

## BY INVITATION

### \*DILEMMAS IN MEDICAL EDUCATION

I would like to make it clear right from the beginning that there have always been problems in medical education, and there will always be problems. However, these problems are different from the problems seen in other professions because of many reasons. Two of the most important are:-

- a) The nature of the discipline of medicine in that it is extremely complex, and man's scientific understanding of physiology and disease is very far from the ultimate, and I doubt whether man ever will understand fully, given the limitations of the evolved human brain.
- b) Doctors have always tried to protect the public interest by a rigid system of training and certification as the profession deals with life itself. In fact, the major reason for the institution of guilds and Royal Colleges in UK in the 14th and 15th centuries was exclusion of those not properly trained to function as doctors.

The first reason demonstrates the fact that medical thought and fashion are constantly changing; in fact, the half-life of new medical knowledge is about 6 months. Hence, medical education should change constantly, and this is all the more necessary, because of the rapid changes brought on by social evolution recently. It is the interplay between rapid changes in medical knowledge (which does not necessarily mean medical advance only but also medical retrogression) and rapid social changes in the environment that demand changes in medical education. Yet, it is the second reason, i.e. steps taken for training and certification of doctors for the protection of the consumer, that often prevents necessary changes in medical education. How has this happened?

It is said that failure to understand history forces people to re-live it all over again. In the days of Hippocrates and Greek medicine. Arabic medicine, Chinese medicine and Indian medicine, one has to be honest and say that there was nothing much really to protect the public against, because, what passed for medical knowledge was based on superstition, tradition and unscientific observations. However, from the 16th century onwards, scientific medicine was born as the result of the work of many of our predecessors. Vesalius (1514-1564) who made anatomy what it is today, and William Harvey (1578-1657), who discovered the circulation of the blood. Boerhaave (1668-1738) who established the famous medical school in Leiden, followed by the others in Vienna and Padua; Schonlein (1793-1864) who estab-

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lished the German school, and Claude Bernard (1813-1878) and Charcot (1825-1893) who among others raised the standard of medicine in France. The first Monro (Primus) (1697-1767) was a pupil of Boerhaave at Leiden, and on his return, he helped to found the Edinburgh Medical School and did much to bring the European continental standards to Scotland and England. Riding on the shoulders of these men, scientific modern medicine was further advanced by others, so that by the 19th and 20th centuries, traditional and unscientific medicine was gradually phased out, but never totally eradicated then or even now. In UK, the Royal College of Physicians in 1518, the United Company of Barber Surgeons in 1540, the Apothecaries in 1617 and the Royal College of Surgeons in 1800 — all these bodies were formed as much to protect themselves as to protect the public. Although, standards of medical schools in UK were influenced by these bodies, historically, our present state of medical education in the English-speaking world, has been influenced most by what happened in the United States. Although the first medical school was founded in 1765 in Philadelphia by Morgan and Shippen, pupils of Boerhaave, very soon private or proprietary medical schools sprouted all over America and at one time, there were more than 400 of them, and some just gave certificates to practise to anyone who could afford the money to buy them. In the midst of such chaos, in 1910 Abraham Flexner (1, 2) brought out his Report and more or less dictated what a medical curriculum should be, and in this Report, he and his colleagues were influenced by the rise of scientific medicine in Europe where they had been trained. The fly-by-night private schools folded up one by one, and the Report till now is held up as the model for medical schools.

From Flexner onwards, stress was placed on science. The stress so placed was understandable for 2 reasons:—

- a) Medicine had just emerged from superstition and empiricism and entered an era of scientific advance.
- b) The constant goal of medical educators was to see that unscrupulous proprietary private medical schools should be closed.

Flexner reinforced these, although UK, as mentioned before, had their own guilds and Colleges to exclude those not properly trained. Flexner, to me, embodied the modern medical guild. In UK, there were no dramatic changes as in the US, but the General Medical Council was formed by Parliament in 1858 to keep a register of so-called "qualified" medical practitioners. Later, the Council extended its functions to include overseeing standards of medical schools in UK and medical schools in the British Commonwealth, and historically, our medical school, came within the ambit of the Council. Initially, of course, new medical schools made sure that the curriculum was closely patterned on that of UK, otherwise recognition from the General Medical Council (GMC) would not be forthcoming. Our local medical school, after producing its first graduates in 1910, attained GMC recognition 6 years later in 1916. It is therefore inevitable that, if our medical school wishes to retain such recognition, it would have to follow UK trends in medical education. For the above reasons stated, UK schools did not change their curriculum and hence, the Singapore medical school did not change theirs. It was as simple as sheep following the shepherd even if he is an

incompetent one. In CONCLUSION, from the end of the last century and the beginning of this century, the UK and Commonwealth curriculum did not change appreciably, in spite of the fact that medicine itself, social demands and the whole world have changed considerably over the last 100 years.

I have briefly traced the historical reasons for the reluctance of Western-type medical schools to change their curriculum. To their credit, one must admit that at the turn of the century, medical educators had formulated a curriculum which served the needs of the graduate at *that time*, within the limits of medical knowledge, which we now know. The graduate at that time was the 'total' doctor. He was obstetrician, paediatrician, surgeon, and internist and often the Father Confessor. He delivered babies in the mother's homes, carried out surgery in the kitchen, and hence the term, kitchen surgery; did tracheostomies on children with asphyxiating diphtheria, and applied leeches for almost any disease. In other words, he had to be taught everything, as he had to do everything, and he *could* do everything, as medical knowledge was extremely limited, compared to the situation today. Yet, the modern undergraduate is still taught the same things which does not matter so much, but he must also submit himself to a professional examination and pass it, which, however, does matter. The medical school entangled within this net, finds great difficulty in extricating itself from the morass of irrelevancies. It is therefore inevitable that the medical school finds itself in a quandry. What are these dilemmas? Are they real or imaginary? One way of assessing this is by asking the views of those who are taught the curriculum, i.e. the students themselves — the customers. A recent survey in 1978 of a batch of recent Yale medical graduates (3) revealed that 73% of them found the clinical curriculum wanting, and 30% expressed the view that, if given the option again, they would not have taken up medicine, and did not want their children to do so. We must remember that Yale medical school, as with most prestigious US Schools, has a most comprehensive system of selecting medical students. If their system is effective in selecting those motivated to do medicine, their curriculum effectively destroyed this motivation! 33% of clinical students, at any one time, contemplated suicide and 37% of the clinical students sought psychiatric treatment!

Let us now come back to 1980, and let us come back to Singapore. Before we can discuss the dilemmas in medical education here, we must ask ourselves what are the objectives of medical education in the modern world as compared to those 50-100 years ago, and where many of these have still been retained. Evolution of medical knowledge (good and bad) has been phenomenal. It was estimated that 10 years ago (4), one new article appeared in the medical journals every 26 seconds. An approximate count of medical journals being published shows that there are more than twice as many now than 10 years ago (in the Index Medicus of 1980, there are approximately more than 2,000 listed journals, and for every listed, there are at least 5 which are unlisted, so that there are more than 10,000 medical journals now). At the moment, I estimate that every 10 seconds one new article sees the light of day in a medical journal! It is obvious, conditions now are totally different from those 50-100 years ago.

What then *should* our objectives be, in regard to the undergraduate medical curriculum as distinct from the postgraduate? I would therefore state that there are 2 fundamental objectives:—

- a) The medical undergraduate must be given the opportunity and must be taught how to learn on his own *for all time*, as medical knowledge is forever changing and will keep on changing for ever, given the nature of this profession. He must be taught to think, and if we have to assess him, we should not assess him only on the basis of what he knows or worse, what he does not know, but assess him on whether he knows how to think, how to learn and how to educate himself for all time.
- b) The second objective is a shorter term one, and that is predicated on what one expects him to do after graduation. In Singapore, the majority, will go into private or general family practice, and we all know the scope of such practice. He therefore should be fully conversant with only 2 disciplines, i.e. internal adult medicine and paediatric medicine. The G.P. here does almost no surgery, no obstetrics except for ante-natal care. Thus, these 2 disciplines — broad medicine in 2 age groups of man, should receive the undergraduates' greatest attention. He can be exposed to a smattering of the others, but these others are essentially in the domain of postgraduate medicine and not undergraduate medicine. We do not expect and should not expect our G.P. to take out our appendix, give us a general anaesthetic, or deliver our babies. We seek out the surgeon, the anaesthetist and the obstetrician. If we decide this for ourselves, we also must decide this for all patients.

With the above, as the 2 prime objectives, we can then now discuss what our dilemmas are.

#### DILEMMA NO. 1

The first dilemma is that the student is fed too much of what I term, dead-end facts. This is an attempt to so-call "upgrade" the curriculum in line with increase in medical knowledge, which, of course, increases. Unfortunately, cognizance is not taken of 2 things:

- a) When new facts are 'fed', the old is not thrown away
- b) It does not matter if a student is taught too much, as long as he is not expected to regurgitate these facts in the examinations. The sad fact is that he is supposed to, and suffers the consequences if he does not.

How real is this dead-end fact overloading? Recently, (5) an analysis of the texts that the medical undergraduate in UK are supposed to study, showed that in the pre-clinical years (i.e. Anatomy, Physiology, Biochemistry and Pharmacology), over a period of 2 years, the student is supposed to assimilate 44,800 dead-end facts and 27,900 concepts. Assuming that the student works 40 weeks a year and 40 hours a week, the analysis revealed that he has to assimilate 24 new facts/concepts per hour. These workers compared this load with that of a student reading modern languages at a University in UK and discovered that he has to learn a vocabulary which does not exceed 15,000 words (dead-end facts) and probably not more than 15,000 concepts, i.e. grammar

etc. Allowing for a 3 year course, 30 weeks a year of 40 hours per week, his assimilation rate is 6 facts/concepts per hour. At a rate of 24 new facts per hour steadily for 2 years, the neurones are overloaded, and we cannot blame the student for promptly forgetting it all the moment he passes the First Professional Examination, for if he does not jettison this load, he just cannot take in the new load in the clinical years. It is common knowledge that clinical teachers have to teach pre-clinical subjects all over again when the students reach the clinical years. This is not only a local complaint, it is seen in all the Western medical schools, especially in those where clinical and pre-clinical integrated teaching is not part of the pre-clinical curriculum programme.

#### DILEMMA NO. 2

The recognition of some aspects of the first dilemma has stimulated medical educators to de-compartmentalise medical teaching, especially the pre-clinical and clinical. Half-hearted attempts are made in many medical schools mainly because it is hard to teach old dogs new tricks. Hence, more success has attended new medical schools. Yet, more efforts should be made in old medical schools to integrate pre-clinical subjects, i.e. vertical integration, as well as integration, as much as possible, among the pre-clinical subjects, i.e. horizontal integration. As an example, the kidney could be studied, at one and the same time, from the point of view of its structure, its physiology, its biochemistry in relation to acid-base balance, and all these related to clinical situations of oedema, hypertension, acid-base abnormalities, renal failure, etc, certainly, not in depth, but an overall view. The student then views the kidney as a whole, he sees the relevance of structure and function in terms of a patient. He sees the effect of renal hypertension on the other organs, the brain and the heart. He remembers what he is taught because he learns concepts inter-related with each other and not as isolated facts, which he cannot remember because they are not inter-linked with real-life situations as exemplified in the patient. The lack in depth is of no consequence because we have taught him to think and to learn, and he will delve deeper on his own, in his own time. We have stimulated him to think by placing ALL the pieces of a jig-saw puzzle which he can assemble on his own, and not give him only a fraction of the pieces. In this latter situation, he does not know what to do with the pieces because he cannot complete the puzzle, i.e. the picture. There is no joy in the exercise. In the clinical years, he is given the other fraction of the jig-saw pieces, but he has lost the original pre-clinical pieces, and still cannot solve the puzzle, and the clinician will have to supply the student with the original fraction again — this is a waste of time, effort and opportunity of learning.

Such an exercise in integration is not easy to achieve, for if it were simple, there would have been no dilemma. The concept is clear but its execution is fraught with difficulties brought on by historical events which have taken place during the evolution of medical education. Such an integration does not mean that only clinical teachers participate in teaching in the so-called early "pre-clinical" years, but "pre-clinical" teachers CONTINUE on teaching the students also in the clinical years during clinical teaching rounds, seminars, and con-

ferences. We need to integrate not only student teaching, but we need also to integrate pre-clinical and clinical teachers. There should not be a dichotomy but there should be a cross-fertilisation.

### DILEMMA NO. 3

The third dilemma is what I call the "United Nations Syndrome" where there are too many departments each having an equal say in the distribution of contents of the curriculum. It does not matter if more departments are needed, but a clear distinction must be made between undergraduate and postgraduate departments, otherwise each postgraduate department, like departments of surgery, obstetrics, cardiology, neurology, haematology, oncology, immunology, etc. wants equal time for the undergraduates' attention! Certainly, they can and must teach the undergraduate but his exposure must be commensurate with what he is to do in general practice, and not as a surgeon, an obstetrician, cardiologist or whatever. The teachers from these postgraduate departments must teach in association with the Departments of Internal Medicine or Paediatrics, and not in isolation. Similarly, the newly-created Department of Psychological Medicine should not teach undergraduates in a setting where psychiatric patients are warded, i.e. in a Psychiatric Hospital. The staff should teach on psychological problems of adult and paediatric patients in the general adult and paediatric wards. In other words, the undergraduate must be exposed to the whole patient with various complaints referable to some body system but with manifold reactions from all the other systems of the body, and not to a body system in isolation from the rest of the body. The student then learns that a patient must be viewed as a whole, as a human being is made as a whole organism, and it is only medicine which has fragmented the body into parts, for convenience of study. Unfortunately, in doing so, medicine has fostered specialities concentrating only on these arbitrary parts, producing doctors with tunnel vision. This "balkanisation" of medicine has clouded the whole view because as someone has stated: "In medicine an increasing number of problems and activities transgress inter-disciplinary, inter-institutional and inter-departmental boundaries" (6), or as has been also said: "It is already out of date to speak about physiology, biochemistry, pharmacology, microbiology or immunology" (7).

### DILEMMA NO. 4

Consequent on Flexner's Report, and the rise of scientific knowledge, the medical curriculum veered totally towards science, and anything that is not scientific is looked down upon. It was inevitable that with time, the patient was looked upon less as a human being than a series of organs in an inanimate casing. Thus began the decline of humanism in medicine. It is not that doctors had never been humanistic, for even Hippocrates stressed it. Doctors had always been fully aware of the pastoral aspects of medicine. It is the encroachment of the era of scientific medicine that slowly eased out the "unscientific" humanistic approach. This interpretation that humanism in medicine is non-scientific is totally erroneous. The power of what we call the mind is now realised to play a vital role in disease, on the one hand, and recovery, on the

other. The psychosomatic diseases bear testimony to the integration and interaction of mind and body. Even the more 'scientific' diseases such as cancers have their onset in psychological stress, as the case of the Shah of Iran and his malignant lymphoma shows; and the 'cures' brought on by faith healing in hysterical conditions and other psychosomatic diseases are as scientific as any therapeutic cures wrought by modern medicine. We now know that the cerebral cortex can affect the secretion of hypothalamic and pituitary hormones, and these in turn can affect all the organs of the body. This knowledge has been used in the control of hypertension, migraine and many other diseases which are influenced by the autonomic nervous system, and biofeedback monitoring attest to the efficacy of this "mind over matter" method of dealing with some diseases. A good example of how medical "progress" has caused disease in this direction is the isolation of the sick child from his parents when he is hospitalised, on the totally misguided premise that the ill child needs quiet but not parental love, which was thought to have nothing to do with a child's health; and that spartan order and symmetry of ward beds contribute to a patient's recovery, and cluttering up a hospital ward with loving parents worried over their child, will cause his disease to deteriorate, in which case, no sick child should ever stay at home but be immediately 'shanghaied' to an isolated area. Unfortunately, such archaic ideas are still extant in some hospitals in the West.

How can human-caring be taught to the medical student? Although it may help to some extent, the injection of excessive teaching hours in psychology, social medicine and behavioural sciences within the confines of a lecture room, followed up by assessment examinations, often produce exactly the opposite effect in the majority of students. Caring of patients can only be learnt effectively by caring for patients and seeing patients being cared for by doctors in the examination room or ward. However, sometimes the student does not see this as the doctor may not set the desired example, and all the theory he has learnt about humanism disappears in practice. It is therefore important that doctors set a good example, for it is not unknown for some doctors to chase away parents when they carry out a ward round in a children's ward! The solution to this problem is for teachers in the behavioural sciences, psychology and social medicine to teach *in the wards on patients*, have discussions with doctors and nurses in the ward situation and not within the confines of a sterile lecture-room.

### DILEMMA NO. 5

The most important attribute a doctor should have is the ability to understand his patient, and in the case of a child, the ability to understand the parents also. If he does not, he will never get the co-operation of the patient in the healing process and what is more important he will be unable to get the patient to prevent the illness striking again. The crux of the whole problem is whether the doctor is able to switch roles with the patient adequately. Can he understand what is going through the patient's mind, his fears, his guilt feelings, his own concepts of his disease, his worries, his unspoken thoughts? Can he get the patients confidence to tell all, to ask all and to satisfy his doubts? Can he establish a rapport and have an

empathy with the patient. I stress this because all the questions which the student has been taught to ask the patient are put to the patient often in robot-like style, and equally answers written down robot-like without attempts to find out why the patient answers in the way he does? It is often done in an automatic computer-fashion. There is no probing, no understanding follow-up questioning. For 2 years in the pre-clinical semesters, the student does not talk to a single patient, nor does he observe doctors talking to patients. Suddenly, he goes to the wards, and starts talking. How can a 21 or 22 year old student talk to a 50 year old patient old enough to be his father or mother, and get the patient's confidence to confide and trust? Can this ever be taught or must this be part and parcel of how the student was brought up himself and hence "un-teachable", or must the student accumulate life experience for another 10 or 20 years to understand one who has more experience of life than himself?

I firmly believe that it can be taught. NOT by lectures and words from a book or in a sterile classroom, but by listening and observing an experienced clinician talking to his patient. It is just not the words either, but the gestures, the reaction of the face, the mouth, the eyes and how the doctor responds both by words and equally by facial gestures, step by interlocking step, till a rapport is established. The doctor questions and answers and gestures and these must be appropriate to the patients moods, his level of education, his culture, his biases, his fears and his ignorance. The patient must feel he is understood, he is respected by the doctor, and he must feel he can put all his trust in him.

I agree this is a life-long process of learning about human nature but I also feel that the basics can be taught by example but life experience has to be accumulated. Therefore, the earlier the student is exposed to the patient by passive observation and active participation, the better it will be for him.

#### DILEMMA NO. 6

Dilemma No. 6 stems from Nos. 4 and 5, and again it arises from the emphasis given in the curriculum to aspects of patient care veering towards the scientific without weighing risks to the patient in terms of invasive investigations. The unnecessary biopsy, the unnecessary endoscopy and arteriogram or laparotomy will reveal the diagnosis but will not affect treatment. Can the doctor reverse roles with his patient, and with his specialised knowledge of the illness, will he want these invasive investigations on himself if he were the patient? If his answer is 'no' for himself, the answer is also an unequivocal 'no' for his patient.

If you take up any text-book of medicine, and you come to the section on investigations of a particular disease, you are taken through a list of such investigations from the simple to the complicated, and very often without an opinion being expressed as to whether such investigations are justified for the disease in a particular patient. The student, of course, has had few contacts with patients even when he has finished the medical course as he seldom is closely involved from beginning to end. He therefore automatically echoes the list, often without giving thought to the relevance in a particular situation.

The fault here is with the clinical teachers, not stressing this highly important aspect of patient care. The student should learn that invasive investigations should be explained fully to the patient, why they are necessary in the particular situation, and if they are unnecessary, they should not be mentioned and not be done. The clinical teacher should not only impart knowledge, but he should also transmit skills, and most important of all, he should shape the correct attitudes in the students!

#### DILEMMA NO. 7

There is a great dilemma concerning assessment of students. Our system, unfortunately, followed that of UK concerned with protecting the public from quacks and doctors not competent enough to practise their skills on patients. It is no accident that the examinations were and are referred to as professional examinations. Our predecessors could be excused for laying such strict criteria before the students are released on to the public. However, certain changes since then must be taken into consideration to see if all of it is still relevant, viz:—

1. The doctor 100 years ago had to deal with everything, from medicine to paediatrics, from surgery to obstetrics. He could do this because the scope then was nothing like what it is now.
2. Knowledge has advanced so fast that the G.P. is not supposed to possess the skills of the specialist.
3. Disciplines which are relatively unimportant to a G.P. now are still subjects for professional examinations.

With the explosion of new medical knowledge, and the make-or-break result in the professional examination, no matter how well the student had worked during his postings, it is the professional examination which provides the real stress to the student. It is not the knowledge dished out to him but its regurgitation. It is not the rigorous ward work and the practicals nor the night duties and the shuttling from unit to unit or hospital to hospital that impose occasionally insuperable psychological stress. It is the professional examinations. Those who advocate for their retention in their present form, which does not differ from that 100 years ago except for the fact that more subjects have been added and more knowledge expected, state that a doctor has to bear stress in his work, and the professional examination is a good test of how the future doctor stands up to stress. Actually, the comparison is facile and irrelevant.

When I was a medical student 35 years ago, every year saw 3% of the students having a mental breakdown. Recently, I asked a few Deans of Medicine in UK what the rate of mental breakdown was there. In UK there is almost the same sort of selection of medical students, and it was a surprise to me that they all replied 3-4% every year, and all due to stress in preparation, stress during, and stress after the failure results of the professional examinations. Sir George Pickering (8) in his recent assessment of medical schools in UK considered that the other stressful factor was the seeming irrelevance of parts of the course and this engendered boredom and frustration, resulting in stress, and students in UK feel that knowing the irrelevance of parts of the course and this engendered boredom and frustration, resulting in stress, and students in UK feel that knowing the irrelevance of some subjects (9) and unable to criticise and tell their teachers what they

think of the course because of fear, contributed to the stress. Incidentally, in UK male students have a higher incidence of mental illness in response to stress than do female students (10, 11).

These are almost universal views of nearly all medical students in the British-type medical schools, as ours is. What are the views of those who have to leave because of failure in professional examinations or because of stress? A survey was carried out (12) on all those who discontinued their studies from 1971/72 to 1976/77 inclusive in the Aberdeen Medical School. Altogether 115 left but 62 were co-operative. 36% left after 1st year, 53% after the second year and 11% 3rd year or after. 44% of those who responded stated that the studies and the examination were the prime cause of their leaving. 42% gave other reasons such as "God's will", "difficulties in commuting", "disillusionment", etc. The majority of these discontinued students believed the demands and responsibilities they found at school different from those encountered at University, but denied that excess of clubs and societies distracted students from their work.

In Singapore, professional examinations should be reduced especially in those disciplines where the majority of graduates will not practise, and reserving these for postgraduate years. Daily assessment together with term tests or tests after a clinical posting should be sufficient evidence of competence at undergraduate level. In fact, some medical schools in UK exempt the majority of students in the final year from the Final Professional Examination because of their satisfactory daily assessment, and submit only those with poor daily performances to a Final Examination. The medical professional examinations, like all examinations of this nature, try to probe as much as possible into the students ability (if this is really possible in the short time available), and because it is a make-and-break examination, students spend all their time learning for the examination rather than learning to be a doctor, so that the very system devised to ensure competence may actually impede this aim, and of course, all this generates unnecessary strain.

#### DILEMMA NO. 8

Medicine as a profession was taught for centuries by a system which was ideal, i.e. the apprentice-system. The student paid a fee to a doctor, became his apprentice, very much like apprentices for tailoring, tinkering, building and other trades. However, the difference between medicine and the other professions or trades is that it deals with life itself in its widest sense, i.e. mental, physical, psychological etc. No other profession needs to be so comprehensive. The master points out the various ways in which diseases may present, the impact they have on the mind, the family and society, and how the mind affects the physical body, what complications may be expected to take place and under what circumstances, etc. — all in a particular patient suffering from a certain disease. However, the apprentice soon learns that he cannot apply all he has learned about one disease to ALL patients because no two patients are alike because their genes are different, and so their organs are different, and these react in different ways to the same disease, and even the quantum and quality of the triggering factor or factors vary. Medicine thus is learnt by close contact with those

who have had the experience of coming into contact with such problems before, and the apprentice soon realises that he must know how to learn and to learn for ever. It is a highly personalised form of learning.

But social evolution demands doctors to be mass-produced in class-rooms, and so long as there is a complete dichotomy between pre-clinical and clinical teaching, the pre-clinical classes can deal with large numbers in the mass. It is when this mass is released into the wards that personalised teaching becomes extremely diluted, and deterioration of skills, lack of humanism, poor doctor-patient communication — all these occur because of lack of close contact between teacher and apprentice, and of course, the spectre of the professional examination in the offing robs the students' attention away from this teacher-apprentice contact.

Often the class-room teaching methods in the pre-clinical departments are more attuned to the science student rather than to the medical student. Factors which foster this include predominance of staff who are science graduates rather than medical graduates, the department teaching science students besides medical students, etc. Once a doctor graduates, he will probably never estimate the blood glucose except with a dextrostik, he will never peer into a microscope to look at the histology of a testicular tumour or come across the obturator nerve again, and almost certainly will never dissect out a toad's heart again. There is nothing wrong in showing these to the student or even asking them to do these experiments, so long as they are not tested in these things in the examination. Show them as much as possible so that their interest can be stimulated but tell them that they will not be asked to do these in the examination.

With time being taken up for relatively non-essential learning matters, the proliferation of departments, each demanding equal time and retention of professional examinations, class-room teaching during the clinical years, the teacher-student apprentice system is impossible to carry out. Over the years, I have observed that it is not possible to involve students in the critical care management situation, while as a medical student, I had the opportunity to sit beside a critical ill patient in relays with my colleagues, to try and save his life. Such experiences cannot be taught in classrooms nor examined in a professional examination system. One got to know the relatives, the parents, the children of critical ill patient, talked to them or observed how the doctors talked to them. This was how the doctor-apprentice system worked.

#### DILEMMA NO. 9

Without this close contact with patients, students have few opportunities to observe how doctors and nurses deal with death. The critical ill patient or the terminally ill adult or the child with cancer. The doctor deals with life but death is as certain as life itself. He cannot escape deaths in his dealings with patients, before they die, and with relatives after the patient dies. Medical students are almost never exposed to such situations, and once they graduate, they may have to deal with such a situation maybe on the very first day as a doctor.

Dealing with death does not end with death. Time may heal all things or it may not, but the doctor must be

capable of sustaining the living relatives who may have a lot of queries or guilt feelings, and only the doctor can deal with these. Of course, the doctor must always be able to deal with the question always asked — will the same thing happen to the rest of the family? How can the same tragedy be prevented, and here genetic counselling, not only for Mendelian and chromosome diseases but for all diseases is relevant.

#### DILEMMA NO. 10

Medical Education is not confined to undergraduates. Medicine, by its very nature is a life-long changing profession and these changes are fast, almost month by month. It has been said, and it is true, that a graduate, if he does not keep up, may be outdated by half in 5 years' time or even in a shorter period. That is why, at the beginning, I said that of the 2 prime objectives in medical undergraduate education, the more important one is to teach our students how to learn for their whole lifetime. If all the time during the medical course, the student is expected to assimilate facts only and facts dished out in a non-correlative or integrated manner, he has no opportunity to learn how to learn on his own. This is true, and you can check with my contemporaries, when I was in medical school, we generally had poor teachers. Of course there were exceptions, but generally we were given facts which we could find in textbooks. We were not taught as such, and we spent time hunting down the source of those facts, cut classes, and taught ourselves the whole subject! We were not taught to learn, but we were forced to teach ourselves how to learn. I am not suggesting that we should revert to the bad old days. We have more enlightened teachers nowadays teaching facts and concepts in a more interesting manner, but we should, in the process, kindle the flame of the student to want to teach himself, to find out things for himself, to ask questions of his teachers and indeed to challenge the views of the teachers, not in a facetious manner, but in a sincere honest way. I agree this would be difficult because of the spectre of the examination and the examiners — that is why examinations can stifle curiosity and the urge to learn.

The postgraduate is now at the cross-roads, general practitioner as well as specialist. The various postgraduate organisations realise this within their own specialities, and in some countries, especially in the US, a specialist diploma conferring specialist status is only for a temporary period of 5 years, after which the specialist will have to produce evidence that he has been keeping in touch before he can be issued with another certificate for a second period and so on. Some specialities need their members to submit to a re-certification examination every so often. This is evidence that the medical profession recognises the need for life-long learning in medicine in order to treat patients correctly and not to cause iatrogenic disease by wrong management.

#### CONCLUSION

I can go on listing many other dilemmas. These dilemmas are not pointed out in the spirit of finding fault in

departments or medical schools. It is only by talking about them that the pot can be kept boiling. Many of these dilemmas are not of the school or the departments own making, though some are. Many are the result of social evolution, of which medicine is a part. Medicine is a dynamic ever-changing discipline dealing with all aspects of life itself. Yet, schools are hamstrung by tradition. It is not only our school but other Western schools too. For example, in UK (12), it was reported that: "The average medical graduate has difficulties which are attributed chiefly to the manner of his training. He tends to lack curiosity and initiative, his powers of observation are relatively undeveloped; his ability to arrange and interpret facts is poor; he lacks precision in the use of words. In short, his training, however satisfactory it may have been in the technical sense, has been unsatisfactory as an education." This was the Royal College of Physicians Report on Medical Education written not now but in 1944, and the Dean of a Faculty of Medicine in Australia, commenting on it in 1978, (13) i.e. 34 years later said: "the intervening years have not really done very much to change the situation" and he continues to add: "I would suggest that, more than thirty years later, the average student is in many respects worse off now than he was then." And so you have it!

Yet we are talking about ways and means to select medical students more appropriately, almost blaming the student for his deficiencies when he graduates, not realising that once admitted, we have made him so. There will always be students who will be misfits in medicine on for that matter in any other profession or in life itself. But I contend that the medical school must share a greater part of the responsibility for making him a square peg in a round hole. An increasing intake of medical students into a single medical school will not help matters, as many of these schools have found to their cost — it just makes the doctor-apprentice system harder to operate. It makes it more difficult to produce a holistic doctor who is also a humanist.

Finally, anniversaries, centenararies and the like tend to celebrate past achievements but it is mandatory that we look also at deficiencies so that at the centenary of our medical school in the year 2005 someone else will deliver an oration to report that at last all the dilemmas seen in medical education here in the year 1980 had been resolved!

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