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PRESIDENTIAL ADDRESS

TROPICAL MEDICINE TODAY

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Introduction

To be the President of the Royal Society of Tropical Medicine and Hygiene is a
great honour. Thank you for electing me.

In my address tonight I am going to look at the title of the Society and try to define
what is meant by Tropical Medicine in the changing world of today.

McROBERT (1961) holds that the motto of the Society “Zonae torridae tutamen”
(the protection of the torrid zone) is not as presumptuous as it sounds, since the Fellows
have had much to do with increasing the expectation of life in the tropics and solving
some of the major secrets of the most dreaded diseases (GARNHAM, 1967). He points
out, however, that the countries of the “torrid” zone have in the last two decades under-
gone great political changes with the advent of independence and new nationalism, and
the associated demands on the more developed countries for help.

It is time we made an effort to define what our responsibilities are in this new world,
what we are doing about it and where we believe we are going. We have left it too long
to others, not as well qualified as we are, to make pronouncements on what is and what
is not “tropical medicine”, and we have unhappily accepted (or, by default, have appeared
to accept) their definitions and thereby have done ourselves little good.

What we are doing is well understood by the emergent world and by some of our
sophisticated neighbours. The picture is unaccountably blurred, however, in the
United Kingdom, where the “official” attitude often accepts current indefensible
definitions, which amount to two mutually exclusive propositions:

1. Tropical medicine is “ordinary” medicine in the tropics;

2. Tropical medicine is concerned mainly, if not entirely, with certain com-
municable diseases caused by parasites and other microbiological agents found in warm
countries where the environmental conditions allow the existence of vectors of the
infections and/or animal reservoirs.

Let us examine these definitions.

The first suggests that, apart from a few obvious parasitic infections, the medical
conditions met in the tropics are mere extensions and modifications of diseases still
present or recently controlled in the more developed world.

This is a cosy notion for general physicians who come to believe that the diseases
they see in the hospitals they visit abroad and listed in the statistics of the national
medical reports (if any) are little different from those at home. They do not seem to
appreciate that local hospitals are filled with highly selected populations. Even in the
established medical schools of the tropics hospital figures are unreliable in this respect. Anyone who has seen the milling crowds in the out-patients department of a big tropical hospital and has subsequently walked the wards will realize the selection that goes on. This can easily lead to the wrong stress in teaching, as one physician fills his beds with heart cases and another with middle-aged diabetics and no-one concentrates on the parasitic and helminth infections, the nutritional disorders and the trivia which bring most of the people to the out-patients clinic to seek help.

The truth is that hospital medicine, which represents selectivity at its worst, is not a true picture of the medical situation in any country, even though the available statistics sometimes suggest that it is.

Thus, the exponents of the "ordinary medicine" theory may quote the statement made in a recent American survey (based largely on hospital figures and statistics culled from annual medical reports) that the first ten diseases—the "big ten"—in the countries studied (covering the Caribbean, South and Central America, Africa, South-west, South and South-east Asia and Oceania) are tuberculosis, nutritional deficiencies, cholera, bacillary dysentery, pneumonia, measles, whooping cough and amoebic dysentery—only four of which, under any stretch of definition, could be regarded as essentially "tropical" (Tropical Health, 1962). They will point to the rising incidence of hypertension in Africa, the frequency of middle-age diabetes in India, the importance of duodenal ulcer and mental stress arising from the changing conditions in emergent countries.

And they will say that these are the problems of the tropics; these are the things that money should be spent on. Then they will demand that experts in these problems be sent to deal with them on the spot.

But this will not touch the root problem of the emergent countries, in which 90% of the population live in rural districts where the people have no representation in the statistics of the hospital beds in the town and cities, but drag out their lives under threat of the great endemic infections and the malnutrition inseparable from their current miserable standards of living.

The doctor who believes that tropical medicine is merely ordinary medicine in the tropics, even if translated into different races and environments, practises the expertise he has acquired at home. He sees no need for expertise in "tropical medicine" (which he does not recognize) and says so. This attitude is all too frequently accepted by the local government and profession and the real situation in the countryside remains neglected.

This negative approach, besides ignoring the major disease problems of the vast mass of the people, is clearly bad from the point of view of training local doctors and auxiliaries and particularly so when such teaching is taken over even temporarily by expatriates imbued with the same notion. The attitude is also bad because it often leads to the deflection of the energies and funds of well-meaning developed countries to totally unneeded and unproductive (at any rate so far as the community is concerned) activities, or to the purchase of prestige material, complicated, expensive and difficult to maintain (McRobert, 1961). This not only deviates money to the wrong objectives; it takes the attention, and the money, from the real problems of the community.

The situation is nicely summarized by Weller (1961).

"The magnitude, importance and nature of the challenge posed the health professions by the mass misery of peoples in the developing areas of the world are insufficiently appreciated. The ignorance of such matters by educators and scientists is attributable in part to the peculiar intellectual provincialism and specialism characteristic of the present time."
The idea that tropical medicine is primarily concerned with a circumscribed group of infections which depend largely on local circumstances and environment for their transmission is equally unacceptable. It is too narrow a concept, even in regard to the diseases, such as malaria or schistosomiasis caused by parasites which pass through life cycles outside man in specific vectors or animal reservoirs.

One reason why these diseases have dominated the interest of those concerned in tropical disease is that so much emphasis has been placed on communicable diseases over the last 50-60 years, largely, as Macdonald (1965) pointed out, because of the early and remarkable returns their study brought to the endemic world in terms of control measures. This emphasis is reasonable, since communicable diseases (including some of the "ordinary" infections discussed above) are extremely widespread in the tropical world, far more so than in the sophisticated world, and represent, with the spectrum of nutritional deficiencies and disturbances, the bulk of the illness of the rural communities.

There are other factors which single out diseases occurring in the tropics from those in the developed temperate areas, even when the same medical condition is under discussion.

These are the special circumstances in which the diseases exist, the poverty, dirt and low living standards of the communities, resembling in these respects the conditions in Europe in the 19th century and earlier (Wilcock, 1963). There is the constantly warm or seasonally warm environment which allows the existence of the specific vectors, be they mosquitoes or snails, and reservoir hosts. Again, man is the only creature who can alter and radically change his own ecology and the existence and persistence of disease in a community may often depend on this (Maegraith, 1969). The disease situation in the community is further influenced by the sanitary standards, the background of malnutrition and overall shortage of protein, the agricultural and veterinary products available and the standards of education, particularly health education.

Thus, modern tropical medicine is a multidisciplinary subject which takes into account the whole picture of disease in the community and environment. The social and economic conditions are equally involved, for "it cannot be entirely accidental that a low per capita income coincides with high mortality and morbidity and a low life expectancy" (Tropical Health, 1962).

I have used the words "tropics" and "tropical" loosely because the history of "tropical medicine" has been concerned mainly with the problems of warm environments. It is appreciated, of course, that many of the countries in which the relevant diseases occur lie outside the geographical tropics, and that the same conditions of environment and bad sanitation exist in certain temperate areas. The common factor is poverty and this must be included in any assessment of disease and medical care (King, 1966).

Up to this point, we have considered the definition of "tropical medicine" in terms of the diseases as such and the practice of medicine in certain areas where communal poverty and low standards of living are basic facts of existence. Examination of the matter in terms of disease prevention and control even more clearly exposes the fallacy of the view that tropical medicine is merely "ordinary" medicine in the tropics.

The major problems of the doctor practising in the developing countries are the care and prevention of disease not only in the sick individual but in the community. This, indeed, was the concern of "ordinary" medicine in the 19th century in Europe, before the modern concentration on the care of the individual developed (Wilcock, 1963). Thus, the balance of curative and preventive medicine differs from that in the sophisticated world, where the weight falls on the former. Tropical medicine is more concerned with the community and therefore with the whole natural history of the people...
and the disease and with the factors that affect their interaction, such as the nature and stability of the environment, the social variants and the nutritional potential and status.

In summary, I think we can say that "tropical medicine" covers a wide area of knowledge and medical practice of basic importance to mankind, particularly in the presently emergent overcrowded and poverty-ridden parts of the world, largely in the warm regions, but also in certain temperate areas. To some extent it deals with diseases similar to those in temperate areas but existing under different social and environmental conditions. It is true that most diseases of temperate countries may be found in the tropical and emerging countries, but, as MacDonald (1965) points out, the reverse (apart from imported conditions) is not the case.

Tropical medicine is more concerned with communicable diseases, some recently retreated from the sophisticated world because of improved standards of living and sanitation, others caused by specific parasites and microbial agents many of which depend for transmission on local vectors and/or local animal reservoirs. It is involved in the medical problems of the emergent countries, with their rapid political social and economic changes, and people exposed to poverty and low standards of living and education, and is thus concerned with the control of disease and its medical and social consequences, including rising standards of living and associated population pressure. In the developed world it plays an important role in regard to imported disease (see later).

Certainly, tropical medicine is a very special discipline and requires expertise for its practice. "Experience, ability and even distinction within the temperate field are not alone enough to qualify for competence in tropical medicine and hygiene" (MacDonald, 1965).

Let us see what we are doing about it and where we are going.

The canvas is too broad for detailed study. I will confine my remarks mostly to the work in which the Schools and Institutes of Tropical Medicine and Hygiene (better called "health") and similar organizations are engaged. I regret I cannot refer more than very briefly to some of the government projects offered as part of overall help to emerging countries, or to the specialized contributions made by national bodies such as the Medical Research Council in the U.K. (largely through the Tropical Medicine Research Board), private organizations such as missions, and international organizations such as WHO and FAO.

It is not too difficult to trace the development of tropical medicine as such in Europe, since the idea of creating organizations devoted to the teaching and study of the subject came very late, considering the size of the colonial empires of the period. It began with an appeal by the then Colonial Secretary, Mr. Joseph Chamberlain, for the creation of a centre in Britain devoted to the teaching of the diseases of hot climates to doctors destined for the colonies. This appeal led to the foundation of the Liverpool School in 1898, followed a few months later by the London School and, shortly after the turn of the century, by an Institute in Brussels, later transferred to Antwerp. Many other Institutes followed. Today there are some 20 in Europe and Western U.S.S.R. The idea also spread quickly to the tropics themselves, with the founding of the Institute for Medical Research in Kuala Lumpur in 1900.

The original Prospectus of the Liverpool School of Tropical Medicine issued in 1900, gave as the objects of the School: (i) to train men in the special subject of tropical diseases (women were admitted in 1901); (ii) to promote research into tropical diseases, and (iii) to organize preventive measures in the tropics against disease (this was inspired by a Memoir by Ross (1900) on malaria control, published the same year). The fourth objective (for some reason omitted from the Prospectus) was the clinical care of patients suffering from tropical disease.
Today the objectives of the Schools and Institutes of Tropical Medicine the world over are much the same, but the approach has changed considerably, as we shall see.

Teaching

Teaching in the Schools is no longer concentrated on doctors destined for the colonies. The colonies are mostly gone and the doctors who come to study are largely from the independent and emerging countries which have stemmed from them.

Many other teaching responsibilities have appeared with the changing political scene. Emergent countries are increasingly involved in training their own doctors and auxiliaries. Medical Schools, Teaching and Research Institutes and Training Colleges are appearing in increasing numbers in the tropics. Most of these require some help in foundation or in development and, in their own special field, the burden of this is falling squarely on the Schools of Tropical Medicine with their limited staffs and financial resources. This is bringing new problems of syllabus and organization, some of which I shall deal with later.

Postgraduate teaching

The need for short courses in tropical medicine leading to a Diploma in Tropical Medicine and Hygiene has recently been questioned. In my view they are necessary and will remain so.

In Liverpool we hold that these Diploma courses must not be regarded as specialist postgraduate instruction but merely represent a means of providing the minimum information needed for doctors who intend to work in the tropics. They are designed to fill in the gaps in the standard undergraduate curriculum. It is incredible that such education should still be needed, but the fact is that training medical students in many emerging countries has been and still is aimed at producing the "basic" doctor in the European or American image. This is done without regard to local endemic and public health problems and the need to provide a doctor who can deal with the local situation; who can confine an outbreak of typhoid in a village or assist intelligently in the health planning of national developments.

When the local teaching programmes for medical students are eventually adjusted to give fair coverage of endemic disease and at the same time keep the teaching of "basic" medicine to an acceptable standard, the present short D.T.M. & H. courses will have outlived their usefulness and can be replaced by others designed to produce specialists.

Of course, some specialists are needed now. It is largely a matter of priorities. In Liverpool, with our limited resources, we believe we are at the moment better occupied in teaching general duties doctors to practise in the tropics. In London both fields are covered; the one-year course for the Diploma in Clinical Tropical Medicine aims at producing specialist physicians.

 Provision of basic courses in specific fields is a vital way in which the developed countries can help the under-developed build up their essential medical personnel. Implicit in the success of such courses will be their acceptance by the emergent world as qualifying the individuals concerned for the particular speciality.

 A good example is training in Public Health. The old idea, dating from colonial days, that a health officer (so often distinguished officially from a clinical officer—a blundering and unnecessary distinction if there ever was one) must have a Diploma in Public Health is now out-of-date. The D.P.H. as at present taught in the U.K. is designed to train medical officers of health for Britain. In some quarters it is thought to be inefficient even for this, and has been superseded by other programmes. It is of
no great use in emerging countries. This view is held throughout Europe, where it is generally recognized that the classical education in public health offered by industrialized countries is not adapted to conditions in the tropics, and to be of any value would need very considerable revision and additions (Annual Report, 1969). The course does not deal adequately with the basic problems of endemic diseases and community medicine or with local preventive medicine, population pressure, and allied matters essential for the health officer of the tropics or the emerging country. Nevertheless, at the moment, most of the student places are filled by overseas doctors.

Attempts to give the old D.P.H. a new look by offering elective courses in tropical hygiene have not been highly successful. Something new is needed. London has met the challenge by introducing a Diploma in Tropical Public Health, which deals with these things. This Diploma is not registrable, but it is doubtful whether this is any longer of great importance, with the dissolution of empires and upsurge of nationalism. The D.T.P.H. is deservedly very popular because it is an attempt to teach the students what they really should know.

The principles which should govern postgraduate teaching of doctors from the tropics by developed countries are illustrated in the comments recently made by the Overseas Committee of the British Paediatric Association (see also the Royal Commission on Medical Education, 1968). This body pointed out that provision of trained paediatric staff for the developing countries (in which the medical services and teaching facilities are usually restricted more by lack of adequately qualified personnel than by inadequate funds) must remain for some time the responsibility of the more sophisticated world. Teaching must be designed to cover the special needs of children in the tropics. The existing training offered in the U.K. for paediatricians from emerging countries is not sufficiently attuned to tropical needs, partly because of the influence of the Royal Colleges and the resulting race for a Membership as an essential qualification for specialist medical practice of any kind. Technical instruction should be more effective than this and appropriate bodies in the developed world should devise more suitable courses of training. The School in Liverpool and the University Department of Child Health, have therefore designed a new approach to the training of paediatricians from overseas, by providing a course which combines clinical paediatric practice with instruction in communicable endemic disease, preventive medicine and public health.

So far we have been discussing the training in the developed countries of postgraduate doctors from the emergent areas. We must for a moment look at the ways in which these latter countries can help themselves in this respect.

The most important factor here is the ultimate production in the emerging world (the Third World, as some would have it) of properly oriented doctors. Such graduates would enormously lessen the load carried by the local public health services. Even so, specialists would still be needed and the prohibitive expense of having them instructed abroad (often in the wrong things) and the appalling shortages that exist, emphasize the importance of developing local training.

This can be done in many ways. One solution is the promotion of Institutes dedicated to the teaching and study of public health, endemic disease and preventive medicine. At one extreme this may be achieved by “mothering” by some organization from the developed world which for a time would take over the major functions and train local personnel. At the other, the programme may be begun, carried out and maintained by the local people, with background advice and help from experts from abroad. The latter arrangement is better, since it breeds national confidence and self reliance from the start and leads more often to the development of an organization truly adapted
to the needs of the country. Success depends on the local people available and, in my experience, if there is only one really good reliable man on the ground, that is enough.

**Undergraduate training**

The saddest thing about medical undergraduate training in the emergent countries is that medical schools are regarded as prestige symbols and may appear without particular regard to local standards, even of secondary education.

Looking over the medical schools which have been created in the past, the striking thing is the common patterns of development and the usually standard types of instruction. The earlier schools, as in India, the Sudan and Thailand, were intended to provide badly needed doctors for local consumption, without too much regard for international recognition. A very few were built with the intention of turning out from the beginning a product who could hold his own with anyone in basic medicine. Most cut their courses to size, with perhaps a view to eventual recognition by some overseas body for the purpose of subsequent postgraduate qualification. In the early stages, these schools produced good local doctors well instructed in local diseases and health and often trained by members of the local government medical services, who had had personal experience of local conditions. Unfortunately, when some of these schools became upgraded and offered a medical degree, the emphasis on recognition by overseas bodies, such as the British General Medical Council, became so exaggerated that the training programmes were fitted as closely as possible to those of the sophisticated countries. Gradually the stress on local conditions and the emphasis on preventive medicine and public health became lost in a curriculum taught by professional teachers who lacked local practical experience. The graduate thus became a good “basic” doctor, no doubt useful in the local hospitals but nevertheless of little real immediate value to the essentially rural populations.

Unfortunately, this type of programme has persisted and has often been adopted by the medical schools founded since World War II.

This is quite wrong but we can do something to correct it.

Where medical schools do not exist, the primary problem is to educate the doctors working in the country, all of whom have had their medical training abroad, mostly in industrialized or otherwise developed countries, and so lack even an elementary knowledge of local endemic disease and rural public health.

The education of such expatriate doctors was the primary intention of the National Institute for Health in Ghana a decade ago. I would ask you to note that this Institute was created in Ghana before the medical school.

It was hoped that putting the postgraduate cart before the undergraduate horse would solve the problem of training the imported doctors, and also guide and train the future teachers of the proposed medical school in what should be eventually taught to medical students. The research side of the Institute was to have provided the necessary continuous and organized study of the natural history of the endemic diseases of Ghana.

These developments in Ghana were underpinned by the Liverpool School, and I think the whole operation represents an example of the way in which a developed country can and should help an emerging nation when asked to do so. Ghana now has a fine medical school with a curriculum well tuned to the endemic problems of the country and to preventive medicine and public health. It is producing well qualified “basic” doctors at international standard who are also capable of dealing with the ills and difficulties of the population in the rural areas. This should be the aim of all medical schools in the emergent world.
This is a sound approach, so long as the secondary education of the country concerned is geared to provide the students, as it is in Thailand. In other countries, especially in Africa, the problem sometimes is to find enough students with adequate secondary education.

Now let us look at the situation in which medical schools are developing and where it is vitally important that the curriculum is adjusted to the diseases of the country from the beginning, or before it is too late.

Such a situation existed a decade ago in Western Nigeria.

When I first went to Ibadan I found the curriculum was largely a replica of that taught in one of the medical schools in London. It contained little about endemic disease and public health, since the British programme was designed for students who would practise in areas where the water was clean and sewage disposal was a matter of plumbing. This was a profound mistake because, in West Africa of all places, the need is for doctors who can understand the medical care and health problems of a population over 85% rural.

To plan training to deal with rural medicine it was necessary to obtain evidence of the situation existing in the country, since teaching of endemic disease and allied preventive and social medicine must be based on a knowledge of what is going on in the community. This information was lacking. Apart from the Rockefeller studies in Qaliub in Egypt, there was no authoritative account of the details of life in a village community in Africa. This had been pointed out in the Harrar Report (1958):

"... (in) Africa, the outstanding obstacle to a rational approach to disease control is the complete absence of valid statistical data relating to the African population, and describing its distribution, birth rates, death rates and incidence of disease in terms of mortality and morbidity. Before any plan for control of disease in Africa can be soundly formulated, it will be necessary to establish studies to secure substantial data on actual incidence of disease in both rural and urban areas."

For this purpose a village (Akufo) was chosen some 12 miles from the new teaching hospital at Ibadan and, over the next four years, was studied in depth by Gilles (1964) then lecturer-in-large in Liverpool (an invention which enabled the School to send a senior person anywhere in the tropical world at its own expense). The disease and genetic patterns were worked out and family relations studied, marketing, agriculture, food and diet, population movement, and so on were catalogued and dissected and eventually a picture emerged of how a Yoruba village worked.

This was the kind of environment in which the general practitioners of Nigeria, presumably to be trained in Ibadan and other medical schools as they developed, would eventually have to work. The local curriculum obviously needed modification to adjust to this. After discussion with the Faculty and largely through the eventual enthusiastic approach of Professor Alexander ("Sandy") Brown, the point was taken and, with the help of seconded lecturers from the Liverpool and London Schools of Tropical Medicine, a Centre was established at Igbo-Ora, some 60 miles from the medical school in Ibadan, where the students could receive training in rural medicine and public health. The Rockefeller Foundation generously financed the major programme and the present Ibarapa Project was developed. Here the medical students, at the same time as being trained in basic medicine, now spend part of their time studying disease as the rural people and doctors see it and, equally important, come into contact with the medical services provided by the Government (Ibarapa Project, 1965).

The idea of providing rural training such as this is not altogether new. It has been tried successfully in Cali, in Durban, Salisbury and Kampala, and is being developed...
in Accra, Lagos and Zaria. I have referred specifically to Ibadan because I was associated with the developments from the beginning.

The Schools in developed countries can also help in medical undergraduate teaching in the emergent world by providing opportunities for the training at home or abroad of indigenous teachers at all stages of the curriculum.

I cannot here enlarge on this point, except to stress the especial importance of training teachers at the preclinical level. This area is one of the most difficult in the development of the medical schools in the emergent countries. Teachers in anatomy, in physiology, biochemistry are extremely difficult to find and harder still to entice to the tropics. It is most important that this deficiency should be remedied. An example of how this can be done is the combined operation of the Rockefeller Foundation and the Thai Government in Bangkok. By the development of teaching programmes in these subjects in the Faculty of Medical Sciences, tomorrow's teachers are being created on the spot (Rockefeller Foundation, 1968).

In the schools in Bangkok a decade ago the teaching of preventive medicine and public health was relegated to a junior member of the Department of Medicine. The hours spent on teaching endemic disease (called "tropical medicine" in Bangkok) were ludicrously few. The emphasis was on teaching basic medicine and surgery that would satisfy the United States and Europe.

Attempts were made to change this curriculum so that it dealt adequately with endemic diseases and with preventive medicine and public health. Some success was eventually achieved, primarily because of the development in Bangkok of the Faculty of Tropical Medicine, in which emphasis is fully given to endemic disease and prevention. The idea was to provide in this Faculty a course of training which would cover, at any rate for a few postgraduate doctors, the material the ordinary undergraduate curriculum lacked. It was realized of course, that the scale of operations was too small to have much direct effect, but, in the event, the objective was partly achieved by using senior staff from the medical schools as teachers in the postgraduate school in order to allow the young men who had joined the new Faculty to go abroad for training. In preventive medicine in particular this has been a success, since the teacher concerned, who is also responsible for teaching public health to undergraduates, has become deeply interested in field work. He has learned that the man who is sick with malaria or with leptospirosis cannot plant or harvest his rice and that his family suffers accordingly. This living view of social medicine has been transmitted to his undergraduate students who have discovered that public health is both interesting and important. Moreover, this teacher has not lost touch with clinical medicine (which always has the greatest appeal to a student audience). Let me take you on one of his ward rounds: He stops by a jaundiced patient with a palpable liver and asks—What is the first question you would ask this man? The answer is—Which part of the country do you come from? The reason for this is that the patient comes from the N.E., where he has been infected with the liver fluke *Opisthorchis*. Then follows a discussion not so much on the disease itself but on why and how this patient and four million others in that area have become infected; how such infection affects him and his family and the local economy and how it can be prevented. This is the way I believe the preventive angles of communicable disease should be taught.

A popular method of help is the "adoption" of a new medical school in an emergent nation by a University or medical school in a developed country which seconds teachers over the formative years. In one way or another, this "mothering" of new institutions in the tropics has been going on for many years; it was in fact begun in the colonial days. Recently, it has been practised by the University of Southern California in Indonesia, the University of Illinois in Thailand, the University of Glasgow in Kenya and the
University of Edinburgh in India. It is one of the surest ways of building up a medical curriculum which will satisfy the standards of the developed world. It is also, as I see it, one of the surest ways of producing the wrong kind of doctor for the relevant country. Too often, the seconded personnel are imbued with the idea that they are really dealing with ordinary medicine in the tropics and, because the teaching conforms with this notion, the student is given the wrong approach and is turned away from the real medical and health problems of his country.

There is, nevertheless, an increasing demand for this form of aid as medical schools of all calibres mushroom in the emergent world.

The alternative is to use the local talent as much as possible from the beginning, with the introduction of the absolute minimal amount of outside advice and personnel. This applies especially to certain areas of knowledge and instruction, notably endemic disease and public health, for the teaching of which guide lines can be laid down by individuals or small groups on secondment. The latter often come from a University or medical school, or work on contract for international organizations, such as the World Health Organization.

There are many examples of the success of this method in the new medical schools of the developing countries. I prefer it because it leads to better national self respect and pride in achievement and because it often happens that, with the best will in the world, "mothering" institutions are not the right people for the job. An unrealistic approach relying on over-sophisticated machinery may be entrenched before it is realized. The essential aim must always be to graduate doctors well trained in local medicine and health. It is no use turning out half-scientists who have been taught to rely on diagnostic laboratory techniques and other sophisticated skills which do not exist in the country.

There are great advantages in the development of links between organizations and individuals in developed countries and the growing medical school in the tropics, since continuity is extremely important in such ventures. Once the local doctors have taken over, which should occur as soon as possible, the expertise acquired by the overseas consultants and advisers is invariably in great demand in other parts of the same country or in other countries, and, in this way a relatively small group of people, such as the staffs of the European Schools, can cover a surprisingly wide area of operations.

For a long while to come the production of doctors in the tropics will fall far short of the numbers required. It is probably unwise to calculate the needs in terms of doctor: patient ratio, since in rural countries the problems of community medicine are adamant and are essentially preventive and public health. Nevertheless, in any assessment, the medical help available in the average emergent country is hopelessly small, and there will be too few doctors for generations. The alternative is to have auxiliaries, even though these carry nothing like the prestige of the doctor.

In this field, in terms of advice and practical training, the help of the developed world can be very rewarding.

Auxiliaries can be created in a number of ways. They can be trained by the local Ministries, usually on patterns laid down by expatriate officers or by local individuals trained in Europe. One of the outstanding examples of a successful operation of this kind has been the training of medical assistants in Kenya.

An alternative is the development, with the collaboration of the local government, of training centres in the emergent territories by outside organizations. The establishment of the training school at Ifakara in Tanzania by the Swiss Institute for Tropical Medicine is a case in point.
There are other similar aid programmes, some of which are more ambitious and provide for fully established schools and colleges. In many of them, however, there is one important factor missing. Eventually, whatever training methods are adopted, the auxiliaries will have to work with the medical staff. The sooner the two groups become used to the idea of common service the better and there is thus much to be said for linking the training of auxiliaries and of doctors. This is being done in Zaria, Northern Nigeria, where the Institute of Health trains medical auxiliaries under the aegis of the developing medical school. The latter has thus accepted responsibility for training all medical personnel, so facilitating the necessary integration between the doctors and the auxiliaries. This may well turn out to be important practical psychology.

Training auxiliaries in Europe is naturally limited by the type of students and the numbers involved. There is no doubt that auxiliaries needed for general duties must be produced in adequate numbers on the spot. It would be outrageously expensive and basically inefficient to send them abroad for training, except for special categories. The latter include the higher grades of nurses and laboratory technicians, for whom courses of instruction are given in all the main centres in Europe.

A point of some contention is when to train auxiliaries and when to train doctors and specialists. How can limited funds and resources best be used for the production of the most needed personnel?

The answer depends on the circumstances. In the ordinary course of events, the emergent country is commonly prepared to spend a great deal of money on building up a prestigious medical school at the expense of producing auxiliaries, although it is perfectly well known that the output of doctors for many years will not touch the needs of the medical service. I think most people would agree that this is not a wise decision, even if politically a natural one. Equally unwise in my view is the opposite extreme, when all resources are put into producing public health auxiliaries, without first deciding what they should do. Such ventures are often based on the idea that the mere implementation of what is already known would greatly improve the health and living conditions of emerging peoples. Few would deny this, but progress in this direction is limited by the big gaps in the existing knowledge of the natural history, epidemiology and even clinical patterns of many of the major regionally wide endemic diseases and of the impact of disease on populations exposed to environmental changes induced by socio-economic development.

Relevant information has therefore to be collected, studied and ultimately applied. Without it, adequate control or eradication of some of the endemic diseases will not be possible. Insecticide resistance and drug resistance in malaria illustrate how the picture can change and control plans become threatened, even in a disease which is fairly well understood, and how, consequently, control must be dependent on the availability of scientists who can study and deal with the new situations when they arise.

Public health services in their present state of knowledge cannot therefore adequately cope with many endemic diseases until scientists have provided the knowledge and techniques required. It follows that in developing countries there must always be available some training for personnel at the highest level.

This is a field in which aid from developed countries, in training scientists and technologists either in their own country or in Europe, should be given freely. The full value of such help will become evident only if it is given for the major purpose of solving the problems of endemic disease in as practical a way as possible.
Research and advice

The luxuries of highly scientific fundamental research should for the time being normally remain the preserve of the developed countries. Research in the tropics should be essentially pragmatic, aimed at studying the immediate problems of community health, endemic disease and malnutrition. Such problems will not be solved in some small back room in an ivory tower. They must be tackled in the field by people qualified to do so.

The basic difficulty any emergent country has to face in this respect is shortage of technically or administratively trained personnel.

It behoves the more developed countries to help by providing training for nationals of the developing territories (FRYE, 1962). This presupposes that the former have teachers of their own with the necessary experience. Unfortunately, such personnel are invariably in short supply and therefore any country seriously intending to help must provide training for its own people at home and offer them opportunities to visit and work in the tropics.

A great deal is already being done in this respect in the developed world, where young people from emerging countries are being trained as scientists. However, my experience is that such students are often trained in too rare an atmosphere, and tend to be out of touch with reality when they return home, since, unless something has been prepared for them, the young scientists lose momentum and become frustrated when they find no opportunities or facilities for continuing their work. The establishment of some local organization oriented to research in endemic problems is very useful in this respect.

The Faculty of Tropical Medicine in Bangkok was built on such a basis. From the beginning it has functioned as a wholly Thai Institute run by Thais and paid for by the Thai Government. Help from outside has come at a personal level or in the form of grants for specific research projects. An alternative would have been to develop an Institute “mothered” in the same way as some medical schools are receiving help. I believe the former approach is right, for the reasons I have mentioned above. The developed country should help where it can and where it is asked to, but the major effort should always be left to the nationals (MAEGRATH, 1959, 1961, 1963, Faculty Report, 1968).

The success of such operations is very much a matter of persons and personalities and in many respects the unattached organizations, such as the U.K. schools, are better suited than governments to carry out the work, especially where continuity of personal contact is essential (a point often overlooked by governments).

When successful organizations of this type are established they rapidly become centres of all kinds of activity related to the study of the national endemic health problems. They become teaching centres for postgraduates and often for auxiliaries. As such, they do an immense amount of local good, especially if they work closely with local ministries of health and other relevant bodies. But their influence should not end there. Their development offers a great opportunity for regional collaboration.

Doctors can work together when politicians cannot.

In this world any chance of such collaboration is welcome. South-east Asia has taken a lead in this respect. Four years ago I joined a fact-finding task force organized by USAID to examine ways and means of getting collective effort on the medical problems of the emergent countries bordering the South China Sea (SEAMES, 1966-7).

The problem was how to get these nations to cooperate. The answer was the suggestion made to the South-east Asian Ministers of Education Council (SEAMEC) that each country should develop an independent organization, which could act as a centre
for the study of its own endemic diseases and diseases of common interest to contiguous
countries. In this way the national centres would make valuable contributions to the
endemic and health problems of the region, and the creation of one large centre in one
place (which, because of the nature of the problems and their distribution, could never
function efficiently) would be avoided.

The national centres have been created and are now coordinated through a Board
administered in Bangkok by Professor Chamlong Harinasuta, the Dean of the Faculty
of Tropical Medicine.

Regional medical collaboration involving Laos, Thailand, Malaysia, Singapore,
Indonesia, the Philippines and South Vietnam has thus become a reality. The future
will depend on continuing finance. So far, the burden has fallen largely on USAID,
with contributions from other governments. In a few years the local member countries
will finance the scheme themselves, with help from outside governments as aid on a
regional or bilateral basis. (I wonder why the former is so much more difficult to get?)

An immense amount of good will is already coming from this regional plan. I
believe the idea should be developed in other parts of the world, for instance, in areas of
Africa.

Regions of this size, with common problems, are capable of useful development.
Anything at global level, such as The International College of Tropical Medicine pro-
posed recently in Uganda, seems to me to be unrealistic. In passing, it is worth noting
that the World Health Organization has split itself into Regions.

One immediate good thing that has come from this SEAMEC adventure has been
the development of international centres for teaching and training in the member states.
In Bangkok the Diploma in Tropical Medicine, taught for seven years in Thai, is now
offered in English and has already attracted students from five of the member countries
(paid for by scholarships from the central fund) and from elsewhere, including Europe.
Thailand in 1970 will also provide teaching programmes for Lao auxiliary nurses and
laboratory technicians. Students from member countries are also studying Public
Health in Manila, and will soon be offered Nutrition in Djakarta, Public Health in Sing-
apore (with special reference to urbanization in the tropics and to family planning),
and a much-needed course of training for entomologists and parasitologists in Kuala
Lumpur.

These are all important educational developments which are spreading information
on local problems of major importance to the region.

**Socio-economic developments**

Today the Schools in the developed world operate largely in an advisory capacity
in regard to preventive measures and public health in the emergent countries. Almost
all the countries with which we are concerned are emergent. All of them at some level
or other have plans for extensive socio-economic developments which will affect the
current and future health of large communities or even of the whole population.

The situation will be influenced by demographic factors, movements of labour
forces and the development of resettlement areas. It will be dependent on existing
endemic diseases, their prevalence, incidence, mode of transmission, the possibilities
opened up for increased transmission by the collection of the labour population and its
followers, changes in the ecology of the reservoir hosts or vectors, the relationship
between the labour force and the local community and so forth.

The medical problems of such schemes are considerable, and yet the major decisions
in planning—where and when to build a dam, what to irrigate with the overspill, where to
build new roads and new markets—are made by people who are not concerned or interested in biomedical problems. Consequently, unless the health aspects have been included from the beginning, the socio-economic development may well become a menace to health not only in the building areas but in the contiguous population.

This is opposed to the basic idea cherished by so many economists that socio-economic “progress” will inevitably lead to better health. This is no more an axiom than the view of educationalists that improved education in itself will lead to better economic development and health or the belief of health workers that without health neither economic development nor education will flourish. There is some truth in all of these statements, but in the total situation the economic, medical, health, educational and social aspects must be considered together.

The problem from the point of view of those concerned with tropical medicine is to convince the planners that health aspects must be included at all stages of major socio-economic developments as an integral part of the complex organization of the planning. Otherwise, there can be no vigorous economic growth. This has been discussed elsewhere and in general it has been agreed that factual analysis of the medical situation is essential before an estimate can be made of the advantages in increased economic output likely to come from a given expenditure on health (Maegraith, 1968). It has truly been said that a healthy economy demands a healthy community.

This is another area in which help can be given to the emergent world and in which the combined “capital of knowledge” in the sophisticated world can be of great benefit when put to proper use (Bates, 1966).

When socio-economic programmes are promoted in the absence or, as sometimes happens, in contempt of medical estimates and advice, the results can be disastrous. Try to estimate in terms of human suffering (or in dollars, if you prefer it) the loss engendered by schistosomiasis in the cotton-growing irrigation areas of the Gezira and in the resettlement areas of Khashm El Girba in the Sudan, the human and financial loss caused by the same disease in Egypt. Look at the present set back to the Nam Ngum dam in Laos, being built by Japanese contractors who were not warned of the dangers of malaria and took no precautions and were consequently decimated by the disease. Such things can be prevented (politics permitting) only by planning which includes the medical aspects from the beginning. It is part of our responsibility to make the planners aware of this.

### The care of the sick

The principal clinical duty of the Schools of Tropical Medicine when they were first founded was the care of the sick returning from the tropics, a purpose for which beds in Britain had earlier been set aside during the Ashanti wars.

This duty continues today in very different circumstances. The ship has given way to the aeroplane and movement to and from temperate and hot areas of the world is very much greater and faster than it was even a decade ago. Consequently, the type of patient catered for has changed. We are not now concerned mainly with small groups of people dedicated to long-term work in the tropics or at sea; we are concerned with all who travel to areas in the world where the major communicable diseases are endemic.

Jets fly half way round the world in a fraction of the incubation period of the major infectious diseases, with the consequence that the public health barriers in the ports, once so effective in controlling the introduction of communicable diseases, have broken down. Movements of people in and out of Europe have increased fantastically in volume and speed, and in any important central airport can be measured in tens of millions.
The figures for travellers are enormous and growing. So are those for immigrants from the poor world to the rich; millions have moved into Western Europe in the last few years.

The overall effect is that the importation of disease into Europe is rapidly increasing. Where this concerns the diseases we classify as tropical (and in some respects I would include pulmonary tuberculosis in the group, at any rate as an “imported” disease) we clearly have a major responsibility.

In the clinics of the tropical Schools we are well aware of the risks of the importation of disease, but this is not the case elsewhere. It has become our responsibility to see that the medical profession as a whole, the travelling public—be they travellers or immigrants—and the carriers that move them across the world become equally aware of the potential dangers of travelling abroad to personal health and to the community. How this can be done has been discussed many times on other occasions. I will not dwell on it now but I must remind you that this problem is an urgent one, that it concerns in particular Western Europe the U.S.A. and Canada, Australia and New Zealand and involves millions of people moving in every direction all over the world (Maegraith, 1963).

The dangers inherent in the present wide failure to recognize the significance of imported disease are often minimized, especially by those interested in promoting holidays and travel. The gravity of the situation should not be obscured in this way. The figures recently tabled by Shute and Maryon (1969) tell the story clearly enough—2000 cases of malignant malaria with 58 deaths in Britain alone in the past 15 years, and every one of them entirely unnecessary. Infection could have been prevented by proper precautions during exposure; the clinical malaria could have been cured if the patients had been seen in time and properly treated.

Ways and means must be found to educate and warn the profession (including medical students) and the public. There are negotiations going on here and in Europe to get the profession, the government, the public and the carriers interested. The Institutes of Tropical Medicine in Europe and U.S.S.R. have recently combined through their standing Council to work out a programme for Europe which will include an adequate warning card for travellers.

The situation in the emergent countries is similar in some respects. The traveller from Europe may bring infection with him, occasionally precipitating epidemics. Movements of populations even within a country may be equally dangerous. The aggregation of labour forces and sometimes even the movement of a single individual may result in the re-introduction of disease into an area that has become clean, often after tremendous output of effort and money. An example is the recent epidemic of malaria (over one million cases) in Ceylon.

The importation of infection has become part of the global pattern of the distribution and control of communicable diseases. Dorolle (1968) has brilliantly summarized the position and the efforts WHO are making to improve it. He has pointed out that in some respects the International Sanitary Regulations no longer work efficiently and their enforcement has become increasingly difficult. There is a feeling that the Regulations should be given a new look. What is needed is something on the lines of the world surveillance programme already in operation for influenza and based not on regulations but on cooperation (Leading Article, 1968).

The problems of imported disease are only one degree removed from this. If a disease cannot be excluded from a country, the next best thing is to see that it is identified correctly as soon as possible and that individual and public health measures are taken promptly, with the necessary authorities informed. This is nothing more than internal
national surveillance, which should be based on awareness in profession and public, the easy availability of the necessary skills, and prompt reporting.

This is clearly in some respects a responsibility of the organizations concerned with overseas diseases.

There are many other things that need doing. The profession and the public are not sufficiently aware of the expertise and services available and concentrated in London, Liverpool, Edinburgh and other areas, such as Birmingham, where imported "tropical" diseases are receiving adequate attention. These facilities should be regularly brought to the notice of the profession, and so should the risks of imported disease in general. In some parts of Europe this point is met by annual publication of relevant information in the local medical press. Why not here?

Conclusion

I hope I have said enough to satisfy you that tropical medicine is part of the modern developing world and that the Schools and Institutes concerned have an equivalent responsibility. This is an interesting development. In the years immediately succeeding World War II it was seriously suggested that they might have passed their peak of usefulness, taking into account the large numbers of doctors scattered through Europe who had had some war contact with the tropics and the steadily increasing improvement in the tropics of facilities for the care of the sick and the study of the endemic diseases. It was suspected that the burden on the European Institutes would become correspondingly lessened (Mægraith, 1964).

I have shown you that the reverse has happened. The Schools in Europe (and this of course applies to those elsewhere) have, in fact, become more important in the changing patterns of global medicine. Factors responsible for this have been the revolution in ease and speed of transport, the acute shortage of trained personnel, the expansion of socio-economic development in the emerging world and the realization that the control of many of the major endemic diseases still awaits information about their natural history and the training of men capable of obtaining and exploiting it.

Something more needs to be said on aid from the developed to the emergent countries. To approach this from the humanistic point of view is not the best way to make governments see that they are getting value for money. It is no good telling economists and governments that good health is an essential part of socio-economic progress. They regard expenditure on health services as essentially capital investment on human resources. They want evidence of the importance of health in social and economic development “for testing the presumption that the basic improvement in health has an important bearing upon the prospects of improving economic growth performance in real terms for the areas in question” (May, 1964).

Since no community can sustain indefinitely large social losses due to preventable disease and advance economically, it has been said that tropical medicine is the midwife of economic progress in the under-developed areas of the world (Tropical Health, 1962). This is a field in which the accumulated wisdom and experience of the Tropical Schools could be of great potential value in helping governments to decide on aid in the right place. In a world as interdependent as this, it follows that the more developed countries must give aid to the under-privileged “in social and economic terms if they are to deal successfully with their health problems” (Tropical Health, 1962).

Our problem in the U.K. is not whether we should help but how much we can help. Despite the adverse press the Ministry of Overseas Development has had in this respect, I believe that the contribution of this country to the emergent world should be greater than it is, not less.
As doctors, we are not primarily concerned here with moral social duty or investments for peace (though in this respect the regional programmes in South-east Asia are impressive). We do not have to consider investments for markets abroad or the future of our political health. We are concerned with putting our resources to work in helping the emergent world develop a healthy community. And to those who still regard such aid as an unnecessary hand out, let me quote the wise words of DOROLLE (1968), referring to international disease and the enormous amount of money bound up in attempting to control it.

"It is a platitude nowadays to refer to the increasing gap between the developed and the underdeveloped countries. Platitude or not, this is one of the tragic features of our times. The only method of filling this gap is to increase in a very large measure the economic and technical assistance given to the less favoured countries. Allow me, therefore, to conclude that, in this age of jet planes and supersonic transport, the only way of preventing the old plagues, and some new ones, from spreading from continent to continent and from country to country is to help the poorest nations of the world to reach such a level of economic and technical development that it will be possible for them to combat the evil at its source".

In the long run, control is an expensive continuing procedure. Eradication may be a lengthy process but it is essentially a one-time expenditure (HINMAN, 1966).

This is the answer to those who complain that too much is being spent in helping the emergent world. It is also a cogent argument in favour of more government help to the Schools which are working for the same end and training the nationals from the developing countries to deal with problems on the spot.

We believe that the impact of European Schools on the tropics must be made in the tropics.

The trouble is that this philosophy extends us physically and personnel-wise beyond our capacity.

Our task has been made lighter in this respect by the help we get from the government in the shape of the lecturers proposed originally by the Porritt Working Party and implemented by agreement with the Ministry of Overseas Development. Today we have both in Liverpool and in London 6 senior and 3 junior lecturers (Technical Assistance) and in Edinburgh two senior and one junior lecturers. We also have in Liverpool a lecturer in veterinary parasitology. This is a great addition to staff but the real gain is that, with the help of the Ministry and local governments abroad, we can place these lecturers in areas where they are most needed and where they can go on undisturbed until the work is done, knowing they have (at Senior Lecturer level) a permanent home appointment.

This is an imaginative programme which might well be a blue print for other developed countries and, indeed, is now being examined by European governments.

To carry out the evergrowing task that lies ahead of us, however, we need more help, more people. This applies particularly to research. To get the men we want we must be able to offer the best of them some kind of continuity. The Technical Assistance lecturers illustrate one way of getting this, at relatively low cost to the community, since most of the overseas work is subsidized by the relevant countries.

In research, unfortunately, the problem of obtaining senior long-term workers is not yet solved. The recently published Report of the Royal Commission on Medical Education (1968) points out that in 1966-67 support from the British Government for research in all aspects of tropical medicine, including commitments abroad, amounted to over half a million pounds sterling. This sounds generous but it is little enough in terms of the money needed and the amounts injected by other countries into the emergent territories, and is insignificant in relation to the problems of tropical disease and the size...
of the populations suffering from them. The Report notes, and I am in complete agreement with this, that the main problem of providing for research is not so much financial as finding and retaining the services of scientists. In the absence of career prospects, which the Colonial Medical Service formerly provided, . . . . "the best hope lies in an appointment which gives assurance of a job here (in the U.K.) after the overseas assignment has been completed".

Apart from its own appointments, the Medical Research Council has offered some help in this direction by the creation of Research Groups with permanent staffs, but these are limited and the bulk of our research workers are young people training for a postgraduate doctorate and paid for by short-term grants from outside bodies. Unfortunately, we lose these men just when they have been adequately trained and when we need them most.

I have pointed out that the problems of Europe are similar to those in this country. It is not surprising therefore that the Schools and Institutes of Europe and Western U.S.S.R. have, at the instigation of the World Health Organization, united to form a Standing Council for the study of mutual problems, especially those concerned with training and with medical aid to emergent countries. The common interest in imported disease I have already mentioned.

I end where I began. I am proud to be talking to you as President of the Society of Tropical Medicine and Hygiene.

I have tried to define what is meant by tropical medicine.

Now, I ask you, what do we represent as a Society?

The Society is certainly an organization, like its fellows in Europe and the U.S.A. and indeed in Scandinavia, in which all those interested in the field may come together. But have we not, as a corporate body, other functions to perform and help to offer in the developing world?

I hope, in the tenure of this Office, to persuade you to look at the problem, so that the Society in this changing world may put to best effect its accumulated knowledge, experience and influence.

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