

College itself and the Gillie committee, have advocated as an essential part of any modern medical school.

If the family doctor can be trained to fulfil this role, and given the facilities and the time to do it, then, surely, not only will the people of our country receive good medical care but the job itself will be a rewarding and satisfying one likely to attract to it the quality of recruits capable of maintaining all that is best in the art and science of general practice.

Borrowing again from Dr Todd's article, here is what Dr Alfred Stille had to say in his presidential address to the American Medical Association in 1871:

Science does its full share of work for medicine; for no other art does it do so much. But we err greatly if we accept it as a certain and sole guide. For science itself is unstable; the science of the last century is the folly of today, and much of that on which we pride ourselves will be found in the lumber room of the next generation. It is because art is uncertain, and science both erroneous and incomplete, that successful medical practice depends upon the individual man so much more than on the art or the science of medicine in itself considered; upon his ability to observe phenomena accurately, thoroughly and honestly; on his capacity to apprehend their relations to their causes and to one another; and upon his personal skill in selecting, combining and applying remedies.

## VII

**Dr John R. Ellis, M.B.E., M.A., M.D., F.R.C.P.** (*physician to The London Hospital and Prince of Wales Hospital: principal medical officer, Ministry of Health: honorary secretary, Association for the Study of Medical Education.*) There have been so many debates about art and science in medicine that the two words cannot be used in the same sentence without evoking the idea of conflict. This is particularly the case in Britain because for a very long time scientific method has been less taught and less used in British medicine than in that of many other countries. Science on the other hand, or rather the conclusions of science, have been used, and we have been inclined to apply these technological results without any deep understanding of their origins and limitations. We have therefore tended to regard things scientific as things technical—material, cold and even antihumanitarian.

To a considerable extent scientific data and scientific techniques are cold and belong more to the laboratory than the bedside. Scientific method of thought, however, has nothing to do with data

or techniques. It is no more than the ability, carefully nurtured, to think critically and clearly, to weigh all the evidence (clinical and technical), to keep an open mind rather than a closed one, to be as accurate and as honest as possible. It is objective and dispassionate, but because it increases integrity and accuracy it calls for compassion more clearly, for it reveals when compassion is required.

The fact that most of us were not encouraged to acquire a scientific method of thinking has not greatly mattered because hitherto medicine has been mainly empirical and depended but little on science. In the future however it will matter because while much purely empirical medicine remains, the power of modern medicine is largely dependent on science—and it is a vastly increased power, completely changing the position of the doctor, especially the physician and the general practitioner. They have now joined the surgeon as people who can effectively alter the course of human disease—and indeed of human life for they have become capable by acts of commission, or of omission, of both helping and harming their patients. And this they can do very quickly and simply, with, and very often without, reflection, nearly always without witnesses, by writing the name and dose of a drug on a piece of paper.

This is perhaps the major feature of the revolution which has occurred in medicine in our time. We find ourselves facing, in this country, diseases about which we know very little—we do not know for example the causes of cancer, hypertension, coronary artery disease, chronic bronchitis, depression or the major neuroses. In preventive medicine we are forced back to reliance on early diagnosis; yet against most of the diseases we meet we possess powerful agents, the products of science. These will, as they increase in number and potency, be used safely only by those who possess a scientific method of thought. Of course they will also need good clinical method, sound clinical competence (which includes empirical knowledge) and proper professional attitudes. Doctors who have all these things will be the doctors who are the masters of science in medicine.

If on the other hand we produce men who possess scientific method of thought without clinical competence, they will be scientists, incapable of taking action on inadequate data, and will be potentially dangerous.

If, on the third hand, we produce doctors who are clinically competent but do not have a scientific method of thought, they will be the slaves of science in medicine. They will only be capable of applying, safely, those remedies which they have been taught, in precisely those situations in which they have been taught to apply them. They will in fact be technicians. They will be limited in what

they can do and will become progressively more limited as scientific advance makes new inroads into the remaining areas of empirical practice.

We must prepare those who are to practice the medicine of the twentieth and twenty-first centuries so that they are masters of science in medicine. This we cannot achieve by the education which we received. Our education evolved some 100 years ago following the revolution which occurred in medicine early in the nineteenth century. A new pattern of medical care had developed so that the new medicine could be applied efficiently. The old orders of physician, surgeon and apothecary had been replaced by a very large number of general practitioners and a very small number of consultants. Between them they supplied most of what medicine had to offer—supplying it rather more in the home than in the hospital. Their most effective weapon was surgery, outside of which they could do very little—save to encourage those who were likely to recover on their own and to ease the suffering of those who were not. Small wonder that people came to think that the doctor should be a man who was good with his hands, and that his office became known as the ‘surgery’.

Once this new pattern of medical care had developed medical education was adapted to it. Medical schools were organized so as to produce general practitioners. The minimum content of the preparation was the maximum content of general practice. The result was a practical training, conducted mainly through apprenticeship. It included those conclusions, those results, of scientific advance which were applicable to general practice. It was not concerned with the reasoning by which those conclusions were reached, and did not set out to confer upon students the ability to reason scientifically for themselves. It prepared a man to be competent in the acceptable practice of his student days, and it did so very adequately. It was not, for most people, an effective preparation for a changing future, nor was it meant to be.

That was the basic training of every doctor. To become anything other than a general practitioner required further postgraduate preparation. The consultant was a general practitioner to whom something extra had been added.

The general practitioner was the basic unit of medical care. He was also the basic unit, *the minimal end point*, of medical education.

Now medicine has changed yet again. Our new medicine differs as much from that of the nineteenth century as did that of the nineteenth century from all that went before. The difference is partly one of degree, of size. Modern medicine is bigger than anything in the past, and is now too large for any one person to dominate

it. But more importantly there is also a difference in kind. Not only does it depend upon science for its new potency but it is not, and never will be, static. It is constantly changing as well as growing, and it will therefore demand, and secure for itself, a constantly changing pattern of medical care. What is best done by surgery today may be done better by medicine tomorrow. The gynaecologist may be replaced in some of his present activities by the psychiatrist and the psychiatrist be relieved of many burdens by further social changes, as by adaptation to changes which have already occurred. Care which is now best given in hospital may later be given better outside. Medicine which can now be efficiently practised in the patient's home may diminish in relation to medicine which can only be practised in specially prepared situations. Medicine which at one time can be safely practised only by a doctor may later be safe in the hands of an auxiliary. It follows therefore that although at any one time we must decide how best to deploy all the doctors we possess, we must expect that there will be redeployment again and again in the future. We cannot foresee any one pattern of care which will remain appropriate, and will always have to settle for the one which makes maximum use of what we have, while leaving the greatest freedom of movement for the future. Any rigidity which we seek to impose can only be in the nature of a break, and is always likely to be related more to the past than to the future. We can be certain that the advances of medicine will always continue to press inexorably upon the practice of medicine and change it accordingly.

We cannot therefore adapt to our new medicine as the early Victorians did to theirs, by first establishing a pattern of care and then devising a form of education appropriate to it. Instead we have no alternative but to provide a form of education which will prepare the doctor for an unknown future while at the same time preparing him to perform competently in one sector of the medicine which exists in his student days. We must make him capable of applying at any time, even late on in his professional life, knowledge and skills which were not dreamed of in his student days. Equally important, we must make him capable of changing his place in the pattern of medical care at some future date, capable as it were of changing his position in the team.

This should apply, and must apply to all doctors, but especially to general practitioners. They will not, I imagine be the only doctors to practise continuing medical care, nor to adopt a holistic attitude to their patients. They are not now, but the field in which they work is and will always be wider than that in which any other doctor works. They will be more exposed than anyone else to change in medicine. This week a letter to *The Times* drew attention to

the fact that the scope of work of the general practitioner should be limited to that which makes use of his knowledge and skill. With this we would all agree, but it is equally important that his knowledge and skill should never be so limited by his preparation that all he can ever do is that which he was taught as a student.

Of course so long as the general practitioner remains the portal of entry to the profession, the only doctor to whom the patient has direct access, then he must remain to some extent the basic unit of medical care. He cannot however ever again be the basic unit, the minimal end point of medical education. The more undifferentiated the work he is required to do, the more differentiated and complex he becomes educationally. He will never again be the simplest, quickest and cheapest doctor to produce. He will never again be the educational lowest common denominator.

There can however, and I believe there must, be an educational end point set for undergraduate education. This should be, I think, a man who has become capable of learning for himself and acquired the habit of learning—thus he will be able to profit from continuing education throughout his life. He should be capable of scientific thought: thus he will be able to achieve diagnosis by reason as well as by recognition; he will be able to meet new ideas with an open mind, but critically and with integrity; he will be able to use science, fully, safely and with humanity, instead of applying, or failing to apply its conclusions with dangerously limited understanding.

The production of such a man is of course the aim of university education in any faculty, and success depends upon the use of appropriate methods on which we need not touch today. Where medicine is concerned however, more is required. In addition to this preparation of the mind, correct attitudes must be laid down and technical skills must be ingrained.

We know from past experience that clinical method, the technical skill of obtaining information from the patient, can be taught to students and practised by them but can never be fully developed without some active and responsible participation in the care of patients. This was so even when clinical method depended solely upon the use of man's own eyes, ears, hands and nose. It is even more the case now that clinical method has been extended so that it includes the use of complex apparatus, and more than one person's investigations. The same is also true of decision-making in clinical medicine. For various reasons, however, responsible practice under supervision is, and has to be, denied to the undergraduate student. Therefore we cannot achieve our educational lowest common denominator by a university course alone. We need also a period

of general vocational training in which the graduate doctor can learn by participation as a practical apprentice.

Of course, both a university education and a general vocational course of training are now provided. But as we all know they are not correlated. One is too long perhaps and the other too short, but a greater weakness lies in the fact that the second (the internship) is so haphazard an experience, varies so greatly in content and method from job to job that no medical school can place any reliance on it in formulating its undergraduate curriculum. Furthermore the two courses together, undergraduate and internship, which should achieve only a certain basic level of preparation, a lowest common denominator, an undifferentiated doctor, constitute almost all that is offered or required for the most general, the most differentiated doctor, the general practitioner.

Everyone else is offered and required to undergo a long, probably far too long, postgraduate preparation to fit him for the special vocational work in his chosen branch of medicine. In every other field a man is given every opportunity to fill those gaps in knowledge which he is bound to have, to acquire all the particular expertise he needs, to build up his confidence and get himself into a position in which he can profit from further experience. True there is much that is imperfect in our present postgraduate preparation for the specialties; it did not come into being for educational purposes alone and it was not shaped with education predominantly in mind, but it exists and can be improved. A similar stage of preparation for general practice virtually does not exist, and its absence must act as a considerable deterrent to the able and responsibly-minded young man or woman who would like to enter general practice. It is an absurd paradox that whereas it is possible to become established as an independent general practitioner at an earlier age in Britain than in most comparable countries, it takes longer to become a physician here than almost anywhere else in the world. It is also a sad fact that the absence of a third stage of special preparation for practice gravely complicates the efforts of the medical schools to give a sound university education by forcing them to attempt some degree of general coverage as well.

We obviously must provide this third stage in which future general practitioners can become competent in their field of work. Efforts to do so have of course been made and many different schemes have been or are being attempted. Wessex, Inverness, Bristol, Stoke and Canterbury are but examples. I think it is fair to say that none of these are altogether successful and certainly all of them together are not enough. The primary need, I would think, is to make this postgraduate preparation a required stage of training for all who enter general practice. The recent announcement by this College

on this subject is therefore of the greatest importance, but by itself, it will not prevent the untrained from being appointed to general practices. [The only way to prevent that from happening is to make it so easy for every would-be general practitioner to obtain post-graduate preparation of sound uniform standard that no one will take on a man who has not obtained it.

This means, I think, that the preparation must be supervised on a national basis and this in effect means a regional basis—with each region possibly operating different methods, but maintaining a national standard. Each region will require a general practice training organization in which co-operation from a university will be needed but which it should not be the responsibility of a university to maintain.

If, for the sake of argument we assume an annual entry of 500 men and women into general practice in England and Wales then each region must cater for at least 30 each year. Not all would enter at once and it should be possible to start 15 every six months upon a training which could last two, three, or four years as thought necessary. Such an arrangement would make it possible to adopt methods of training which have not so far been tried. To date we have tended to combine theory and practice to an extent which has prejudiced success in both. Whatever the total content of the training it is clear that part can only be acquired by full participation in the care of patients (in hospital or outside) and part can be obtained only by some more formally organized education. It is not to be expected that these two processes can necessarily be run coincidentally. Nor is it likely that a lone trainee appointed to a hospital unit, whether supernumerary or otherwise, will learn all that is relevant to general practice from a specialist who is at the same time attending to the needs of his patients.

It would therefore I think be worth while to organize in each region, once or twice a year, a course for those beginning their training. Its duration would depend upon careful consideration of its content but would be unlikely to exceed three or four months. Its purpose would be to present to the group of postgraduates all that was thought relevant to general practice in future, whether knowledge or attitudes or techniques, which they could not be expected to acquire merely by participation in present practice or in hospital. It would include a quantitative approach to medicine, special techniques of prevention as well as of diagnosis and treatment, and further teaching in areas such as psychiatry, dermatology, ophthalmology and others particularly relevant to general practice. It should be arranged I suggest around those age groups of patients with which the general practitioner is predominantly concerned. Thus while dealing with

the infant, the child, the adolescent or the aged, experts in general practice and in the various hospital departments (of eyes and ears and skin and psychiatry and so on) and experts from related disciplines outside medicine, would be brought singly and in combination to the group of postgraduates, to present a co-ordinated picture of the age group. The course should also, I believe, include an introduction to research method.

I appreciate that such a course would require careful organization and also require at least 15 postgraduates being paid at least the salary of a senior house officer for three months. Indeed the national cost, exclusive of teachers, would be at least the equivalent of 125 additional S.H.O. posts each year. This is not, in fact, an enormous sum and there are precedents for paying postgraduates during a course of necessary theoretical study. In any case the national cost of postgraduate training for general practitioners can scarcely equal in size the national need.

After the course training would be by participation, in general practice, and in hospital appointments with responsibility and with a minimum of interference from formally organized teaching. The postgraduate, having had an opportunity to reintegrate his knowledge and to be introduced to new ideas would relinquish the status of student and regain the pleasure of responsible participation without the irritation of being reduced once again to the status of observer. Both in hospital and outside he would be able to apply the knowledge to which he had been introduced during his course. His appointments might or might not be in the one region, but he would remain responsible to a regional organization, to which he should in addition submit the results of some longterm project of research or enquiry.

I would feel myself that the regional organization and the theoretical course should be centred on some large district hospital, and not on a university hospital. I would feel too that in the same centre, and possibly in other large towns, special casualty appointments should be established. In these, trainees should serve not only in the casualty department but also provide on a rota system an emergency domiciliary service to cover the practices of a number of general practitioners. In this way the trainee would be actively engaged in both hospital and domiciliary work at the same time—while providing much needed cover and support for overworked general practitioners who would be adding teaching to their already numerous tasks.

That is merely a suggestion which I believe to be a practicable one—for providing good postgraduate preparation for general practice. Once this is provided we should be able to produce general practitioners who will be capable of bringing modern medicine to their



patients, effectively, kindly and safely; who will be capable of doing so throughout their lives; who will be capable of that inter-dependence upon others which alone can confer independence on the doctor of the future; who will be capable of profiting from experience and therefore capable not only of receiving continuing education but also capable of giving it to others. Above all, wherever they work, whatever the stage of illness of the patients whom they tend, they will use the same method of thought as all other doctors. General practice may remain different from hospital practice but general practitioners will not be different from hospital doctors.

## DISCUSSION

**Dr W. O. Grimms** (*Swansea, South Wales*): I should like to ask the speakers what proportion of their time could they safely give to appointments outside their practice duties, such as factory work, hospital appointments, insurance, and so on, without jeopardizing their position as experts in family medicine. I put this to you as a provocative question.

**Dr Ashworth**: Shall I take the bull by the horns? You see, if you work in a properly equipped health centre, with adequate auxiliary help, you find not that you do less work but that the pattern of your work changes. Therefore, I find that in my life I spend, in accordance with (I think it is) Dr Fry's recent writings, something in the region of 40 hours a week in contact with my patients. I do a maternity or child welfare clinic for a local authority one afternoon a week; I do a very small amount of industrial medicine which occupies me for, I suppose, not more than a couple of hours a week and I find I have very happily filled most of my working days between nine in the morning and a quarter past seven in the evening. It is true, of course, in organizing your life, if you take on the things in which you are interested something else has to go—this was said this morning—and much of what goes is the trivia with which other people can cope very much more efficiently than I can.

**Dr Logan**: The question is: What is our attitude, what is our hunch, what is our impression? The question was not: What operational study has been done to examine this question? This really is throwing the matter right back because we do not know. But, taking up Dr Ellis's point, the patterns of medical care must be flexible enough to adapt themselves to changes, to maximum need, to maximum use of what we have. I think the question is a very good question, but it is one which the research committee should tackle.

**Dr Stewart Carne** (*West London*): Last August the college council did a quick study of one week's work load in general practice. I can give you some of the early answers of that study. The average