

OBITUARIES

Prof. E. G. Richardson

EDWARD GICK RICHARDSON, who died on March 31 at the age of sixty-three, was well known, not only in Great Britain, but also internationally, for his work in acoustics and ultrasonics.

He took the degree course in physics at East London (now Queen Mary) College, graduating during the First World War. He then served in the Royal Air Force (Balloon Section), which no doubt initiated his life-long interest in aerodynamics and meteorology. After a short period as a grammar school master, he undertook research at East London College under Prof. C. H. Lees. About two years later he was appointed a lecturer at University College, London, and during the next seven years his research work in acoustics, recognized by the award of a D.Sc., firmly laid the foundation of his subsequent reputation. In 1931 he moved to King's College, Newcastle upon Tyne, where he spent the rest of his life; he was made a reader in 1943, and in 1956 a chair in acoustics was created for him.

Richardson's research achievement was so extensive and diverse that no brief summary is possible. It must suffice to say that he published some ninety papers on a wide variety of topics, including, besides acoustics and ultrasonics, liquid jets and suspensions, viscosity, hot-wire anemometry and viscometry, atmospheric turbulence, relaxation processes and fish locomotion. In acoustics he made notable contributions to many branches; among these the best-known are probably the absorption of sound in vapours and narrow tubes, phonetics and speech analysis, and æolian, edge and transient tones. In later years he turned his attention to ultrasonics, with special reference to absorption and dispersion. In these researches he was often assisted by students, many of them from overseas, who owe much to his help and encouragement. His experimental work was characterized by directness of attack and economy of means, and he was particularly interested in new lines of investigation. He opened up many of these, leaving others to explore the territory which his work had made accessible.

In addition to his research work, Richardson found time to write upwards of a dozen books, including several compilations which he edited or to which he contributed sections. The most widely known are probably "Sound" (a very popular textbook), "The Acoustics of Orchestral Instruments", "Acoustics for Architects" and "Physical Science in Art and Industry". He wrote fluently and well, with an admirable clarity of expression and an easy mastery of his subject. He was English editor of the international journal *Acustica*, in the founding of which he played a prominent part.

He received numerous invitations to lecture abroad, and did so in the United States (several times), Canada, India and most countries of Europe. He was visiting professor of physics at the University of Cairo for a term in 1947, and a Leverhulme Fellow during 1955-57. During the Second World War he served as scientific adviser from early 1940, first in the Admiralty (Mine Design Department) and later in the Air Ministry (Royal Aircraft Establishment and Helensburgh). After returning to King's College

he carried out various research contracts for these Ministries.

Although Richardson's primary interest was research it was by no means his only one, for he was an accomplished musician, a dedicated cyclist, and an indefatigable member of the College Country Dancing Club. He played both piano and organ well, and for many years travelled between Durham and Newcastle twice daily on Sundays (some sixty miles in all) in order to sing in the Cathedral choir. He was a deeply religious man, although none but his closest friends would be aware of this, for he was somewhat shy and reticent by nature. Nevertheless, his sterling qualities of modesty, sincerity and kindness were apparent to all who knew him, and endeared him the more the better one knew him. His sudden death was a great shock to all his friends; they will long bear him in affectionate memory.

W. E. CURTIS

Dr. John Duckworth

THE sudden death on April 11 of Dr. John Duckworth, head of the Applied Biochemistry Department of the Rowett Research Institute, Aberdeen, has robbed the science of food and agriculture of an outstanding investigator.

Born in Manchester but educated in Canada, and in the course of his life conducting research in Canada, Trinidad and Guatemala, he spent about a quarter of a century in the service of the Rowett Institute at Aberdeen. He obtained his original training at the Ontario Agricultural College, Guelph, and took the degree of B.S.A. at the University of Toronto. He next spent a year with Lever Brothers, Ltd., in Toronto, as analytical chemist, and another year with the same firm's economics section studying production efficiency. In 1931 he became assistant to the professor of chemistry at Macdonald College, McGill University, where he carried out research on the blood chemistry of cattle afflicted with genital disease, and on contagious abortion in cattle.

In 1933, Dr. Duckworth came to the Rowett Institute, where he investigated the relationship of nutrition to pathological conditions in farm animals. He also worked on the partition of serum calcium and the factors affecting it. The object was to establish a closer relationship between the blood picture and the evidence of certain types of disease, such as milk fever and rickets, in farm stock. The latter work was incorporated into a thesis, for which the University of Aberdeen awarded him the degree of D.Sc.

Later he investigated magnesium metabolism in animals, and the influence of fibre in the diet on the utilization of protein and calcium. He collaborated in work on problems connected with both human and animal nutrition, for example, the utilization of phytic acid phosphorus in oatmeal by men and farm animals.

In April 1944 he was appointed senior lecturer in the Agricultural Department of the Imperial College of Tropical Agriculture, Trinidad. There he developed courses of instruction in animal husbandry, and created a nutrition laboratory for investigation of the