

value of various feeding stuffs under tropical conditions.

In September 1946 he returned to the Rowett Institute, and three years later became head of the Department of Applied Biochemistry. His work concerned protein and vitamin requirements, energy needs and metabolism, and mineral metabolism and requirements. He also developed chemical tests which might be correlated with the biological value of proteins. With Mr. N. W. Pirie, of Rothamsted Experimental Station, biological tests had been made on leaf protein for non-ruminants.

Duckworth was responsible, with the Institute's X-ray Section, for developing a mobile X-ray unit for the outdoor study of hill sheep in relation to calcium and phosphorus requirements. In his Department the role of copper in the ruminant was also under investigation, and much progress was being made in the elucidation of this problem.

In 1954, Dr. Duckworth was elected a Fellow of the Royal Society of Edinburgh, and in 1955 was one of four British scientists who attended a symposium of Europe's leading agricultural research experts in Rome, sponsored by the Pfizer Agricultural Research Institute of America, for discussion of research into the use of antibiotics and other new growth factors in animal nutrition. Later in the same year, he was one of three British experts invited to an international conference in Washington on the same subject.

From August 1956 until August 1957, he was seconded to the Food and Agriculture Organization of the United Nations and the United Nations Children's Fund, to assist the Governments of Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua and Panama on food and nutrition policy. With Señorita E. Musmanno of Argentina, he collected statistics of the countries' food production, which showed that between 6 and 10 per cent of their population were dependent on outside sources of food supply. If one took into account the rate of growth of the population, it appeared to be necessary to double food production in the next twenty-five years, and to alter the balance between cereal and livestock production in favour of the latter. Due account was taken of the actual situation in the area: for example, cattle and sheep raising was to be based on native stock feeding on grass, rather than on imported stock eating concentrate feeding stuffs, at least in the early stages. The need was stressed for modern factories for milk and meat products. Almost his last task was to check the Spanish edition of their second report on the area.

Dr. Duckworth was an enterprising yet meticulous experimenter, a skilled statistician and planner, an arresting and clear expositor of his researches, and one who knew the agricultural industry as few others. He was a lively conversationalist and good pianist. He is survived by his wife, and a son and daughter.

D. P. CUTHBERTSON

Prof. K. W. Szarski

THE death of Prof. Kasmierz Witalis Szarski on January 18 prematurely severed a life of great service to zoology and Polish universities. He was born in Vienna in 1904 and on the family's removal to Lwów attended school and the University there. He took his doctorate, and seven years later (1939) became *docent* in comparative anatomy. Soon

afterwards the Russians occupied the University and demoted the staff. Later, under Nazism, academic work ceased, but by acting as hosts for lice used in preparing Prof. Weigl's anti-typhus vaccine, Szarski and colleagues slightly eased impoverishment and received certification as persons usefully employed. Afterwards he and his wife were arrested in Warsaw, but by mere chance escaped transportation to Nazi concentration camps and secured release, he being directed to vitamin investigations.

When war ended, Szarski became professor of comparative anatomy at Wrocław, the new setting for the University of Lwów—Polish no longer. Amid the devastation of Wrocław half the zoological institute lay ruined and in its and the University's rehabilitation Szarski played a leading part, particularly as pro-rector and rector (1954–59).

Szarski was a born naturalist. His early researches related principally to developmental anatomy: three long papers on the urogenital systems of mice being authoritative. His post-war work mainly comprised ornithology and translation. His account of the birds adopting residential niches in the mountainous ruins of Wrocław is fascinating. Freed from rectorial labours, he turned eagerly to study the avian brain—promising work cut short by his death. His comprehensive learning in zoology and his command of Slav and European languages—especially English, French and German, fitted him perfectly as counsellor, editor and translator in many professional capacities. His notable translations, with scholarly commentaries, comprise Darwin's "Voyage of the Beagle" (two editions) and Darwin's and Wallace's historic essays on natural selection (Linnaean Society of London). He was deservedly honoured when chosen to deliver the Darwin Centenary Lecture to the 1959 Polish Zoological Congress in Cracow—practically his last service to science.

Szarski was small and delicate-looking; of great culture, wit, sensitivity and charm; unpretentious; of highest integrity, with an over-riding sense of duty that over-taxed his strength. He had courage: during the Warsaw rising a young insurgent refugee to Szarski's lodging owed his life to Szarski's bluffing of a *Luftwaffe* search-party. He won friendship everywhere: his students and colleagues speak of him as truly 'nieodzalowany' (never to be sufficiently mourned).

Two recent working visits to England gave Szarski renewed inspiration; in Poland British zoologists have profited by his collaboration and enjoyed the bright hospitality of Pani Szarski, himself, and their young daughter, in their modest flat high above the Oder.

In preparing this notice I am indebted to Mr. W. Rybotycki of London, Prof. Sembrat of Wrocław and Prof. Henryk Szarski, rector of the University of Torun.

A. D. PEACOCK

Prof. Ramesh Chandra Ray

RAMESH CHANDRA RAY was born in 1890 and took the degree of M.Sc. from the Presidency College, Calcutta, in 1911. He was one of the first students of the Indian Institute of Science, Bangalore, where he worked with Travers on boron compounds formed by the decomposition of magnesium boride. In 1915 he was appointed professor of chemistry at Patna College and, after the War, joined Donnan's laboratory at University College, London, where he