OBITUARIES

Prof. T. S. Wheeler

ALL who had ever met Thomas S. Wheeler, professor of chemistry in University College, Dublin, will have been deeply grieved to hear of his sudden and unexpected death on December 13 within a few hours of having attended a meeting at the College of Pharmacy. His untimely passing at the age of sixty-three is a tragic loss to the University College where he was not only an outstanding scientist and administrator but also a personal friend respected by everyone who, in whatever capacity, worked or studied there.

Although his work for the College over nearly eighteen years must remain unfinished, Prof. Wheeler has by his energy, his passion for progress, and his genius for inspiring others, much more than fulfilled his own modest ambition to leave the department better than he found it. It is much to be regretted that he has not lived to see the completion of the new chemistry department, now under construction, to the planning of which he had devoted much time and thought. His work for chemistry, for scientific education in Ireland and in other fields will long be recalled. Not least will he be missed by the Irish Government, which frequently sought his advice on practical scientific problems, advice which he was uniquely able to give owing to his remarkably wide interests in science, combining as he did extensive knowledge and research interests in all branches of chemistry and even in physics and mathematics. Prof. Wheeler endeared himself to all by his understanding, his humour, and his felicity of phrase.

Prof. Wheeler was born in Dublin in 1899. He was educated at O'Connell Schools and received a scholarship which enabled him in 1916 to proceed to the Royal College of Science for Ireland, where he gained the associateship in chemistry in 1920. He became for one year a demonstrator and research worker at the Royal Technical College in Glasgow, where his work gained him the external Ph.D. degree of the University of London. In 1923 he was appointed a research chemist at Woolwich Arsenal, and during 1928-31 was a senior chemist at the Winnington Research Laboratories of Imperial Chemical Industries, Ltd.

Prof. Wheeler left industry in 1931 to become for seven years principal and professor of organic chemistry at the Royal Institute of Science, Bombay, where he was active in building up flourishing schools of teaching and research and starting a postgraduate Department of Chemical Technology. He returned to Ireland in 1938 as State chemist in charge of the State Laboratories, and was appointed to the chair of chemistry in University College, Dublin, in 1945. Prof. Wheeler was the author, or joint author, of some two hundred original papers, patents, articles, and books, on an extraordinarily wide range of topics, the largest single group being on the organic chemistry of flavonoids and related compounds. Prof. Wheeler gave freely of his time in the service of many important committees and his loss will be keenly felt not only in Ireland and Great Britain but also in India and the United States, where he had many warm personal contacts. He is survived by his wife, whom he married in 1926, a son and two daughters. W. BAKER

Dr. J. S. Greenhow

THE death of Dr. J. S. Greenhow on November 3 at the early age of thirty-four has brought to an untimely end the career of a leading exponent of the study of the upper atmosphere by radar methods. In the span of twelve years he published nearly forty important research

papers, and for most of these he was either the sole author or the leader of the research.

A graduate of the University of Manchester, he began his research work at Jodrell Bank in the early years of meteor observations by radar methods. He became interested in the characteristics of the meteoric ionization and the factors controlling the movement, diffusion and decay of the meteor trails. Observation of the motion of meteor trail echoes proved to be the best method for studying winds in these regions of the upper atmosphere. In this way, Dr. Greenhow obtained detailed information of wind speeds and directions, diurnal variations, turbulence and so on. Further knowledge of the conditions in the upper atmosphere came from the rates of decay of meteor echoes, and these were used to derive the atmospheric densities and temperatures. The initial stages of trail formation then attracted his attention, and he also studied how echo properties vary with the radar wavelength.

In 1960, Dr. Greenhow joined the Royal Radar Establishment at Malvern. Here he made the first meteor observations obtained at a wave-length as short as 25 cm. The results strikingly confirmed the view he had expressed previously, that a meteor trail has a surprisingly large initial radius, of the order of a metre. At the short wave-lengths, the trail also generally appears as only a short column of ionization close to the meteor. More recently, he has led the first British experiments to investigate upper atmosphere ionization by the important method, discovered in the United States, of measuring the radio scattering by free electrons at the short wave-lengths which penetrate through the ionosphere. He completed his last paper, "The Electron Scattering Cross Section in Incoherent Backscatter", just before his last brief illness. He had given no hint to his colleagues that for more than a year previously he had known that he might not have long to live.

All Dr. Greenhow's work was characterized by directness of approach, elegance of experimental techniques, and clarity of analysis, so that valuable and interesting results followed from every investigation. He was extremely capable in all stages of a research, from designing and constructing apparatus to the writing of the final report. He had a purposeful and stimulating enthusiasm which made him an inspiring team leader. At the same time, he was modest and friendly, and he is greatly missed by his colleagues. He leaves a widow and a daughter.

J. S. HEY

Mr. Herbert Womersley

HERBERT WOMERSLEY, a distinguished student of the taxonomy of the Acarina and primitive insects, died in Adelaide on October 14, 1962, at the age of seventy-three.

He was born in Warrington, Lancashire, on April 10, 1889, the son of amateur lepidopterist, Fred Womersley. He trained as an industrial chemist in soap and chemical manufacturing, specializing in fuel economy and water softeners. In his youth he became an amateur entomologist with a leaning to microscopy, getting training from Abraham Flatters in Manchester, and publishing an early paper in Flatters' journal, *The Micrologist*, on the use of terpeneol. In 1914 he joined the Royal Army Medical Corps, and later transferred to the Chemical Corps, Royal Engineers, in one of the British Gas Companies, seeing service on the Western Front. In 1917 he was transferred back to Great Britain in explosives manufacture. In 1920 he moved from Warrington to Bristol as a departmental manager of Christopher Thomas and

Bros. soapworks. In Bristol he identified himself with local naturalists' groups, serving as president of Bristol Naturalists Society. In his evenings and week-ends he studied the apterygote fauna of the south-west of England. In several years he established himself as an authority on the Collembola and Protura, initially under the guidance of J. M. Brown.

He worked with great industry and speed—habits that never left him—and soon collections of foreign material were sent to him for working up. He was elected as associate (*hon. causa*) to the Linnean Society. In 1930 he was able to transfer to entomology in a professional capacity, as entomologist, Pasture and Field Pests Section, Council for Scientific and Industrial Research (now C.S.I.R.O.), stationed in Western Australia, his work having attracted the notice of Tillyard, then chief of the Division of Economic Entomology. Womersley's task was to study cultural, chemical and biological methods of controlling the lucerne flea (*Collembola: Sminthurus viridis* (L.)) and the red-legged earth mite (*Halotydeus destructor* (Tucker)), which were causing considerable damage. This work was done in collaboration with the Department of Agriculture, Western Australia. In the biological control field it was found that the bdellid mite *Piscirus lapidarius* (Kramer) was an important predator on *Sminthurus*, and the results were considered promising enough for lots of this mite to be transhipped by air to various Australian localities in an effort to establish them locally.

In 1933 Womersley was appointed to the South Australian Museum as entomologist, on the death of Arthur M. Lea. Here he found his most important role, that of a descriptive taxonomist, with a virtually unworked

continent before him. Initially he continued his earlier studies on the Apterygota, these culminating in his monograph, *The Primitive Insects of South Australia* (1939), which, in fact, monographed the whole of the Australian fauna.

Afterwards, he gradually changed to the Acarina, and within a few years was virtually pre-occupied by the vast number of new mites requiring classification and description. His *magnum opus* was his monograph of the Trombiculidae of the Oriental and Australian regions (1952), which ran to 673 pages. These scrub-typhus and scrub-itch mites had assumed importance during the Second World War, and immense collections of them were referred to him during the war years and for years afterwards, as teams of workers concentrated on this subject in Malaya, New Guinea, India, China and Japan.

Womersley retired as entomologist in the South Australian Museum in 1954, but was immediately appointed acarologist, a salaried position created for him. The reference collection of mites he built up there is one of the great reference collections of the world. He retired from this position at the age of seventy, in 1959, but continued his work with zest, although by then dogged by increasing ill-health. However, his enthusiasm never waned, and he was working on the mites until a fortnight before his death.

He identified himself with naturalists' organizations both in England and Australia, taking an important part in wild-life conservation. A former president of the Royal Society of South Australia, he was awarded the Verco Medal for his achievements in biology in 1943, and in 1962 was made an Honorary Fellow.

R. V. SOUTHCOTT

NEWS and VIEWS

Biology in the University of East Anglia :

Dr. J. A. Kitching, O.B.E., F.R.S.

DR. J. A. KITCHING, whose appointment to a chair of biology in the University of East Anglia has just been announced, has been reader in zoology at Bristol since 1949, and was first appointed there as lecturer in 1938. From 1939 until 1945 he went first as a Research Fellow to Princeton and, with the outbreak of War, to Canada, where he worked on protective clothing for aircrew and served as secretary to the National Research Council's Committee on Aviation Medicine. A graduate of Trinity College, Cambridge, he is best known for his classical work on the osmoregulatory function of the contractile vacuole in Protozoa; he has also contributed to investigations on ciliary movement and on the physiology of Suctoria, where his interest in the experimental effects of high hydrostatic pressure has played a significant part. He has also made substantial contributions to marine ecology, recently as leader of an annual group of scientists and students investigating the hydrography, fauna and flora of Lough Ine, in south-west Ireland. In Bristol he played a leading part in the establishment of the Joint School of Biological Chemistry under the late Prof. W. E. Garner, and served as the secretary of its first Board of Studies. With Profs. T. A. Bennet-Clark and J. Dainty, the University of East Anglia has thus established an outstanding team to head its new School of Biological Sciences.

Chair of Transport at Imperial College of Science and Technology:

Prof. C. D. Buchanan

AT the outbreak of the Second World War, the part-time Maybury chair of highway engineering lapsed with the retirement of Prof. R. G. Clements. The small post-graduate school started by him has continued studying

problems mainly allied to the needs of lesser-developed countries. The increasing national need for traffic engineering and long-term planning in urban and highway developments demands detailed examination and research. The College's new civil engineering building will enable the Department to undertake this work and to direct proper attention to the wider study of the complex social and planning problems of modern transportation. Mr. C. D. Buchanan, at present urban road traffic adviser to the Ministry of Transport, has been appointed to a newly established chair of transport tenable at the College as from October 1. Mr. Buchanan, an old student of the College, has held many distinguished posts in the Ministry of Transport and of Housing and Local Government. The appointment of Mr. Buchanan, who has a recognized professional reputation in this field, with qualifications in town planning and architecture as well as civil engineering, will enable detailed attention to be paid to long-term planning in urban and highway development.

The Institute for Operational Research

THE Operational Research Society and the Tavistock Institute of Human Relations have concluded negotiations for the establishment of an Institute for Operational Research as a non-profit-making body. This new Institute, of which Mr. W. N. Jessop will be the director, will be set up within the framework of the Tavistock Institute. The Operational Research Society is a scientific body which does not itself engage in project work. The Tavistock Institute consists of a linked group of active research units—so far, the range has covered sociology, social psychology and medical psychology, and it will now be extended to include operational research. Each unit has a high degree of autonomy and the new Institute will be free to develop its own programme and associations, both within and outside the Tavistock Institute.