suggested Teaching Service in the Commonwealth and other countries, was published.

Much of the material covering this memorandum on the proposed "Medical service within the Commonwealth and other countries overseas" has been based on this Ministry of Education Circular 10/60. Acknowledgment with thanks is here given.

POSTGRADUATE EDUCATION IN THE FIELD OF RHEUMATISM AND ARTHRITIS IN THE U.S.A., 1960

BY

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This review is based on a period of four months in the U.S.A., spent for the most part at Bethesda by invitation of the National Institute of Arthritis and Metabolic Diseases and with visits to research centres and university departments of medicine in Washington, Pittsburgh, New York, Baltimore, Durham, Birmingham, Dallas, New Orleans, Boston, Cleveland, Chicago, and Los Angeles, undertaken with the assistance of the Wellcome Research Travel Fund and the centres concerned.

Comparison with the educational programme in Great Britain must take into account two major differences between the countries: firstly, the rather different structure of undergraduate and graduate education in the two countries; and, even more important, the very great difference between the two countries in the organization of medical services to the public.

Undergraduate and Graduate Education

Before receiving a doctorate of medicine, the American student has usually spent four years in university and four years in medical school: his school-days have not in general resulted in as quite a high level of education as do English private schools, but this difference is made up by the time of entry to medical school. After the M.D. examination he may spend a year as an intern (house-physician) before taking his State examination. For intending specialists there follows five years' training in an approved centre or centres before he is allowed to take his specialty board examinations (corresponding to our M.D. or M.R.C.P.). This is made up of two to three years as resident (registrar) and then two to three years as a research fellow or in specialty practice. The 19 specialty boards are composed of representatives of the American Medical Association and of the National Specialist Societies. There is no specialty board in rheumatism, which is included mainly with the specialty of internal medicine. Although many members of the American Rheumatism Association do not have specialty board qualifications at all, a number possess these in the fields of internal medicine and a few in the fields of physical medicine, pathology, or orthopaedic surgery.

A specialty board qualification is not necessary for appointment to academic or hospital posts, particularly in the more renowned centres, but it is desirable in any event and usually necessary for appointments to smaller

hospitals, etc. There are large differences between the calibre of students accepted at different universities, but in general the just-qualified M.D. is probably similar to his M.B., B.S. counterpart in England, knowing perhaps a little less of clinical evaluation and a little more of laboratory diagnosis. Demand for doctors as a whole is increasing fast because of the increase in population.

Organization of Medical Services

The second major difference between the two countries is in the organization of care. In England this is a Government responsibility; in the States, consultant services are sponsored by individual consultants themselves (private practice) often with part-time hospital appointments, by private hospitals and clinics, by private or State university hospitals, and by Government agency only in small part (in the Veterans Administration Hospital and the Public Health Service). The majority of consultants are therefore chosen by private hospital or university boards, and there is no overall control of specialty categorization or of the numbers of specialists in any one specialty field or in any one area. In this system of private enterprise, therefore, the outlet for specialists in any particular field depends primarily upon demand and usefulness.

Rheumatism has become very much more important over the last 10 years as a specialty field: although not being rigidly defined, the university specialists are usually to be found within the department of medicine, but they may also be in paediatrics, pathology, or biochemistry. Thus membership of the American Rheumatism Association has increased from 876 in 1955 to 1,283 in 1959. In 1960 there are 1,350 members in 44 states. These numbers are related to a total population of 180 million and a total medical population of 210,000. In 1955, American Rheumatism Association members were found in 40 of the 48 States (as well as in D.C., Puerto Rico, and eight Canadian provinces) and in 228 cities within the United States. Some centralization in New York was inevitable (112 out of 876 members were listed therein in 1955). There are now active rheumatism units in most of the 86 universities of the U.S.A.: 45 of these are in receipt of research training grants from the National Institute of Arthritis and Metabolic Diseases (as well as some other hospitals, such as Mount Sinai, New York), as compared with six in 1946. In view of the ever-increasing funds voted by Congress for expansion in this and other fields, it is clear that there is and will continue to be many posts available in the U.S. over the coming years for people well trained in the field of rheumatism and arthritis.

By contrast, in Great Britain, with its more rigid and centralized control of consultant appointments, the great advances made in the rheumatism field have not been reflected in the recognition for appointment purposes of specialization in this area of the field of internal medicine. There tend, therefore, to be few entrants for training in this field, and they are correspondingly difficult to place when their training has finished. Many of them emigrate, some find appointments in physical medicine, and a few find posts, against very strong opposition, in general medicine. In most universities and hospital centres, rheumatism patients are bandied between the orthopaedic surgeon, the medical consultant, and the physical medicine consultant, whereas in the U.S.A. the rheumatologist,

a consultant in internal medicine with as good a background in that subject as his "internist" colleagues, takes overall responsibility for these chronic diseases. As a result, the general level of medical care in the rheumatism field in England is low apart from a few specialized centres.

As an *ad hoc* programme, therefore, the need in the United Kingdom for postgraduate ("refresher") education is great. However, as will become evident during the ensuing review, the long-term remedy for the inevitably continuing deficiency in this and other fields is to educate postgraduates either immediately after graduation or in the pregraduate stage. Education of established consultants is nowhere as rewarding or as economical as adequate education during earlier stages and the inculcation of a habit of continued study.

In the field of rheumatism, which lies mainly within the specialty of internal medicine, overlapping slightly with physical medicine and rehabilitation, postgraduate education in the U.S.A. is vigorous and far-sighted. It depends, as in all other specialties, primarily on individual apprenticeship during hospital *residencies* (registrarships). This is true also in England. In addition to these regular hospital training posts, which allow the acquisition of practical clinical wisdom and at the same time maintain the hospital, education in this field is furthered by *fellowships and traineeships in research*, by "*refresher*" courses or postgraduate courses, and by *symposia and society meetings*.

Residency Training

During his two to three years' residency, the doctor takes on progressively more and more clinical responsibility, so that in many American hospitals the residents, at least in internal medicine, appear to be primarily responsible for the care and treatment of the patient—with advice and comments on the daily or twice-weekly ward visits from the visiting consultant. The latter may be a professor of medicine or of public health, or a specialist in some field such as allergy or cardiology, or someone who is primarily a biochemist. Other residencies rotate through various services and others still may be allocated to specialty clinics. As might be imagined, supervision is very variable, and residents may well be trained or "do-it-yourselfers." Experience in rheumatism and arthritis is therefore acquired in the general framework of internal medicine, and particularly in those centres where energetic arthritis units exist. Fortunately these are becoming increasingly common, and exist in most of the university centres of the U.S.A.; and, just as many of the younger specialists owe their interest in this field to their residency days in such old-established centres as Harvard, Columbia, New York, or Ann Arbor, so in the future such interest will be stimulated by the full-time directors of arthritis units in these many university hospitals.

Research Traineeships and Fellowships

After his resident years, the man seeking board recognition as a consultant must put in the remainder of his five-year training period in clinical specialty practice or research. Those seeking an academic career usually apply for research fellowships or traineeships at a recognized centre. While formerly there were comparatively few centres where a training in arthritis and rheumatism was possible, and comparatively few fellowships available, now, as the result of the increased

Governmental expenditure in public health, both the number of centres capable of undertaking training and the number of trainees supported has increased remarkably. In addition to direct research fellowships and traineeships supported by the Arthritis and Rheumatism Foundation and the National Foundation, the Helen Hay Whitney Foundation, and the Public Health Service, the U.S. Public Health Service has instituted a series of training grants for the setting up of research and teaching units on a large scale. These have altered the climate of the university hospital centres a great deal.

For instance, out of the 185 training grants made for 1959 by the National Institute of Arthritis and Metabolic Diseases, 47 are listed for arthritis alone and total \$913,286, or £325,012. They are distributed among 42 centres, of which only one is outside continental U.S.A. (Puerto Rico). Thus the average grant is \$21,743 a year and lasts usually for a period of five years. (Seven centres receive more than \$35,000 each.) The typical structure of a unit allowed by such support is an honorary director (professor or assistant professor paid usually by the university entirely), salaries for one or two trainees and a technician, sometimes a secretary, equipment, and a fund to pay visiting lecturers. Such a unit is often also in receipt of funds from elsewhere—for example, the Arthritis and Rheumatism Foundation or the National Foundation—allowing still further personnel. These public health training grants are for the express purpose of training academically inclined personnel for basic research and clinical investigation so that later they will attain university posts in this or related fields.

In a typical centre the trainees attend ward rounds and conduct clinics, but spend most of their time on their research project for a two-year period. Already a large number of such trainees have obtained university posts, and in their turn have started arthritis units with the aid of such training grants. Others have left for private consultant practice. This seems an ideal form of postgraduate education, ensuring not only education of the trainee but future training of others in this field within the university framework.

Comparison with the British scene reveals the great difference between the countries in this phase of education in rheumatism. Perhaps the major comparison that can be made is that the National Institutes of Health budget for 1960 was \$400m. (already raised by the Senate to \$600m. for 1961) as against a budget of £3-4m. for the Medical Research Council. In more detail, the National Institute for Arthritis and Metabolic Diseases has itself a budget of \$39m. in 1960, having risen from \$30 m. in 1959, \$25m. in 1958, and \$15m. in 1956. In England, Wales, Scotland, and Northern Ireland there are fewer than a dozen units to which research or clinical trainees could be apprenticed, and these are variable in calibre. This represents about 7 of the 15 British universities. It is difficult to compare the number of trainees, but at a guess there are about 100 in the U.S. Public Health training grants and traineeships combined, plus about 30 fellowships and 30 traineeships given yearly by the Arthritis and Rheumatism Foundation. In England there are a few (? five) research fellows in this field sponsored directly by the Medical Research Council and a few by the Empire Rheumatism Council. Some of these are non-medically qualified biochemists awaiting university posts

and interested primarily in, for example, polysaccharide chemistry.

Most of the research and clinical trainees in the English units come from and go back overseas. Thus at Taplow over the past 10 years we have had 32 research fellows over and above the resident and permanent research staff: only eight of these were British. British fellows wanting training are few and the facilities are very limited. This is to a large extent due to the fact that university and hospital posts in Britain for people trained in this field are still lamentably few in comparison with the U.S.A.

Postgraduate Courses ("Post-doctoral")

The postgraduate course is the traditional British mode of teaching postgraduates. In the U.S.A. postgraduate courses in the rheumatic disease field are held regularly in New York, and from time to time elsewhere. Thus in 1958 17 courses in arthritis and rheumatism were listed (eight in New York, others in Buffalo, Chicago, Ohio, Los Angeles, Mayo Clinic, New Orleans). They were to last on average two to three days, although one course lasted a full week and another one comprised one session a week for two months. Some last only one day. This is against a total yearly background of 975 postgraduate courses under 42 listed categories held by 212 organizations. These courses were intended for physicians in established practice, and cost anything from 30 to 100 dollars. The subjects covered were wide. In most of these courses the speakers are for the most part those staffing the local centre or hospital, with a few guest speakers of renown* whose expenses or honorarium are paid out of subscriptions, often with the help of a grant from drug companies, from the Arthritis and Rheumatism Foundation, or in some instances out of public health training-grant moneys. British postgraduate courses differ only because attendance by whole-time specialists in a National Health Service is paid for (as well as travelling and living expenses) by the National Health Service. In the U.S.A. tax deduction for the expenses of attending is allowed.

In both the United States and Great Britain exhibits aimed at the practising physician are put on at medical meetings, and a bulletin on rheumatic disease is circulated by each national rheumatism society.

Symposia

Symposia represent education at its top level where generally the frontiers of knowledge are explored by a small group of experts intimately concerned in advancing those frontiers. Because the population of the States is three to four times that of Great Britain, because relatively more people within the medical fold are also engaged in "basic" research (to use the current shibboleth), and also because the more generous funds usually allow for distinguished foreigners to attend, these symposia appear on average to be more numerous than those in England. They fulfil the same purpose, however, and are run on much the same lines as those in Great Britain, and need not be further discussed except perhaps to remark that official National Institutes of Health participation occurs in the U.S.A. in addition

*However, in a full week's course held in January, 1960, under the auspices of the American College of Physicians at Cornell, New York, there were 14 guest speakers as well as 25 from Cornell itself.

to support by private foundations, drug firms, universities, hospitals, medical schools, and professional associations such as the American College of Physicians, whereas the Medical Research Council has not so far taken an active part in such colloquia, which are run by such bodies as the Royal Colleges, the Royal Society of Medicine, the Ciba Foundation, etc.

Undergraduate Training Grants ("Pre-doctoral")

As stated above, this survey has led to the endorsement of the view that education is the more valuable the earlier it is received. The "basic" problems in this field are no different in kind from those encountered elsewhere in medicine: besides the problem of therapy and its advancement of diagnosis, of social care, and of prevention, education for the future must include acquaintance with mechanisms (biochemistry, immunology, epidemiology and methods, biophysics, statistics). In Great Britain the medical student has very little acquaintance with this group of very common diseases largely because his teachers are concerned mainly with other fields and comparatively infrequently include anyone with both interest and qualifications in this field. The new U.S. Public Health training programme for clinical investigators is therefore of great interest, since it aims at the medical student (pre-doctoral).

As an example, I may cite the scheme at Duke University, sponsored by the U.S. Public Health Service, together with the Commonwealth and Markle Foundations, the American Cancer Society, and Duke University. This project takes selected medical students for a nine-months period with intensive training in concepts and experimental methods in cell biology, followed by directed research and special didactic cases in biostatistics, electronics, genetics, embryology, mathematics, and logic. For this purpose new staff members have been appointed to the University and a new wing has been added. By rearrangement of the ordinary course no time will be lost in graduating.

National Institutes of Health

Finally, to complete the picture of postgraduate education in the U.S.A., the National Institutes of Health at Bethesda must be briefly mentioned. The National Institute of Arthritis and Metabolic Diseases, besides running the extramural programme of training grants already referred to, as do each of its six sister institutes, plays a leading part in education within the field of rheumatism and arthritis. Under the clinical direction of Dr. Joseph Bunim and the general administrative direction of Dr. Daft (with Dr. R. Knutti covering the extramural programme), workers in this field have made a large number of fundamental advances in the past 10 years and have trained a large number of highly selected young men, both in the clinical and in the laboratory field, and, even more important, young men skilled in both aspects of research. These are now beginning to head up university departments all over the country.

The National Institutes of Health have two special organizational advantages over and above their unique facilities and their top-rank staff: firstly, fellows can get their period of compulsory military service done as trainees there; and, secondly, patients are treated without charge—thus ensuring a wide selection. With its intimately associated laboratories and hospital accom-

modation, it offers a first-class opportunity for this modern synthesis of clinical and laboratory approach. The Medical Research Council in contrast has its clinical units scattered in various centres throughout the country, and its central laboratories at Mill Hill are without close clinical opportunities. Nevertheless, considering its relatively restricted budget, it seems (on rather short acquaintance with U.S. conditions) that the rapport between clinical and scientific staff is just as good in a small M.R.C. unit situated within and in close liaison with a university medical school as in the vast corridors of the National Institutes of Health. Indeed, one of the practical difficulties of the National Institutes of Health was that of knowing what was going on one floor above or below. Knowledge from related fields and from association, which is highly important for education, may demand a certain maximum size, and it might be considered that the policy of the Medical Research Council—to establish clinical units in relation to existing university centres or to existing hospitals allied to a university or other scientific centre—is better for this smaller country than the erection of Bethesda-like institutions.

Conclusions

Postgraduate education in rheumatism in Britain is badly needed if we are to keep pace with scientific development and practical applications as exemplified in the American scene. Some expansion of training facilities is needed, but this is useless without better and more numerous outlets for trainees within the National Health Service.

My thanks are due to Drs. Bunim, Daft, and Knutti, of the National Institutes of Health, for their invitation to work at the N.I.H. as a visiting scientist. They made my stay a most happy and interesting period. They, Dr. Ralph Knutti, of the extramural division, and others, spent a long time answering my rather jejune questions and decreasing somewhat my vast ignorance. They should not be held responsible for any inaccuracies or misconceptions in this document. I am indebted also to Dr. Lamont Havers, of the Arthritis and Rheumatism Foundation, and to others throughout the country too numerous to mention, for their hospitality and patience during a most interesting tour of the medical schools and universities.

Nova et Vetera

ST. PETER'S HOSPITAL FOR STONE

It must have been labour of love for Mr. Morson to edit this book* about the hospital with which he has been honourably associated for so many years. The name given to the hospital was at first peculiarly appropriate, though its scope now takes in the whole of genito-urinary surgery. There may have been some justification for the opposition to its foundation, for in 1860 Henry Thompson was working at University College Hospital and William Coulson was at St. Mary's, and indeed at first the venture was on a small, even paltry scale. Then in 1873 came a mysterious gift of ten one-thousand-pound notes by an anonymous donor (who is still unknown) and a bigger and better hospital

was built. From that date its reputation rapidly grew until it became the best teaching centre of urology in this country, a position which has been recently enhanced by the foundation of the Institute of Urology. The list of famous surgeons who have been on the staff includes Reginald Harrison, Hurry (not Henry) Fenwick, Peter Freyer, Thomson-Walker, Swift Joly, and many others who have helped to make urology a more exact science. Mr. Morson pays a well-deserved tribute to Dr. Cuthbert Dukes, who put the pathological department on a sound foundation.

The nursing was at first not very good, but in 1880 Mrs. Wemyss Anderson was appointed matron and brought order out of relative chaos. It is stated that, "it is more than likely that she had had a hospital training." We can supplement this. Mrs. Anderson was for many years Lady Visitor at St. Mary's Hospital, Paddington, and in 1866, when the matron was ill, visited the hospital daily for four months to supervise the nursing. For this she received the thanks of the Board and was made an honorary governor of St. Mary's Hospital. She was therefore not without some experience. An interesting book.

ZACHARY COPE.

THE BEST OF SIGERIST

Henry Sigerist was professor of the history of medicine successively at Zurich, Leipzig, and Johns Hopkins Universities. In 1947, still in middle life, he retired from his chair at Johns Hopkins to Pura, a village near Lugano in his native Switzerland. His valedictory address is included here*; and in the essay "Living under the Shadow" he records his physical handicaps, of which hypertension and associated cardiovascular disease were the most serious. Sigerist gave up an academic position that he loved, partly through ill-health but mainly to write in undisturbed tranquillity his monumental eight-volume history of medicine. Of this he completed two volumes, and then died on March 17, 1957, at the age of 65.

As Professor Fulton—alas, no longer with us—states in his foreword, while many deplore that Sigerist did not live to finish his *History*, others—including the editor of this book—consider that he achieved much more through the inspiration of his essays and miscellaneous writings, as exemplified in the collection here which was chosen by Sigerist himself. This anthology treats of medical history generally, of ancient and mediaeval medicine, baroque medicine, and medicine in an enlightened age, and of Sigerist's personal history. Each essay reveals the scholar, the depth and wide scope of his knowledge and his interpretation of a philosophy of medicine.

Even Homer sometimes nods. Sigerist, in his amusing paper on Jonas Hanway's attack on the drinking of tea (1757), is incorrect in stating that Oliver Goldsmith never graduated in medicine. The investigations of Sir William Osler and Sir Ernest Clarke† showed that he was M.B. of Dublin University, and also M.B.Oxon *ad eundem* in 1769, as Bishop Percy stated. In "An Elizabethan Poet's Contribution to Public Health: Sir John Harington and the Water Closet," Sigerist omits to mention that this useful invention was a rediscovery in point of time, for it was known to Minoan civilization. These are trivial criticisms. In this book, admirably edited and produced, we have the best of Sigerist.

ARTHUR S. MACNALT.

*Henry E. Sigerist on the *History of Medicine*. Edited by Felix Marti-Ibañez, M.D. Foreword by John F. Fulton, M.D. (Pp. 313 + xviii. \$6.75.) New York: MD Publications, Inc. 1960.

†E. Clarke (1914). "The Medical Education and Qualifications of Oliver Goldsmith." *Proc. roy. Soc. Med.*, VII, No. 4. *Sect. Hist. of Med.*, 88.

**St. Peter's Hospital for Stone 1860-1960*. Edited by Clifford Morson, O.B.E., F.R.C.S. (Pp. 64 + viii; illustrated. 21s.) Edinburgh and London: E. and S. Livingstone, Ltd. 1960.