

work continues. In addition, many years of undergraduates at London, Cambridge and Bristol will remember Professor Ottaway with gratitude for his enthusiastic teaching.

M. R. McCrea

Sir Rickard Christophers

A strong link with the malarial past has been severed by the death on 19 February 1978 of Sir Samuel Rickard Christophers, CIE, OBE, MB, FRS, at the age of 104 years. He qualified in medicine in 1896 at the University of Liverpool—2 years before the School of Tropical Medicine had opened its doors, and about the time that Ross discovered the transmission of malaria by mosquitoes.

In the previous decade the malaria parasite had been found by Laveran while most of the greatest discoveries in tropical medicine were being made at the turn of the century. Thus Christophers began his career in a fertile period; he knew all the famous figures, including Manson, the Father of Tropical Medicine, and was himself to contribute fundamental knowledge to the subject. He lost no time in making his way into the tropics and in 1897 went to the upper reaches of the Amazon as the medical officer of the ship.

The following year he became a member of the Royal Society—Colonial Office Malaria Commission and with J. W. W. Stephens he investigated the disease first in Nyasaland, then in various parts of West Africa and finally in India. This work, among other results, clearly demonstrated the connection between malignant tertian malaria, the consumption of quinine and blackwater fever. Furthermore, in 1900, Christophers published his first descriptions of the anatomy and histology of mosquitoes, observations which 60 years later were to culminate in his *magnum opus* on *Aedes aegypti*. In the meantime, he was to carry out detailed work on other insects including sandflies and ticks.

India finally claimed him in 1902 when he joined the Indian Medical Service; he spent the next thirty years in establishing malariology as a special discipline. His little book *How to do a malaria survey* (Christophers, Sinton & Covell) became the constant companion for all subsequent workers; the simplicity of its contents does not disguise the profound knowledge on which it is based.

These were the years of his greatest research: he was an entomologist, protozoologist and sanitarian; moreover he knew the subcontinent in many other aspects, its geology, flora and fauna, paleontology and sociology, and

of course the major epidemic diseases. Probably his most important discoveries related to the mechanism of immunity in 'hyper-endemic' malaria, in which he demonstrated the state of 'immune infestation'—the concept which had been foreshadowed by Koch, and was developed subsequently by Swellengrebel, Sergent and Bagster Wilson. His observations on splenomegaly led him directly to the problem of kala azar and eventually to the rôle of the sandfly in the transmission of the infection (the final solution of which had to await the classical experiments of the nonogenarian Colonel H. E. Shortt, his loyal and younger brother officer in the Service).

Christophers contributed to veterinary research by describing the development of *Babesia canis* in the tick, and to zoology by tracing the cycle of haemogregarines of rodents in ticks and lice. Within his broad interests he included systematics both as an entomologist and as a protozoologist; he and Stephens were the first to describe the characteristic stippling of erythrocytes caused by *Plasmodium falciparum* (and wrongly called 'Maurer's clefts') and he played no small part in the final agreement regarding the correct name of this parasite.

On his return to England, Christophers was given a personal professorship in the field of malaria studies at the London School of Hygiene and Tropical Medicine, where he carried out fundamental work on the biochemistry of malaria parasites and trypanosomes with J. D. Fulton. During this time also he was helped by P. G. Shute, who was a life-long friend. In 1938 he was given accommodation in the Department of Zoology in Cambridge, where he continued his anatomical studies of mosquitoes. He left Cambridge in 1963 and spent his remaining years in Dorset. His numerous friends remained in contact with him and had the benefit of his advice almost to the end of his life. His centenary was celebrated at the Royal Entomological Society and at the Royal Society of Hygiene and Tropical Medicine.

P. C. C. Garnham

L. Jánossy

Lajos Jánossy, Professor of Physics at Eötvös University, Budapest, died on 2 March 1978, at the age of 66. He was well known for his work on cosmic rays. His output of scientific papers was prolific: indeed, in 1972 a collection of his published papers filled five volumes. In addition he wrote a number of standard texts on cosmic rays, and less well known books on

the evaluation of measurements and relativity. Some of his books were later translated into Bulgarian, Hungarian, Italian, Japanese and Russian.

Jánossy began his study of cosmic rays with Kolhörster in Berlin for his doctorate. He came to England in 1937 and from 1938-47 was a prominent member of Blackett's distinguished school of cosmic rays at Manchester University. There he did significant work on various types of showers, primary cosmic rays and on the origin of the cosmic-ray meson. On the theoretical side he was much influenced by Heitler, then at the Dublin Institute of Advanced Studies. Like many others Jánossy did not solve the problem of the meson but his study of meson showers led directly to the Manchester cloud chamber work of 1946-52 and the discovery of some of the best known K-mesons and hyperons by Rochester, Butler and their colleagues. His research papers revealed a physicist with a thorough grasp of theory and mathematical ability of a high order.

In 1947 he was elected to a senior professorship at the Dublin Institute of Advanced Studies but he resigned in 1950 and returned to Hungary to play an important rôle in post-war scientific and academic development. He again set up a cosmic ray research group which did notable work on the time variations of the muon component and on extensive air showers and maintained close contacts with similar groups in the U.K. His other researches included the experimental and theoretical study of photons (especially photon bunching, which paralleled the work of Hanbury-Brown and Twiss in the U.K.), and the theories of relativity and quantum mechanics on which he held somewhat unorthodox views.

In addition to his University work he was from 1956-70 Director of the Central Research Institute for Physics where he worked to encourage the Hungarian electronics and other science-based industries. He was Hungarian representative on a number of international bodies particularly those connected with atomic energy and a member of the Hungarian Academy of Sciences (Vice-President from 1958-73).

Jánossy was slightly built, and of pale complexion but he had fine brown eyes which shone from under a shock of unruly dark hair. Former colleagues and his many friends will miss his scientific originality, his questioning mind and his warm friendship.

He married in 1937, Leonie Kahn, and they had three sons and one daughter. After Leonie's death he married Alice Farkas, a medical doctor.

George D. Rochester