TEACHING AND RESEARCH IN TROPICAL MEDICINE IN THE UNITED STATES*

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THERE is much disagreement over the definition of tropical medicine. In the narrow traditional sense it covers only those communicable diseases that are limited to the tropics. Tropical medicine has been defined as "ordinary medicine in the tropics," but I agree with Professor Brian G. Maegraith that it is not a useful or meaningful concept. For this discussion, "traditional tropical medicine" includes only those communicable diseases of high incidence in less developed countries and of low incidence in the developed countries. For clarity I use the phrase "international health" to refer to the broader problems of providing the benefits of modern medicine in less developed regions at prices they can afford. In reality, international health encompasses significantly more than evaluation of health problems and planning of health programs so that scarce resources will yield maximum benefits. Further, the need for health planning and evaluation is not restricted to less developed countries of the world.

In this presentation I hope to raise some controversial points to spur discussion and dialogue. Specifically, I should like to pose six questions about the teaching of traditional tropical medicine and international health in the United States, discuss their relevance, and comment upon their implications for future teaching programs.

First: is there a clear-cut need for competence in traditional clinical tropical medicine for all practitioners in the United States? If not, how many of our future physicians might need to be reasonably well versed in tropical medicine?

Second: is the United States the best place to teach tropical medicine? For example, is adequate clinical material available?

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Third: should the grand tradition of teaching tropical medicine here or in other developed countries be carried on if only for its own sake?

Fourth: should the United States maintain a cadre of experts in tropical medicine as insurance against possible disasters—ranging from the reintroduction of tropical epidemic disease to the need for protection of large numbers of men fighting in tropical countries?

Fifth: as educated men, should physicians be made cognizant of the vast gulf between the less developed world and the developed world in terms of the burden of disease and resources for health care? Do some concepts of international health have applicability for physicians of all countries?

Sixth: should medical schools present the planning and evaluation aspects of international health so that future doctors will understand what is needed to ensure maximum benefits from available resources of health care?

As for the first point, I feel strongly that we can reject the rationale that every physician in the United States requires training in traditional tropical medicine just because, once in his lifetime career, he might meet a case of malaria or some other tropical disease and misdiagnose or mismanage it. I am not moved by Professor Maegraith's alarm that there were 2,000 cases and 58 deaths from malaria during the past 15 years in Great Britain.[1] In the United States there were 27 malaria deaths in the past five years[2]—but there are also 60,000 deaths in the United States every year from automobile accidents. At least half of these deaths are preventable—probably 5,000 of them are preventable by improved medical care. As an example, in a recent study of deaths from abdominal injury in autmobile accidents, more than half might have been saved by proper medical attention.[3] Other examples of higher priority problems in the United States might also be mentioned. The point is that the "pay-off" for the United States—and no doubt for other developed countries as well—in terms of reducing unnecessary deaths does not lie in teaching the diagnosis and treatment of malaria, schistosomiasis, or hookworm.

More and more, medical educators are accepting the view that physicians do not retain knowledge about diseases which they do not see regularly; by extension, it is counterproductive for undergraduate medical education to attempt to provide a detailed presentation of all diseases which affect mankind.[4] Skills of any kind, including diagnostic or

therapeutic skills, are lost without practice. If a physician does not see patients with certain diseases on a reasonably regular basis, the lack of reinforcement permits him to forget the complex and varied manifestations of those diseases.[5, 6] All of us are familiar with a house-staff physician or private practitioner who has missed the diagnosis of a case of tuberculosis. We are not justified in expecting him to identify conditions he almost *never* sees, such as malaria (with one tenth the incidence of tuberculosis) or typhus (with one hundredth the incidence of tuberculosis).

There are a few, relatively very few, physicians in the United States (perhaps 4%) who will have a real need for more than a superficial knowledge of tropical medicine. Of the 311,000 physicians with addresses known to the American Medical Association, only some 10,000 are overseas; of these, perhaps 6,000 are in tropical countries.[7] Since overseas tours are usually not lifetime careers, particularly in the military, the number of doctors in the United States who will be exposed to tropical disease probably is double the number in tropical countries today. Perhaps their need for specific training in tropical medicine can best be met in specialized postgraduate centers. I shall return to this point later.

The second question—whether the United States is the best place to teach tropical medicine—is not difficult to answer. How often does one see acute smallpox, cholera, typhus, or other tropical diseases here? Several sources were used to estimate the incidence of "tropical" diseases in the United States. The *National Disease and Therapeutic Index* (NDTI) determines the number of physicians' visits by diagnosis on a sampling basis. In 1967 NDTI estimated total physicians' visits at 1.2 billion.[8] This figure tallies well with the total number of physicians' visits (just under 1 billion) determined by the National Center for Health Statistics *Health Interview Survey*, which has a far larger sampling base.[9, 10] The NDTI's estimate of visits for all infective and parasitic diseases was 24 million: that is, only about 2% of all physicians' visits in the United States. Most of the infective and parasitic disease visits are not for tropical diseases but for streptococcal sore throat, gonorrhea, hepatitis, and so forth. Among the traditional tropical diseases, helminthiasis accounted for 0.08% of physicians' visits, dysentery for 0.01% of physicians' visits, ankylostomiasis for 0.004%, brucellosis for 0.002%, schistosomiasis for 0.001%, typhus and other rickettsial diseases for 0.006%, and

malaria for 0.006%. These exceedingly low rates of physician visits for tropical diseases in the United States have been confirmed by the reported incidence of notifiable disease as recorded by the Communicable Disease Center of the U.S. Public Health Service,[11] taking underreporting into account. This low incidence of tropical disease (with the possible exception of a very few sites) makes the United States in general a rather poor place to teach traditional tropical medicine.

Finally, to say that no suitable laboratories or hospitals are available in the less developed countries to carry out the teaching of tropical medicine is to ignore the progress that has been made over the past few decades in creating and maintaining quite adequate centers in most of the major tropical nations of the world.

As to the third point: there is no denying that a great tradition of research and teaching of tropical medicine has been maintained in some developed countries.[12] There is also a great tradition of building extremely fast and sea-worthy clipper ships in my own hometown of Baltimore. I do question whether tradition should be continued merely for its own sake, after the major need for it has faded. Perhaps some better ways can be found to honor the tradition than inflicting 10,000 medical students a year with information that they will probably never use in their lifetimes.

The fourth point—on the need for a cadre of experts in traditional tropical medicine—is generally accepted. No major outbreaks of tropical disease have occurred recently in developed countries (the 1972 Yugoslavian smallpox epidemic can hardly be called major), but ever-increasing worldwide travel by air does not put such a disaster totally outside the realm of possibility. Several authors have noted the need for experts in tropical medicine in developed countries to handle the problem of returning servicemen or travelers.[13, 14] The maintenance in developed countries of several centers of excellence in the teaching and research of tropical medicine, then, is widely regarded as a wise form of insurance. In the United States one such center should be part of the Armed Forces, since one emergency that might create a sudden need for special training in tropical medicine would be a military adventure in some tropical, less developed country.

Of the 113 medical colleges listed for the United States and Canada in the *American Association of Medical Colleges Directory*, only three have independent departments of tropical medicine, while four have de-

partments of international health.[15] Perhaps this represents a trend toward broadening the scope of tropical medicine. (In schools of public health, there are three departments or programs of international health and two of tropical medicine.)

Dr. Kevin M. Cahill and others have called attention to the need for training in tropical medicine in developed countries,[16, 17] but these institutions are more frequently postgraduate institutions than undergraduate medical schools.[12, 18]

In response to the fifth question—whether all physicians should have some concept of the great variety of disease patterns and quality of life throughout the world—I believe that physicians in the developed countries should be aware of the magnitude of differences between their own relatively happy state and the state of misery, poverty, and illness that prevails in most of the developing world. This international orientation should not be centered on laboratory investigation or on diagnosis and treatment of clinical disease; rather it should be focused on the social, political, and economic consequences of the triad of ill health, poverty, and excess growth of population. These three areas should be given major attention in any academic program of international health or tropical medicine for medical students, for their ramifications are as relevant to some areas of the United States (and, no doubt, to some areas of other developed countries) as they are to tropical, less developed countries.

The sixth question—on broadening the concept of traditional tropical medicine to include the planning and evaluation elements of international health—is eloquently covered by Professor Maurice King's book *Medical Care in Developing Countries*, now in its sixth printing.[19] The extent of reader interest in Professor King's book lends authority to his views. For our purposes, what is omitted or given little attention in Professor King's book tells us as much about his priorities as what is included. Of 29 chapters, none is devoted to traditional tropical diseases; they are discussed only in passing as part of the chapter on pediatrics and as part of the chapter on laboratory techniques. Full chapters, however, are devoted to such topics as auxiliaries, the economics of care, the organization of health services, health centers, the under-fives clinics, malnutrition, and family planning. These areas are unquestionably of far greater potential for the improvement of health in less developed countries than the clinical aspects of tropical disease.

Much the same point can be made by reference to John Bryant's book *Health in the Developing World*,[20] in which the term tropical medicine does not even appear in the index. The practice of medicine in the tropics requires knowledge of far more than the diseases traditionally thought of as constituting the core of tropical medicine.

In conclusion: the teaching of detailed laboratory or clinical tropical medicine has little relevance today in most undergraduate medical schools in the United States, and probably the same is true for undergraduate medical schools of other developed countries as well. There continues to be a need, however, for teaching and research in selected institutions at the postgraduate level. Medical students in the United States should be taught to consider tropical disease in patients returning from overseas and to know where they might be referred. More important, students should be exposed to the new and broader concepts of tropical medicine and international health, such as extending scarce resources through the use of auxiliaries, regionalization, and systematic planning and improving health through better nutrition and family planning. These concepts are as applicable in much of the United States as they are in the less developed tropical countries of the world.

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