LIVERPOOL SCHOOL OF TROPICAL MEDICINE

FIFTIETH ANNIVERSARY

ON November 22 a reception was held at the Liverpool School of Tropical Medicine on the occasion of its fiftieth anniversary. During the ceremony the Mary Kingsley Medal was presented to representatives of the families who had helped found and maintain the School in its early days, and to scientific workers who had advanced the knowledge of tropical disease. The latter included Emeritus Prof. D. B. Blacklock, Prof. P. A. Buxton, Prof. Neil Hamilton Fairley, Dr. A. F. Mahaffy, Sir Philip Manson-Bahr, Sir Edward Mellanby, Prof. Jerome Rodhain (Antwerp), Dr. Paul F. Russell (U.S.A.), Prof. H. E. Shortt, Brigadier J. A. Sinton, Prof. N. H. Swellengrebel (Amsterdam), Prof. W. H. Taliaferro (U.S.A.) and Prof. Warrington Yorke (posthumous).

At the end of last century the toll of diseases among Europeans in the tropics was disastrous, and in this respect the British Empire was no exception; in Sierra Leone, for example, the annual morbidity-rate had at one stage reached the fantastic figure of one in three. This was in strange contrast to what was happening in Europe, where the introduction of sanitary principles based on the newly won knowledge of the cause and spread of disease was producing notable results.

Knowledge of this sort was still very little advanced in the serious diseases of hot climates, such as malaria and sleeping sickness. The necessity for organised research was obvious and, largely following the repeated insistence of Manson, Joseph Chamberlain, then Secretary of State for the Colonies, appealed in 1898 to the nation for the establishment of centres for the study of tropical disease and the training of medical men for the Colonial Empire.

Liverpool responded at once. On the inspiration of Alfred Jones, head of the Elder Dempster Line of shipping, a meeting of local commercial and medical interests was called, and in April of the following year, 1899, the Liverpool School of Tropical Diseases, as it was then called, came into existence in the Royal Southern Hospital. Alfred Jones became the first chairman, and the long association with the University began with the simultaneous appointment as dean of Rubert Boyce, the professor of pathology in the then University College.

At first the School carried on without government recognition or support; but this came soon after the turn of the century and was followed by affiliation with the University. Since then the School has grown steadily in size and strength and is recognized to-day as a world-famous institution which has played a very important part in medical research. It now houses four departments, and the staff includes three University professors.

The early work of the School was made possible by the enthusiasm of Liverpool business men, who encouraged and financially supported expeditions to the tropics in which work was carried out that formed the basis for much of the modern progress in tropical medicine and hygiene.

The School was particularly fortunate in its early choice of staff and was given a splendid start by the appointment of Ronald Ross—later Sir Ronald, and Nobel prizeman—as the first lecturer in tropical diseases. Ross was already well known for his share in the discovery of the carriage of malaria by mosquitoes—a discovery which quickly revolutionized methods of control of the disease, and in the year he was appointed took the School's first expedition to Africa, where he quickly confirmed the existence of infected mosquitoes. From the beginning, Ross emphasized a point of view that has always been predominant in the School's outlook. He regarded tropical disease as basically a sanitary problem. It was the prevention of disease that mattered, and all other research into cause and cure alike must be ultimately subservient to this aim. Ross joined the School as lecturer in tropical diseases and was eventually made its first professor of tropical medicine; but his outlook was clearly expressed when in 1913, the year before he left for London, he vacated this chair in favour of a new one created for him in tropical sanitation.

From the turn of the century until the First World War, expeditions to the tropics were vital to the progress of the knowledge of tropical medicine, and the School organised and equipped many of them. But as the material and information acquired steadily accumulated, more and more scientific work became possible in the School and its offshoot at Runcorn, and in work of this sort the staff rapidly made a world reputation which they have maintained to this day.

The scientific work has continued without a break for the whole period of the School's history; but over this time the relations of the School to the tropics have somewhat changed.

In 1905 an outstation was established at Manaos on the Amazon and for many years the work on yellow fever, in the study of which the School was early concerned, was largely concentrated there. In 1921 the School entered upon a more ambitious venture and founded a laboratory in Freetown, Sierra Leone, made possible by a further bequest from Alfred Jones.

This opened up a new phase in the School's work, for the laboratory was placed under the control of a director who was also a member of the School staff and, later, a University professor. This meant some degree of reciprocity between the parent body and its Colonial station which proved of immense benefit to both. The School now directed its work mainly to the west coast of Africa, and thanks to a series of brilliant directors the attack on local disease problems directed by the laboratory was given a unique continuity which was broken only in 1941 by the impact of the Second World War. This laboratory has remained closed for eight years, and its work both in research and in acting as a centre for medical thought and teaching on the west coast of Africa has been sadly missed. It is probable that it may soon be reopened, this time under government control, as part of a planned drive against tropical disease such as Chamberlain, in his original appeal, might scarcely have dared contemplate.

This illustrates the third phase in the School's history, for, since the Second World War, the prob-

lems of tropical disease have become recognized as world problems, and the attack on them is at last becoming an international one, directed by the World Health Organisation. It seems likely that the days of locally supported scientific expeditions and tropical outstations may be over. The future lies in linking up not only the resources of cities like Liverpool, and London, which recognized the need for action by founding a School shortly after Liverpool, but also the resources of nations vitally interested in the welfare of the tropical world.

The scientific work of the School has been vigorous and productive. Ross's achievements in the field of transmission and control of malaria, started before he joined the School and brilliantly continued for many years afterwards, have long since received world recognition. His early associates, who continued at the School after he left for London, were also remarkable men. They included Newstead, an entomologist of international repute, and Stephens, who discovered *P. ovale*, the fourth form of human malaria parasite; but the greatest of them was Warrington Yorke, who died so recently as 1943, and will be remembered as one of the pioneers of the scientific and rational study of the action of drugs on parasites.

Basic research in the School's laboratories was given a new turn in 1929 by Yorke's discovery of techniques for maintaining trypanosomes *in vitro* and the use of this method for screening trypanocidal activity of chemical substances. From this work came the study of synthalin and ultimately the development, in association with May and Baker, Ltd., of the diamidine compounds which have been used with such success in the control and early treatment of sleeping sickness, and in the treatment of kala azar. The development of this new approach to the study of the action of drugs on parasitic infections was in a way an extension of the earlier work in the School initiated by Wolferstan Thomas, who first demonstrated the action of organic arsenicals on the trypanosome infection in animals, an observation which influenced Ehrlich's work on syphilis and led indirectly to the modern tryparsamide treatment of trypanosomiasis.

The chief value of Yorke's work lies in the part it played in founding modern chemotherapy, and to some extent on its effect on the battle against disease in the Second World War, for it was largely due to Yorke that, when Java was overrun in 1942, the Allies were able to substitute mepacrine for quinine in the control of malaria, and it was his inspiration that led to the work in Imperial Chemical Industries, Ltd., Manchester, which eventually gave rise to 'Paludrine'.

No attempt could be made here even to outline the scientific achievements of the School. It will suffice to mention only a few: the original discovery of *Trypanosoma gambiense* in the Gambia by Dutton, at the time a member of the School staff; the classification of trypanosomes and separation of *T. rhodesiense* from *T. gambiense* by Yorke and Blacklock; the researches by Newstead and others on the carriage of sleeping sickness by tsetse flies; the brilliant entomological studies of Miss Alwen Evans and Patton; the demonstration by Blacklock of the carriage of the blinding worm disease onchocerciasis by *simulium* flies; researches on typhus, relapsing fever, blackwater fever and malaria, including Yorke's pioneer work on therapeutic malaria in general paralysis.

Present-day work continues on similar lines, but the emphasis has changed. Techniques have improved and a great deal of work once necessarily done in the field can now be carried on in the School's insectaries and aquaria under controlled conditions. A certain amount of research is necessarily based on the need for practical applications of methods of hygiene and control of disease in the tropics, and of the treatment of disease; in this respect the School functions as a co-ordinating link between field work and the laboratory. But research into problems of a more fundamental nature is recognized, as it always has been, as one of the essential academic functions of the School. Interest in blackwater fever and malaria, for example, is as great as ever, but is now concentrated upon the study of the physiological effects of these diseases on body tissue, an approach which has already had its influence on general medicine in at least two important aspects, namely, the recognition of the syndrome of renal anoxia, and the study of the pathogenesis of liver necrosis in a wide variety of disease conditions. Recently such work received great impetus by a further example of the generous interest taken in the School by local commercial concerns when the firm of John Holt (Liverpool), Ltd., gave a considerable grant towards the development of basic research in malaria.

Teaching is an essential part of the School's activity, and has been since Joseph Chamberlain first called for centres in which Colonial medical officers could be trained. To-day a remarkably international group of students passes through the laboratories and wards, working for the University diploma in tropical medicine and hygiene. Scientific men and technicians are trained in the laboratories and wards, and there is little doubt that the School will be called on to play a part in the production of similar personnel for the new Colonial universities. Undergraduate teaching of veterinary parasitology and postgraduate training of nurses are also part of the School's academic work.

Important clinical work goes on in the wards attached to the School, and it is not surprising that this aspect of the work was of great national value in both World Wars, and has led to advances in the control and treatment of tropical disease. In the First World War the School's buildings (the present ones) were handed over to the Government as a hospital, and the treatment of malaria by quinine was rationalized by Yorke. In the Second World War the School organised the biggest centre for tropical diseases ever seen in Britain, and in its wards 'Paludrine' was first tried against malaria. The centre for tropical diseases established then still exists.

The School has always maintained a close contact with other bodies responsible for medical research. It has received much support from the Medical Research Council and the Colonial Office; members of the staff are actively engaged in various Colonial welfare and development schemes and sit on many advisory committees, including the Colonial Advisory Medical Committee, the Inter-University Council for Higher Education in the Colonies, and the Colonial Medical Research Committee. Two of the staff were recently appointed to the new Panel of Consultants set up by the Secretary of State jointly with the Nuffield Foundation.

For the past twenty-five years the School has been honoured by His Majesty the King, first as president and afterwards as patron.