MEDICAL EDUCATION:

A REVIEW OF SOME MODERN METHODS.

BY

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I.

THE institution of the medical and surgical units in London was an attempt, originally begun by the Board of Education and continued by the University Grants Committee, to give a more scientific character to medical education. Osler and others had criticized our teaching of the final subjects on the ground that it was too empirical, and had not incorporated the later discoveries of physiology. They had argued that it could not be improved in this respect unless some system was introduced by which men well versed in the latest work of the physiological and pathological laboratories could be placed in important teaching positions, under such conditions as would enable them to employ on the clinical problems of human disease the same methods as were in use among the physiologists and pathologists. They admitted that the clinical teachers were in touch with the heads of the laboratories and regularly sought their assistance, but they argued, and rightly, that to get the best teaching this was not enough. Men who had for years been engaged in clinical work and had been unable to take part in recent discovery were, they said, incapable of using themselves the laboratory methods now required to make fresh discoveries in medicine, and in consequence could not impress upon students either the exact bearing or the importance of such work. English teachers were excellent observers, and had rendered great service in distinguishing and describing diseases up to then confounded; but the science of medicine now required much more than bedside observation. Not only was observation itself largely transferred to the microscope, but also the laboratories had imported the methods of experiment and verification into many regions where observation had hitherto been employed alone, and with this change had arisen a different way of looking at clinical problems and a greater hope for their solution. In England no provisions existed such as were found in other countries whereby men could if they wished devote themselves rather to the study of disease and the teaching of students than to earning their living by seeing patients, and until there was some sufficient payment for such men not only would English education suffer, but also English medicine would not rank with that of other countries. A professorial system was advocated much like that in force throughout Germany, whereby a clinical division of the hospital, with properly equipped laboratories attached to it, should be placed under the control of a chief chosen for scientific distinction, around whom should be grouped a staff of younger men to be engaged in research under his guidance, and to assist him in the education of students.

These ideas, which were promulgated more than ten years ago, were approved by medical teachers and by the Board of Education, and steps were taken to bring them to a practical issue. But the war intervened, and nothing could be done at the time. As soon, however, as peace returned the Board of Education again took up the question, and began in a few of the London schools the trial of what is known as the unit system, in which these ideas were embodied. In 1919 the University Grants Committee took over the university work of the Board of Education, and continued its policy. Medical and surgical units have been established in five London schools, and an obstetrical and gynaecological unit in a sixth.

In London, owing to the peculiar relation of the medical schools to the University, the Board, and later the Grants

Committee, granted money for the maintenance of the units directly to the school. But the University Grants Committee could only deal with the schools as schools of the University, and made its position and its policy clear by requiring that in all such cases as might originate under its sanction the director of the unit should be a professor of the University, and also by requesting the University to inspect the working of the units. The Grants Committee, as a committee of the Treasury, considered itself hardly fitted by its position to act as a committee of experts in education, and was also extremely desirous to maintain the autonomy of the universities and not to usurp functions properly belonging to them.

The experiment made in London roused great interest in the other universities of England and in those of Scotland. In none of those up to that date had the emoluments of the chair of medicine been sufficient to provide such a staff and equipment as was now established in London. Everywhere much discussion took place, and in many schools fresh schemes were adopted for the improvement of their teaching. Some made chairs with arrangements similar to those of the London units; others adopted different plans.

The chief difficulty lay in the position of the professor. He had not till then been expected to be more than a good teacher of the usual type. It was not universally accepted that a man with more laboratory knowledge was required, nor was it desired or even possible to displace the present occupants of the chairs. Nor again did the universities, which were very poor, feel able to spend the three or four thousand pounds which are required to maintain a complete unit of the London type. It must be added that the supply of men was not there even if there had been a demand for them. Since no such posts as these had existed previously, men had not trained themselves to occupy them. Those who had been interested in experimental science had gone into physiology or pathology, and had indeed cultivated a positive contempt for clinical medicine, because it was contaminated by the pecuniary interest of private practice. A few men in the schools, whose names will occur to everyone, had indeed combined experimental and clinical work, and in neurology a large amount of both had been carried out, though it had chiefly centred round a great special hospital which was not one of the undergraduate schools. But it cannot be said that clinical medicine had been as a whole marked by experimental research, and even pathology had not approached the position which English physiology had long held.

This lack of men will soon be supplied. In the London units and elsewhere there are now many young men at work, who are looking forward to a life of study in preference to a life of gain, and will make excellent professors and assistants of the kind intended. As soon as the life was made possible there was no lack of candidates. Such men are even now in demand to a certain extent, and will be more and more required as time goes on. The change has, moreover, already broken in upon the bad system of closing appointments to all but those locally trained, which has been a great hindrance to improvement. In more than one school an outsider has been appointed to an important position, and undoubtedly in future the need will more and more be felt to obtain the best men available from whatever source. There is no doubt that what may without exaggeration be described as a new spirit in clinical teaching will be permanent, and that public reputation and the demands of students themselves will ensure its retention and its growth.

II.

A certain amount of dispute has also centred round the conditions in which such a chair should be held. In London a professor of medicine is required to resign all private practice, and that stipulation has been adopted in some other universities. It saves a certain amount of opposition, since other members of the faculty feel a natural hesitation in voting a large salary to a colleague who will compete with them in practice. Some men, again, greatly dislike private practice, and will gladly give up the prospect of a

large income for the sake of an academic life. Such men also usually find that the work of a professor as they conceive it is so exacting that it leaves no time for anything else. It must be said that this monastic view of the professoriate of medicine has never been taken anywhere else than here and in a few American schools, and it is certainly unreasonable to insist upon it everywhere. There are, at any rate, other possibilities. A comparatively young man might, for instance, be elected for a limited number of years, on the understanding that after that he might resign his chair and take a practice, or that the university might think it better not to re-elect him. There is something to be said for such a plan, for a man's invention rapidly deteriorates, while his experience and his judgement advance, and this method might be a means, if not to give him the best of both worlds, at least to give both worlds the best of him. But it has also disadvantages which are equally obvious. Or, again, it might be preferred that the professor should be the embodiment of judgement and experience, and that the more imaginative qualities which are certainly needed should be supplied by an assistant, who should be placed above the necessity of practice.

Opinions will differ, too, as to the part which the professor should play in the school organization. At one school he may be given the charge of organizing the whole of the teaching in the final subjects, while in another he may be merely a colleague working alongside the other members of the staff, and on the same terms with them.

For some time to come circumstances will differ, and the plans adopted will differ accordingly. But, so far as the first of these points is concerned, it seems not unlikely that the best candidates for the chairs will themselves prefer an academic life and ask to be relieved from practice, while if they do so the universities will probably find means to render this possible.

The remainder of the staff is, in London itself, treated with even more variation. At one school the first assistant may have part of the day to himself, while the juniors are fully occupied; at another the reverse may happen, or the same school may vary its conditions at different times to suit the persons concerned. The more variation the better. The paid assistants are not, however, the only persons on the unit staff, for these units are centres to which are drawn not a few graduates from other countries, especially from Canada and the United States, who wish to come to Europe and to work under European teachers. In at least one instance a London professor has taken duty for a colleague in America, and the latter in his turn has acted temporarily for the professor here.

We may hope that the poverty of the universities, which sadly hinders the introduction of expensive changes, may gradually be relieved, though we can hardly expect to obtain the immense endowments which universities, and especially medical schools, have received of late years in America. In that country gifts to education have taken the place of those gifts to religion by which our forefathers sought to perpetuate their names in this world and to mitigate their sufferings in the next, and the restricted insight which leads men to prefer material benefits to others has turned such gifts almost entirely to the scientific, and chiefly to the medical departments. The same tendency is visible here, but the donors are less wealthy and are therefore ransomed at a smaller cost. In America, too, there are few other objects on which a man may spend largely; in the old world there are many; and since our Governments have not hitherto accounted public benefactions of this kind worthy of honour, public giving has turned rather to those channels which conduce to the rewards that good men naturally desire.

III.

It remains to consider the effect of recent changes upon the student. It was allowed, even by those who criticized the system then existing among us, that the practical instruction of the British and Scottish schools was probably the best in the world. Nowhere else was the feeling of responsibility, which is the best of all incentives to learning, so early developed as with us, and nowhere were general

practitioners so competent. Our methods had been imported into American schools, and American physicians were unanimous in approving them. Criticism turned rather upon the future outlook of the men we trained. It was alleged, but on *a priori* grounds and without any attempt at comparison with other countries, that though they left the schools excellently equipped for practice they were not so trained in what may be called by contrast the theory of medicine as to lead them to pursue independent research in their daily work, or to assimilate for practical use the gradual advance of physiological and pathological discovery. It must be repeated that this was almost entirely founded upon what the critics thought our training would produce, rather than upon any actual observation of the conduct of the living, wriggling general practitioner himself in this and in other lands; and even so, no one wished that the practical excellence which was admitted to exist should be impaired, but it was desired to add to it a deeper study and a profounder view. Everyone acknowledged that it was of the first importance to the public that a man should know the clinical significance of what he saw or felt or heard in the patient's body, but the critics added that he should be trained continually to question the meaning of these phenomena, to refer them to wider physical laws, or to seek explanations in the most recent results of physiology and pathology.

The recent advances in these sciences have led to an astonishing increase of those methods of clinical observation which depend upon the test tube and the microscope. The student has many more ways of observing his patient than he had aforesaid, and a complete account of any single case of disease is much longer and much more complicated than it used to be. The employment of new methods raises many fresh questions in his mind. He asks himself why this element in the blood is decreased or augmented, or why this constituent in the urine is absent or enormously in excess. His horizon is extended, and with the addition of each fresh phenomenon to the sum of his observations a fresh object is afforded to curiosity. All such fresh work is ill understood at first, but behind the outer fringe of new observations law gradually advances, consolidating—as the soldiers say—the territory won, classifying, reducing to regularity—or, as we call it, explaining the phenomena—and adding width and depth to the science of medicine.

It is, of course, true that these laboratory methods are on the one hand so laborious that few have time to continue them in after-life, and also need such constant exercise that to use them only occasionally as private practice offers is probably more dangerous than profitable. Yet a man who has used them and understood them will better realize what they mean and what they can effect. He will be able to some extent to form his own judgement on laboratory reports, and will not put a penny in the slot and expect an answer to all his difficulties.

Yet it must be acknowledged that there is a little to be said on the other side. The new labours entailed upon students undoubtedly diminish the time they can spare for the practice of the old methods. The time spent with the microscope is not spent with the stethoscope, and that given to the laboratory is so much taken away from the training of the eyes to see, the ears to hear, and the hands to feel the body itself. This is in a measure compensated by the greater labour of the teachers. The student is an instance of intensive cultivation. He is taken over his work by one teacher after another, and the effort is made by constant pressure to squeeze into him in a short time that which he used to absorb more slowly by himself. But there is no denying that something is lost by these methods. The student thinks less for himself.

Nor can it be denied that the multiplicity of the phenomena diminishes the consideration which can be paid to each. The horizon is vastly extended, but there is less opportunity to dwell upon any of its details. There is even some fear that the change may lead to the direct opposite of what was intended, and may, while greatly increasing the student's information, tend to a more superficial rather than to a profounder habit of thought.

This has led some to question whether all that can be

required of the student can usefully be expected of him within the years of his student course. Claims have of late years been put forward that in the final examination questions should be put upon various special branches of practice. Specialists have upheld the importance of their particular specialties, and have stated the dangers that ignorance of them involves. But the authorities have shown a tendency to answer that the student cannot be expected to know the prophets as well as the law, and that under present conditions some subjects must inevitably be left for special study after qualification.

This leads naturally to the question what effect the increasing subdivision of medicine and surgery has upon education. In some ways it is beneficial. No doubt a man who treats one organ or one class of diseases sees more examples of it and can study it more fully than one in more general practice. This is of advantage both for pathology and for treatment, and both patients and students reap the benefit. And since each organ or disease can afford examples of the wider laws of pathology, subdivision does not necessarily cramp the view of either teacher or student. Indeed, it may be argued that it improves it, for the student seeing, for instance, the effect of inflammation in various conditions which are clearly separated for him, gains perhaps a more distinct idea of the process than from a confused medley of cases. He can compare its effects in syphilis and tubercle, or see it exemplified in the skin and in nervous centres.

Yet there is a weakness in the present system to be set against its gains. In former times the hospital was more or less representative of ordinary practice. In the out-patient room and the wards taken together most of the problems were exemplified which would present themselves in later life, and, as in later life, they were presented unexpectedly. The patient might be suffering from almost any kind of disease, and the student had to keep his clinical knowledge ready and in constant use. He was expected to give a careful account of the patient's symptoms, and though in most cases he was not expected to form a diagnosis, yet he constantly endeavoured to do so, and in this way was always practising himself in the same processes of thought as he would pursue in later life.

It is different now. He knows that when he is in the V.D. clinic he will see syphilis and gonorrhoea, and in the tuberculosis department cases of that disease, whereas he will hardly see a case of either in the rest of the hospital. He is not, therefore, as he used to be, continually on the look-out for these diseases in the general wards or in the out-patient room, and he is so much the less practised in diagnosis. In fact, to a considerable extent he postpones the practice of diagnosis to the time at which he enters upon an independent position, and finds that he is obliged to sort his patients for himself.

IV.

In this matter there are two directly opposite opinions current among those who theorize upon education. British teaching placed diagnosis very high in the scale of medical duties. It was considered of the first necessity to find out what was the matter with the patient, and the student's mind was directed to this end throughout his examination of the case. It must not be thought that he was allowed to jump to conclusions. The very contrary was the fact. It was constantly impressed upon him that his examination must be as complete as possible, and his constant fear was lest his master should discover omissions in his notes and censure him for negligence, or, still worse, for forming an opinion without having taken the pains to guard it by sufficient observation. He was constantly warned that in practice more mistakes were due to want of observation than to want of skill, and the criticism of his teacher was invariably directed to the inaccuracy of his notes rather than to the incorrectness of his diagnosis. In so far as precept and example could, he was made to understand that the first requisite of a physician was accuracy in observation.

But, on the other hand, he was taught that while in

many cases judgement should be held in suspense, a diagnosis was the object to which observation was directed. His examinations and his notes were not made for the mere purpose of making them, but with this end in view. Nor was it thought necessary, it must be allowed, to make a study of basic metabolism in every case of bronchitis, or that every observation that can possibly be made upon any case should be made upon all.

There is, however, now current, especially in America, what may be called the encyclopaedic theory. Not the formation of judgement but its suspense is the function held most high. British teachers are criticized for training with a view to diagnosis instead of insisting on observation alone. Diagnosis itself is made a secondary thing, an object possibly of distant hope, like a future life, but not a thing to guide our action in the present. The first thing necessary is to make such a complete and detailed study of the patient's state that no cell remains unturned. That the world shall not contain the books (of notes) that shall be written is perhaps of little moment in a country that measures 1,500 by 3,000 miles; that before an exhaustive study such as this is finished both teacher and student may have sunk into the grave is not an obstacle in a population of a hundred millions, nor where it rains dollars need the cost be prohibitive. But it seems doubtful if in some cases the patient's untimely death may not render nugatory the incomplete though magnificent attempt.

Seriously, however, it is to be hoped that the British point of view may be maintained. On nothing has so much nonsense been talked as on the subject of education, and on nothing are sensible men more prone to push their views to an excess which is ridiculous. Just at present the immense increase of our powers of observation has naturally led men to exaggerate its scope. We have indeed seen instances in which new light has been shed by phenomena which are usually insignificant, but that is not to say that such occurrences are common. It still remains true that in the great majority of cases we know the limits within which laborious observation may be usefully employed. And while it is in thorough accord with our traditions to ply observation to its fullest limit, yet it is our habit to try to make up our minds.

It is often said that the British, or perhaps the English, are of a race that has no sympathy with principle and is interested in action alone; that they are efficient in difficulties but can give no reason why; that the Constitution works, but as a product of human reason is absurd; that we have tumbled into an empire which will perhaps continue by good luck but certainly not by good management. That is a complete misreading of the English character. The real feeling which shapes English thought—and thought is always and in all men moulded by feeling—is a sense of the immensity and the imminence of the Unknown. This is present to us most vividly throughout our lives. We desire a logical basis for action as much as other races, but we have a haunting feeling that we have never observed the whole. We take a provisional conclusion and act upon it—perhaps we are readier in making such quick judgements than some are—but we know that it is unsatisfactory and uncertain, and we doubt whether all conclusions are not much the same. We are apt to think logical rules of action unsafe, because they are deduced from principles whose basis, from the fallacy of insufficient instances, is probably unsound. Few general laws command respect with us, and truth seems very far away.

With this genius and cast of mind our critics may be sure that an undue reliance on precocious diagnosis is not likely. In medicine as in other matters it is our habit to treat conclusions as provisional. We do, indeed, desire some ground for action when action must be taken, for it is a maxim with us that the King's Government must be carried on. But we use it as a hypothesis only in default of a better, and we seek and welcome fresh facts with equal pleasure whether they prove it or disprove. Where no action is immediately necessary we enjoy the luxury of contemplation as much as others, but as in most cases something must be done, we make the best effort of which our rude minds are capable, and we call it common sense.