

agricultural basis of religion in southern India, and directed attention to the somewhat inadequate provision made on this occasion for the consideration of the results of Indian ethnographical research. In January last, he presided for the last time over the Anthropological Section of the Indian Science Congress Association, held at Secunderabad, when he dealt in his presidential address with his recent work in the Coorg State.

Ananthakrishna Iyer's publications are too numerous to mention here. During a period of forty years he was connected with most of the learned societies dealing with anthropology in Europe and America. He was a foundation fellow of the Indian Academy of Science, Bangalore, and of the National Institute of Science, Calcutta. In 1935 he was made officier de l'Académie Française and honorary doctor of medicine and surgery of Breslau. In the same year he was promoted from Rao Bahadur (1921) to Diwan Bahadur, by the Government of India. By his death, India loses an indefatigable and learned worker in the field of ethnographic study who cannot readily be replaced. His many friends both in that country and in England will regret the passing of an attractive and vigorous personality.

R. E. ENTHOVEN.

Dr. T. G. Macaulay Hine, O.B.E.

DR. T. G. M. HINE, who died on April 25 at the age of sixty-six years, was the son of the late Mr. George Hine, an architect in large practice. From close association with his father, Hine acquired an excellent knowledge of business, and in his youth spent a year in Germany at the practical study of engineering. Educated at Charterhouse, King's College, Cambridge, and St. Bartholomew's Hospital, Hine, after qualifying and acting as house physician, settled down to the study of bacteriology and investigated the fermentative character of organisms of the diphtheria group.

Hine's chief chance, however, came when during the first winter of the Great War cerebrospinal fever broke out among the mass of troops then in training and, as recruits are specially susceptible to the disease, a very serious outbreak was threatened. The disease was known to be due to the meningococcus and to be conveyed by droplet infection through a chain of healthy carriers who harbour the organism temporarily in their nasopharynx. The D.G. of the Army Medical Service, the late Sir Alfred Keogh, was advised as to the measures taken by Sir William Horrocks assisted by the late Dr. Richard Reece and Dr. Mervyn Gordon, whose services were supplied by the Medical Research Committee. A central laboratory was set up at Millbank (headquarters of the R.A.M.C.) with a travelling laboratory attached and Dr. Hine was put in charge. In order to check the disease, contacts were swabbed, carriers segregated, and intensive research undertaken in which Martin Flack, W. J. Tulloch, J. A. Glover, and A. G. Bell all made valuable contributions.

As each salient point came to notice it was applied by Dr. Hine. Thus (1) the first requirement was a suitable medium that could be supplied in bulk for

identifying carriers of the meningococcus. When this was arrived at, Dr. Hine manufactured it on a large scale and kept more than fifty laboratories dealing with troops supplied. (2) It was soon found that the only safe way to identify the meningococcus was by serological means, and that four different types of it were operating, of which two were responsible for 80 per cent of the cases. The large-scale production of menotypical agglutinating sera for identifying these strains of the meningococcus, and homologous suspensions for checking the sera, was undertaken by Dr. Hine, who later on was succeeded in this work by Commander A. G. Bell. (3) When trial was made of monotypical therapeutic serum standardized by its antiendotoxic capacity, Dr. Hine undertook its distribution and the assessment of results. This serum was particularly successful in patients infected by Type I, the main epidemic strain of the meningococcus, in which the mortality had previously been highest, but less successful in cases infected by the other types. (4) When it was found by experiments on carriers at the central laboratory that the meningococcus can be destroyed in their nasopharynx by causing them to inhale through the nose the air of a room densely charged with a spray of droplets of 1:50 zinc sulphate, Hine's previous engineering experience enabled him to design a jet that was more efficient than the one previously in use.

Although the disinfection of carriers by this means was only temporary, it proved valuable for dealing with instances of mass infection, and when applied the last thing at night before going to bed, appeared to stop the incidence of the disease in some outbreaks: the disease ceasing while the spray treatment was in use and beginning again when it was stopped. The Navy adopted Hine's jet for installation in the Fleet, where it was operated by compressed air instead of by steam as in the Army.

For his services during the War, Dr. Hine received the O.B.E. and was made an honorary major in the Army. After the War, he gave assistance for a time to the administrative staff of the Medical Research Council and then retired to his house near Slapton in South Devon. Dr. Hine was a popular figure in lay as well as medical circles, and was a past Master of the Fruiterers' Company.

WE regret to announce the following deaths:

Prof. R. H. Fernald, director of the Department of Mechanical Engineering and dean of the Towne Scientific School of the University of Pennsylvania, known for his work on fuel technology, on April 24, aged sixty-six years.

Prof. A. R. Ling, emeritus professor of malting and brewing and of the biochemistry of fermentation in the University of Birmingham, on May 14, aged seventy-six years.

Prof. L. W. McCay, emeritus professor of chemistry in Princeton University, known for his work on the chemistry of arsenic, on April 13, aged seventy-nine years.