SOME IMPERIAL ASPECTS OF THE STUDY OF TROPICAL MEDICINE.  

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The history of St. Thomas's Hospital is the history of the nation from a single point of view. It displays a long procession of social forces that have made the health of the people the first concern of local and imperial government. In the administrative staff of 1557 the surgeon ranked after the shoemaker, and it was not till ten years later that the staff included a physician. The present Hospital—on a noble site, appropriately fronting the Houses of Parliament and the area occupied by the great Departments of State—constructed, equipped and organised in accordance with modern ideas, is a symbol of the place assigned to the medical profession in the modern administrative system of the Empire. For to the medical profession—including in the term the exponents of sanitary science—is assigned the imperial duty of preserving the health of an infinite diversity of races in an infinite variety of environment. And the Medical School of the Hospital is a guarantee of the purpose of the Governors to qualify the profession for the burden and dignity of its high trust and function. The work of the School is therefore distinctly a matter of imperial concern, and I rejoice, as I am sure we must all rejoice, to learn from the report of the Treasurer that it maintains the high standard of efficiency that has distinguished it in the past.

In the wide range of study and research exhibited in the prospectus of the School, I am naturally attracted to an area of work of which I can speak with the sympathy of nearly forty years experience. I propose, therefore, to say a few words on some imperial aspects of the study of tropical medicine. If my experience has enabled me to appreciate the value of the work already accomplished it has given me opportunity to estimate the magnitude of the area as yet hardly touched. The self-governing Colonies, with interests lying mainly in temperate zones, have of late years attracted so much attention that an enormous expansion of the King's over-sea dominions in the Tropics has been going on with comparatively little observation. They now cover an area of about four million square miles, a fourth of the entire area of the Empire; while their estimated population is nearly a fifth of the estimated population of the world. But the conditions of tropical life and environment are not

1 An address delivered on the occasion of the distribution of prizes at St. Thomas's Hospital Medical School, in June, 1908.
limited even to this wide range. They extend to the whole heat-belt lying within the northern and southern isotherms of 68° (F.) mean annual temperature, or about 30° north and south of the Equator. So that the sphere of influence of tropical medicine may be said to occupy all this vast area.

The relations of Europe with the Tropics have passed through three stages—a period of plunder, a period of trade, and a period of occupation. And the period of occupation has revealed quite unexpected sources of wealth. There was a good deal of romance in the influences that inspired the adventurers of the earlier periods, but there is nothing of romance in the solid substances that have of late excited the cupidity of nations and engaged all the Great Powers in conflict for a share of the tropical regions of the earth. Among the products of agriculture and forestry, apart from articles that enter into the daily use of every household, such as sugar, tea, rice, tobacco, I need only remind you of two raw materials, cotton and rubber. It is probable that nearly one-half of the population of the United Kingdom derive their living, more or less directly, from industries dependent on an adequate supply of these materials; and it is impossible to over-estimate the importance of a supply sufficiently regular and stable to free us from the risks of shortage and foreign speculative manoeuvres.

The mineral resources of the Tropics we have hardly begun to explore, but we know that in addition to gold and gems they include substances of universal present demand, such as mineral oils, and of infinite promise for the future, such as thorium and other possible sources of radium.

But if the experience of occupation has enabled us to realise the economic uses of the Tropics, it has compelled us to realise the extent to which the agencies of beneficial occupation—industry, commerce, military and naval defence and good government—are dependent on the preservation of health against tropical diseases.

I need hardly remind you that in the Tropics all industrial enterprises depend upon an adequate and regular supply of manual labour. Regulating this supply we have to consider three material facts. Firstly, the most profitable lands—for instance, the lands most appropriate to cotton cultivation—are largely found in malarial areas with no efficient labour supply. Secondly, and consequently, with the exception of India, where there is a pressure of population, we have no tropical possessions of any commercial importance in which the elementary operations of industry are not carried out by imported labour. And thirdly, experience has proved that the migration of large bodies of men from tropical areas of economic pressure, or from conditions to which they have become adapted, is always attended with the danger of spreading disease.

In these circumstances the constantly increasing demand for labour to exploit new areas brings home to us the constant wastage from disease. Within limited areas of British India, during the first seven years of the
century, nearly 6,000,000 persons, mostly in youth or in the prime of life, have perished from plague alone. In 1907 the average mortality exceeded 25,000 weekly. In Hong Kong and Mauritius during the same period the mortality from plague has been hardly less serious in proportion to area and population. Some years ago plague appeared for the first time in South Africa; it recently visited West Africa; within the last few weeks it has been reported in Trinidad and South America. If in Africa and America its progress has been promptly arrested, it is to tropical diseases research that we owe this triumph of science. Of the contemporary wastage of labour from malaria, yellow fever, cholera and other tropical diseases I can give no estimate. But the stations I have mentioned on the itinerary of plague illustrate the distribution of tropical diseases from centres of origin following the migration of labour. A few years ago an outbreak of beri-beri among the Chinese introduced into South Africa first directed public attention in England to that terrible disease. Meanwhile the expansion of English interests in Equatorial Africa has been accompanied by the introduction of sleeping sickness into Uganda. Colonel David Bruce, R.A.M.C., in a paper recently read before the South African Society, traced the spread of the disease following the increased demand for labour, and insisted on the duty of England to arrest its further progress by preventive measures, and not rest until it is stamped out.

Many years ago Livingstone declared the tsetse-fly to be the greatest obstacle to civilisation in Africa. The researches of Colonel Bruce and others have thrown the light of science on the processes by which it works. The infection of sleeping-sickness is caused by a parasite called a trypanosome transmitted by a tsetse-fly, which is thus the carrying agent of the deadliest of all known diseases of humanity; while varieties of the same parasite and the same fly are the infecting agents of hardly less deadly diseases among animals. In this way the tsetse-fly is the carrying agent of diseases equally fatal to industry and to commerce; commerce implying the transport of commodities from the place of profitable markets by land and sea.

Among the basal facts of economic geography we have to recognise the extent to which all methods of land conveyance—human labour, animal draught and mechanical transport—are affected by tropical diseases. The abolition of slavery and the substitution of animal draught for carriage by native bearers has involved the movements of animals on a large scale, with exactly the same results that have followed the migration of large masses of men. They have become agents of infection. Some years ago the fly-borne disease known as surra was introduced into Mauritius and gave me practical experience of the extent to which an animal disease is capable of paralysing every operation of private enterprise and every department of public service. The particular outbreak, coinciding with a similar outbreak of surra in the Philippines,
drew the attention of the University of Liverpool to the disastrous influence of animal diseases on the commerce of the Tropics and was a factor in determining the University to establish a Department of Tropical Veterinary Medicine and Hygiene in association with their School of Tropical Medicine. The imperial importance of the study of diseases of animals is now recognised by the Universities and the Public Departments and has added appreciably to the dignity of the profession of the veterinary surgeon.

The exigencies of commerce, baffled by disease, have naturally demanded the substitution of mechanical transport for animal draught, but here again we are confronted by the fact that the construction of railways through malarial areas is always accompanied by high rates of disease and mortality. There is scarcely an area of activity in which a knowledge of the conditions of health and hygiene in the Tropics is more important.

But the larger operations of commerce in the interchange of products between the component parts of the Empire in temperate and Tropical zones are conducted mainly by sea, and here again we find that the removal of masses of tropical products is attended with the same danger as the removal of men and animals. The sea-borne commerce of the Tropics has, therefore, to contend with the formidable obstacles of quarantine. Scientific knowledge of the origin and processes of tropical diseases has already done much to modify the laws and regulations affecting quarantine. The facilities offered by the Suez Canal for the introduction into Europe of the diseases of the East, in particular plague and cholera, led to the Venice International Sanitary Conference of 1892 and the Paris Convention of 1894. To reconcile the interests of personal and family security with the exigencies of trade and shipping is one of the gravest responsibilities the Governments of tropical Colonies have to undertake.

The Venice Conference and the Paris Convention had for their object to reconcile these conflicting interests and to regulate on scientific principles the periods of detention and the processes of disinfection. Although all our tropical Colonies did not become parties to the Paris Convention, they have all in the enactment of laws relating to quarantine had the same object in view. But there is still much to be done, and my own experience has convinced me that a scientific knowledge of the origin and processes of disease—both of men and animals—bears nowhere more intimately on the commerce of our tropical dependencies than in the enactment and enforcement of laws and regulations relating to quarantine.

Essential to the economic development of the Tropics is the security of their sea-borne commerce. The health of our sailors in tropical waters, and of our soldiers in tropical fortresses and defended coaling stations, is, therefore, a national asset of value. Some years ago it was the policy of
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the Imperial Government to make the Island of St. Lucia a defended coaling station of the first importance in the Caribbean Sea. Fortifications and barracks were constructed at great cost, but the troops had hardly been transferred to them when an epidemic of yellow fever broke out among the sailors of the training squadron which happened to be in the harbour, and the soldiers of the garrison. As I was Governor of the Windward Islands at the time, I can speak from experience of the serious consequences of this incident, and I can assert with confidence that it would not have occurred had the nature of the infection been understood as it now is. I believe that the preventive measures adopted against yellow fever since the discovery of the infecting agents have been eminently successful in St. Lucia. While speaking of the results of tropical diseases research as affecting our naval and military forces, I cannot refrain from a word on Colonel Bruce's work in the subtropical island of Malta. Up to three years ago the admissions to hospital of men suffering from Malta fever amounted to a considerable reduction of the strength. The research work of the Mediterranean Fever Commission, which led to the discovery that goats' milk is the agent of infection, has stamped out the disease, so far at least as our soldiers and sailors are concerned. The problem of securing complete immunity for the civil population is a question of expense.

And now one word on the imperial aspect of tropical disease research as an agency of good government and civilisation. The development of our tropical territories is carried on almost universally by workmen of Asiatic or African origin under the supervision of a handful of Europeans. Administrative efficiency was long seriously impeded by the difficulty of finding qualified candidates for employment in regions where even a short period of service brought almost certain sickness and probable death. Hardly fifty years have elapsed since these considerations determined the Government to withdraw from all our West African Settlements, reserving only a single naval station for the control of the slave trade. Wilberforce's schemes for the civilisation of Africa through the agencies of industry and commerce were ridiculed as impossible by reason of the climate. Scientific research has now analysed the vague generalisation styled "climate," and found that tropical diseases are specific infections by discovered agencies working in accordance with ascertained natural laws. And already the knowledge has effected such a change in the conditions of life that appointments in Africa are eagerly sought for by officials and administrators of proved ability in the imperial service. But the functions of the Medical and Health Departments have a much wider range than even the security and comfort of European officials. The most successful missionary enterprises I have known have been those which have most closely associated religious teaching with the practice of medicine, and more or less directly with industrial work. In the nature of things it must be so. It is no exaggeration to say that the
history of the Tropics, prior to European occupation, has been a record of plague, pestilence, and famine, battle and murder and sudden death. No wonder that communities living in so malignant an environment have thought it more politic to propitiate the spirit of evil than to appeal to the goodness of God. No wonder that fetishism flourishes in all the lower strata of tropical civilisation.

We offer these communities a new dispensation, a new order of things. We endeavour in the first place to relieve them of the environment of plague and pestilence by the methods of science, and so teach them by practical demonstration that science is merely a right interpretation of the ordinances of Nature and the will of God. We shall encourage them, relieved from plague and pestilence, to work out their own salvation from famine by developing the resources of the soil by industry. And in the new environment thus established we promise to save them from battle and murder and sudden death by the civil and military arms of a just and efficient administration.

And here let me suggest among the imperial aspects of the Medical School of St. Thomas's Hospital, the part it may play by educating selected students of medicine of tropical birth and origin to co-operate with us in extending the benefits of European research and study over the whole vast area of the King's tropical dominions. There can be no more effective method of extending that sense of loyalty which has been finely declared to be the cheap defence of nations.

In conclusion, I may remind you that the imperial aspects of tropical disease research are now fully recognised by the Colonial Office, the War Office, and the Admiralty. Having held office as Governor in tropical Colonies throughout the period of Mr. Chamberlain's administration, I should be derelict from my duty were I not to pay my tribute to his services to the cause. His successor, Mr. Lyttelton, established in 1904 a Committee of the Colonial Office to advise on the administration of the Tropical Diseases Research Fund, and it may be hoped that no changes of parties or persons will be allowed to interrupt the continuity of service of this Committee.

In calling your attention to some imperial aspects of the study of medicine, I do not under-estimate the importance of others. My long official life has led me to divide all diseases of the Empire into two groups—diseases of civilisation, and diseases that have their origin in uncivilised communities, but are distributed by civilised agencies. Both groups are of equal imperial concern, and offer an equally honourable career to the students of St. Thomas's Hospital Medical School.