

discussions leading to the present definition of the unit of dose. It is also to be remembered that in collaboration with such pioneers as Strangeways, Canti and Donaldson at 'Barts', he was responsible for the physical aspects of some of the earliest work using tissue cultures in the study of the effects of ionizing radiations on living cells.

Long an authority in the physical aspects of the use of radium in the treatment of disease, he realized very quickly the importance to medicine of the discovery of artificial radioactivity, and particularly its production by neutrons, so that it is no accident that the important Szilard-Chalmers type of reaction was brought to light by those workers in his department. The physico-chemical effects of neutron irradiation, particularly in respect of biological action, early interested him, as may be seen from the Silvanus Thompson Memorial Lecture delivered by him to the Institute of Radiology.

His other main scientific interest lay in the field of sound, audible or supersonic. Undoubtedly stimulated by his work during the First World War with the Admiralty Research Station at Harwich when he worked on the detection of underwater sound, Hopwood built a supersonic generator and showed the

destructive power of this 'radiation' on such simple organisms as *Nitella* and carried out many experiments on the subject. This interest in sound persisted to the end of his life and, characteristically enough, the last conversation I had with him a week or two before his death was filled by an account, delivered with boyish enthusiasm and much dexterous manual demonstration, of experiments he had been carrying out at home on the strange and fascinating things to be seen in a kitchen sink in jets of water impinging on perforated metal.

One other aspect of Hopwood's work must be mentioned. He was perhaps at his best as a teacher. Lucid, thorough, impressive and enthusiastic, even first-year medical students fell under his spell, as well they might, for many of them 'off stage' had known his fatherly interest in them when as dean he had at once admonished and shielded them in their misdeeds.

Hopwood was called on to undertake much committee work, and mention must be made of the help he rendered on their governing bodies to the Physical Society, the Institute of Radiology (of which he was president) and, among many others, to the British Empire Cancer Campaign. W. V. MAYNEORD

## NEWS and VIEWS

### The Queen's Birthday Honours List

THE Queen's Birthday Honours List includes the names of the following scientific men and others associated with scientific work:

*Baronet*: Sir Russell Brain, president of the Royal College of Physicians of London.

*Knights*: Dr. A. Chester Beatty, vice-patron (formerly president) of the Royal Cancer Hospital, London; Dr. Gavin R. de Beer, director of the British Museum (Natural History); Dr. Ian Clunies-Ross, chairman of the Commonwealth Scientific and Industrial Research Organization, Australia; Dr. Arnold A. Hall, director of the Royal Aircraft Establishment, Farnborough; Dr. Alexander P. Murphy, president of the Royal Australian College of Physicians; Prof. Francis E. Simon, professor of thermodynamics, University of Oxford; Dr. Thomas M. Taylor, principal and vice-chancellor of the University of Aberdeen; Prof. Alexander R. Todd, professor of organic chemistry, University of Cambridge, and chairman of the Advisory Council on Scientific Policy.

*C.M.G.*: Ivor Bowen, lately head of the United Kingdom Ministry of Supply Staff, Australia, now principal director of equipment research and development (air), Ministry of Supply; R. J. Simmons, adviser on animal health to the Secretary of State for the Colonies; Dr. A. Topping, dean of the London School of Hygiene and Tropical Medicine.

*C.B.E.*: W. G. Alexander, deputy secretary, Agricultural Research Council; G. H. Bacon, lately director of agriculture, now agricultural adviser to the Sudan Government; H. Davis, chief pharmacist, Ministry of Health; Dr. G. E. R. Deacon, director of the National Institute of Oceanography, Wormley, Surrey; Dr. M. S. Jones, director of the Social Rehabilitation Unit, Belmont Hospital, Sutton, Surrey; Dr. W. Idris Jones, director-general of research, National Coal Board; R. S. Marshall, inspector-general of Animal Health Services, Nigeria; Prof. L. H. Martin, professor of physics in the Univer-

sity of Melbourne; K. T. Parker, keeper of the Ashmolean Museum, University of Oxford; V. A. Pask, chief engineer, Headquarters of the British Electricity Authority; H. G. Raggatt, secretary of the Department of National Development, Australia; Prof. L. Rosenhead, professor of applied mathematics, University of Liverpool; D. R. Rosevear, inspector-general of forests, Nigeria; A. E. Russell, director and chief designer, Bristol Aeroplane Co., Ltd.; H. L. Shrimpton, chief livestock husbandry advisory officer, National Agricultural Advisory Service; H. Tongue, chief engineer, Atomic Energy Research Establishment, Harwell, Berks; H. L. Verry, assistant secretary, Department of Scientific and Industrial Research; J. R. Whinfield, of Imperial Chemical Industries, Ltd., for services in the invention of 'Terylene'; I. D. Wratten, lately president of the Royal Photographic Society of Great Britain; Prof. C. M. Yonge, regius professor of zoology, University of Glasgow.

*I.S.O.*: J. D. Broatch, deputy director of agriculture (cocoa industry), Gold Coast; G. A. Elliott, director of surveys, British Honduras.

### Mathematics at Reading: Prof. E. H. Neville

IN July, Prof. E. H. Neville retires from the chair of mathematics at the University of Reading, which he has held since 1919. His publications cover a wide field of mathematics: in 1922 his "Prolegomena to Analytical Geometry" gave a consistent logical basis to the concepts of complex space and ideal space, and in 1944 a skilful combination of technique and logic in his "Jacobian Elliptic Functions" developed beauty and order in a domain which had often seemed overgrown with an amorphous welter of formulae. Prof. Neville was president of Section A (Mathematics and Physics) of the British Association in 1950, and his presidential address, "Mathematical Notation", is a penetrating essay towards the study of the influence of symbolism on the development of mathematical thought. He also served for many