

reducers of potassium permanganate than extracts from male plants. The results are closely parallel with those of the Manoilo reaction, but the reducing substances effective in the two cases are different. The reactions depend on quantitative rather than qualitative differences.—E. M. East: Inheritance of trimorphism in *Lythrum salicaria*. Self-sterility is not due to selective pollen-tube growth. The two kinds of pollen carry the same factors so far as trimorphism is concerned. Flower differences are conditioned by three genes, long style being recessive.—F. G. Benedict and E. G. Ritzman: (1) The fasting of large ruminants. Four steers have been subjected to fasts of 5 to 14 days. Records were obtained of changes of body-weight, amount of excreta, gaseous metabolism, and so on. The total carbon dioxide production in consecutive half-hour periods was measured in a respiration chamber. During the fast, the character of the urine changes from that of herbivora to that of omnivora and nitrogen excretion increases. Heat production (determined from the carbon dioxide production and respiratory quotient) decreases, at first rapidly and then more slowly. Metabolism depends on the previous feeding (maintenance or sub-maintenance) and is notably higher in young animals. (2) The basal metabolism of steers. The effect of the temperature of the environment is small. The metabolism reaches a steady value about 30 hours after the last feed. Respiration experiments during four consecutive half-hour standing periods and during 24-hour periods when the animal stood or laid down at will showed that posture has little effect. The true basal metabolism is 1300+calories per square metre of body surface, which is 40 per cent. greater than that of man. (3) The metabolic stimulus of food in the case of steers. Animals fasted for two days and then given a ration low in protein all showed a great increase of metabolism consequent on the ingestion of food. Any additional activity during feeding periods and 'the work of digestion' required by the movements of food masses through the intestines cannot account for the increased metabolism observed. It is suggested (after Grouven) that carbohydrates in the ruminant are fermented to form fatty acids and are wholly absorbed at this stage; these acids in the blood stimulate cell activity.—Leonell C. Strong: Studies on the effect of potassium alum-hydrochloric acid solutions on the growth and fate of neoplastic tissue. (1) Effect on a slow-growing adeno-carcinoma of the mouse. A stock of mice the females of which develop spontaneous mammary gland cancer has been produced. Potassium alum in hydrochloric acid was given in the drinking water, and it so affects the host or the tumour that the growth of the later is definitely slowed down and the host animal is able to live longer than it would if untreated. Complete regression of spontaneous tumours has been observed after combined oral administration and subcutaneous injection.—C. F. Roos: Dynamical economics. Competition, monopoly, and co-operation in general functions of demand and cost are discussed mathematically.—Edwin B. Wilson: On the proof of Sheppard's corrections.—D. V. Widder: Note on a generalisation of Taylor's series.—George D. Birkhoff: (1) A theory of matter and electricity. The theory requires the introduction of a 'substance coefficient' and an 'atomic potential' and it is claimed that it satisfies the demands of determinateness and stability.—(2) The hydrogen atom and the Balmer formula. By the use of the theory put forward in (1), a formula of the Balmer type is obtained.—G. A. Miller: Groups generated by two operators of order three whose product is of order three.

Official Publications Received.

BRITISH.

- Annual Report of the Council of the Yorkshire Philosophical Society for the Year 1926, presented to the Annual Meeting, February 21st, 1927. Pp. 41+16. (York.)
- British Chemical Abstracts issued by the Bureau of Chemical Abstracts. Index, 1926. Pp. 430. (London: Society of Chemical Industry.)
- The Physiological Society. Session 1927-8. Rules, List of Members and Dates of Meetings. Pp. xii+32. (London.)
- Transactions of the Faraday Society. Index, Vols. 1 to 20. Pp. 55. (London and Edinburgh: Gurney and Jackson.) 13s. 6d. net; paper, 10s. 6d. net.
- Union of South Africa: Department of Agriculture. Bulletin No. 11: Cheddar Cheese-making. By Jas. P. Gow. Pp. 16. (Pretoria: Government Printing and Stationery Office.) 3d.
- Union of South Africa. Report of the South African Museum for the Year ended 31st December 1926. Pp. ii+13. (Cape Town.)
- Board of Education. Report on the Science Museum for the Year 1926. Pp. 27. (London: H.M. Stationery Office.) 1s. net.
- The University of Leeds: Department of Leather Industries. Report of the Advisory Committee on the Work of the Department during the Sessions 1924-25 and 1925-26. Pp. 8. (Leeds.)
- The Scientific Proceedings of the Royal Dublin Society. Vol. 18 (N.S.), No. 37: The Soluble Silicate Content of Soils. By W. R. G. Atkins. Pp. 433-436. (Dublin: Hodges, Figgis and Co.; London: Williams and Norgate, Ltd.) 6d.
- Falmouth Observatory. Meteorological Notes and Tables for the Year 1926. By Joshua Bath Phillips. Pp. 11. (Falmouth.)
- Proceedings of the Cambridge Philosophical Society. Vol. 23, Part 6, April. Pp. 617-754. (Cambridge: At the University Press.) 7s. 6d. net.
- The Physical Society. Proceedings, Vol. 39, Part 3, April 15. Pp. 171-250. (London: Fleetway Press, Ltd.) 6s. net.
- The North of Scotland College of Agriculture. Bulletin No. 32: Crane Fly Grub and the Oat Crop. By John Rennie. Pp. 14. Bulletin No. 33: Acarine Disease in Hive Bees; its Cause, Nature and Control. By John Rennie. Pp. 34+5 plates. 1s. (Aberdeen.)
- Electricity Commission. Electricity (Supply) Act, 1926. Central Scotland Electricity Scheme, 1927: Scheme prepared by the Electricity Commissioners in pursuance of Section Four of the Electricity (Supply) Act, 1926. Published by Order of the Central Electricity Board. Pp. 10+1 map. 1s. net. Supplementary Particulars. Pp. 73+4 diagrams. 2s. 6d. net. (London: H.M. Stationery Office.)
- The Journal of the Institution of Electrical Engineers. Edited by P. F. Rowell. Vol. 65, No. 365, May. Pp. 469-552+xxx. (London: E. and F. N. Spon, Ltd.) 10s. 6d.
- Forest Bulletin No. 68: Notes on the Comparative Economic Cost of Wood and Metal Sleepers in India, and Cost of Treatment. By J. H. Warr and H. Trotter. (Economy Series.) Pp. v+20+8 plates. 1.12 rupees; 3s.
- Forest Bulletin No. 70: *Hoplocerambyx spinicornis*—an important Pest of Sal. By D. J. Atkinson. (Entomology Series.) Pp. ii+24+5 plates. 15 annas; 1s. 6d. (Calcutta: Government of India Central Publication Branch.)
- Journal of the Indian Institute of Science. Vol. 9A, Part 9: Derivatives of Naphthaquinolines and Naphthaisoquinolines. By Charles Stanley Gibson, Kalvo Venkatakrisna Hariharan, Kottiazath Narayana Menon and John Lionel Simonsen. Pp. 179-191. 12 annas. Vol. 9A, Part 10: i. Isomeric Phenylserines; ii. The Unstable Modification of isoNitrosocampor; iii. d-Mannitol from 'Gardenia turgida.' By M. O. Forster and Keshaviah Aswath Narain Rao. Pp. 193-207. 12 annas. (Bangalore.)
- Publications of the Dominion Astrophysical Observatory, Victoria. Vol. 3, No. 15: The Orbits of three A-type Spectroscopic Binaries. By W. E. Harper. Pp. 315-329. Vol. 3, No. 16: Two Spectroscopic Binary Orbits. By R. M. Petrie. Pp. 331-339. Vol. 3, No. 17: Two K-type Spectroscopic Binaries. By W. E. Harper. Pp. 341-348. (Victoria, B.C.)
- Publications of the South African Institute for Medical Research. No. 20: The Plague Problem in South Africa; Historical, Bacteriological and Entomological Studies. By J. Alexander Mitchell, Dr. J. H. Harvey Pirie and Dr. A. Ingram. Pp. 85-256. (Johannesburg.)
- Aeronautical Research Committee: Reports and Memoranda. No. 1062 (E. 23): Dopes and Detonation. Second Report by Prof. H. L. Callendar. Experiments made in the Air Ministry Laboratory at the Imperial College of Science, London, under the Direction of R. O. King, by Dr. E. W. J. Mardles and W. J. Stern, assisted by N. R. Fowler. (B.4. Engines, 62.—T. 2372.) Pp. 31+5 plates. 1s. 3d. net. No. 1069 (Ae. 251): On a Modification of the Chattock Gauge, Designed to Eliminate the Change of the Zero with Temperature. By W. J. Duncan. (C.I. Accessories-Instruments, 93.—T. 2368.) Pp. 5+1 plate. 6d. net. No. 1074 (Ae. 256): Full Scale Tests of a Suspended Air Log. By J. K. Hardy. (C.I. Accessories-Instruments, 94.—T. 2391.) Pp. 4+1 plate. 4d. net. (London: H.M. Stationery Office.)
- The Scientific Proceedings of the Royal Dublin Society. Vol. 18 (N.S.), No. 36: On the Index Fossil of the *Cleistopora* Zone. By Dr. Louis B. Smith. Pp. 423-431+plates 20-22. (Dublin: Hodges, Figgis and Co.; London: Williams and Norgate, Ltd.) 2s. 6d.
- Bishop's Stortford College. Report of the Proceedings of the Natural History Society, 1926. Pp. 23. (Bishop's Stortford.)

FOREIGN.

- Koninklijk Magnetisch en Meteorologisch Observatorium te Batavia. Verhandelingen No. 19: Monsoon-Currents in the Java Sea and its Entrances. By H. P. Berlage, Jr. Pp. 23+21 plates. (Wetvaardigen: Landsdrukkerij.)
- Report of the Aeronautical Research Institute, Tôkyô Imperial University. No. 20: On the Mechanism of Cyclones and Anticyclones, Part 2. By Tatuo Kobayasi. Pp. 205-233. 0.50 yen. No. 21: Lower Limit of Inflammability of Ethyl Alcohol, Ethyl Ether, Methyl Cyclohexane and their Mixtures. By Yoshio Tanaka, Yuzaburo Nagai and Kinsei Akiyama. Pp. 235-246. 0.25 yen. (Tôkyô: Koseikai Publishing Office.)

United States Department of Agriculture. Department Bulletin No. 1469: The Satin Moth, a recently introduced Pest. By A. F. Burgess and S. S. Crossman. Pp. 23+1 plate. (Washington, D.C.: Government Printing Office.) 10 cents.

Department of Commerce: U.S. Coast and Geodetic Survey. Serial No. 878: Tables for Albers Projection. By Oscar S. Adams. (Special Publication No. 180.) Pp. ii+24. (Washington, D.C.: Government Printing Office.) 5 cents.

Department of the Interior: Bureau of Education. Bulletin, 1927, No. 2: Record of Current Educational Publications, comprising Publications received by the Bureau of Education to January 1, 1927. Pp. 58. (Washington, D.C.: Government Printing Office.) 10 cents.

Proceedings of the United States National Museum. Vol. 70, Art. 18: Small Shells from Dredgings off the Southeast Coast of the United States by the United States Fisheries Steamer *Albatross* in 1885 and 1886. By William H. Dall. (No. 2667.) Pp. 134. Vol. 70, Art. 23: A Revision of the Beetles of the Genus *Oedionychis* occurring in America north of Mexico. By Doris Holmes Blake. (No. 2672.) Pp. 44+2 plates. Vol. 71, Art. 11: Notes on the Melitæid Butterfly *Euphydryes phœdon* (Drury), with Descriptions of a new Subspecies and a new Variety. By Austin H. Clark. (No. 2683.) Pp. 22+5 plates. (Washington, D.C.: Government Printing Office.)

Smithsonian Institution: United States National Museum. Report on the Progress and Condition of the United States National Museum for the Year ended June 30, 1926. Pp. ix+205. (Washington, D.C.: Government Printing Office.) 25 cents.

Proceedings of the Academy of Natural Sciences of Philadelphia. Vol. 78, 1926. Pp. iii+306+40 plates+228. (Philadelphia, Pa.)

Department of Commerce: Bureau of Standards. Technologic Papers of the Bureau of Standards, No. 337: Soundproofing of Apartment Houses. By V. L. Chrisler. Pp. 258-260. (Washington, D.C.: Government Printing Office.) 5 cents.

Bulletin of the American Museum of Natural History. Vol. 53, Art. 2: The Aquatic Mollusks of the Belgian Congo, with a Geographical and Ecological Account of Congo Malacology. By Henry A. Pilsbry and J. Bequaert. Pp. 69-602+plates 10-77. (New York City.)

Diary of Societies.

SATURDAY, JUNE 4.

INSTITUTION OF MUNICIPAL AND COUNTY ENGINEERS (South-Eastern District Meeting) (at Town Hall, Maidstone), at 11 A.M.—T. F. Bunting: Housing in Borough of Maidstone; Widening of Maidstone Bridge; New Elementary School.

OXFORD UNIVERSITY JUNIOR SCIENTIFIC CLUB, at 8.15.—Sir Leonard Rogers: Climate and Disease Incidence in India: Forecasting Epidemics.

INSTITUTION OF MUNICIPAL AND COUNTY ENGINEERS (Scottish Meeting) (at Dunfermline).

MONDAY, JUNE 6.

ROYAL SOCIETY OF EDINBURGH, at 4.30.—Prof. Harvey-Gibson: Account of the Life of De Saussure 1767-1845, with the gift of the MSS. of a Translation of his "Recherches chimiques sur la végétation," 1804.—Ethel Currie: Fossil Echinoida of Somaliland.—A. Calder: A Case of Partial Sex Transformation in Cattle.—W. O. Kermack and W. T. H. Williamson: Stability of Suspensions, Part 2, The Rate of Sedimentation of Kaolin Suspensions containing Colloidal Silicon Dioxide.—Amy Fleming: The Peripheral Sympathetic Innervation of the Uterus (to be read by title).—W. L. Ferrar: Consistency of Cardinal Function Interpolation (to be read by title).—Prof. W. H. Lang: Contributions to the Study of the Old Red Sandstone Flora of Scotland, Part VI, On *Zosterophyllum Myxotriaxum*, Penh., and some other Plant Remains from the Carnymillie Beds of the Lower Old Red Sandstone. Part VII. On a Specimen of *Pseudosporochnus*, from the Stromness Beds (to be read by title).—Sir Thomas Muir: The Theory of Orthogonants and Latent Roots from 1881 to 1918 (to be read by title).

ARISTOTELIAN SOCIETY (at University of London Club), at 8.—Dr. F. Aveling: Mental Association.

TUESDAY, JUNE 7.

ZOOLOGICAL SOCIETY OF LONDON, at 5.30.—Prof. J. P. Hill: Exhibition of Lantern-slides of Echinidna Embryos.—R. I. Pocock: The Gibbons of the Genus *Hylobates*.—Dr. C. A. Nilsson-Cantell: Some Barnacles in the British Museum (Natural History).—R. Gurney: Zoological Results of the Cambridge Expedition to the Suez Canal, 1924. Report on the Crustacea, Copepoda (Littoral and Semi-Parasitic).—P. Esben-Petersen: New Species of *Neuroptera Planipennia* in British Collections—IV.

THURSDAY, JUNE 9.

ROYAL SOCIETY OF MEDICINE (Laryngology and Otolaryngology Sections) (Summer Meeting).—Laryngological Session, at 2.30.
LONDON MATHEMATICAL SOCIETY (at Royal Astronomical Society), at 5.—Prof. W. E. H. Berwick: Modular Invariants Expressed in Terms of Quadratic and Cubic Irrationals.—H. Bohr: On the Limit Values of Analytic Functions.—Prof. E. H. Neville: The Logarithmic Singularity of the Quarter-period K.—Prof. J. Proudman and F. Edith Mercer: On the Theory of the Oscillations of a Rotating Mechanical System of Infinite Freedom.

BRITISH PSYCHOLOGICAL SOCIETY (Æsthetics Section) (at Royal Anthropological Institute), at 6.—Dr. E. D. Hutchinson: The Psychology of Creative Effort.

OPTICAL SOCIETY (at Imperial College of Science and Technology), at 7.30.—Dr. T. H. Harrison: The Use of Photo-electric Cells for Precision Photometry of Electric Lamps.—R. Kingslake: An Experimental Study of the Best Minimum Wave-length for Visual Achromatism.—Sushil Krishna Datta: On Brewster's Bands. Part II.

FRIDAY, JUNE 10.

ROYAL SOCIETY OF MEDICINE (Laryngology and Otolaryngology Sections) (Summer Meeting).—Otolaryngological Session, 10 A.M. to 12.30.—Papers on Progressive Middle-ear Deafness.—Dr. Scott Stevenson and E. Horace Richards: Preliminary Study of Chronic Middle-ear Deafness.—G. J. Jenkins: Paper.—Dr. D. McKenzie: What is Progressive Middle-ear Deafness?—Dr. A. Gray: Demonstration by Stereoscopic Transparencies of Specimens of the Temporal Bone.—Dr. D. McKenzie: Posterior (Mastoid) Drainage in Acute Suppuration of the Middle Ear.—Laryngological Clinical Meeting, at 4.—Cases and Specimens by W. S. Syme, H. Kisch, T. B. Layton, and others.

ROYAL ASTRONOMICAL SOCIETY, at 5.—B. M. Peek: Observations of Nova, 1926-27.—Dr. H. Spencer Jones: Note on the Mass of Venus deduced from Cape Heliometer Observations.—Dr. J. K. E. Halm: On a Graphical Determination of the Orbital Elements of a Spectroscopic Binary.—R. C. Johnson: Note on the Origin of Certain Radiations in Cometary Spectra.—V. A. Ambartzumian and N. A. Kosirev: Radiative Equilibrium in Inner Layers of Stars.—P. A. Taylor: (a) The Equilibrium of the Calcium Chromosphere; (b) The Light-Intensity of the Calcium Chromosphere.

PHYSICAL SOCIETY OF LONDON (at Imperial College of Science), at 5.—J. H. Awbery: The Latent Heat of Evaporation of Sulphur.—H. Lowery: The Refraction and Dispersion of Carbon Tetrachloride.—P. K. Kichlu: Regularities in the Spectrum of Ionised Neon.—Demonstration of the Schönherr-Hessburgh Nitrogen Fixation Arc, by Capt. G. J. Finch.

PHILOLOGICAL SOCIETY (at University College), at 5.30.—C. T. Onions: The New English Dictionary.

INSTITUTE OF CIVIL ENGINEERS, at 6.—Report of the Special Committee on Tabulating the Results of Heat Engine Trials.

MALACOLOGICAL SOCIETY OF LONDON (at Linnean Society), at 6.

GEOLOGISTS' ASSOCIATION (at University College), at 7.30.—Prof. H. L. Hawkins: Echinoid Illustrations of Some Problems in Evolution (Lecture).

OXFORD UNIVERSITY JUNIOR SCIENTIFIC CLUB (in Department of Zoology and Comparative Anatomy, Oxford), at 8.15.—Prof. J. Barcroft: Respiratory Pigments.

ROYAL INSTITUTION OF GREAT BRITAIN, at 9.—C. L. Woolley: The Excavations at Ur.

SATURDAY, JUNE 11.

ROYAL SOCIETY OF MEDICINE (Laryngology and Otolaryngology Sections) (Summer Meeting).—Otolaryngological Session (Clinical Meeting), at 10.—Dr. G. Portmann: The Sacculus Endolymphaticus and an Operation for Draining the same for the Relief of Vertigo.—Cases and Specimens by Dr. A. R. Friel, A. R. Tweedie, Dr. T. E. Jobson, N. Barnett, E. B. Barnes, and others.

PUBLIC LECTURES.

WEDNESDAY, JUNE 8.

UNIVERSITY COLLEGE, at 5.30.—Prof. Raymond Pearl: Experimental Vital Statistics. (Succeeding Lectures on June 9 and 10.)

THURSDAY, JUNE 9.

INSTITUTE OF PATHOLOGY AND RESEARCH (St. Mary's Hospital), at 5.—Prof. B. J. Collingwood: Molecular Movement in the Living Body.

FRIDAY, JUNE 10.

UNIVERSITY COLLEGE, at 5.30.—Prof. R. A. S. Macalister: Celtic Art. (Succeeding Lectures on June 13 and 15.)

SUNDAY, JUNE 12.

GUILDHOUSE (Eccleston Square, S.W.), at 3.30.—Dr. R. E. M. Wheeler: Some of the Ancient Civilisations of Britain.

CONVENTIONS.

JUNE 4 TO 7.

ANNUAL CONFERENCE OF THE ASSOCIATION OF TEACHERS IN TECHNICAL INSTITUTIONS (at Plymouth).

JUNE 6 TO 9.

CONVENTION OF CANADIAN CHEMISTS (at Quebec).

JUNE 6 TO 11.

PHOTOGRAPHIC CONVENTION OF THE UNITED KINGDOM (at Warwick).
Monday, June 6.—Afternoon.—Welcome by the Mayor of Warwick. Installation of President. Presidential Address. Annual General Meeting.
Tuesday, June 7.—Evening.—H. Baker: Lecture.
Wednesday, June 8.
Thursday, June 9.—Evening.—A. S. Newman: Lecture.
Friday, June 10.—Evening.—A. Keighley: Lecture.
Saturday, June 11.

JUNE 16 AND 17.

CONGRESS OF INTERNAL COMBUSTION ENGINE (at Padua).