comet Dodwell-Forbes (1932n). By Allan D. Maxwell. Pp. 39–42. (Ann Arbor, Mich.).

State of Connecticut. Public Document No. 24 : Fifty-fifth Report of the Connecticut Agricultural Experiment Station, New Haven, for the Year 1931. Pp. xii+850+74. (New Haven, Conn.).

Geological Survey of Uganda. Memoir No. 3 : The Volcanic Area of Bufumbira. Part 1 : The Geology of the Volcanic Area of Bufumbira, South-West Uganda ; with Notes on the Petrology and Economic Geology. By A. D. Combe and W. C. Simmons. Pp. xi+150+12 plates. (Entebbe : Government Printer.) 15s.

Forest Bulletin No. 80 : List of Trees and Shrubs for the Kashmir and Jammu Forest Circles, Jammu and Kashmir State. By W. J. Lambert. Pp. v+40. (Calcutta : Government of India Central Publication Branch.) 12 annas ; 1s. 3d.

The Science Reports of the Tôhoku Imperial University, Sendai, Japan. Fourth Series (Biology), Vol. 8, No. 1, February. Pp. 74+4 plates. (Tokyo and Sendai : Maruzen Co., Ltd.)

Meddelelser om Grønland udgivne af Kommissionen for Videnskabelige Undersøgelser i Grønland. Band 79, Nr. 4 : The Godthaab Expedition 1928—Alcyonaria, Antipatharia and Madreporaria. By P. L. Kramp. Pp. 20. (København : C. A. Reitzels Forlag.) 1.00 kr.

Report of the Aeronautical Research Institute, Tôkyô Imperial University. No. 92 : On the Transmissibility of Visible Light through a Cloud of Particles. By Daizo Nukiyama and Atsusi Kobayasi. Pp. 307–338. 35 sen. No. 93 : Hôbutumen no Onkyôgakutekino Seisitu ni tuite (On the Acoustical Properties of Parabolic Reflectors), Part 2. By Kôzi Satô and Masaaki Sasao. Pp. 339–356. 25 sen. Tôkyô : Koseikai Publishing House.)

Scientific Papers of the Institute of Physical and Chemical Research. No. 409 : Vitamin C in Japanese Green Tea. By Masataro Miura and Michiyo Tsujimura. Pp. 129–144. 20 sen. No. 410 : On the Antiscorbutic Factor in Commercially Sterilized Milk and Japanese Green Tea—An Experiment upon Monkey. By Masataro Miura and Nagayo Okabe. Pp. 145–161. 25 sen. Nos. 411–413 : On the Minor Constituents of Thermoluminescent Calcite, by Shin Hata ; The Absorption Spectra of Naturally Coloured Fluorites, by Jun Yoshimura ; Reactivation of the Blood Forming Action of Liver by Constituents of Gastric Mucosa, by Fumito Inukai and Waro Nakahara. Pp. 163–188. 40 sen. (Tokyo : Iwanami Shoten).

Canada : Department of Mines : Mines Branch. Anhydrite in Canada : Occurrence, Properties and Utilization. By L. Heber Cole and R. A. Rogers. (No. 732.) Pp. v+89+5 plates. (Ottawa : F. A. Acland.) 20 cents.

CATALOGUES

Microscopical Preparations : Zoological and Botanical Material. (Catalogue A, eighth edition.) Pp. 112. (Manchester : Flatters and Garnett, Ltd.)

Colorimetry and Nephelometry. (Section E33.) Pp. 15. Moll Thermopiles and Vacuum Thermocouples. (Thermo 33.) Pp. 4. (Delft : P. J. Kipp and Zonen.)

Books on Various Subjects in New Condition at much Reduced Prices. (No. 465.) Pp. 24. Catalogue of a Portion of the Library of the late G. Lowes Dickinson. (No. 466.) Pp. 24. (Cambridge : Bowes and Bowes.)