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THE MEDICAL CURRICULUM AND PRESENT-DAY NEEDS

BY

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A recently qualified man once wrote to the late Sir Norman Moore asking his advice as to what he should read. He received a list containing most of the English classics. That was Sir Norman's characteristic way of urging that a medical man should possess a general education and not merely a technical training. With the ever-increasing demands on the student's time, this desideratum becomes more and more difficult to attain. Yet if a medical man is to fulfil his role adequately his interests must be wide and his general education sound. The General Medical Council has taken a step in the right direction by trying to raise the standard of the entrance examinations to the profession. As nearly every medical school is embarrassed by a surplus of students, and as these students find it increasingly difficult to earn a living after qualification, it is eminently reasonable not to open the door of entry too wide. Recently I strongly contested the statement in the public press by a teacher of the preliminary subjects that it was generally recognized that the students of to-day were mentally and morally inferior to their predecessors of thirty years ago. Mr. Hentschel, who also teaches these subjects, while agreeing with me on the general question, pointed out that during the years of business depression a considerable number of quite unsuitable youths entered only to be rejected at the early examinations, whereby we clinical teachers were spared much trouble. There always seems to be an inverse ratio between business prosperity and the number of entrants into the professions. All this strengthens the case for stiffening the entrance examination. It is much kinder to both the prospective student and his parents that he should be checked at the outset from attempting a career for which he is not adequately fitted; disappointment, and loss of time and money, would thus be avoided.

A Recent Development

An interesting development of the last fifteen years or so has been the way in which the universities and hospitals have thrown the responsibility for teaching the preliminary subjects—chemistry, physics, and biology—on to the schools. Thus an increasing number of students enter Cambridge having already passed the First M.B., and I gather this is the experience elsewhere. The standard of teaching in chemistry at school has generally been very satisfactory, and that in physics soon followed suit; but for several years that in biology lagged behind. At Cambridge we found that the percentage of rejections in biology was far higher for the school candidates than for those trained at the University. Of late, however, that difference has been steadily diminishing—evidence of the improved teaching of biology in the schools. Now the average boy will pass an examination permitting him to enter on his medical education at 16, and he will

probably attempt to pass in these preliminary subjects a year later. I am convinced that this is a mistake. I am one of those who have strongly maintained that the study of anatomy and physiology should not start before the age of 18. If two years are taken over the preliminary subjects they will not be rushed in the way they too often are, and there would be time for general education to be continued. It is a mistake to restrict education to professional subjects so early in life as 16.

Training in the Basal Sciences

The natural and proper enthusiasm of the teachers of these preliminary subjects is, I think, sometimes apt to lead them to forget that they are training students for medicine and not as embryo chemists, physicists, or biologists. Since these basal sciences are the foundation on which medicine rests, some knowledge of them is of course imperative. But it is the principles rather than a mass of facts that are needed. To this the teachers reply that principles are the last thing which the elementary student can grasp and that he must study, for instance, a considerable number of types in biology before he can appreciate generalizations. I am impressed with the validity of that argument, but am not satisfied that principles are more insisted upon now than that a larger number of types are studied than formerly. I believe the same thing applies to chemistry and physics, which prove an excellent mental training and a practice in exact observation, but I should like to feel sure that here, too, the principles were put in the forefront. It is all to the good, in my opinion, that the amount of mechanics in the First M.B. at Cambridge has been drastically reduced. The time occupied in the study of anything more than the most elementary principles of mechanics, such as the parallelogram of forces and the properties of levers, can then be devoted to electricity, which provides just as much mental training. Also it is more important that a medical student should know something of gamma rays rather than problems concerning elephants sliding down inclined planes.

Mr. H. S. Souttar wrote recently, "The medical curriculum has reached the limit of human endurance, and it is only the genius of the medical student for clearing his brain completely after every examination that enables him to preserve his sanity." It is a matter to which I have devoted some attention, for I have sat on three committees each and severally designed to improve and lighten the curriculum. The results were not impressive. Everyone agreed that the curriculum ought to be lightened, but each thought that the other man's subject could be cut down, while more attention should be given to his own. In this matter I ran true to type and stressed the importance of clinical medicine and a more psychological consideration of ill-health. There was in

fact a general consensus of opinion in favour of adding some psychology to the curriculum, but I do not see that it has been materially lightened thereby.

How Much Anatomy?

But this is to anticipate. We must return to the student, his preliminary studies cleared off, standing at the portal of his medical school rather ruefully regarding the superscription over it, "Art is long, but life is fleeting"—a truth which must haunt him to the end of his days. He is now about to start the study of anatomy and physiology. When we wished to lighten the curriculum we found the anatomists steadfast, unmovable, always abounding in the faith that dissection of the whole body is necessary unto salvation. Many non-anatomists do not think so. "Son of man, can these dry bones live?" How often I repeated those words as I dolefully studied them with Holden's *Osteology* by my elbow. Technique, exact observation, and memory training—true, all these are developed thereby; but when men tell me that after demonstrating anatomy for ten years or so they rapidly forget the finer details and only remember what is of practical importance to their surgery, then I ask, How much anatomical detail can you expect the average student to remember? I fully realize that the teaching of anatomy is a very different thing to-day. In my time we were taught almost as much error as truth so far as the viscera were concerned. To-day the student sees on the screen the stomach as it is in life and activity; he learns its variability within the limits of normal, and we too have had to learn the wide variations in the position of the colon compatible with health and normal function. He sees the skeleton living and moving on the fluorescent screen. But is it fair to expect the student to carry the whole weight of the old anatomy in addition to the new?

Physiology has become almost as abstract as physics, and a survey of examination results suggests that in some schools the teaching of it has departed from the lines suitable for the training of those designed to become doctors and not whole-time physiologists. If this is so, it is to be regretted, for there is no sounder foundation for medicine than physiology.

Materia medica has been cut down almost to the vanishing-point in most curricula, and rightly so. Now that the old type of apothecary has disappeared, doctors do not handle the raw material from which medicines are made, and the time formerly occupied in learning about them can be more profitably employed. As to the teaching of pharmacology, this has largely come under the aegis of the physiologist, who has in turn handed over histology to the anatomist. I am strongly in favour of the examination in this subject being conducted by pharmacologists and clinicians working in pairs. In this way its practical therapeutic aspect is kept to the fore.

Bridging the Gulf between Pre-clinical and Clinical Studies

The committees to which I have referred were deeply concerned to try to bridge the gulf between pre-clinical and clinical studies. Only in this way can the student be convinced that anatomy and physiology will really be useful to him in after-life and are not merely subjects for examination which can be conveniently forgotten as soon as may be after the examination has been passed. The method of illustrating anatomy and physiology by demonstrating patients in the pre-clinical period and by classes in applied anatomy and physiology during the clinical years is a step in the right direction. A case of

hemiplegia or of tabes can be made to illustrate vividly the tracts in the cord to a Second M.B. candidate, while at the bedside every effort should be made to induce the student to build up his interpretation from physiological principles, thereby encouraging him to develop his own powers of judgment. I have been struck by the unwillingness even of students who have done brilliantly in physiology to attempt this. I have repeatedly had to remind them that there is a lot of common-sense deduction in medicine—it is not an esoteric mystery. We must do our best to encourage the formation of a balanced judgment ready to accept new truth after critical investigation and able to detect specious fallacies.

Systematic lectures in medicine and surgery could be reduced, if not entirely abandoned, in favour of further clinical lectures and demonstrations, which are more stimulating at the time and make the subsequent reading of textbooks more interesting. Formal lectures are a survival of the time when textbooks were few and inadequate. Surgery is outside my province, but I feel that too much time is spent by students trying to get an unsatisfactory view of operations which they will never be called upon to perform.

Observation in the Wards

It is often alleged that the student of to-day relies too much on what he is told, rather than on what he can observe for himself. For this no doubt the examination system is somewhat to blame. Nothing can take the place of living in the wards as much as possible and observing closely the progress of actual cases.

It is a special advantage of our English plan of clinical clerkships that the student is taught to regard a certain number of the ward inmates as *his* patients—he is *their* doctor; the personal individual relation is encouraged from the very beginning, and it is the best introduction to general practice. I used to make a point of urging upon all my students the prime importance of taking a full history. I told them, what is the literal fact, that as I have gone on I have found myself taking more and more time over the history compared with the time occupied by the physical examination. I would point out that the history tells them so much about the patient, his general outlook and temperament, and prepares them for the kind of examination specially called for. I would go on to say something of this sort. At the outset remember the enormous difference in the effect on the patient that can be produced by your attitude towards him. Some patients are uncommunicative, others loquacious, but it is fairly certain that they are in a state of fear—whether obvious or concealed. This may make them exaggerate or it may make them minimize their symptoms, because in the former case they are afraid that if they don't emphasize their sufferings you will overlook something; in the latter the fear that you will confirm their own fears if they let you know how much they are suffering. But both alike are in a suggestible state and they are watching you closely, and are much readier to accept an unfavourable than a favourable suggestion, even though they react by a tendency to contradict you. Keep a straight face when the patient tells you his interpretation of his symptoms, however preposterous it may be. Another difficulty may be that the patient will persist in attaching a label invented by himself or obtained from his relatives or possibly from another doctor. After explaining how to get down to the facts as accurately as possible, I would go on to show how the patient's statements, though demonstrably false, told them a lot about him—his fears and his reactions to them. They

might even find that his disease was fear, and they could proceed to investigate the origin of that fear.

After the formal round I tried to have a private talk with the patient, and also, if possible, with a relative. Such relevant particulars as I could glean I would tell the students on the next round, but away from the patient's bed.

The Psychological Aspects of Disease

With regard to the more specific teaching of the psychological aspects of disease I may summarize the views of one of our conferences of which I was a member. It is highly important that the student should be made familiar with the psychological aspects of patients in hospital, whether they are under treatment for organic disease or for functional nervous disorders, or are admitted merely for the purpose of observation and investigation. With this object a series of demonstrations should be held at least once a fortnight throughout the student's period of in-patient clerking and in-patient dressing. It is recognized that in every ward there are many patients suitable for investigations and demonstrations of this kind, but that a considerable amount of time is required in some instances for their preliminary study by a psychotherapist before they can be used for the purposes of teaching. In some medical schools such demonstrations are in force and have met with great success, and we suggested that the physician or surgeon in charge of the ward may undertake them himself or may hand over that duty to a colleague who is attached to the hospital for the purpose of teaching medical psychology.

The medical officer in charge could hardly dissent if he was given the option of taking on this work himself if he had any desire to do so; if he had not, he could scarcely object if someone else did it, and this could hardly be regarded as an intrusion. It would be well for the physician and the medical psychologist to meet in consultation in the ward, at any rate in the first instance. I am sure this arrangement would be mutually helpful.

We thought at the conference that in some such way the teacher of medical psychology would be able to draw upon the material in the hospital as a whole for teaching purposes, and by selecting patients whose condition is not primarily one of mental disorder the psychological features of any sick man, woman, or child could be brought to the notice of the medical student in proper perspective. We also recommended that in the final qualifying examination adequate knowledge of the psychological aspects of ill-health should be expected from the candidates and should be tested not only in the written papers but in the clinical and oral parts of the examination. Some such arrangement is bound to be made eventually; my own experience as a teacher has shown me this: the pressure to teach the neuroses is coming from below—the students are eager for it, clamouring for it, and if they don't get it from one man or in one school they will go elsewhere. In the future no school will be able to maintain its prestige for long if it persists in neglecting its opportunities in this direction. I believe that in this way a man going into practice would not have the humiliating experience of finding himself confronted with conditions that he had never met with in his textbooks. Having allowed for or excluded organic factors, he would know how to look round for the psychical causes at work.

Above all, we must not overwhelm the student with a mass of facts at the expense of developing his powers of observation and deduction. With those powers at his

disposal he will be able to go on educating himself. Some of my suggestions as to the methods by which these desirable ends may be attained may not meet with general approval; I can only claim for them that they are based on an experience of more than forty years of teaching various subjects in the curriculum ranging from biology to clinical medicine.

The Examinations

The *Examination of Examinations*, published by Sir Philip Hartog and Dr. E. C. Rhodes in 1935, was a shock to our confidence in the system. We had already travelled far from the point of view which underlay the original attitude of London University; indeed, it seems incredible to-day that a mere examining body should ever have been regarded as a university. The enormous building now rapidly rising in Bloomsbury shows how far London University itself has left such an attitude behind. But it was disturbing to find how widely different were the marks allotted by different examiners to the same papers, and even by the same examiner re-reading the same papers after an interval. To take a chance example, the papers of three candidates were marked by seven examiners; the marks of the first varied from nineteen to fifty-eight out of 100, of the second from thirty-seven to seventy-one, of the third from thirty-eight to seventy. A different fate was allotted to half the candidates by one examiner on a second reading! When one considers what depends on the result of examinations such discrepancies are indeed perturbing. Yet the authors of this inquiry have no alternative to offer.

These instances are not quoted from medical examinations, but if we believe ourselves entirely free from such errors we deceive ourselves. The rules of the General Medical Council do what is possible to reduce such errors to a minimum. No candidate can be rejected on the verdict of one examiner alone. Two examiners must be present throughout the clinical and oral examination of every candidate. Where there are a considerable number of examiners it is well for the candidate to have his work surveyed by different pairs. Thus at Cambridge the first paper is looked over by one pair, the second by another, the clinical examination is conducted by a third, and the oral examination by a fourth. In this way every candidate is reviewed by eight individuals, and as every doubtful case is discussed at the examiners' meeting it is not likely that substantial injustice will result. If arrangements permit of more than one pair of examiners participating in the clinical examination of each candidate, so much the better.

The plan instituted in the National University of Ireland by Professor Henry Moore at Dublin is the best I have met with. It necessitates three pairs of examiners. The candidates have an hour to examine and write up their first case; they are then put on to a second case, which they go over in the presence of two examiners, pass on to a "spot" case with two more, and are finally cross-questioned on their first by the examiners who have had an opportunity of reading the scripts. The examiners deal with the same cases; it is the candidates who change over. As I cordially agree with the G.M.C. rule that no candidate should pass who fails to obtain half marks in the clinical examination, it is a wise precaution that such a decision should depend on the judgment of more than one pair of examiners. It is usual to allot only 15 per cent. of the total marks to each of the two papers, 20 per cent. to the oral, and 50 per cent. to the clinical. It may be thought inequitable to allot a smaller proportion of marks to three hours' written paper than to an oral

examination not lasting more than a quarter of an hour, yet most examiners of experience are confident that they can judge a candidate's capacity better by oral than by written examination. This is true if the candidate remains in a normal state of mind; unfortunately some of them seem to become disorientated and aphasic under the ordeal. I remember an able man who had been a combatant major in the war breaking down completely; he told me that he would rather go "over the top" any time than face an oral! Every effort should be made not to keep candidates locked up and waiting for a long time; for fear is infectious under such conditions, a fact I bear in mind when I come to the later members of a batch. I realize that it is the irresistible tendency of outgoing candidates to communicate "tips" to the incoming ones which necessitates this rather barbarous practice, but it should be possible to call up small batches for certain hours, and to change the questions for each new batch. If this became recognized as the usual practice the hunting for tips might cease to be so keen. I think it is better for the papers' marks not to be known at the time of the clinicals: it is apt to prejudice the examiner for or against a candidate. On the other hand, it is well for the examiner at the final oral to know all the candidates' marks and to adjust his test accordingly.

It is clear that, on the usual scale, high marking for the clinical may entirely compensate for weak papers, and a man who has been unable to show adequate knowledge during six hours' writing may, through luck in the cases he is given, reach a pass mark on the total. More insistence on a pass mark for the papers is needed, in my opinion, in some places, though I agree that at least half the total marks should be allotted to the clinicals if we are to let loose on the public men with practical rather than merely theoretical knowledge.

The Candidates

I have thought it worth while to discuss rather fully the conduct of the final examination, since the whole system of testing knowledge thereby has recently come rather under a cloud of suspicion. I hope I have shown that care is taken to diminish the element of chance as much as possible, and I should next like to offer some advice to prospective candidates. I would, in the first place, remind them that their examiners have all been candidates themselves and know both the difficulties experienced and the devices adopted—particularly the latter. I would say, do not imagine we are out to trap you; we want to see what you know, not what you don't know. Map out your time for the different

questions in the papers. It is not easy to gain many extra marks by a specially long answer, while to omit a whole question for lack of time seriously reduces your total. It is quite easy, on the other hand, to get 25 to 30 per cent. of the marks by giving a synopsis of an answer if you have not allowed yourself time to answer it fully. Don't try to impress us with your learning by giving rare causes first; it only proves you lack a sense of proportion. If at the oral you do not know the answer to a question, say so—do not waste time which should be devoted to gaining more marks by glaring helplessly at the examiner. If at the clinical you are asked the position of the apex beat of the heart, say it is in the *x* space *y* inches from the middle line, and not "I thought that perhaps it might be a little out," and then with a hurried attempt to read the examiner's expression, add "but I wasn't quite sure": an exasperating trick, and a very common one. Do feel the pulse and be able to say something about the condition of the radial artery. One might think the modern student never feels the pulse, but merely demands to see the electrocardiogram! Remember that you will get more credit for routine examination of the patient and good observation than for a lucky shot at the diagnosis. Two candidates I recently asked the relevant question, "Is the patient a married woman?" replied that they had not asked her; yet her wedding ring was freely displayed! Remember also that "tips" are dangerous and often misleading. At one examination we showed a juvenile hemiplegia in the morning; in the afternoon it happened that a boy of about the same age suffering from Friedreich's ataxia was occupying the same place. Candidates went on diagnosing hemiplegia in a patient whose lesion was obviously bilateral. Comment is unnecessary. Put clinical points first. If asked what is the first thing you would do when called in to see a case of jaundice, do not reply, "I would do a van den Bergh," or that the first thing you would do for haematemesis is a test meal or a barium meal. You know you would do nothing of the sort; at least I hope so. I am quoting from my actual experience. I must admit that the attitude of clinical teachers may do something to contribute to developing this absurd state of mind. The student is influenced more by what he sees his teacher do than by what is said, and he is quick to notice that the newer methods interest the teacher most.

In conclusion, let me welcome new recruits for the study of the most fascinating, if one of the most exasperating, professions. Its combination of scientific and human interest will provide the satisfying feeling that a life spent in its pursuit has not been lived in vain.

THE PROFESSION OF MEDICINE

In accordance with long-standing custom we preface the main contents of the annual Educational Number of the *British Medical Journal* with some remarks by way of guidance to those who contemplate entering the profession of medicine.

REVISION OF CURRICULUM

A revision of the medical curriculum has been under consideration for the last few years and a good deal of discussion is still continuing, based mainly upon four important reports: the final report of the American Commission; the report of the British Medical Association's Committee; a Bulletin on "Medical Education and the

Reform of Medical Studies" issued under the auspices of the Health Organization of the League of Nations; and the report of a Conference of Representatives of the Universities of Oxford, Cambridge, and London, the Royal College of Physicians of London, the Royal College of Surgeons of England, and the Society of Apothecaries of London. These reports are essentially at one as to the main points of reform. So far as relates to the British position, there has been common agreement that it is undesirable to lengthen the five years' medical course, but it is recognized that this course should be regarded as beginning at the time when the study of human anatomy and physiology is entered upon, and that this should be