METHODS AND MEN IN THE TEACHING OF CLINICAL MEDICINE

BY

Sir HENRY COHEN, M.D., LL.D., F.R.C.P., F.F.R.

Professor of Medicine, University of Liverpool

Recent reports on medical education have been concerned primarily with the content of the medical curriculum. They have emphasized how such influences as the vast expansion in the corpus of medical knowledge due largely to the application to medical research of the newly discovered implements of science, the triumph of the functional concept of "disease" over the earlier notion of "diseases" as specific entities, increasing specialization, and more readily available hospital services have rendered necessary fundamental changes in the structure and orientation of the curriculum. There has been general agreement on the pattern which these changes should follow, and they have been embodied in the most recent recommendations of the General Medical Council and in the educational provisions of the Medical Act, 1950.

Too little attention has been paid to what is equally important—the methods and techniques of medical teaching and the selection of medical teachers. For, whilst exceptional men are the product of their exceptional talents rather than of any system of education, the average student will be better trained by the teacher who has mastered the main principles of pedagogy. The contributions of distinguished educationists to this symposium leave no doubt of the general applicability of Flexner's observation that "medical education presents a problem not of medicine but of education." In a measure the problems of medical education may well be simpler than those of general education, for the medical student may be presumed to want to be educated, whilst the scholars in our primary and even secondary schools (to whom most educational research has been directed) are too often the unwilling victims of our system of compulsory education; moreover, the vocational component of medical education gives to it a more defined objective than that of general education.

In common with the vast majority of clinical teachers I have had no formal training in the art and science of education. In over twenty-five years of teaching I have had perforce to learn largely by the heuristic method, though I have learnt much, both to emulate and to avoid, by observing others. It is from the basket of this experience that I pick some impressions and a few convictions which will, I hope, be helpful to the young clinical teacher.

The Clinical Teacher

Although some clinicians are born teachers and some, however eminent in their profession, are abject failures as teachers, most clinicians who possess certain natural attributes can be trained in the art and methods of teaching. If we are to choose our clinical teachers skilfully we must appreciate what their business is. We must recognize that their purpose is not only to transmit knowledge but also to stimulate the student to think for himself to some purpose, and to show by example the techniques, simple and intricate, of the science of medicine and of its human and social relationships. They have to teach both how to observe and what to observe; the need for thoroughness, accuracy, and freedom from bias; the significance of the

analysis and synthesis of observations and the reaching of rational judgments on them.

The clinical teacher must then know the practice of medicine through long and intimate contact, for he cannot give what he does not possess. But competence in practice or research is not enough. He must be interested in teaching and in the taught. For him, behind the power to teach a subject must be the power to train a doctor, so that he must be a man of character as well as ability, for many students will model their lives on his personality. To an equable temperament, and courtesy and patience in dealing with patients of all social groups and of all degrees of intelligence and stupidity (for manners proclaim interest), he should bring an orderly mind and a balanced outlook, a sense of proportion, an ability to think for himself and to question authority, confidence in his own judgment, and a ready acceptance of the fact that, from the nature of medicine, blunders are inevitable, because summary decisions on inadequate evidence are often needed for action where a reasoned judgment must be postponed because of limited knowledge.

There are certain qualities indispensable to any efficient teacher whatever his subject. He must have, or acquire by training, a clear and unhurried diction, and he must be able to express himself in simple language. Ruskin held that "he who hath truth at his heart need never fear the want of persuasion on his tongue." But mumbling inaudibility can never persuade. Such simple but important faults as speaking to the blackboard with his back to the class, writing illegibly, and others have only to be noticed to be corrected. The good teacher must be able to sense the response of his class so that he knows when to repeat, to emphasize, or to remodel his explanations. But amongst the major considerations of special application to medical teaching are (i) the need for a clear objective in all forms of instruction whatever their content or type, (ii) the need to adjust teaching to the stage of the pupil's knowledge and understanding, and (iii) the methods and techniques of teaching, and especially the tools of clinical teaching.

Certain aims are generally accepted. Thus progress must be from the known to the unknown; there must be constant reference back by way of explanation and illustration to earlier work. The need for this has been recognized in the importance attached to the transition period between preclinical and clinical studies and the increasing emphasis on interpreting disease in terms of anatomy, physiology, psychology, and pathology rather than in describing "diseases" as if they were equivalent to the species of plants and animals. Moreover, if its purpose is to be achieved there must be a clear, and preferably in the earlier years a single, objective in any given lesson. The teacher should repeatedly ask himself, What point am I trying to make? In this patient with a failing heart what am I trying to demonstrate? Is it a cardiac irregularity, the pleural effusion, the mechanism of oedema, or dyspnoea, etc.? He thus will appreciate constantly the need for dealing with one problem at a time.

These principles are specially important in relation to the stage of his clinical studies which the student has reached. For example, the patient with carcinoma of the pancreas should in the early stages of the student's ward work be an object-lesson in obstructive jaundice and not a text for a discussion of neoplasms of the pancreas. It is well also to recognize that there will be patients in the wards who can offer but little material which is appropriate to early clinical studies.

Whatever the special aim of any course of instruction may be, the general aims of medical education should not be overlooked, and topics far removed from its purpose should not be laboured at the expense of more rewarding studies for the basic training of the doctor.

Methods of Medical Teaching

These are here discussed with special reference to the teaching of clinical medicine, though what is written applies *mutatis mutandis* to other clinical studies.

The methods of clinical teaching ("tools of the teacher") may be roughly regarded as (i) didactic—e.g., the systematic lecture and the lecture-demonstration, (ii) those designed to encourage the student to observe accurately and to think for himself—e.g., some aspects of ward work, out-patients, clinical conferences, and discussions, and (iii) those in which he sees the trained practitioner at work—e.g., in consultative out-patients, in the operating theatre, or in general practice.

Systematic Lectures

Doubt has frequently been expressed about the value of a course of systematic lectures in the teaching of medicine, but, provided that the lecture is not a mere reproduction of what is in the textbooks but expounds essential principles vividly and clearly, embodies recent work, and approaches the subject of the lecture from an individual, fresh, and novel angle so as to present an integrated conception of a problem, it is a most valuable teaching instrument. The lecture must, however, be carefully prepared, for few are competent lecturers without preparation, and all are better for it. The lecturer should have advised at the beginning of his course which textbooks should be used and before each lecture which chapters should be read; he may supplement these by predistributed cyclostyled notes, blackboard summaries, and diagrams. The student's time must not be wasted in writing detailed notes of the facts recorded in his textbooks. The lecturer and the students can then devote themselves to the proper purpose of the lecture, which is to act as a guide and stimulus.

In preparing the lecture, attention must be given to its proper timing and length. Special care should be devoted to the introduction, which creates an atmosphere and which should explain the lecturer's aim. The theme should then be developed rationally on the basis of prior knowledge. Spoon-feeding must be avoided and is unnecessary if the student is properly directed in the use of his textbooks. In any event he is not a mere receptacle for the storage of information nor is the lecture solely a medium for its transmission. The need for reiteration ("repetitio est mater studiorum"), and for emphasizing what are important principles and what minor details, should be appreciated. The apt illustration from personal experience impresses itself on the student's memory. References to the literature will encourage and direct the student in his further studies. For classifications and diagrams the blackboard is as a rule the best medium of visual instruction, for the able teacher can show them expanding from the broader generalizations to smaller details. Lantern slides, the epidiascope, and film-strips have their place in the lecture—for example, in demonstrating morbid anatomy and histology, the variations in the clinical pictures of disease, graphs, and statistics. Radiographs and pathological specimens should also be available for purposes of illustration in the systematic lecture.

The place of films in systematic instruction has been widely debated. There is general agreement that their

novelty and superficial attraction has led to their over-use. The films recording many surgical operations reveal less than do a few simple line drawings. But where the emphasis is on movement they are valuable. They can be used, for example, to illustrate abnormal gaits and involuntary movements, the expansile pulsation of an aneurysm as shown by the "match sign," the dramatic effect of blowing out a candle with the air escaping from a needle inserted into an area of extensive surgical emphysema; or as records of a series of cases—for example, of cranial nerve palsies—not readily available when needed for demonstration. The film is not, however, an adequate substitute for the living patient. Another use of films is to show technical methods, such as ventriculography, with which the student should have an acquaintance, and in which the procedure which takes a considerable time can be shortened to illustrate its essential features. A third use of films in lectures is to provide animated diagrams; these are especially useful in showing, for example, the relation of the spread of the cardiac impulse to changes in the E.C.G. or in demonstrating labyrinthine reactions.

The fewer notes the lecturer uses the better. The reading of a lecture is usually uninspiring, and the student may pointedly ask, If the lecturer has not learnt the subject, why should I? But no attempt should be made to memorize the lecture verbatim, for this will defeat one of its most vital purposes. The lecturer should always be sensitive to the reactions of his class, especially to those he has not foreseen, and he must modify his lecture accordingly by repetition, emphasis, and recasting. Although the importance of this must be recognized, there is still a place in the training of the inexperienced teacher for "shadow teaching"—rehearsing the lecture without his class.

Lecture-demonstrations

Much of the foregoing applies to lecture-demonstrations, especially to clinical lectures of the old type (and the young teacher would be well advised to read those of the masters—for example, Trousseau, Graves, Charcot, Gowers, and others, not so much for their content as for their form). The clinical lecture should be a complete and orderly presentation of a special topic or a carefully prepared clinical demonstration of a patient or group of patients illustrating a particular theme. There is, however, another useful type of lecture-demonstration in which both pathologist and physician can fruitfully collaborate. In this a particular topic is chosen, such as cerebral tumour; the pathologist and clinician expound their special aspects and then question each other before the class to illustrate how certain symptoms and signs are produced and what is their pathological basis. The scheme can be widened to include the radiologist, the clinical pathologist, and other specialists.

Ward Work

The main purpose of work in the wards is, to use Professor Lauwerys' phrases, "to stimulate purposive mental activity and to individualize instruction," and also to introduce the student to those personal relationships essential to the eliciting of accurate histories, conducting physical examinations, and the handling of human material. To these ends are directed his term of clerking, ward classes and tutorials, and ward rounds. The wards should be open to the student whenever practicable so that he may have the opportunity of studying and observing the patients assigned to him at any time and throughout the course of their illness. Clerking should be a modified apprenticeship,

and the student should be encouraged to believe that under proper guidance he is responsible for the patient. He should accompany the patient to the various diagnostic departments and see the specialists at work. The period of clerking is in medical education most analogous to the Dalton plan in general education, and gives the opportunity to the tutor to instruct the student on his individual problem. Ward classes and tutorials must be regarded as complementary to, and not a substitute for, clerking. The class must always be small (not more than 10 to 12 students to each tutor), and each member of the group should be at the same stage of study; mixed classes of senior and junior students are educationally indefensible. The tutor should plan but not overplan the work of the individual clerks. These classes serve to throw light not only on the work of the student but also reveal to the senior teachers the calibre of the tutors. In the ward classes the Socratic method is to be encouraged, and in them the student must take an active part. They must, therefore, be neither too formal nor too discursive. "It is not seeing much but seeing wisely that is valuable" (Osler).

I have earlier stressed that the ward round by the senior clinical teachers must aim at being appropriate to the stage which the student has reached in his clinical studies. The wrong way of conducting a ward round was graphically described in the B.M.A. report on *The Training of the Doctor*: "The chief, attended by his satellites, and followed by a throng of leg-weary students, moves from bed to bed, down the ward, briefly demonstrates case after case himself, and delivers unprepared discourses (however wise) on the patients or their diseases." The duty of the chief is to reveal in his teaching a wisdom and judgment which the junior teacher cannot from his lack of experience possess, and he should aim at presenting a synoptic view and stressing the importance of fundamentals, for there is a real danger that the tutor, having recently studied for his higher examinations, will be a little prone to exhibit his mastery over advanced medicine, and to over-stress detail. Moreover, the senior teacher should as part of his ward round take the opportunity of interviewing not only the patient himself but also his relatives if they can provide useful information, in the presence of the students, and for this purpose a special consulting-room attached to the ward is, in the interests of privacy, most desirable. It is here also that the final interview with the patient should take place after the hospital has completed its service so that the students may hear the chief's discussion with the patient on his condition and treatment; here also the work of the almoner and other social agencies should be brought into the clinical picture. There is one other point which, in my experience, is rarely recognized; it is that a teaching ward round should be primarily directed to teaching. The physician should pay additional visits to the ward in the absence of students so that the required service to the patient may be given. There is then no temptation by the physician to go beyond the students' comprehension on his teaching rounds, and the patients receive all necessary attention; and even those who may not be so suitable for clinical demonstration are ready to co-operate in the work of medical education. I have found that patients with no spectacular physical signs too often feel themselves neglected in the wards of a teaching hospital.

Out-patients

Teaching in out-patients should come at a later stage when the student is familiar with the commoner expressions of disease. The teacher must here take the oppor-

tunity of stressing the earlier, less severe, and more reversible manifestations of illness, and he must emphasize that in out-patients is seen a cross-section of disease which more closely reflects that met with in general practice. The opportunity for seeing emergencies and minor accidents, especially in urban and industrial areas, should be taken. In teaching hospitals where out-patients are essentially consultative, the physician should stress the technique of consultation. It is here that he can show how to tackle the patient seen for the first time, how to put the patient at his ease, how to extract and assess the salient points in the history, how to pick out the essential features on physical examination and to decide what investigations might reveal the nature of the patient's complaint and so lead to rational management without the need for admission to hospital. But if admission is necessary then the teacher should ensure that there is continuity of teaching from out-patients to wards. For the senior students out-patients provide the opportunity for practical exercises in diagnosis. The provision of single rooms in which a student can examine a patient and then discuss his findings and conclusions with his teacher should be an essential feature of all teaching hospital out-patient departments. There are, of course, difficulties. The number of out-patients and the appointments system have led to a prior selection of cases which is educationally often disadvantageous. In out-patients, too, the opportunity should be made by the teacher to illustrate the course of disease and the effects of treatment by paying particular attention to the work of his follow-up clinics; and here again the precepts of social medicine should be stressed.

Conferences and Discussion Classes

In the wards and in out-patients the dominant emphasis is laid on accurate, thorough, and unbiased observation, and in this I include the taking of accurate histories, for history is essentially observation in time. Simple inferences in terms of structure and function and, as the student's knowledge increases, in pathology, aetiology, therapeutics, prognosis, etc., will be made. But in conferences and discussion classes the educational emphasis is on the rational inference, for in most instances observations will have been recorded and completed. Hence clinico-pathological and clinico-therapeutic conferences have most to give to the senior student, but conferences at the bedside in which clinicians and specialists take part are most valuable at all stages of the clinical course provided that the teachers modify appropriately their teaching. The discussion class in which such problems as pituitary disorders, disturbances of carbohydrate metabolism, malignant disease, etc. (the "projects" referred to by Professor Lauwerys), which may be suggested by the teacher or by members of the class, and in which by question and answer the student may be encouraged to develop a theme and after preliminary discussion be referred to patients, case records, the relevant literature, etc., and at a later session be asked to expound, demonstrate, and review, is for the best students a most valuable experience; but the less able tend to shrink from the publicity which this type of class entails, and we are still far from having convinced our students that to expose their ignorance is educationally sound.

Seeing the Teacher at Work

A valuable educational instrument for the advanced student is provided by the following type of demonstration. A patient who has been fully investigated and in whom a diagnosis has been established by a colleague is

presented to the teacher, who has not previously seen the patient but who in the presence of a senior class takes the history and examines the patient: he then discusses the diagnostic problem presented and might venture on the relative probability of various diagnoses. After this he specifies the investigations which could serve to confirm his provisional diagnosis or clarify the problems of differentiation. He may, for example, examine x-ray films or take note of blood and marrow reports; he will then express his considered views, in the light of his examination and the investigations, on the diagnosis. Those who have seen this kind of class at work describe it as a vivid and memorable experience. As an illustration of method in observation and inference and their importance for clinical studies it can hardly be bettered, and it has on the teacher a sobering influence however well developed may be his *prima donna* instinct.

There is as yet too little experience on which to form a judgment on the place in which training in general practice or in a health centre is for the undergraduate a fruitful addition to our methods of medical teaching.

I have not attempted a systematic or exhaustive thesis on medical pedagogy. I concur wholly in the views expressed by other contributors to this discussion, about the need for the novice in medical teaching to know something of general educational principles and of the psychological factors involved in learning, and to be aware of the scope, uses, and potentialities of the various aids to teaching and of the educational techniques which their use involves; of the value in learning the art of teaching of observing the technique and methods of the most successful teachers, and of discussing his problems with them and seeking their criticism. I have, however, been impressed with the fact that most successful teachers have developed methods of teaching which are suitable to their own personalities and which cannot be fitted into a particular pattern, and that "in the long run systems of education stand or fall by virtue of effort and ideas, not machinery."

The Social Psychotherapy Centre which was recently opened at 7, Fellows Road, Hampstead, has held its first "view day," when groups of interested people—psychiatrists and social workers—were shown round the departments. The activities include art and occupational therapy, therapeutic social clubs, individual treatments, physical treatment in suitable cases, child guidance for those under 7 and those from 7 to 16, and remedial teaching. It is in fact a "day hospital," the patients to the number of a score or more attending at all times from 9 a.m. to 10 p.m. They sleep at home if the home environment is suitable, and if it is not an endeavour is made to find them suitable lodgings. Thus they retain touch with their ordinary environment, and their time at the centre is so fully occupied that they forget their own condition. Patients are also admitted who have been in a mental hospital and are in need of the rehabilitation which is brought about through social clubs, enabling them to return to ordinary life in the most favourable circumstances. Dr. Joshua Bierer, the medical director of the clinic, explained to the visitors the multidimensional treatment employed. He expressed his thanks to the Central Middlesex Group Hospital Management Committee, under whose auspices the centre is working, for making the experiment possible. It was really, he said, a very simple experiment. Its most important feature was co-operation, directed towards the encouragement of self-realization and self-fulfilment of the patients. Various schools of psychiatry were represented on the staff, but staff and outside friends and former patients all worked together in the effort to help the maladjusted and to give each patient the individual attention that he needed. The centre depended largely upon the group idea for its results. The patients at first tended to remain solitary, and then they discovered a group whose feelings they could share and the way was open for normal social life.

THE TRAINING OF CLINICAL TEACHERS*

BY

R. D. LAWRENCE, M.D., F.R.C.P.

Physician, King's College Hospital

This subject is very difficult and ploughs nearly virgin soil. So far as I know, no discussion has taken place directly on this question and little writing has been done. True, for years, and especially in current post-war years, voluminous publications have dealt with the curriculum and the training of medical students and, recently, of practitioners and the need for change. All this impinges closely on our subject but has not tackled the equally important question of the teachers, their capacity, their choice, their training—so fundamental a matter because on it the full success of medical education must be based. I am glad, therefore, to raise the question before a meeting of the best young brains and the future intellectual leaders of our College. I feel quite humbly inadequate, but shall do my best to stimulate more sense and knowledge than mine.

The argument behind the need for improving teaching and the teachers in medicine is simple and was briefly stated in my short letter in the *British Medical Journal* of September 10, 1949 (p. 594). It drew attention to the training, and criticism, that elementary teachers have, not only in the matter to be taught but in the method of presentation and how to teach. In the teaching of medicine, and perhaps especially clinical medicine and its application to practice, training is entirely lacking, and teaching capacity is not considered profoundly when the staffs of teaching hospitals are chosen. I consider that clinical medicine is, for many reasons, the most difficult of subjects to teach, and that some training in it is of paramount importance. Of course, if you accept the old platitude that teachers are born, not made, there is little to be done about it. But I am sure that the educationists would not agree, and I believe that, though bad teachers cannot be made good ones, moderate ability can be improved, and even the born teacher, too. Certainly, the definition of a good teacher would not be agreed upon; but he must, above all, be personally stimulating and questioning. The conference and the academic lecture need other treatment and qualities than those required of the all-important bedside teacher: the manner, the mode, and the material are quite different.

When I reflect that the material to be taught is vast in its details and ever changing, with all our temporary fixities and ultimates becoming penultimate, and that no clear philosophy of medical thought and teaching has been evolved, I am appalled by the complexity of the subject before us. I think, however, that it is possible, and useful, to regard the whole subject from two main aspects.

Diction and Delivery

The first aspect is relatively easy to deal with but is very important. We have all suffered on too many occasions, from our earliest lectures in physics and chemistry to such occasions as this, from inaudible whispering and mumbling, from humming and hawing, from distracting mannerisms, until our attention died and we relapsed into restless boredom or uncomfortable sleep; suffered, too, from mumbling into blackboard drawings, from boring over-explanations of a simple slide, or from bad and complicated diagrams with no explanation. Perhaps worst of all is the opener of a discussion (I must be careful) who wastes time with his prolixity or those following who take fifteen

*An address opening a discussion by Members of the Royal College of Physicians at Bristol.