plasmosis, and he may well have been the figure who inspired Camus to write *La Peste*, though Blanc himself violently disagreed with its amateur epidemiology. Like most parasitologists of this epoch, he was drawn to the study of animal reservoirs of human infections, and made notable contributions to our knowledge of their importance in toxoplasmosis, *Q* fever and *fièvre boutonneuse* (from which his wife suffered severely in Morocco), leishmaniasis and relapsing fever. These diseases require arthropods for their transmission, and Blanc spent much time in the Neffik Forest trying to disentangle the complicated network linking ticks, mites, rodents, rickettsiae, etc., with man. In this forest, he isolated the virus of choriomeningitis in wild rodents and of myxomatosis in ticks. He early reached the conclusion that the sexual cycle of an organism in the arthropod provides the key to its systematics. Blanc had to be an entomologist as well as a bacteriologist, and both a protozoologist and a mammalogist.

He will perhaps be best remembered for his demonstration of the life-cycle of the causative organism of *Q* fever in wild rabbits and *Hyalomma* sp., the transovarial passage of the rickettsiae through *Rhipicephalus* sp., the first use of a living vaccine against typhus, and his interesting theories about the epidemiology of plague. Almost his last paper analyses the causes of the present-day eclipse of plague. His friends will remember him for his generosity of spirit and good companionship. P. C. C. Garnham

Dr. R. S. J. Hawes

The death of Dr. R. S. J. Hawes, lecturer in zoology in the University of Exeter, occurred in London on July 22, 1963. After leaving school, he started a business career and entered the office of an oil company. In a few years, however, he decided that his vocation lay in the scientific world. He took a zoology degree at King's College, London, under the late Prof. D. L. Mackinnon, and was awarded the degree of Ph.D. in 1943 for research on eye structure and reaction to light of the cave amphibian, *Proteus anguinus*.

His first investigations were on the cavernicolous fauna and he took part in an expedition to Yugoslavia, a country which he visited again to collect specimens of the cave salamander, *Proteus*. However, the interest in Protozoa, first stimulated by Prof. Mackinnon, was his major field of study.

His published works were few in number, dealing with cave fauna, and with *Trichomonas vaginalis* and parasitic amœbæ. On the other hand, he was interested in all aspects of protozoology, as shown by the article published posthumously on sexuality, and a text-book. The book, *An Introduction to the Study of Protozoa*, probably represents his major achievement. It was commenced by Prof. Mackinnon, and on her death was completed by Dr. Hawes. It has now established itself as one of the best introductory texts on Protozoa.

Dr. Hawes took an intense interest in the progress of his students, most of whom were unaware of the despondency and the elation which their efforts caused. Dr. Hawes had more than his fair share of personal tragedies, but he did not allow these to affect his morale. He was a man of wide acquaintance and varied interests. For him, there was no barrier between the "two cultures" and he was equally at ease among scientists, High Church dignitaries, writers, musicians and artists. He maintained uncompromising æsthetic standards throughout his life. A great conversationalist, he delighted his friends by recounting stories, often of a slanderous nature, in his inimitable manner.

It is a tragedy that his death came at a time when his work seemed to be reaching an authoritative status.

R. A. Neal

Mr. F. J. Wilkins

Mr. F. J. Wilkins died suddenly on March 24. He joined the Distillers Co., Ltd., in 1938 as a chemical engineer in the Technical Development Department. After periods of service with the General Works Department and with British Industrial Solvents, Ltd., at Hull, he returned to the Research Department at Great Burgh, Epsom, and finally became manager of process development. As such he was responsible for chemical engineering and pilot plant operation, and contributed much to many major projects of the company.

He was prominent in the activities of the Institution of Chemical Engineers, being a member of Council and its Board of Examiners. He was also chairman of the Distillation Panel of the Association of British Chemical Manufacturers.

Mr. Wilkins leaves a widow and two sons, to whom his many colleagues and friends extend their deepest sympathy.

NEWS and VIEWS

The American Geophysical Union: Awards

The twenty-sixth *William Bowie Medal*, the American Geophysical Union's highest honour, has been presented posthumously to Prof. J. Bartels, who, until his death on March 6, was professor of geophysics in the University of Goettingen and director of the Max Planck Institute for Aeronomy, for "unselfish co-operation". Early in his career, Prof. Bartels developed statistical procedures especially suited to the needs of geophysics. His investigations led to a clear discrimination between geomagnetic variations arising from wave and particle radiation from the Sun. He also developed measures for the solar wave radiation, and derived indexes for the effects of solar particle radiation on geomagnetic variations. The widely used planetary indexes, K_p, were prepared by Prof. Bartels for each three-hourly interval since 1932. He applied his statistical methods to provide an understanding of the periodic effects of the Moon's gravitational influence on atmospheric tides and their influence on geomagnetic and ionospheric variations. He used these variations to investigate the 27-day variations in geomagnetic activity associated with the solar period of rotation and found that they were unrelated.

The third annual *John A. Fleming Award* has been presented to Dr. E. O. Hulburt for his "original research in geomagnetism, atmospheric electricity, and aeronomy, and his leadership on the national and international levels". Until his retirement in 1955, Dr. Hulburt pioneered atmospheric and ionospheric research as the first director of research in the U.S. Naval Research Laboratory in Washington, D.C., and inspired the growth of its programme of space research. While he was with the U.S. Naval Research Laboratory, he became well known for his scientific contributions to the solutions of naval problems related to optics of the sea, visibility through the atmosphere, target detection, and camouflage, for which he received the Navy Distinguished Service Award in 1945. Dr. Hulburt in 1925 deduced the structure of an ionosphere varying in density with height and capable of returning radio signals by refraction. His work led to an explanation of the origin and behaviour of the ionosphere under the influence of solar ionizing radiation.