

## THE EDUCATIONAL BACKGROUND FOR THE PRACTICE OF TROPICAL MEDICINE<sup>1</sup>

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My address will be brief, as I have really a very simple theme and it will not take much of your time for me to present it.

It is unnecessary for me to remind you that we are living in a changing world, and that both medicine and public health are playing a much more important rôle in the world than they did formerly. For example, it is now customary for public officials and people in general to talk about adequate medical care for every one; this is no longer merely the dream of the sociologist, but a real objective of the thinking public.

I imagine that most of us, of the older generation, realize that this is a very high ideal, which has never yet been reached, even in the most advanced countries. It predicates further the utmost use of preventive as well as of curative medicine, otherwise the ideal could never be even remotely approached. The problem and the objective have recently been stated by Dean John Wyckoff of the New York University Medical School as follows: "Adequate medical attention should be available to the public to the same extent as educational facilities."

You are no doubt familiar with the statements of Sir George Newman, Principal Medical Officer of Great Britain, who as an expert in medical education has coined the happy phrase that "the medical curriculum must be permeated with public health."

If this be the present attitude of educators, sociologists, and the leaders of the medical profession in the most advanced countries may we not ask and try to learn how it affects us in our special

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interest in tropical medicine, and in the education of the men who are to carry on the work of the future in the tropics. A glance at the history of our schools of tropical medicine may help us to orient ourselves.

Scientific tropical medicine as a special field is so new that its history is easy to trace and most of us here present are familiar with it. Its founder was Sir Patrick Manson. He was born in 1844, and was educated at Aberdeen University where in 1865, at the age of twenty-one he received his qualification in medicine. After a short period as a physician in an institution for mental diseases he received an appointment in the Chinese Imperial Maritime Customs as Medical Officer for Formosa.

His first station was at Takao, Formosa, where in 1866 he began his practice. In 1871, he went to Amoy, an important port on the Chinese mainland where he resided for thirteen years. While there and later in Hong Kong he did his important work in tropical medicine and pursued his remarkable investigations in elephantiasis, liver abscess, and sprue.

What sort of education in medicine did he receive in Aberdeen in 1865? We cannot at this time be sure of the details but we know in general that at that period in medical education, the schools taught what we can properly call the art of medicine rather than the art and science of medicine which is the ideal of today. Dr. Franklin Martin in his interesting autobiography says of the four decades from 1880 to 1920, that they were the period of transition from the art to the art and science of medicine and that during this period preventive medicine was introduced and developed, and that scientific discoveries flourished.

With such a background how did it happen that Manson was so successful as an investigator of tropical diseases? The only answer possible is that his achievements were due to his innate ability, and that in all probability the extent of his training was confined to the art of medicine as practiced in Great Britain, and that his investigations were made as the result of his own scientific curiosity and a persistent perseverance in following up his cases over a long period. We find his invariable custom was to keep very clear and complete case records, giving us the day to day

record of his studies on filaria, a subject that always intrigued him; in short he belongs to that small group of self-trained leaders, who have been responsible for giving us the beginning of scientific medicine as we understand it today. His name deservedly ranks along with that of Pasteur, Koch and Theobald Smith.

During his twenty years of practice in the oriental tropics he acquired a knowledge of tropical diseases such as no one before had had, and he published many important papers in the China Customs Gazette, a curious journal for medical papers but apparently the only one open to him at the time.

While it is true that Demarquay in 1863 saw filaria in chylous urine, and Lewis in 1870 found them in the blood, it was Manson who discovered the causative rôle of *Filaria sanguinis hominis* in the production of elephantiasis, and most important of all its carriage from person to person by the mosquito, and its development in that insect. This was in the period from 1875 to 1883 and was the first scientific work showing the actual transfer of disease from man to man through the agency of an insect, ranking it as one of the important milestones in the progress of medicine from an art to a science. Manson's interest in medical education began with a small scheme for teaching native assistants in the mission hospital at Amoy. Although practically alone he trained his assistants in the elements of medicine and surgery and sent them out as early converts to Western medicine to live and practice in native Chinese communities.

When he went to Hong Kong in 1883 he organized a medical society and soon afterwards with the help of his European associates, a medical school for Chinese. This was the first school in what was later to become the great University of Hong Kong.

So far as one can tell from existing records his training the Chinese in medicine and surgery brought forth good doctors, and even at this early stage he introduced as much science as possible into the curriculum. His own special interest was in the field of parasitology, which is so very important in the tropics. He trained his students to the use of laboratory procedures from the beginning to the end of their studies, and was one of the very first

of our great leaders to see the need for laboratory studies of clinical cases and to teach parasitology to all his students. This, you will remember, was before the days of bacteriology; neither the lepra bacillus nor the tubercle bacillus nor the diphtheria bacillus had yet been discovered: both he and his students were provided with the best microscopes that Manson was able to procure and they were in constant use in ward laboratories. So much for Manson's work in China.

In 1889, after twenty-three years in China, he returned to Great Britain and we are told by Manson-Bahr, that in May 1892, while practicing in London, his great chance came through an appointment to a position on the staff of the Seaman's Hospital Society. The Society maintained a hospital at the Albert Docks in London and a larger institution in Greenwich lower down on the Thames. He, Manson, had access to cases of exotic disease coming from all parts of the tropics, and soon his reputation as an expert in this field spread among the medical profession and the public. This in turn led to his appointment as medical adviser to the Colonial Office in July 1897.

We have seen that Manson both in Amoy and in Hong Kong had set up a scheme for teaching medicine to the Chinese. What was more natural than that he should set up a school in London to teach tropical medicine, particularly as he himself had had such great difficulty in learning anything about tropical disease when visiting home on his furloughs from China. However, the scheme was slow in maturing and it was not until 1897 that he succeeded in interesting the Seaman's Hospital in the idea, and a little later in securing the all powerful help of Mr. Joseph Chamberlain, the Colonial Secretary. Even then it took some time and money to initiate the project and it was not until October 1899 that the school opened for its first session. The school was very successful and continued its separate existence until August 1, 1924, when it was consolidated with the new London School of Hygiene and Public Health, a most happy union.

Let us consider for a moment what are the social and economic differences between the tropics and temperate climates as concerns the medical man. While most of you are just as familiar as

I with these considerations it will do no harm briefly to review them.

In the large cities, particularly in the ports of tropical regions there is a small number of Europeans permanently resident and a considerable number of tourists. They are as a rule well to do, and their medical needs are taken care of just as they are at home in Europe or America.

A second class is the wealthy native; this is also a small group, and they are coming more and more to appreciate and to avail themselves of the services of the well trained medical man, either European or native.

It is these two small classes which furnish almost the entire clientele of the private practitioner.

The third class, which may comprise almost 99 per cent of the total population, is made up of the average native, who in the past has relied on native medicine in the hands of persons whom we know have very little training and almost no knowledge of disease processes, or of their prevention or cure. It is this huge class which presents the main problem in health to the governments and people of tropical regions.

The little that we can do with the wealthy native and the European makes little or no difference to the general health of the region, so some solution must be found for improving the health of the great mass of the population, not only for their own sake but because infectious diseases among the mass imperil the lives and livelihood of the select classes. Cholera spreading like fire through the villages in the delta of the Ganges pays no attention to social differences in selecting its victims. The majority of governments of tropical regions realise this situation and have taken steps of one kind or another to protect their people.

The oldest method that has been used is probably quarantine, or the forty days' detention of ships required by the Venetians to keep out plague and in the absence of detailed knowledge of the epidemiology of infectious diseases it was of course the only method which could be used.

Among primitive peoples strange and barbaric practices took place, as, for example, among the Yorobas, a large tribe of blacks

on the West African coast, who, within historic times, collected all the known lepers in the tribe and executed them, hoping that such action would terminate the disease among them; of course it failed owing to their inability to diagnose the incipient cases.

Until quite recently the only attempt to raise the general level of health was made by missionary and other voluntary workers and associations, but their effort was almost always limited to setting up hospitals and dispensaries for treatment. In many tropical countries that is the situation found today. In our own tropical possession, Puerto Rico, the Presbyterian Hospital has done a large amount of very good curative work for many years; however, it is easy to see that no matter how good that work may be, it will have very little effect on the general health on the island.

For this reason Puerto Rico and many other tropical regions have come to realize the need of official government action in preventive medicine and hygiene and health departments are being set up on the model of the best in highly civilized nations. It is almost the rule for us to refer to the Panama Canal Zone as an example of what can be done in disease prevention in a tropical region. I, however, shall refer to another region which should be just as well known as Panama. I mean to the Straits Settlements and the Federated Malay States. This is a considerable region occupying the southern part of the Malay peninsula, a region lying wholly within the tropics. The people were all Malays originally but at some time in the middle ages the region was invaded by the Chinese and the descendants of these early conquerors now constitute about one-third of the population. In the sixteen hundreds, as the modern period began, the region was invaded by the Dutch and later by the English. The products of the country are tin, copra, tea, pineapples, and above all, rubber; these are all products which are produced by large corporations operating plantations or mines, and for these large numbers of laborers are required. Experience showed that the Malay could not be obtained in sufficient numbers for the plantations and that the Chinese organized their own corporations so the European planter was forced to import enormous numbers of Hindu laborers from Madras; many of these have remained, and,

in a very rough way, one may say that they constitute the final third of the population. As the Hindus were the principal plantation laborers, their health became a matter of dollars and cents to the planter, as it cost a considerable sum to import a Hindu from India to replace a dead laborer in the settlement. The common diseases were of course the usual ones, found in every climate, tuberculosis, venereal disease, tumors, etc., and more or less in epidemic form, beri-beri, leg ulcers, and malaria, with occasional outbreaks of smallpox, cholera and plague. The planters erected large hospitals manned with a considerable hospital staff, but even then the expense was so great that unhealthy plantations were abandoned because they did not pay. Improvements in diet were brought about through the studies of Stanton and Fletcher which resulted in the gradual elimination of beri-beri, so that at this time the disease is no longer seen, and as a result of the discoveries of Ross and the interest of Manson, control work in malaria was begun and carried through to a successful issue by Watson and his pupils. Their objective at first in malaria seems to have been merely the control of the disease, but their success in control was so great that the objective became eradication in the cities and among the plantation populations; as a consequence Watson and his successors have set a new and high ideal of malaria control in the Malay peninsula.

The third disease I have mentioned, tropical leg ulcers, still remains more or less a mystery, though where the plantations have been cleared of underbrush, the disease has diminished but not disappeared. We still remain ignorant of the true etiology and epidemiology of tropical leg ulcers.

As a result of such experiences today we know that by the use of public health methods many of the diseases of the tropics can be controlled, and in some cases, eliminated. This applies of course not merely to tropical but to all preventable diseases such as typhoid, dysentery, and cholera.

It would be interesting to learn how much opportunity there was in Manson's day in Formosa and Amoy and in Hong Kong, for preventive medicine and sanitation. Except for vaccination against smallpox, there was very little that one could do at that

time as the epidemiology of cholera, typhoid and dysentery were still unknown.

Manson was of course familiar with the sanitation program in England, but he expressed himself quite clearly on the difficulties of sanitating Chinese communities, and consequently seems to have taken no part in the meagre public health programs possible at that time.

However, in organizing the London School, he set up a department, although rather a minor one, dealing with tropical hygiene, and in it the practitioner learned what he could do in furthering public health control of epidemic diseases by quarantine, ship regulations, and measures for the protection of estate coolies and participants in the great religious pilgrimages of the East.

Until the amalgamation of the School of Tropical Medicine and Public Health in London in 1924, there was no real opportunity for the tropical man to study public health in its broader aspects.

So, in view of the past history of schools of tropical medicine, what should we set up as the ideal plan for the future? Each will have his own ideas of course but in my belief something like the following is desirable at this time:

The medical graduate of today is relatively so well trained that a new disease for study is a rich prize; he already knows the technique of physical and laboratory examination of his patients, he is reasonably familiar with diseases of the blood and of disturbances of metabolism, and knows more or less parasitology; in other words, he does not have to learn new techniques, as was the case in Manson's day, but uses methods from which he knows he can get quite rapidly the clinical picture of the exotic diseases, and even in the tropics, away from teachers, he will be reasonably competent in diagnosis and treatment. W. P. MacArthur, in a paper in the *British Medical Journal* of January 28, 1933, states the case very well when he says that "teaching clinical tropical medicine presents the fewest difficulties to the teacher, for this is merely an extension and elaboration of what the candidates already know. The determination of hepatic dullness is the same whether an enlargement is due to amoebic abscess or to biliary cirrhosis."



“A defective training in general medicine is a great handicap to those taking up the study of tropical medicine, and a sore trial to their teachers.” And I think we can all sympathize with Dr. MacArthur in this last statement.

The subject which the students' instruction may not cover is the prevention, the public health aspects, of tropical diseases, largely because he may not have had very much if any instruction in hygiene and public health in his medical course.

The combination of curative and preventive practice which confronts the medical man in the tropics indicates clearly that the student should have all training possible in hygiene and public health, subjects not adequately presented to undergraduate students.

To make the tropics healthy for Europeans and natives alike, tropical medicine, as a graduate subject, should be taught in close association with schools or departments of hygiene and public health.