We have in India enormous out-patient attendances every day—perhaps this also is true of Burma and some other Eastern countries. At our hospital in Bombay the out-patient department attendance every morning is 2,400. This out-patient service is almost a specialty, distinct and different from others. The diagnosis and assessment of progress as practised here have to be seen to be believed. It is not clinical medicine alone, although it is the most “clinical” of all medical activities. The full educational potential of this phase of medical service in India has remained unexplored. I invite the clinical teachers amongst you to India for this experience, which will certainly be interesting.

I would also invite public health teachers to come and get acquainted with our rural and public health projects. Perhaps your concepts regarding public health, your impressions about standards of normal health, and therefore your expectations about the practicability of solutions to rural health problems will be subjected to considerable strain, but in your first-hand acquaintance with this problem lies our hope for a more practicable approach towards a healthy world.

INTERNATIONAL CO-OPERATION IN POSTGRADUATE MEDICAL EDUCATION IN MALAYA*

BY

**E. S. MONTEIRO, C.B.E., M.D., F.R.C.P., F.R.F.P.S.
D.C.H.**

*Dean, Faculty of Medicine, and Professor of Clinical
Medicine, University of Malaya in Singapore;
Physician, General Hospital, Singapore, Malaya*

The cessation of hostilities in South-East Asia in 1945 imposed serious problems in the medical rehabilitation of my country. Some of the graver issues involved were the considerable depletion of senior and experienced teachers and medical specialists in the university and Government Medical Services as a direct result of the war.

The enforced closure of the medical school during the period of hostilities and enemy occupation for a period of five years added seriously to the problem of an acute shortage of doctors for the whole country, while damage and destruction of hospitals and other buildings during the war aggravated the problem further.

The gigantic task of rehabilitation was faced with the twin problems of producing more doctors, teachers, specialists, and research workers, and of constructing more hospitals and repairing damaged buildings, both of which were tackled with eagerness and determination. The problem of rehabilitation was greatly complicated by the inevitable changes which wars have always brought about. The changing political pattern from a colonial to an independent self-governing status; the awakening of national and political consciousness of the people recently liberated from enemy occupation and oppression; the natural aspiration of the citizens to get into the top posts in medicine and the other public services of the country, previously barred to them, by the rapid Malayanization of the medical and public services; and the consequent staggering and eventual cessation of recruitment of specialists and senior

consultants into the Medical Service of Malaya by the Colonial Office in London, were some of the complicating factors which added to the difficulties of medical rehabilitation.

Our National Effort

I am sure I am expressing the gratitude of our country for the help and encouragement we have received from international co-operation in our national effort. We have, on our part, doubled the intake of undergraduates into our medical school, so as to produce more doctors for the country. We have also recruited doctors from India, the United Kingdom, and the other Commonwealth countries to meet the shortage of medical personnel. Where no local candidates were available to fill the important posts we have recruited medical specialists and dental specialists from overseas. We have increased the number of scholarships and fellowships a hundredfold to enable our medical and dental graduates and nurses to go to the United Kingdom, to the Commonwealth, to the United States, and to Europe to study and to do research so as to equip them with the knowledge and experience to return as specialists and teachers in the various fields of medicine, dentistry, and nursing.

The University of Malaya, conscious of the importance of postgraduate medical education, instituted, with the assistance from the World Health Organization, who supplied teachers and fellowships, a diploma course in public health for graduates from Malaya and from South-East Asian countries. The course has been in existence now for five years, and its importance in providing men and women trained in the principles of preventive medicine and public health in a rapidly developing rural and industrial area is beyond measure.

International Help and Co-operation

In order to assist in this programme of postgraduate medical education, the Colonial Development and Welfare Fund of the United Kingdom contributed a major share in the cost of the construction of the magnificent building of the Institute of Health, where undergraduates and graduates in medicine and nursing are trained in the principles and practice of public health and social medicine.

Through the assistance of the Colombo Plan and with the co-operation of the Postgraduate Medical Federation of Australia, eminent and experienced teachers from Australia are being sent regularly by the Royal Australasian College of Surgeons to teach and examine graduates specializing in the many fields of surgery at the Faculty of Medicine and the Teaching Hospital at Singapore.

The China Medical Board has made several handsome contributions for the development of a first-class medical library housing 70,000 volumes and 600 international medical journals and for the purchase of much-needed and valuable equipment and apparatus for basic research in the preclinical departments of the medical school.

The Colonial Development and Welfare Fund of the United Kingdom has helped us to build a new and imposing department of pathology and museum to assist in research and teaching. The nursing school, too, has increased its intake of admission for the nursing profession. In this school, the Government and university specialists, assisted by a team of World

*An address given to the Second World Conference on Medical Education, Chicago, 1959.

Health Organization tutors, have developed a number of postgraduate nursing diplomas, such as ward administration, paediatric training, orthopaedic nursing, psychiatric nursing, tuberculosis training, so that more girls are obtaining their postgraduate diplomas in the country and fewer are going overseas to the United Kingdom and the Commonwealth for their postgraduate education.

The medical school has also been assisted by visiting professorships in parasitology, and a visiting professorship in pharmacology is being arranged with the China Medical Board at this moment.

It might appear to be a curious fact that, while international jealousies and national monopolistic tendencies were, and indeed are, prevailing throughout the world, international co-operation in medicine has been a feature—one which must have puzzled the orderly thinking of many a philosopher.

Outstanding among these developments could be mentioned the wide and easy dissemination of scientific discoveries within and without countries, whether they were at war or at peace or whether they were racially or otherwise on friendly terms. Even more outstanding, perhaps, has been the effort at international co-operation, and indeed control, for the prevention of entry of disease into one country from another. Talent, wherever it existed, has been recognized by medicine without fear or favour, and it has borrowed abundantly from these sources.

Developments in transport, particularly during this century, have contracted the world almost to insignificance. To-day, one does not fear the challenge of a hazardous journey of a few thousand miles, as our forebears had to face. These developments have naturally tended to bring persons of eminence, of wisdom, and of knowledge in contact one with the other, and so have enabled more liberal and intimate discussions on which a basis for future development, for future programmes, and indeed for future ideas can be more ably formulated.

International co-operation in such development and in dissemination of knowledge has come from numerous sources. It will be sufficient for me to quote only a few examples. The widespread medical journals; the inter-library facilities; the large numbers of foundations devoted to medicine, such as the Carnegie, the Rockefeller, the China Medical Board, the Colonial Development and Welfare, etc.; the specialized agencies devoted to health of the United Nations, such as the World Health Organization; the co-operative efforts engendered by the Colombo Plan countries and the South-Pacific Area Commission; the Inter-University Exchange Scheme—all these have furthered and encouraged international co-operation in postgraduate medical education.

Benefits to Malaya

Malaya has benefited enormously from international effort. We have profited by the postgraduate medical education given to our students in universities and other medical institutions in countries overseas, particularly the United Kingdom and Australia. We have profited even more by the experts from other countries who have come to work amongst us. A group of American scholars working in the Institute for Medical Research in Kuala Lumpur discovered, quite by accident—though by design in so far as they were in Kuala Lumpur—

that chloramphenicol is as much a specific for typhoid as it is for tropical typhus. It might also be profitable to mention the work of the Medical Research Council in Singapore in the study of tropical conditions, in close liaison with the department of physiology. We have, of necessity, had to limit postgraduate training facilities for our doctors to countries we know more intimately than others. Consequently, for this purpose many of our scholars go to the United Kingdom or to Australia, and a few to the United States of America and Canada.

It does not, however, follow that other countries cannot contribute to our knowledge. I believe that the more widely spread our ideas and purposes are, the more we shall profit by an encounter with what might perhaps appear to be antagonisms, though I do not believe that, in fact, antagonisms exist in medicine.

International co-operation, therefore, in the field of postgraduate medical education should yield far more practical results than the insularity of breeding and thought, which in fact would impose limitations to progress. It is by the appreciation and realization of the significance of various facets which constitute what might be the truth that we may be enabled to get a glimpse of the ultimate truth.

If I may be permitted to digress a little, medicine has in recent years been drifting away from its purpose. We have been so much engrossed with the significance of bacteria and viruses, of antibiotics and pharmaceutical preparations, of the heart and the lungs and the liver and the other viscera, that we are in grave danger of not realizing that the human being is much more than the sum total of all his constituent parts. We are dealing with a being—quite apart from what our religious teachers tell us is a soul—who has his own particular physique, intelligence, aptitudes, attainments, interests, and disposition; and this being has been subjected to numerous stresses and strains by the environmental circumstances of his living. We have to realize that he is a thinking thing, a feeling thing, an emotional thing that has been moulded and shaped by his environment either to live sensibly and in rapport with his fellow beings or as a rebel among them.

Conclusion

The fact that the word "disease" has been so divorced from its original meaning emphasizes how far medicine has departed from its original purpose. It is right that we should remind ourselves what disease is. It is not tuberculosis; it is not typhoid; it is not cholera, or any of those descriptions that appear in textbooks. It is in fact *dis-ease*. Does it really matter to the man whether he has cancer or hypertension if he is not at "dis-ease," so long as he feels no ill, so long as he works efficiently, so long as he thinks well, so long as he is able to contribute abundantly to his country and live joyfully? Can we, as physicians, be exonerated from the indictment that we have often made the "cure" of such cases more grievous than the endurance thereof? The World Health Organization defined health in a more liberal way than I have done. It says "it is a state of physical, mental, and social well-being and not just the absence of disease."

While we accept the fact that organic pathology is likely to produce disease, we must take cognizance of this—that many more things than organic pathology can cause *dis-ease*. Now this presupposes a wider (and

more liberal) knowledge than that provided by the ordinary medical education, whether undergraduate or postgraduate. It presupposes a knowledge of a kind which embraces within it the humanities, the religions, and a deep understanding and sympathy for the living man and a sincere respect for the human personality.

International co-operation in postgraduate medical education, while much greater than it ever was before, is not yet sufficient. And the tragedy of it all is that developments in other fields of science—for example, nuclear energy and conquest of space—are proceeding so fast that we appear to be lagging behind. Not only this; we would have to face the challenge of these developments, and if in the hour of need we fail, we shall not only be held to blame but to ridicule as well.

Do not for one moment think that remote countries, underdeveloped countries, or small countries will not be able to contribute anything significant to the development of postgraduate medical education. Underdeveloped countries and such countries as I live in can contribute much, but the fact of our contributing something to your knowledge, and your even greater contribution to us, would be as nothing compared with the synthesis that will emerge as a result of this co-operative effort. A broader vision, a wider field, and a more deliberate appreciation and consciousness of our purpose and aims will be furthered by such efforts, and I make an appeal here and now that we should intensify international co-operation in postgraduate medical education with the least possible delay.

THE VALUE OF PARTICIPATION IN RESEARCH AS A COMPONENT IN THE EDUCATION OF DOCTORS FOR THE MEDICAL, GRADUATE, AND POSTGRADUATE STUDENT*

BY

VICTOR JOHNSON, M.D., Ph.D., Sc.D.

Director, Mayo Foundation for Medical Education and Research; Professor of Physiology, University of Minnesota Graduate School, Rochester, Minnesota, U.S.A.

There is no need to document the value of medical research as a major factor in the constantly improving well-being of mankind. It could be convincingly contended that our knowledge of health and our control of disease have progressed farther in the last 50 or 60 years than in all the preceding countless ages of man.

Further, it is unnecessary to declare the value of participation in research for a medical student who anticipates either a career of full-time investigation or part-time clinical research supplementing the practice of medicine. The methods and tools of research, the nature and conduct of investigation, must be learned early. A physician who has done no investigation by the time he has finished his postgraduate residency training is unlikely to make significant contributions to research in his subsequent career.

It is self-evident that research must continue to increase our understanding of man in health and disease, and also that experience and training in scientific investigation are essential at an early stage in the education of the physician who intends to continue to carry on research. This presentation is concerned rather with the value of participation in research as part of the experience of a medical student who may not again work in a research laboratory, who has no intention of conducting further clinical investigation, or who will never write another scientific paper. Some training in research can contribute enormously to the education of such a physician, engaged entirely in clinical responsibilities, as is necessarily the case with most physicians.

Evaluation of Research Reports

Past research experience by a physician who is now fully engaged in clinical practice sharpens his judgment and enhances his evaluation of the research of others. "Medicine, a lifelong study," requires the physician to keep abreast by reading the journals and listening to scientific papers. Research necessitates a struggle with

data collected, requires a sifting and sorting of experimental results, insists upon a recognition of deficiencies in the supporting evidence, compels the reaching of conservative conclusions warranted by the objective findings. Experience in research warns against the pitfalls of inadequate numbers of observations, faulty controls, inaccurate measurements, the intrusion of chance, the inherent variability of biological material. Engagement in research enhances the physician's judgment of conclusions reached in medical papers he reads, sensitizes him to inadequacies of evidence, increases his wariness of exaggerated claims, tempers his acceptance of enthusiastic predictions.

Difficulty of Discovery

Research has been called "a way of making Nature talk." But Nature guards her secrets with intense jealousy and is loath to speak. Research reveals the painful difficulty of discovery.

To the layman, who reads only the newspaper or popular magazine accounts of discovery, the pathway is easy. To the more sophisticated, such as a medical student or practising physician, somewhat familiar with research literature, the difficulty of making a contribution to knowledge becomes more apparent. But it is only the student or physician who has actually participated in research himself who is completely aware of the tremendous effort and patient toil which are exacted of an investigator who establishes even a very little new fact or a causal relationship.

A celebrated exception to this axiom was the discovery of vagus material, by Otto Loewi. He recounted that he had an idea one night, in bed, and went to his laboratory next morning to test his thought. In this instance, only a day elapsed between the idea and the demonstration. New principles of broad physiological application emerged: not only the concept of neuro-humoralism but eventually also the theory of chemical transmission of nerve impulses across synapses.

*An address given to the Second World Conference on Medical Education, Chicago, 1959.