He then turned to study beriberi in particular, and nutritional disorders in general. Little work on these lines had been done in India, though McCarrison was particularly impressed by the work of McCay (1912) on the importance of dietary protein. His approach was original and successful; he realized that single dietary deficiencies were unlikely to occur in man, and that ill-health might well be produced by combined deficiencies. So he fed lower animals such as rats on the type of poor diets being used by various tribes, and produced in the animals diseases similar to those frequently occurring in such tribes. This type of approach was very different from that of Hopkins, McCollum, Evans and others, who were feeding lower animals on purified diets. Both approaches were needed, and it is surprising that short-sighted scientists levelled criticism at McCarrison's method, which he summed up in these words: "My own method, on the other hand, has been to observe the more general symptomatic and pathological effects of faulty food on the animal body as a whole, and thereby to ascertain what forms of human illness might reasonably be attributed to it". This approach led to a series of papers on the pathogenesis of deficiency disease.

He met criticism not only from scientific colleagues but also from the Finance Department. His work was frequently stopped, and much he paid for himself. In 1926 Lord Linlithgow visited India as chairman of the Royal Commission on Agriculture, and insisted on going to see McCarrison's work. The Commission recognized the importance and promise of what he was doing in Coonoor; and in 1929 his unit was made into the Nutrition Research Laboratories, now moved to Hyderabad.

In 1935, McCarrison retired and settled in Oxford. He and Lady McCarrison, who survives him, kept open house, and they had constant visitors, especially in the form of the local children and distinguished scientists from abroad. During the Second World War, McCarrison was chairman of various committees, and during 1945-55 he was the first director of postgraduate medical education in the University. His academic honours were many, and he was knighted in 1933.

His more important papers were edited by me and presented to him as a *Festschrift* on his seventy-fifth birthday. Nothing pleased him more than a telegram from the Minister of Health of India, Rajkumari Amrit Kaur, expressing the gratitude of that country for his great services to the science of human nutrition and the advancement of the public health.

H. M. SINCLAIR

Dr. R. K. Schofield

ROBERT KENWORTHY SCHOFIELD, reader in soil science in the University of Oxford, died on June 8, at the age of fifty-nine.

He entered Trinity College, Cambridge, in 1919, obtained a first in Part II of the Natural Sciences Tripos, and the hobby of country dancing. In a testimonial, J. J. Thomson "... was impressed by the promise he showed, he had ideas and the energy and skill to test them by experiment". Already interested in surface physics, Schofield sought research experience in the Colloid Science Laboratory, and his first two papers (with E. K. Rideal) were on

the kinetic theory of surface films. After two years at Durham (1926-28) as lecturer in physics, he joined B. A. Keen at Rothamsted Experimental Station with an introductory description from I. O. Masson that fitted Schofield throughout his life: "As a physicist he is all round. He is a very nice fellow indeed, full of go and good spirits, and we all like him."

Schofield spent twenty-seven years at Rothamsted, succeeding Keen as head of the Physics Department in 1949, and then took charge of the much bigger Chemistry Department on the death of E. M. Crowther in 1954. Two years later he moved to the Department of Agriculture, Oxford, so returning to the academic atmosphere for which he always had a great affection.

Though his early Rothamsted work was mainly on the rheology of clays and similar materials, done in collaboration with G. W. Scott Blair, by 1935 he had also published papers on proteins, on the diffuse double layer—and on soil water. One of these was "Schofield (1935)", perhaps the most quoted reference in the literature of soil science. Others have expanded his thermodynamical treatment—a few think they have improved it—but "The pH of the water in soil" still remains the basis of any worth-while discussion of soil-water equilibrium. Leaving problems of bulk movement to those interested in drainage and evaporation, Schofield concentrated on the behaviour of water as an electrolyte in contact with the charged faces and edges of clay particles. His ideas on the ionic forces in water films were used in physical studies of soil structure, soil permeability and soil rheology; and in chemical problems of soil acidity, cation exchange, and the availability of nutrients.

There will be widespread regret that he did not write a synoptic survey of this work and of his ideas for its future development, but even without it Schofield leaves behind him an enviable world reputation in soil science and related technologies. Part of this was attained through his publications (more than eighty as sole or joint author), and part through an extremely wide range of personal contacts. There seemed to be no limit to his fund of ideas, and they were passed on liberally to anyone willing to listen. As a consequence, he was much in demand, nationally and internationally, for committee work and for discussion meetings. Selecting only a few events and activities in his career, Schofield was chairman of the Colour Group of the Physical Society; for six months, 1951-52, he was visiting professor at Cornell University; at the time of his death he was president of the British Society of Soil Science, and chairman of Commission I of the International Society; and, specially pleasing to him, he had an honorary doctorate conferred on him in Lisbon in 1956.

Throughout a very busy life, his main interest outside science was in country dancing, and he was an enthusiastic performer and administrator in the English Folk Dance and Song Society; at the time of his death he was 'Master Squire of the Oxford Morris Men'.

In his combination of qualities as man and as scholar, Schofield was unique and irreplaceable. He leaves behind a host of grateful friends, at Rothamsted, in Oxford, and elsewhere, all proud of their association with him.

H. L. PENMAN