within the Hydrographic Department. With his usual foresight, he realized that Great Britain seriously lacked a centre for research in this subject, and in 1944 he opened discussions in the Admiralty which eventually blossomed, six years later, into the National Institute of Oceanography. After retirement from the Navy, he kept himself fully abreast of all developments and served on the National Oceanographic Council and Executive Committee of the Institute, where his counsels were highly respected. He attended his last committee meeting as recently as June of this year, after which his health began to fail.

For his services in command of surveying ships during the First World War he was awarded the O.B.E. in 1919. In 1936 he was made C.B., and was created K.B.E. in 1942.

But his proudest moment was when he was elected to the fellowship of the Royal Society in 1943.

Edgell was, from its beginning, very closely connected with the activities of the International Hydrographic Bureau and attended four of the quinquennial conferences at Monaco, and in 1939 was elected chairman of the Assembly.

Edgell was appointed by the Admiralty to the Board of the Port of London Authority in 1941, and held this post until his seventieth birthday and was nominated as the Authority's representative on the Kent River Board. He was selected to be the acting conservator of the Mersey on retirement as hydrographer until 1951.

Always a keen cricketer, Edgell lived an active life. Many were his tales of hard work and full enjoyment in his sea-going days, when there was no easy substitute for marching through rough country to make a triangulation station or pulling a whaler for weeks on end to sound out the shallow areas of a survey. He took a very personal interest in his officers and men and would always be forthcoming in giving advice and encouragement. His knowledge of hydrography was unlimited, and he had a flair for imparting his skill, while his memory never failed him for even the most precise point of detail.

He was the last of the old generation of surveyors who had been brought up on the tenets of Wharton and Field and the hard life that the early surveyors had endured. E. G. IRVING

Prof. T. M. MacRobert

THOMAS MURRAY MACROBERT died at his home in Glasgow on November 1 at the age of seventy-eight. He held the chair of mathematics in the University of Glasgow from 1927 until 1954, and before that had been assistant and lecturer in the same University. He was educated at Irvine Royal Academy and the University of Glasgow, where he graduated in 1905 with first-class honours in mathematics and natural philosophy. From 1906 until 1910 he was a Major Scholar at Trinity College, Cambridge, and was a Wrangler in the Mathematical Tripos.

Prof. MacRobert was the author of numerous papers on the theory of special functions, on which he was an expert; he continued to be active in research until just before he died. Much of his work was concerned with the properties of E-functions; these functions, which were invented by him, contain as special cases several of the well-known functions of mathematical physics, and make it possible to give a unified treatment of the subject. His books on *Functions of a Complex Variable* (Macmillan, 1917) and *Spherical Harmonics* (Methuen, 1927) were widely used by students, and he also collaborated with other writers in books on Bessel functions and trigonometry. He was responsible for the second revised edition of T. J. I'A. Bromwich's *Infinite Series* (Macmillan, 1926). The value and popularity of these works are attested by the number of different editions in which they have appeared.

He was a friend and helper, not only to generations of Glasgow students, but also to many mathematicians from India and the East, who will sorely miss the willing assistance he gave them in their work, without ever expecting any acknowledgment. He was one of the original founders of the Glasgow Mathematical Association, of which he was twice president and latterly honorary president. The flourishing state of the Association and the establishment and reputation of its *Proceedings* are very largely due to him.

His interests outside mathematics included hill-walking and playing the organ, and he took a prominent part in the preparation of the *Congregational Churches' Hymn Book*. The affection and respect in which he was held by friends, colleagues and former students was amply demonstrated when, after his retirement in 1954, they commissioned Mr. Norman Hepple to paint his portrait. This excellent likeness, which the University of Glasgow is fortunate to possess, also conveys something of his character and personality. He will be remembered for his kindliness and unfailing courtesy, but above all for his absolute integrity. R. A. RANKIN

Prof. E. F. Nash

PROF. ERIC NASH, professor of agricultural economics in the University of Wales, Aberystwyth, died on October 31, aged fifty-eight. He is survived by a widow, a daughter and a son.

Nash started his academic career with a first in Greats at University College, Oxford, went on to Modern Greats, in which he also took a first, and at one time seemed set for a career in pure economics (in 1930 he published *Machines and Purchasing Power*, which was an essay in monetary theory). But with his appointment to the Ministry of Agriculture in 1934 he turned his attention to agricultural economics, and most of his work was done in that subject either in that Ministry, the Ministry of Food, the Control Commission for Germany, or, since 1946, at Aberystwyth. At the time of his death he was among the two or three best-known agricultural economists in Great Britain. This was a reputation gained not through the volume of his published work (indeed, during his twelve years of Government service he was scarcely able to publish anything) but through the uniformly high quality of his articles, speeches, teaching and contributions to discussions and debates. He was much in demand as a speaker and member of committees (Government and other), and his services were borrowed for quite long periods by the authorities in Jamaica, who were concerned with the low state of agricultural development in that country. He had much to do there with the work of the Institute for Economic and Social Studies.

Nash had no special interest at any time in agriculture as an applied science. It is true that as provincial agricultural economist for Wales he had to devote himself to some extent to the practical problems of Welsh farming, especially on the farm management side, and that as a member of the

National Food Survey Committee he came to have an extensive knowledge of nutrition. But his main interest was in size and structure of British agriculture viewed as a component of the national economy, a subject on which Nash felt that the British agricultural industry was both too large and too expensive. He would not, however, have wished to be remembered only as a critic. Most of his criticisms were accompanied by constructive suggestions; and in particular his sympathy was readily engaged by the difficulties experienced by many small Welsh farmers from their unfavourable environment and insufficient size of farm. Had he lived to ordinary retiring age there is no doubt that he would have done much more writing on this and allied subjects, and that it would have had the same originality and lucidity that were the main features of his work up to the time of his early death.

J. H. Kirk

NEWS and VIEWS

Physics at Sheffield: Prof. G. E. Bacon

Dr. G. E. Bacon, at present deputy chief scientific officer at the Atomic Energy Research Establishment, Harwell, has been appointed to a chair of physics at the University of Sheffield as from October 1963. The University has decided to experiment with a system in which the headship of the Department of Physics will be held in turn for a period of three years by each of the two professors concerned, and Dr. Bacon will assume the headship on his arrival, under this arrangement. Dr. Bacon was educated at Derby School and Emmanuel College, Cambridge, where he took Firsts in both parts of the Natural Sciences Tripos. In 1939 he joined the Air Ministry Research Establishment and was eventually in charge of a group concerned with ground radar research and development at what was then the Telecommunications Research Establishment, Malvern. He was seconded to Chalk River, Canada, for a period, soon after going to the Atomic Energy Research Establishment, Harwell, and since 1948 has been principally engaged in neutron diffraction experiments. His book on this subject is well known as an important work and he has published numerous contributions in this field. It is expected that Dr. Bacon will continue his work on neutron diffraction with particular reference to magnetic ordering in metals and alloys through arrangements to be made outside the University, and a programme of X-ray experiments designed to elucidate further the electronic structure of molecules and solids will be built up following Dr. Bacon's arrival at Sheffield. Dr. Bacon will bring very wide experience in research on the physics of solids to the chair at Sheffield, and with it energy and enthusiasm for implementing new ideas on the teaching side, particularly on the training of postgraduate students, and it is expected that this aspect of the work of the Department of Physics will build up rapidly over the next few years.

Head of Space Department, Royal Aircraft Establishment: Mr. E. G. C. Burt

Mr. E. G. C. Burt has been appointed head of Space Department, Royal Aircraft Establishment, Farnborough, in succession to Dr. A. W. Lines, who has taken up an appointment with the European Preparatory Commission for Space Research. Mr. Burt, who is forty, was educated at Yeovil School and Queen Mary College, University of London, where he graduated with a first class honours degree in electrical engineering in 1943. After serving in the Royal Air Force, he joined the Royal Aircraft Establishment in 1947, where as a scientific officer he worked in the field of computers and servo-mechanisms. He was promoted to senior scientific officer in 1950, to principal scientific officer in 1953, and to senior principal scientific officer in 1955, when he became superintendent of the Dynamic Analysis Division of Guided Weapons Department. During this period he published a number of papers concerned with stochastic processes in control and guidance systems and the theory of optimization, and he was awarded the Navigation Prize for his lecture to the Royal Aeronautical Society on this subject. After the launching of the first Earth satellite in 1957 Mr. Burt took a leading part in the Royal Aircraft Establishment's work on satellite tracking, and the correlation of observation with theory concerning the effects of the Earth's oblateness. On the formation of Space Department at the beginning of this year he was appointed head of its Dynamics Division; he has taken an active part in the Department's work—in particular, on communication satellites, where he has made a number of contributions to attitude control theory and orbital patterns.

British Committee for Biological Education

The Royal Society and the Institute of Biology have established a Joint Committee to report on desirable changes in the teaching of biology in the United Kingdom. It is hoped that this Committee will, through its representative membership, ensure that the merits of various proposals for changes in syllabuses, examinations and teaching methods can be assessed. The Committee will have close liaison with the group of biologists seconded to the Nuffield Foundation in order to produce texts, teachers' guides, apparatus, films and visual aids for the biological education of children from eleven to sixteen years of age. The membership of the Committee is: Prof. W. O. James and Prof. M. M. Swann (Royal Society); Sir Gerard Thornton and Mr. J. B. Cragg (Institute of Biology); Dr. A. Urie (Ministry of Education—observer); Dr. Lucy Boyd (Scottish Education Department—observer); Dr. H. G. Vevers (Biological Council); Mr. W. H. Dowdeswell (Science Masters' Association); Miss V. J. Evans (Association of Women Science Teachers); Mr. L. C. Comber (Secondary Schools Examination Council). Individuals selected for the Committee from universities, examining boards, technical colleges and teacher training colleges include: Prof. T. A. Bennet-Clark, Mr. D. A. Coult, Prof. G. E. Newell, Dr. T. G. Onions and Mr. L. Wolff. The secretariat for the Committee is being provided by the Institute of Biology (41 Queen's Gate, London, S.W.7).