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POSTGRADUATE MEDICAL EDUCATION: THE PRESENT OPPORTUNITY AND THE IMMEDIATE NEED

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Medical education is now much "in the air." During the past quarter-century much thought has been given, many discussions have taken place, many arguments have arisen, and many excellent reports and monographs have been published dealing with the undergraduate curriculum and the issues to which it gives rise. The adoption of the Goodenough Report by the Government gave the universities the means to achieve their ends. The compulsory year of house appointments before full medical registration freed the undergraduate curriculum for education rather than instruction. Finally, the liberal reform of the G.M.C. regulations has made it possible for universities to experiment with the curriculum in a way impossible before.

There are, of course, imperfections. I hope there always will be, otherwise we shall stagnate. But, by and large, medical education in the undergraduate stage is not too bad in this country at the present time. The curriculum, though still overloaded, is being lightened; its separate parts are slowly being integrated; examinations are being reformed; the teachers have a clearer idea of the nature of learning; compulsory lectures are being replaced by discussion groups; and here and there experiments are being tried. That the problem is important is everywhere recognized. And if proof is needed, the many excellent and stimulating reviews, reports, and papers bear witness.

By contrast, postgraduate education has almost no literature in this country, though it has in Canada and the United States. It is true that the postgraduate medical institutes of London, later the British Postgraduate Medical Federation, have produced many annual reports, and that the Royal Colleges set up committees to define the training needs of consultants and specialists, and the need for the development of certain specialties. But these committees were concerned rather with the maintenance or improvement of standards, and with certain technical questions, than with the broad questions of the purpose of postgraduate medical education and how this purpose is to be achieved.

In this paper I hope to discuss these problems. I lay no claim to originality. The views expressed here are the outcome of discussions with colleagues on both sides of the Atlantic and particularly of discussions at the 1942 Club and a meeting organized by the Nuffield Provincial Hospitals Trust. Their thoughts have been shamelessly plagiarized by me.

The Scope and Purpose of Postgraduate Education

Graduate or postgraduate education begins on qualification and, in a formal sense, ends when the

doctor becomes an established scientist, a consultant, a principal in a general-practitioner partnership, an established administrator, or leaves medicine for the arts. I emphasize "in a formal sense," because in fact education is terminated only by one event—namely, intellectual death; and it is, of course, the primary purpose of all good education to postpone this unhappy event as long as possible, ideally to the actual moment of physical death. As we shall see, arrangements for postgraduate education, that are by no means Utopian dreams, would have the merit of enabling those general practitioners and specialists who wish to go on learning to do so. And education can do no more. It cannot raise the dead.

In case my meaning is not clear, let me try to explain. Traditionally, teaching methods may be divided into two categories: instruction and education. Sir Joseph Barcroft used to define a lecture as a process by which information is transferred from the notes of the lecturer to the notes of the lecturee without going through the minds of either. Instruction is to some extent like that, but if it is to achieve its purpose it does make a temporary or permanent imprint on the mind of the recipient. But the recipient's mind is largely passive. He is *told*. Education demands the active participation of the student's mind. The student learns not by being told but by doing. What he does is then subject to discussion, appraisal, correction, approval, or discord. Education is not a one-way transfer of data. In principle, and in practice at its best, it is a process in which the experiences and the ideas of two or more minds meet and are sharpened. It engenders an attitude, an appetite, and at length a habit of mind that, given opportunity, brings steadily increasing knowledge, awareness, and discrimination to its possessor.

This brief statement indicates at once the scope, the purpose, and the method of education. It applies, of course, to the undergraduate period, in which the whole field of knowledge relevant to disease is touched on. But it applies still more to the postgraduate period in which, as it were, the undifferentiated organism is being shaped to the more specialized function which it will serve in the body politic of medicine. Education in the period after graduation is an expansion and extension of undergraduate education, a process that can and should continue throughout life.

While the general principle should apply to all, its detailed application will vary according to ultimate specialized function. The future scientist will need training in precise methods of identification and measurement, whether these be in the clinic, the

laboratory, or in the field, or indeed in all three. The needs of specialist physicians and surgeons have been considered by the Committees already mentioned and will not be further detailed here. The needs of the general practitioner are not basically different in nature, though they are in pattern of experience. These needs, numerically the largest, are at present under active discussion. Administrative and preventive medicine again deal with a different pattern of experience with which the postgraduate must become familiar. The details differ, but the needs are the same: the need to become familiar with the material, with the problems that have been solved completely, partially or not at all, with the methods of solving them, and with the processes of arriving at a balanced judgment of the problem under consideration. Whatever his chosen field, the established doctor should have an open and inquiring mind (for even his patients have much to teach him) and he should have the facilities for exercising it.

The Dimensions of the Problem

From what has been said it would seem to follow that the period devoted to formal postgraduate education should extend from the beginning of the compulsory pre-registration year till the end of the senior registrarship, in the case of the specialist, or the completion of his training posts in hospital in the case of the general practitioner. Under present circumstances a man may not finish being a senior registrar till 10 to 15 years after graduation. This period is far longer than the five years envisaged by the Committees of the Royal Colleges and the periods of similar order demanded by the American Boards. I cannot believe that any responsible body of educators would have chosen so long a period. And in fact this was not a deliberate choice; the situation has got out of hand.

This is not altogether surprising. The National Health Service is barely 14 years old. It has, as it were, reached the age of puberty, and certain habits which it got as a child will have to be corrected if adolescence is to be productive. This particular situation has arisen because the junior posts of house officer, senior house officer, registrar, and senior registrar are the means by which much of the medical work of the service is done. Their number has not been exactly related either to the needs of education or to the probable vacancies at consultant and other levels. This most important problem is fraught with such difficulties that to discuss it adequately would take us too far afield. Two points only may be noted. First, both Spens and Platt committees agreed that all posts from house officer to senior registrar should be regarded as training posts. Second, it is apparent that the needs for training posts, and the needs for pairs of hands to do the work of the Health Service, are not the same. Until this distinction is made the situation will remain as confused as it is now.

The most important dimension of our problem is the distribution of these training posts between teaching and non-teaching hospitals. At the present time two-thirds of the house officers and indeed of all posts up to and including senior registrar, are held in hospitals administered by the Regional Boards. This brings us at once to the nub of the problem. When the National Health Service was established the hospitals under the Regional Boards were regarded as service and not as teaching

hospitals. Their function was to provide a service for the sick as efficiently and as cheaply as possible. Nurses, radiographers, physiotherapists, and other ancillaries would have training schools and educational facilities, because the plain fact was that without these facilities the hospitals would not have had trained staff to carry out these services. But, oddly enough, no provision was made for medical education. The old idea, that when a man becomes M.B., B.S., or M.R.C.S., L.R.C.P. he is trained to practise medicine, surgery, and midwifery on his own account lingered on as old ideas always do. The young doctors have had to go to regional hospitals for pre-registration posts to qualify and to gain experience; they have to go to regional hospitals for subsequent posts. The hospitals needed them to do the work and the men needed experience. It was a marriage of convenience. What was not then so apparent, but now is, was the notion that educational facilities are necessary for the proper use of experience. A young surgeon who in the course of his training is able to boast that he has done 200 partial gastrectomies on his own, but who has never had the advantage of working with a skilled team, including radiologist, pathologist, and physician, and whose own surgical technique has not been perfected by working under a master, goes into the independent practice of surgery as a positive menace to the sick. There is probably no more certain method of hastening that closing of the mind that constitutes intellectual death than "experience" uncorrected by the kind of interchange with other minds that educational facilities provide.

While the facilities for postgraduate education in the undergraduate teaching hospitals and in the Institutes of the Postgraduate Federation of London are in general adequate, those in the numerically more important regional board hospitals are not. Let two senior administrative medical officers speak:

"... Whilst the Board is generous with study leave, with grants of time and expenses for junior staff to visit the University centre, and with 'subsidized' part-time appointments for those wishing to take such courses as that for the Diploma in Public Health, the formal arrangements for the education of junior staff are practically nil."

"There are no facilities existing, with the exception of pathology, anaesthetics, and mental health, for any formal teaching of registrars and senior house officers. This is a disturbing feature when one considers that a medical student undergoes a long and disciplined training at his teaching hospital and is then seconded to two selected posts for his pre-registration experience. After that time the practitioner is left oft-times to his own devices to gain experience at the expense of the British public. In some cases there is neither adequate supervision of his work nor is formal training given. It is noteworthy that where a consultant is prepared to give time to personal teaching at the bedside, he usually has no difficulty in filling his junior posts."

Two further dimensions require note: first, only one-quarter of our graduates stay in hospital or specialist service. Up to now discussions on postgraduate education have been too closely focused on them. The educational needs of others, and particularly those going into general practice, are still in the melting-pot. The broad shape of the ultimate casting can, however, be made out. Finally, as already noted, there are more

than 3,000 graduates from overseas. Their needs are rather different from those of our graduates. For example, in India and Pakistan the need for doctors is such that in the 14 years since the British left the number of medical schools has approximately doubled. The facilities in these schools are, of necessity, much less lavish than in ours. The students tend to be taught largely by lectures; opportunities for practical work are small. Instruction rather than education is the rule. While there is no doubt that these men will benefit from any improvement in facilities in regional hospitals, what is provided for our graduates is not enough. They need more attention, particularly in practical work. The additional facilities and arrangements needed for graduates from abroad is another important point that cannot be discussed further here.

In this country and at this time there should not be any need to justify educational facilities during this period of postgraduate training in hospitals. Nevertheless, for completeness, they may be listed:

(1) Education facilities improve the speed and accuracy of learning. (2) Ultimately the quality of the care which the National Health Service provides depends on the knowledge and skill of the doctors and the way in which that knowledge and that skill are applied. (3) Medicine is a rapidly advancing science. Efficiency demands (a) that our own medical scientists are in the forefront of those advancing knowledge; (b) that doctors working in the Health Service can learn, and thus change their practice, as knowledge grows. (4) At the present time there are upwards of 3,000 graduates from the Commonwealth and overseas holding hospital training posts, many of them from Africa and Asia. To be fully competent many of the men need education even more than our own graduates. If this is given they are likely to return satisfied, and thus ambassadors for good relations with this country. In the emergent nations, doctors are not unimportant members of society.

What is to be Done?

The first point to be made is that the present arrangements of the National Health Service provide what is in many ways an ideal framework for satisfying the need. This is not accidental. The architects of the Service were far-sighted men. The Service is divided into regions based on a University with a medical school (except Wessex) or on several medical schools of the University of London. Each university has appointed a postgraduate Dean or Director to supervise postgraduate education in the region. In England and Wales each region has one or more teaching hospital boards (except Wessex) and a regional board. These have overlapping membership. They are ideally suited to making a partnership of postgraduate education in the region. In Scotland the conditions are even more ideal, because the regional boards also look after the undergraduate teaching hospitals.

While the machine is ideal, it has not yet begun to work. The situation is not unlike the ill-fated expedition to Walcheren.

Great Chatham with his sabre drawn
Stood waiting for Sir Richard Strachan.
Sir Richard, longing to be at 'em,
Stood waiting for the Earl of Chatham.

In fairness, it is to be said that the universities have been fully and profitably occupied with perfecting their arrangements for undergraduate education, and for the postgraduate education of medical scientists, while the

regional boards have been fully and profitably occupied with organizing their services to the sick. It is also to be noted that the Hospital Plan recently announced by the Minister of Health will enormously facilitate the ideas which my colleagues hold and are here presented.

It would be profitless and impertinent for a private citizen to suggest in detail in what way the universities and regional boards should organize and finance postgraduate education in their regions. No doubt there will be a Dean or Director responsible to a joint committee, as at present. Perhaps the Royal Colleges and College of General Practitioners might also be represented. It would seem extremely important that the regional authority, whatever it is, should review its training-posts, say every two years, and any in which facilities are inadequate should be discontinued, the service work being done in some other way by men who are *trained*. And it should not be possible, as it is at present, for another regional authority to reinstate that post.

Probably some central body will be needed to co-ordinate the regions, and it may be that some independent body should periodically visit or inspect the regional hospitals as the G.M.C. and University Grants Committee do the universities.

The scheme will need financing, either through universities or regional boards, or both, though a very modest additional expenditure could produce spectacular results.

Postgraduates, particularly from overseas, will need help and advice in the choice of careers and posts.

These are all administrative points that will need to be settled at a high level. In any case, administration is pointless (*pace* Parkinson) unless there is something to administer. What this might be has, in this country, just began to take shape in men's minds, though its prototype has long been active in the United States and Canada. What I am going to describe, albeit imperfectly, is my impression of the New Jerusalem which those who attended the Nuffield Provincial Hospitals Trust conference saw.

The Teaching Unit of the Regional Hospital

Just as the units in undergraduate education are the undergraduate teaching hospitals, and their associated medical schools of the university, so the units for postgraduate education should be the larger hospitals of the regional board.

What is needed in such a hospital is a matter that has received much more attention in the United States and Canada than here. In the United States it is very difficult to be a respectable practitioner of a specialty without having satisfied the specialty boards of the American Medical Association and Colleges. Before admitting to their examinations these boards require as a rule a minimum of one year's approved internship, and two years' approved residency training, as well as other experience. Hospitals wishing to have their interns and residencies approved have to submit their training programmes, an account of the facilities they offer, and submit themselves to inspection. The Board may wholly disapprove or approve a limited number of posts and for a limited time. In Canada the Royal College of Physicians and Surgeons plays a similar role. Further information can be obtained from these bodies. The

Thirty-Fifth Annual Report on Graduate Medical Education in the United States (*J. Amer. med. Ass.*, 1961, 177, 620-641) occupies 344 pages when set out in ordinary type. I shall not try to summarize American and Canadian criteria, but suggest how a beginning could be made.

The needs are of three kinds: first, a minimum standard of service; second, physical facilities to allow the programme to be carried out; and, third, the right atmosphere of inquiry.

I. A Minimum Standard of Service

Unless the service reaches a certain standard a hospital should *not* have training-posts at all. To provide them in such an institution is to invite the trainee to acquire slovenly habits and to become the kind of practitioner that a good medical service does not want. Minimum standards should include the following:

(1) A really good service in general medicine and general surgery, including acute work. (2) Clinical pathology and chemical pathology of adequate accuracy and range. (3) Radiological services of high standard. (4) A post-mortem service with a high frequency of examinations and a regular system of display and discussion at which the physicians and surgeons attend. (5) Medical records properly made out, filed, and indexed under the control of a records clerk. (6) Adequate out-patient facilities.

All these criteria imply that a hospital should be of a certain size. But it should be stated unequivocally that size is not the decisive factor. This is quality of service.

II. Physical Facilities

Certain physical facilities must exist before a hospital is allowed to have training-posts. I would make two of them obligatory:

(1) A library. The American Medical Association council on medical education demands this from a hospital recognized for residency learning:

"Institutions offering approved residencies should maintain an adequate medical library containing carefully selected authoritative medical textbooks and monographs of the latest edition of the *Index Medicus*, and current medical journals in the various branches of medicine and surgery in which training is being conducted.

"The medical library should be in the charge of a qualified person who should act not only as custodian of its contents but also arrange for the necessary cataloguing and indexing which will facilitate reference work by the resident and attending staff. A permanent committee of the medical staff should be responsible for the organization and development of this department.

"The medical library should be readily accessible to the resident staff, located, if practicable, within the main building of the hospital. Its size may depend to some extent on the availability and the use which can be made of other library facilities in near-by institutions. Every hospital conducting graduate training must have, however, a basic collection of medical texts and journals available for ready reference, whether or not accessory facilities are available."

(2) Ward laboratories or side-rooms. In Scotland I am glad to say that students, house officers, and registrars still make a practice of examining blood, urine, sputum, and faeces from their patients and making simple measurements. In England the practice is nearly dead. Send it to the "Lab." I know from bitter experience that this is just

bad medicine, and that facilities must be provided *now* in all institutions having training-posts. This neglect of elementary laboratory procedures is the only really bad development in medical education in my lifetime. I have just had a distinguished American visitor running my service. He was horrified at the neglect of the laboratory by the young in England. The terrible thing is that new hospitals are being built in this country without such facilities. I should make it plain that though I, and some of my colleagues, would make this an obligatory facility, others, and perhaps most, do not mind.

(3) A room or rooms for meetings. While these rooms should be specially built to provide a lecture theatre for large numbers, and one or more rooms with adequate projection arrangements for small numbers, I have never known an institution in which it was not possible to find some room, even if it happens to be a patients' dining-room, a gymnasium, or nurses' lecture-room, in which at least a beginning can be made.

(4) A room for the clinical tutor. If chosen next to the library the clinical tutor's secretary could act as librarian.

Other facilities are desirable, but less urgent. They include:

(5) A lunch-room where consultants, registrars, housemen, and general practitioners can lunch together. American hospitals usually have a section or sections that can be closed off, thus enabling a group of, say, up to 20 to discuss a topic. The more hedonistic of us would regard this as a barbarous custom. But it does save time, and sometimes represents the only way in which a group can be assembled.

(6) Married quarters. If it is ever going to be easy to move graduates from one institution to another as their training demands married quarters are essential.

III. An Educational Atmosphere

Perhaps the most important objective is to achieve an atmosphere of liveliness, curiosity, and inquiry. This does not mean that the hospital should be turned into a research institution—far from it—but it does mean that the staff, junior and senior, should have an intense desire to learn both from their own experience and from that of others. This is not an objective that can be achieved quickly. It is not unlikely that a number of consultants, senior hospital medical officers, and registrars will be found to be already intellectually dead. They are the legacy of past neglect, and they represent the cross which the service must bear. But those who still live must see that new recruits fare better. The creation and preservation of this atmosphere depend on a number of factors, among them the following:

(1) *Attitude of Senior Staff.*—Most of us would agree that the most important formative factors in our lives have been the chiefs under whom we have served. The most important feature of a good teaching unit will be the standard of excellence demanded by the staff from their registrars and housemen. If histories are first-class, physical examinations accurate and complete, progress notes accurate and up-to-date; if the registrars and housemen themselves make simple examinations of body fluids, watch their patients being screened or operated upon, and regularly visit the post-mortem room—then it can be said that all the most important functions of the teacher have been performed. Clearly, every member of the senior staff must realize this is an essential part of his duty. One slack service can be carried; several ruin the atmosphere of inquiry before-mentioned. Hospitals with slack services should not be chosen for development.

(2) *A Responsible Person.*—Each hospital unit needs a man who shall be responsible for seeing that his unit gets the proper facilities and for arranging the educational programme. He could also advise graduates in the centre. He would no doubt wish to work through a small committee of his colleagues. Clinical tutor might be a suitable name. To do the work, the tutor should be relieved of some of his routine, but without loss of salary. He must be a man with energy, tact, and wisdom, and one who understands and cares about education.

(3) *A Programme.*—What has been done in the name of postgraduate education since the war has largely consisted of lecture and refresher courses. These are all right in their way, but they are not of much account. Indeed, they have performed a disservice in providing a façade behind which is emptiness. Education programmes at the postgraduate level should largely consist of discussions which may be centred on patients or ideas, or new work. At the Royal Victoria Hospital, Montreal, the hours 12–2 are set aside for interns and residents. During this time there are weekly clinico-pathological conferences, radiological conferences, case conferences in chest diseases, heart disease, etc., in which physicians and surgeons jointly review and judge patients presenting interesting problems. Other topics of interest are discussed as they arise. The great advantage of this sort of discussion and of the so-called grand rounds of American hospitals is that the practitioners of the neighbourhood may also attend and contribute to the case presentation and discussion. Thus the hospital is the centre of a programme for the area. It is difficult to overestimate the importance of this to the efficiency and morale of the general practitioner. The aim should be to make him in fact an integral part of the service. In this country I would guess that to arrange a grand round from 2.30 to 4 p.m. on a fixed afternoon, and to arrange discussions between 12.30 and 1.15 p.m. and between 5 and 5.45 p.m., would be most generally popular.

(4) *Time to Participate.*—Many regional hospitals have tried to arrange programmes such as have been outlined, but have failed because neither senior nor junior staff can spare time from their routine duties to attend. It is quite essential, if the scheme is to flourish, that the doctors have time to participate. Staffing must be generous enough to allow this.

(5) *Attitude of Junior Staff.*—If the junior staff fail to welcome such developments it is almost certainly the senior staff who are to blame. The young are anxious to learn, and appreciate any help. The competition for posts whose chiefs take trouble and are known to do so, show this.

How Long Would It Take ?

Given drive, and a small additional sum of money, I would think that every region in the country could find at least two centres, and most of them more, at which a beginning could be made with such a programme in the next year. These centres already have good lecture theatres and libraries, thanks to the local medical association. They need an organizer, and it is to be hoped that the staffing review will give them the time to begin and enjoy the programme organized.

It is to be hoped that after such a beginning a decision could soon be taken as to how many other centres are needed, and which should cease to have training-posts at all. The present position by which men go for training to hospitals where there are not the most elementary facilities and where the staff do not mind should be ended as soon as possible.

Is it Worth While ?

To begin something comparable with that here outlined will mean that some people will have to work quite hard and the Treasury will have to provide a small additional sum. Are the results to be expected worth while ?

The prizes are two. The first is the future efficiency of the Health Service. If this is judged important then it is difficult to postpone some development similar to that here outlined.

The second and more remote is the relationship between this country and the Commonwealth, and indeed with other countries, of which the emergent nations, because of the scale of their needs, are the most important. With certain additions that would have to be specially provided for them, their graduates would profit as much or more than ours. It is said that whether the uncommitted world tends to the West or the East for help is the most important problem of our time. It was also said, "Cast your bread upon the waters and it shall return after many days."

"The conclusions, that by 1965 supply and demand of manpower should not be much out of balance and that a surplus may exist after that date, will come as a surprise when one considers the crippling shortages of scientific manpower that have been experienced since the war. It is recognized that the balance is a statistical one; and that supply and demand in individual disciplines (we would instance mathematics as perhaps the most important example) cannot so easily be equated. There may well be important differences in the factors which govern employment prospects between the specialized technologist and the engineer with a general training; and between engineers as a group and scientists. These problems remain to be examined. But it is possible now to foresee something of the fruits of the efforts which have led since the war to such a striking increase in our annual output of qualified scientific manpower; 10,000 in 1955; 16,500 this year [1961]; with a prospect of 20,000 by 1965, and 30,000 in 1973. In our view the possibility that there will be a surplus of scientists over immediate 'demands for employment' should be welcomed. It should make possible a rational, as opposed to an emergency, use of the scientific disciplines. It should mean that at long last we shall have a supply of qualified manpower with a scientific training for management, administration, and the professions generally, in addition to those who up to the present have been drawn inevitably in vocational employment. . . . The calculations in the Report do not cover medical, dental, agricultural, or veterinary qualifications, nor the specialized technologies, nor the claims of the 'social sciences' for which provision would have to be made in any national review." (*The Long-Term Demand for Scientific Manpower*. Advisory Council on Scientific Policy Committee on Scientific Manpower Statistics Committee. H.M.S.O., price 1s. 9d. net.)