aims of the clinical period of the curriculum to help the student regain his sense of service by showing him always an example of kindness, understanding, and humility in the approach to patients. Not all students are gifted with a natural ability to deal easily and sympathetically with people, but, provided they are given the opportunity and encouragement, there is much that they can learn of the art of consultation from their teachers. Most consultations take place in the out-patient department, but the Goodenough Committee (1946), in its report on medical schools, criticized the hurried work and crowded conditions found in the out-patient clinics of many teaching hospitals. The committee did not consider that it was possible, under these circumstances, for the fullest use to be made of out-patient teaching facilities.

In private gynaecological practice, by comparison, the patient attends by appointment, is welcomed by a receptionist, and is seen in privacy in congenial surroundings. Unfortunately the student does not have the opportunity of observing consultations carried out under these favourable circumstances, for it has never been the custom to teach on private patients.

In hospital practice the surroundings and facilities offered by the out-patient department may fall short of this ideal, but in the really important meeting between doctor and patient there is much that can be done to simulate the atmosphere of a private consultation where doctor and patient are left undisturbed and no third party is present to detract from the confidential nature of their talk. With the introduction of a student something of that personal relationship may be lost, but if he can sit in the background as an observer, then there lies the greatest chance that both patient and doctor become unmindful of his presence. That his position as an observer is one of privilege is made clear to the student at the first meeting, when the purpose of out-patient teaching is explained to him.

In many gynaecological units the student is encouraged to take a more active part in the work of the out-patient clinic. For example, he meets the patients and takes the history before she is seen by the gynaecologist. This system has the disadvantage that the student never sees his teacher conduct a proper consultation, for the gynaecologist will most likely listen to the history which the student has taken and then confirm the salient points before the patient is examined. There are disadvantages, too, for the patients. Many are apprehensive when they first attend the clinic; to be met and questioned by an inexperienced student does not inspire confidence, and they are unlikely to disclose to him personal or family worries which may have an important bearing on

their complaints. Unless great care is taken, some patients may even be under the impression that the student is the specialist or his deputy, and this can only lead to confusion. For the patient who is ill, or imagines herself to be ill, the reception she is given in the out-patient department may mean the difference between a satisfactory and helpful consultation and one which is neither.

The surroundings in which the consultation takes place are important for patient and student. The form of teaching which I have described can best be conducted in a small plainly furnished but pleasant consulting-room with an adjacent examination cubicle. The rooms should be so constructed as to ensure complete privacy for each patient. This would seem to be an obvious arrangement, yet it is not unusual to find that patients are interviewed and examined in cubicles separated by thin plasterboard or curtains. A patient may well hear all the details of her neighbour's history, and for some this may be a distressing experience. It is wrong for the student to witness consultations carried out under adverse circumstances, for his own approach to patients and his technique of consultation are likely to be influenced greatly by what he sees in his teaching hospital. Much can be done to modify and rearrange existing accommodation, but the need for new out-patient buildings is particularly urgent in many hospitals. In teaching hospitals, where new clinics are planned, it would be to the advantage of patients, students, and staff if the form of teaching in the various specialties could be discussed fully with the architect.

It is not easy to assess the value of experiments in medical education, for the qualities of a good doctor are difficult to define and measure. In the out-patient teaching described here the staff, by their example, are attempting to show the student that good gynaecological practice is based upon successful consultation. The changed approach to out-patient teaching was instituted two years ago. It has been found to be practicable, and, so far as can be judged from discussion with students and by watching them deal with patients, the experiment has been a success.

I am indebted to Professor H. Evers for permission to publish details of the gynaecological out-patient clinic in the Royal Victoria Infirmary. I should like also to acknowledge my gratitude to the late Professor Sir James Spence for the time and care he took to demonstrate his method of out-patient teaching in the Children's Clinic in the Royal Victoria Infirmary, Newcastle-upon-Tyne.

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SCHOOL VERSUS ACADEMY IN THE MEDICAL CURRICULUM

BY

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The teaching of medical students is a perennial subject, and never out of season. In the last few months the pages of the *British Medical Journal* have carried articles on this subject of weight and great interest (Pickering, 1956; Liebow, 1956; Walshe, 1956), and allusion to points raised in them are made in the present communication. This also deals with the subject of medical education in a broad way; with the relation of the subjects of the curriculum to one another, and especially to the balance of the scientific subjects with those called clinical; and with criticisms, doubts, and questions of medical teaching that are often heard and strongly expressed.

To put all this in historical focus we can take medical history in view from 150 years ago to the present day.

That stretch of time begins with Jenner's discovery of vaccination (1796), a wonderful gift that at one stroke put the dreadful disease smallpox under control; it was followed about 1870 by Lister's work on wound infection that transformed the field of surgery; then by many other fatal infections which became subject to medical control; and to the final mopping-up of the major infections by the moulds and antibiotics about 1940. This is the story of human infections subdued by the science of bacteria, parasites, and viruses. Lastly, we can only mention physiology, chemistry, physics, and pharmacology, all of which made notable advances in the second half of this period of time. All these discoveries of science, of which the above is a bare catalogue, have been made available to mankind by the hospital doctors

and the general practitioners of our society. These people are the clinicians of medicine; and medical education consists in the imparting to medical students of the attested facts of science and their training in the art and skill of medicine. The latter is clinical medicine, and this, simply stated, means bringing to the bedside of sufferers the healing gifts of science. It is clear therefore that medical education is a subject of deep social importance, deserving of frequent review, and one of vast social consequence.

What Lord Auchinleck said about Samuel Johnson's Academy

The subject of medical education is confused and controversial, and it is not easy to select a point of opening. But this story of the old Scottish judge, Lord Auchinleck, has given me a clue which I shall follow through my argument. The judge was a rough, rude, able man who did not think much of his son, James Boswell, or of his new friend, Dr. Samuel Johnson; and talking about this friendship he said: "A dominie, mon—an auld dominie; he keeped a schùle, and caw'd it an acaademy!"

We can transfer this story at once to the medical curriculum, and find there to-day, as a matter of lively debate, this difference between a school and an academy. It is raised explicitly by Professor Pickering (1956), when he contrasts the technology of a training school in medicine with the scientific character of a medical faculty within a university. And "medicine in the framework of a university" is the title and the whole theme of Sir Francis Walshe's (1956) address. Pickering says that the power to collect and verify the necessary facts, and to form a balanced judgment on them, should be the main object in the training of medical students. His words are simple and clear; and by their light let us look at the subjects of the medical curriculum. There are the early sciences, including anatomy; later follow medicine, with its main branches and the subdivisions; and the last two years are given up to the clinical teaching of medicine. The clinical teaching is the grand culmination of the course; and, if the clinical teacher and the student have enough of their physiology and chemistry still at command, the foundations for the building of a doctor and expert clinician can be well and truly laid in these final years. So long as the doctor remains in practice he must remain a clinician: his approach to medicine remains clinical; that is, by way of the bedside where he finds a man, woman, or child who is sick or sorry.

But fact-finding and judgment upon facts are very different for the student engaged in the study of one of the basal sciences, say physiology, than when he is studying clinical medicine, be it surgery or any of the other branches of medicine. In physiology the facts of this noble science are expounded, their significance is explained, and judgment upon them is delivered by the professor or his expert assistant. Only in the experimental or practical classroom does the student get an experience of what an experiment is. He and forty-nine other students sit in a great hall: he sets up the apparatus lying ready, he sets it going, and he is told to expect a certain result. This is a very dim and unprofitable idea of research. And yet research, and especially research by experiment, is the life-blood of physiology. In the crowded state of the preclinical curriculum, in the vast size of his subject, the physiologist cannot lead his students into an *academy*, but by careful selection and clear presentation he can conduct an excellent *school*, in which his scholars are impressed with the noble science and with its great importance in their future practice of medicine. Alas, for the discovery of facts and for the exercise of judgment the basal sciences of medicine have little value for the student. But there remains the great benefit of *understanding* the meaning and significance of many facts in these basal sciences on which modern practice has been built.

Clinical medicine has been a strong feature of the British and Irish medical schools for at least two hundred years: its group of subjects are the crown of the medical curriculum, indispensable for good practice; and gathering to it all the new resources of the medical sciences. These resources are sometimes translated into medical practice with great speed and ease; but sometimes the transfer may be slow and difficult. In all these clinical subjects the proceedings begin in the same way and follow the same course: begin with a living person in some kind of trouble, proceed with the collection of facts of many kinds, and at last come to an end in a conclusion, a judgment, a diagnosis. The student watches all this and often takes part. He exercises himself in observation, verification, consideration (when he draws also into mind his sciences); and is at last impelled into judgment or diagnosis. This is the end of the first act in clinical medicine. And the remaining acts of treatment and prognosis are easier, and are determined by the diagnosis. In a later section of this paper an account is given of the method of clinical teaching used by the late Sir Thomas Fraser, physician to the Royal Infirmary, Edinburgh; I was privileged to hear and enjoy it as one of his students, and it seems worthy of record and is still of value.

I shall end this section with a brief summary. The overcrowding of the medical curriculum is going on apace at each end. The task of the teachers is becoming more difficult, both in the early sciences and in the later clinical subjects, but a more important danger may be a lowering of the clinical standard of our medical students.

Montaigne's Warning on Filling of the Memory

Both Professor Pickering (1956) and Dr. Liebow (1956) speak strongly about glaring faults—the overloading of subjects, the excess of detail in lectures, and the crying evil of examinations. Pickering's condemnation of examinations is most scathing. And yet it is often the keen lecturer who insists on a strict examination paper to ensure that his carefully prepared lectures will be written down and memorized. Before I was called on to teach in Edinburgh I came across Montaigne's essay on pedantism, and wrote on my heart this sentence: "We [that is, the teachers] labour and toyle and plod to fill the *memorie*; and leave the *understanding* and the *conscience* empty." I tried to put this into practice and often quoted it to my students. But the evil goes on; and I have come to feel that no permanent intellectual or moral damage is done to our students by five or six years of this alternate process of remembering and forgetting and remembering again. The Romans did something akin to this when they sat down to a colossal feast. But the sad and irretrievable loss is that, for grand subjects in the medical curriculum, the understanding and the conscience are left empty; and this void in the receptive days of youth will never be filled in later life. Most teachers feel guilty on the subject of these examinations, linked up with these crowded lectures, and their consciences are perhaps eased by the small number who fall down below 30%.

Dr. Liebow's cure is to pare down his own lectures to a basic minimum—a brave self-denying ordinance. Meantime there are no dangerous signs of failure in our medical education; on graduation day our successful students look fresh and gay and reliable, and when they pass into hospital or general practice they are able to undertake great labours and responsibilities.

Montaigne's words are the very truth of the matter, but they are "a hard saying," and who will heed them? Liebow has done it in pathology in Yale; he does not say how many of his colleagues have followed him. But let him remember that one righteous man in a wicked city may save the city. And in these islands there may be like righteous men in our medical schools and they will join hands with him across the Atlantic. The believers in long lecture courses (both in the sciences and in the clinical subjects) point to the high percentages that "pass the examinations." But this is simply the brutal method of the old pedagogues

who flogged their scholars into learning. They are the descendants of the "auld dominies" that Lord Auchinleck despised; and in packing their lectures with concentrated facts they flog their students over the hurdles of an examination, and leave them lacking in understanding and in conscience (a deep and universal kind of understanding). So long as the examination system holds its tight and cruel grip upon our medical schools, injurious to the students and no less to the teachers, they do not deserve the noble title of academy which Samuel Johnson used.

Some Teachers in the Edinburgh Medical School Circa 1903

The following notes are drawn from my experience as a student in Edinburgh about fifty years ago. They are not given so much as personal reminiscences but as illustrations of points in our theme of medical education.

Sir Thomas R. Fraser

Sir Thomas Fraser was professor of materia medica and physician to the Royal Infirmary. He was also renowned as chemist and pharmacologist, and we all knew of his studies on strophanthus. But his great reputation with students was his teaching of clinical medicine: the method of examination of the patient in bed, pursued in strict order from the complaint, through the history, the stages of the examination, and the critical moment of the diagnosis; then, more quickly, the discussion of prognosis and treatment. All these things were done successively by pairs of students called down from the steep benches of the theatre to the area where the patient lay in bed, the chief lying back in a wooden armchair at the head of the bed, with a fierce expression on his face, like a watching hawk ready to strike. Some fifty students looked down on the long-drawn-out process for nearly two hours with unwavering attention; it was as interesting as a murder trial. Indeed, the students were all witnesses and might be called on at any moment to produce evidence of the crime (the disease) that was responsible for the stricken state of the victim in the bed. This long process of incrimination was *carried out by the class*, but under the close guidance and the searching correction (often savage) of the chief.

The summing up of the evidence, its consideration, the conclusive sentence or diagnosis, were also carried out by members of the class, but all under the direction of the physician-assessor. A crucial stage had now been reached: a complaint had now become a disease, or a crime had been fixed on a particular criminal. It is obvious that the whole process was based on that in a criminal court of law. It was pursued three times a week on case after case for ten weeks by Fraser, and by that time each member of the class had exercised himself thoroughly in every detail of the process that leads to diagnosis, prognosis, and treatment. And if a man wished to learn and practise this discipline further he could return for a second or third course; many did so.

There was another kind of lesson learned by Fraser's students—the exact use of words. Loose and vague words were an abomination to this great clinical teacher, and he was relentless and savage in correction. If a student described the pulse as "bounding," "full," or "empty" he got at once a castigation as severe as that by any of the old school dominies.

As a system of clinical teaching it was unique in the Royal Infirmary of that day. Looking back at it now from the short distance of fifty years, I would describe it as perfect, classic, and timeless; for it was founded on the timeless principles of grammar and logic, of care and truth in observation and in language. Such a system is just as valid and as much needed to-day, as Sir Francis Walshe (1956) has well pointed out. Where Fraser got it I do not know. He had a powerful and clear mind; but there was a strong tradition of clinical teaching in Edinburgh, and working from that he brought it to his own perfect form.

His clinical lectures were also good, with a noble rhetoric added, but they were dated by the pathology and physiology of their day.

His class lectures on materia medica, one hundred of them, were too much both for himself and for his students. But, with the examination ahead, we put down our heads and scribbled notes.

But his students will never forget his clinical teaching. Without a note taken, that teaching has entered into the grain of our professional lives; and, especially in the fundamental process and act of diagnosis, we have continued to practise daily through the years the lessons of the master.

Professor John Chiene

John Chiene was professor of systematic surgery, and was known to students as Honest John. When I attended his ward teaching in 1901 it was my first experience of patients and surgical operations. He was an influential and beloved teacher, both in his long course of lectures and in his ward teaching. He was regarded as a philosopher, and often quoted Marcus Aurelius. His honesty was transparent, and nothing of pose in it. He was not afraid to confess his mistakes and admit his doubts; but behind all this were his sense of responsibility for his patients and his compassion for them. Without mentioning the name, he was instilling into us the teaching of Hippocrates: and, more than by any other medical teacher in Edinburgh of that day, the ideal and ethics of Hippocrates were held up to us by Honest John. He also urged us to make our own clinical observations in the ward; and, to back up his words, there were two coloured prints set up on the mantelpiece of the side-room. One was a nest of young birds with open mouths being fed by the mother; the other was of active young chickens scratching for food in a farmyard.

I remember well the first operation we saw. We sat on the benches, quaking; while the patient was prepared and lay still on the table under white linen cloths. Honest John came forward, gowned to the throat and wrists, with rubber gloves on, and the knife held in one hand. His broad face and broad brow, his deeply sunk rather sad eyes, his grave look, his sensitive shut lips were impressive. In a few words he explained the nature of the operation, and then put this question to us: "What am I thinking about?" This was typical of his teaching: he always tried to draw out our minds. He seldom smiled, and I never heard him laugh. His humour was melancholy, but witty, wise, and most stimulating. He taught us the deep ethical meaning of the word *clinical*, the moral bond between doctor and patient. Hippocrates is said to have disliked surgeons, but he would have counted John Chiene as one of his followers.

Our first contact with clinicians in Edinburgh was with a surgeon. Surgeons are different from physicians, their work and thought being firmly based on anatomy. I remember a sentence on this subject which fell from the lips of John Chiene. "Physicians should *never* be certain, surgeons only now and then." This was typical of the wisdom, deep and ironic, of Honest John. It was the wisdom of a surgeon-philosopher, based on the wisdom of the emperor-philosopher Marcus Aurelius, but also on the humanity of the physician Hippocrates. If wisdom is the principal thing, his students had the chance of getting it from this wise and good surgeon.

John Thomson

John Thomson was lecturer on diseases of children in the University of Edinburgh and physician at the Sick Children's Hospital. He had great defects as a teacher of students, but he had great renown as a physician, and his reputation went outside these islands and over the world. He was a medical discoverer of new types of disease in children, exercising in a high degree the talents of clinical observation, reflection on what he saw, and close attention to current

literature. He was in fact a scholar as well as a discoverer, and his papers were not only convincing but written in a fine clear simple style of English. But when he stood before a class of students his voice was low, his manner shy and diffident, and his command of words poor. Yet we heard him with attention and deep respect, for we were in the presence of a recognized master of his subject. His reputation threw a kind of glow round about him, not visible, but felt as inspiration. And inspiration is mentioned by Liebow in his address as one of the greatest gifts of a teacher to his students. Other virtues that came out of Dr. Thomson in his teaching were his modesty and humility. These things were apparent, and when joined with high reputation were discerned at once by his audience and had a powerful effect. The case of Dr. Thomson could easily be paralleled elsewhere. For example, in physiology, Sir Charles Sherrington was a great scholar and a master of his subject, but is said to have lagged behind as a teacher of students.

The three examples that have been given were of clinical teachers in the Edinburgh Medical School fifty years ago. From them we cannot judge of the strength or weakness of the school as a whole at that time, nor can we make any comparison with the state of teaching in Edinburgh to-day. But they illustrate methods and principles of teaching which are valid at any time for any school, and which must be taken into account when reconsidering the medical curriculum to-day.

The College of General Practitioners

The College of General Practitioners, already created as a corporation, has now secured a site for building at Lincoln's Inn Fields. This is announced in a letter to the *British Medical Journal* by its President, Dr. W. N. Pickles (1956). This notice is relevant to the present discussion on medical education, and in conclusion I shall make some comments on its significance.

Would the following statements be accepted?

1. General practitioners are the main body of our medical system; more than that, they are its hinge and pivot, and determine the efficiency of the hospital and public health parts of the system.

2. The medical experience of general practitioners is wider and more complete than that of hospital or public health doctors. This is seen in the greater number and the greater variety of diseases they deal with, and in the fact that they see these diseases (in most cases) from the beginning, through their course, and to their end in recovery or death. A well-educated G.P. who has become versed in his work is the most experienced and valuable of all kinds of doctor. He is our master clinician. Even though he delegates some of the difficult technical jobs of surgery, midwifery, and practice of physic to hospital specialists, these are only temporary, although crucial phases, and they all begin with him, and in many cases come back into his hands.

3. The public and the press, stunned with the marvellous work of the hospitals, tend to belittle the humdrum work of general practitioners and to put them into the second line of the medical army; in truth they are the first line and are indispensable.

4. The general practitioners themselves realize that much of their work falls short of what it might be. In the hospitals as students they saw teams of assistants, and nurses, and laboratory technicians, and records, and all the apparatus of diagnosis. In practice only a bare minimum of these aids is available, and after a year or two the doctor, man or woman, comes to accept much of his work as unfinished and incomplete. This state of affairs will surely be the concern of the new College.

5. Lastly, there is medical education, which has been discussed here. This has been thrashed out for years by medical faculties, colleges of consultants, the Ministry of Health, and *ad hoc* committees. And all this indicates the importance of the subject which deeply concerns the public weal. All these learned bodies agree that medical education

is imperfect, but do not agree about how to put it right. The College of General Practitioners will know better and more closely than any other college what is lacking and faulty in the young men and women now being turned out into general practice by the medical schools. In due course we shall have a report on medical education by a committee of the College which will be read with respect and great interest by the whole medical profession.

The College of General Practitioners is the last and the youngest of the medical colleges; it may become, like the mustard tree, the greatest of them all. It will be the guardian of the interests and dignities of the largest body of our medical men and women, all engaged in the full range of medical work. Better training and better conditions of work for general practitioners can bring great benefits to our society.

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MEDICINE'S WIDENING HORIZONS*

BY

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The figurative meaning of the word "horizon" is given in the Oxford Dictionary as "the limit of mental perception, interest, or experience." I am relating the phrase "widening horizons" to certain aspects of our professional life which should and will expand.

The Horizon of the Science of Medicine

The past hundred years have seen a remarkable development in the science of medicine. In 1856 bacteria had not been isolated and little was known of the cause or prevention of infection. Ether and chloroform anaesthesia had existed for about ten years, but Lister had not even begun the antiseptic surgery which preceded aseptic surgery. Abdominal operations were rare before 1858, when Spencer Wells, of London, began such work with some success. Most compound fractures were treated by amputation, otherwise the patient usually died of sepsis; even with amputation the mortality was nearly 50%. X rays were still undiscovered.

In contrast, during the past twenty years our scientific horizon has extended to include major therapeutic advances such as the antibiotics and the sulphonamides, while anaesthesia has forgotten its "rag-and-bottle" days and is now a constant source of joy for the anaesthetist and the surgeon, though the patient's joy still has reservations. The progress in antibiotics and anaesthesia has removed the last restraints on the surgeons, who now think little of making a direct assault on the arch of the aorta, of attacking the valves of the heart, of amputating a frontal lobe, or of removing most of the viscera between the oesophageal hiatus and the levator ani. The radiotherapists spray their rays with increasing vigour and abandon their machines and their statistics becoming always more impressive and less understandable. The radioactive isotopes have opened up new fields whose limits are beyond the horizon. Clinical biochemistry has become almost an ideology, and the day of milli-equivalents is at high noon. In future no self-respecting professor of medicine will allow the time-honoured phrase "At rest" to be chiselled on his tombstone—he will insist on some such statement as "In osmotic equilibrium."

There is no doubt that the scientific horizon will continue to widen. It is possible that just beyond the present horizon

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