

oxide. These reactions, and the effects of oxidizing and reducing ions in solution, can now be correlated with other studies of oxidation-reduction processes. In ionic solids, highly ionized atoms resulting directly from the collision of fast neutrons lose most of their energy by electronic excitation, but near the end of their track they must suffer elastic collisions. Atomic displacement and the rupture of chemical bonds thereby result, and the physical properties of solids are modified. A third field of radiation chemistry is in the study of 'hot-atom' chemistry—the ultimate chemical fate of atoms formed, often with high recoil energies, in nuclear reactions. To this category belong Szilard-Chalmers processes, and the formation of hydrogen cyanide, carbon monoxide and carbon dioxide, containing carbon-14, during the neutron irradiation of ammonium nitrate.

J. S. ANDERSON

OBITUARIES

Dr. A. E. V. Richardson, C.M.G.

THE death occurred in Melbourne on December 5, at the age of sixty-six, of Dr. A. E. V. Richardson, who for the last forty years has given distinguished service to the agricultural and pastoral industries of Australia. Born in Adelaide, Dr. Richardson's connexion with agriculture began when he was a student at Roseworthy Agricultural College. He studied science at the University of Adelaide, where he graduated M.A., B.Sc. In 1909 he was appointed assistant director of agriculture in South Australia, and in 1911 transferred to the Victorian Department of Agriculture as superintendent of agriculture. The purpose of his appointment was to put the activities of the Department on a scientific basis, and this was realized to the full. Richardson threw himself into his work with tremendous energy, and changed the whole basis of departmental advice from 'expert' opinion to the results of carefully planned experiments. He reviewed the scope of the State research farms and consolidated their work into three main stations: the Experiment Farm at Rutherglen, where work on the top dressing of pastures led to the establishment of subterranean clover throughout Victoria; the Central Research Farm at Werribee, working on cereal breeding; and Longerenong Agricultural College, which was responsible for the introduction of improved cultivation methods of wheat farming. As a result of his work, new wheat varieties were developed and many improvements made in wheat farming practice. Wheats developed from Werribee now represent 86 per cent of the acreage sown to this crop in Victoria. His publication "Wheat and its Cultivation" became a standard text on the subject in Australia, and for this work and research on the water requirements of farm crops he received in 1924 the first D.Sc. degree awarded in agriculture by the University of Melbourne.

In 1918 Richardson visited the United States and Canada for the Victorian Government to study agricultural education and research; as a result of his report on this visit, the School of Agriculture was established on its present basis at the University of Melbourne, and Richardson was appointed dean of the Faculty and director of the School. He held these posts in addition to his position with the Department of Agriculture, and thus ensured a close link between the educational and research activities of the Univer-

sity and the requirements of the Department for research and extension workers.

In 1924, Mr. Peter Waite, a prominent South Australian pastoralist, presented his estate on the outskirts of Adelaide, together with a considerable endowment, to the University of Adelaide, which, as a result, was able to establish the Waite Agricultural Research Institute and the Waite chair of agriculture. Richardson accepted an invitation to be first director of the Institute and occupant of the chair, and his energy, enthusiasm and devotion to the problems of agriculture found full scope in his new post. He was responsible for the development and expansion of the activities of the Waite Institute to its present leading position among the agricultural research institutes of Australia. In 1927 Richardson was appointed a member of the Executive Committee of the newly formed Council for Scientific and Industrial Research, a position he held until his retirement in 1949, and there is no doubt that his skillful judgment and wide knowledge of Australian agricultural problems contributed largely to the early success of the Council in selecting problems for research which yielded such valuable results for Australian primary industries. In 1938 he left the Waite Institute to become deputy chief executive officer of the Council for Scientific and Industrial Research, and in 1946, on the retirement of Sir David Rivett, he was appointed chief executive officer, a post which he held until his retirement in 1949. In 1927 Richardson was a delegate to the first Imperial Agricultural Research Conference in London and in 1932 an official adviser to the Australian delegation to the Ottawa Conference. He was created C.M.G. in 1932. He was the first president of the Australian Institute of Agricultural Science in 1935, and in 1947 was president of the Australian and New Zealand Association for the Advancement of Science. His presidential address, "Science in Relation to Australia's Development", is a brilliant survey of the possibilities of research in Australia.

Richardson was a big man, in mind and stature, and his genial, unassuming manner won him warm friends in many walks of life. Apart from his work he had wide interests, especially in the arts and in various games, in which he possessed greater than average ability. He had an encyclopædic knowledge of agricultural matters and a prodigious memory for facts and figures which made him a formidable opponent in argument. As well as his ability as an experimentalist and his unflinching judgment of the practical value of research, he possessed a capacity for solid work and careful attention to detail which made him such a successful administrator. He is survived by his wife and daughter.

Prof. W. H. Newton

PROF. WILLIAM HENRY NEWTON, professor of physiology in the University of Edinburgh, died on December 20, after an illness of a few months. His all-too-early death makes a grievous gap in the ranks of British physiology.

Newton was born in 1904, the son of the Rev. J. T. Newton, and educated at Ashville College, Harrogate, and at the University of Manchester, taking first-class honours in physiology at the B.Sc. examination in 1925. After a further year he took the M.Sc. degree, and continued physiological studies (on plain muscle) during the succeeding three years, which were