

second method does need an extra condition, but it is not at all clear what form it should take.

Theoretical physics is much more complicated than it appeared earlier in this century. About thirty years ago it seemed that all physical quantities were expressible in terms of tensors. The discovery of the wave equation of the spinning electron showed that we needed also spinors. Now Prof. Dirac shows that for quantum electrodynamics we need a new kind of quantity with components which transform linearly under Lorentz transformations, which he calls an 'expansor'. It has an enumerably infinite number of components.

## FORTHCOMING EVENTS

Monday, July 28—Saturday, August 2

PHYSICAL SOCIETY, COLOUR GROUP (at Cambridge).—Conference on 'Colour Vision'.

## APPOINTMENTS VACANT

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

ASSISTANT LECTURER (temporary) IN PHILOSOPHY—The Secretary and Registrar, University College of North Wales, Bangor (August 1).  
LECTURER IN APPLIED MECHANICS at the Royal Naval College, Greenwich—The Director, Education Department, Admiralty, London, S.W.1 (August 2).

SENIOR LECTURER IN ENGINEERING, and a LECTURER IN ENGINEERING OR ENGINEERING MATHEMATICS—The Principal, Royal Aircraft Establishment Technical College, Farnborough, Hants (August 2).

LECTURER IN ENGINEERING PHYSICS, to work in the Electrical Engineering Department of Queen Mary College and the Electro-Therapeutic Department of the London Hospital Medical College—The Registrar, Queen Mary College, Mile End Road, London, E.1 (August 2).

LECTURER IN ELECTRICAL ENGINEERING, a LECTURER IN AUTOMOBILE ENGINEERING, a LECTURER IN MECHANICAL ENGINEERING SUBJECTS, a WELDING and SHEET METALWORK INSTRUCTOR, and a LECTURER IN BIOLOGY, at the Blackpool Technical College and School of Art—The Chief Education Officer, Education Offices, 3 Canuce Street, Blackpool (August 2).

ASSISTANT well qualified to teach MECHANICAL AND ELECTRICAL ENGINEERING SUBJECTS, at the Bolton Municipal Technical College—The Chief Education Officer, Education Offices, Nelson Square, Bolton (August 2).

LECTURER IN MECHANICAL ENGINEERING—The Director of Education, The Polytechnic, 309 Regent Street, London, W.1 (August 2).

LECTURER IN ELECTRICAL ENGINEERING, and a LECTURER IN MECHANICAL ENGINEERING—The Principal, Paisley Technical College, Paisley (August 2).

PRINCIPAL OF THE TECHNICAL COLLEGE shortly to be established in Salisbury—The Director of Education, County Hall, Trowbridge, Wilts, endorsed 'Salisbury Technical College' (August 6).

JUNIOR PHYSICIST for research in connexion with medical applications of artificial radio-elements—The Director, Radiotherapeutic Research Unit, Hammersmith Hospital, Duane Road, London, W.12 (August 7).

LECTURER IN ELECTRICAL ENGINEERING—The Secretary, The University, Edmund Street, Birmingham 3 (August 12).

RESEARCH CHEMIST at the National Gallery, London—The Ministry of Labour and National Service, Technical and Scientific Register, Room 171, York House, Kingsway, London, W.C.2, quoting F.512.47A (August 12).

SENIOR DIETITIANS and JUNIOR DIETITIANS to the Ministry of Food—The Ministry of Labour and National Service, Technical and Scientific Register, Room 171, York House, Kingsway, London, W.C.2, quoting C.248.47A (August 14).

JUNIOR PROFESSIONAL OFFICER (woman) IN THE BRANCH OF BOTANY AND PLANT PATHOLOGY, Department of Agriculture, Southern Rhodesia—The Official Secretary, Office of the High Commissioner for Southern Rhodesia, 429 Strand, London, W.C.2 (August 15).

REGISTRAR OF RHODES UNIVERSITY COLLEGE, Grahamstown—The Secretary, Office of the High Commissioner for the Union of South Africa, South Africa House, Trafalgar Square, London, W.C.2 (August 15).

ASSISTANT VETERINARY INVESTIGATION OFFICER—The Secretary, West of Scotland Agricultural College, 6 Blythswood Square, Glasgow, C.2 (August 15).

ASSISTANT PHYSICIST—The Secretary, University College Hospital, Gower Street, London, W.C.1 (August 15).

LECTURER IN PHARMACOLOGY—The Dean, Guy's Hospital Medical School, London, S.E.1 (August 15).

ASSISTANT (able to undertake instruction in Mathematics) IN THE DEPARTMENT OF MECHANICAL ENGINEERING, and an ASSISTANT (able to undertake instruction in Chemistry) IN THE DEPARTMENT OF GEOLOGY—The Secretary, School of Mines, Camborne (August 23).

ASSISTANT LECTURER or LECTURER IN THE DEPARTMENT OF PHYSICS—The Registrar, University College, Cathays Park, Cardiff (August 23).

LECTURER (Grade IIc) IN THE DEPARTMENT OF ZOOLOGY—The Secretary, The University, Edmund Street, Birmingham 3 (August 25).

LECTURER IN MEDICINE—The Secretary, The University, Edmund Street, Birmingham 3 (August 31).

SENIOR SCIENTIFIC OFFICER in the Food Investigation organisation of the Department of Scientific and Industrial Research for work in a small laboratory at Smithfield, London, in association with the Low Temperature Research Station, Cambridge—The Secretary, Civil Service Commission, 6 Burlington Gardens, London, W.1, quoting No. 1943 (September 1).

SENIOR LECTURER IN GEOLOGY at the Canterbury University College, Christchurch, New Zealand—The Secretary, Universities Bureau of the British Empire, 8 Park Street, London, W.1 (September 1).

LECTURER IN GEOGRAPHY—The Secretary, Queen's University, Belfast (September 7).

CHAIR OF CIVIL ENGINEERING at the University of Cape Town—The Secretary, Universities Bureau of the British Empire, 8 Park Street, London, W.1 (September 12).

PROFESSOR OF FINE ART (and Director of the Michaelis School of Fine Art); SENIOR LECTURERS IN (a) ZOOLOGY, (b) COMMERCE; LECTURERS IN (a) GEOGRAPHY (2), (b) PHYSICS, (c) PURE MATHEMATICS (2), (d) FRENCH; SUPERVISOR OF FIELD WORK (Social Science), in the University of Cape Town—The Secretary, Universities Bureau of the British Empire, 8 Park Street, London, W.1 (September 15).

SENIOR RESEARCH FELLOW IN THE DEPARTMENT OF CHEMISTRY, University of Melbourne—The Secretary, Universities Bureau of the British Empire, 8 Park Street, London, W.1 (Melbourne, September 30).

SENIOR LECTURER IN MEDIEVAL PHILOSOPHY—The Secretary of Faculties, University Registry, Oxford (October 1).

EXPERT IN TOBACCO GROWING (M.N.18166), AGRICULTURAL INSTRUCTOR IN TOBACCO GROWING (M.N.18167), for the tobacco monopoly of the Government of Iraq; TOBACCO BREEDING SPECIALIST (M.N.18181), for the Directorate General of Agriculture, Iraq—The Crown Agents for the Colonies, 4 Millbank, London, S.W.1, quoting appropriate Ref. No.

MECHANIC for experimental laboratory workshop in DEPARTMENT OF BIOCHEMISTRY, a TECHNICIAN IN THE DEPARTMENT OF ZOOLOGY, and a TECHNICIAN IN THE DEPARTMENT OF PHARMACOLOGY—The Establishment Officer, University College London, Gower Street, London, W.C.1.

ASSISTANT LECTURER IN GEOGRAPHY—The Secretary, Queen's University, Belfast.

HEAD OF THE PHYSICS DEPARTMENT—The Principal and Clerk to the Governing Body, Wigan and District Mining and Technical College, Wigan.

EXPERTS IN AGRONOMY (M.N.18175), PLANT PATHOLOGY (M.N.18176), PLANT NUTRITION AND FERTILIZERS (M.N.18182), COTTON BREEDING (M.N.18177), SHEEP BREEDING (M.N.18178), FORAGE CROPS (M.N.18185), BIOMETRY (M.N.18186), PLANT BREEDING (M.N.18187), AGRICULTURAL EXTENSION AND DEMONSTRATION WORK (M.N.18179), for the Directorate General of Agriculture, Iraq—The Crown Agents for the Colonies, 4 Millbank, London, S.W.1, quoting appropriate Ref. No.

LECTURER IN CHEMICAL ENGINEERING—The Head of the Department of Chemical Engineering and Applied Physical Chemistry, Imperial College of Science and Technology, South Kensington, London, S.W.7.

UNIVERSITY ASSISTANTSHIP IN THE DEPARTMENT OF BIOCHEMISTRY—The Secretary, The University, Edinburgh.

LECTURER IN BIOLOGY—The Registrar, Municipal College, Portsmouth.

ASSISTANT ENGINEER or TECHNICIAN FOR X-RAY DEPARTMENT, and a SENIOR ASSISTANT PHYSICIST—The Secretary, Mount Vernon Hospital and the Radium Institute, Northwood, Middx.

RESEARCH STATISTICIAN, an ASSISTANT STATISTICIAN, and a MATHEMATICAL COMPUTER—The Secretary, Rothamsted Experimental Station, Harpenden, Herts.

CHEMISTS IN THE JOINT DEPARTMENT OF CHEMISTRY, Malayan Union and Singapore—The Director of Recruitment, Colonial Service, 15 Victoria Street, London, S.W.1.

LECTURER IN ELECTRICAL ENGINEERING—The Clerk to the Governors, Heaton Technical Institute, 12 Chapel Street, Marple, Heaton, Nottingham.

LECTURER IN MINING at the Cannock Chase Mining College—The Director of Education (Dept. F.E.), County Education Offices, Stafford.

## REPORTS and other PUBLICATIONS

(not included in the monthly Books Supplement)

### Great Britain and Ireland

British Rubber Producers' Research Association. Publication No. 72: Modern Views on the Chemistry of Vulcanization Changes, Part 1, Nature of the Reaction between Sulfur and Olefins, by E. Harold Farmer and F. W. Shipley; Part 2, Role of Hydrogen Sulfide, by Ralph F. Naylor; Part 3, Reaction of Sulfur with Squalene and with Rubber, by George F. Bloomfield. Pp. 26. Publication No. 73: A Simple Laboratory Falling-Film Molecular Still. By E. Harold Farmer and D. A. Sutton. Pp. 4. Publication No. 74: Kinetic Studies in the Chemistry of Rubber and Related Materials, 2, The Kinetics of Oxidation of Unconjugated Olefins; 3, Thermochemistry and Mechanisms of Olefin Oxidation, by J. L. Bolland and Geoffrey Gee. Pp. 18. (London: British Rubber Producers' Research Association, 1946.) [301]

British Electrical and Allied Industries Research Association. Twenty-sixth Annual Report, October 1, 1945, to September 30, 1946. Pp. 148. (London: British Electrical and Allied Industries Research Association, 1947.) [32]

### Other Countries

Smithsonian Miscellaneous Collections, Vol. 106, No. 16: New Birds from Colombia. By Alexander Wetmore. (Publication 3862.) Pp. ii + 14. Vol. 106, No. 17: Some New Cambrian Bellerophon Gastropods. By J. Brookes Knight. (Publication 3865.) Pp. ii + 11 + 2 plates. (Washington, D.C.: Smithsonian Institution, 1946-1947.) [291]

Classified List of Smithsonian Publications available for Distribution, December 1, 1946. Compiled by Helen Monroe. (Publication 3858.) Pp. iv + 53. (Washington, D.C.: Smithsonian Institution, 1946.) [291]