INDIVIDUAL DIGNITY AND THE MEDICAL MILL

By Professor G. J. V. Nossal

Delivered at a meeting of the Medico-Legal Society held on 17th October, 1970, at 8.30 p.m. at the Royal Australasian College of Surgeons, Spring Street, Melbourne. The Chairman of the meeting was the President, Mr. Peter Balmford.

The modern doctor faces almost daily a classic confrontation between two sides of his nature: that of the wise counsellor and healer; and that of the technically attuned biocrat. Let me illustrate what I mean by referring to two patients seen recently at the Walter and Eliza Hall Institute. The first was a lady of seventy-five, in fair general health though distinctly frail, who complained of dizzy turns accompanied by faintness and at times by transient paralysis almost simulating a mild stroke. Questioning revealed that attacks were sometimes precipitated by certain movements of the neck. A special X-ray test revealed the cause to be a narrowing of one of the main arteries in the neck supplying blood to the brain. Delicate vascular surgery was considered, but was finally ruled out by the presence of generalized arterial degeneration, though the broad feeling of our group was that in ten years' time, with greater experience and technical prowess, our surgeons might well operate on just such a case, despite her advanced age.

The second patient was an eighty-one year old ex-wharf labourer who had spent many of his early years working in cotton mills and asbestos factories. His complaint was breathlessness, and he had a long series of elaborate tests to show that he suffered from a fibrosing condition of the lungs which prevented oxygen from getting into his blood stream properly. The extensive debate about this patient was whether he should be put on cortisone or not, as cortisone can sometimes help to delay the laying down of fibrous tissue. My feeling was that this man's lung disease had been progressing over at least forty years, and that cortisone was not likely to reverse the ravages of the decades. Moreover, long-term use of cortisone can have serious side-effects, particularly in old people. Though this view held the day, it was opposed with great vigour and conviction by some of my very able younger colleagues.

I think these two cases illustrate the essence of my dilemma which I have termed "individual dignity and the medical mill". Within this framework I wish to achieve three goals tonight: first, to analyse and exemplify the relentless trend towards ultra-specialization in medicine and greater complexity in both diagnosis and treatment; secondly to annotate the contingent changes in the structure of medical practice in Australia which lie ahead; and thirdly to point towards some ways in which individual dignity can be retained and protected in this more technocratic era of medicine.

Complexity in Medicine due to Research

While serendipity still remains a feature in many medical advances, the pattern over the past twenty years has been more and more geared towards the painstaking, logical approach. The tendency is to uncover by new and often highly elaborate and expensive diagnostic tests the structural or functional basis of a disease, and then to apply rigidly scientific methods towards solution or partial solution of the problem. For example, the 1940s was unquestionably the decade of the antibiotics, where serendipity played a major role. The 1950s was the decade of heart surgery, where hard scientific technology was the prime prerequisite. The 1960s was the decade of the immunobiology and organ transplant revolution, where technology needed even more fundamental help from basic cell biology. Only time will tell whether the 1970s will provide a medical movement of equivalent momentum, but one thing is certain: the advances in diagnosis and treatment will be research-based and will be, of their very essence, complex and specialized.

Though I would find it difficult to document this point in detail, it seems to me that the more empiric, almost chance findings in medicine have been more global in their impact, more sweeping in the benefits they confer, than the planned miracles of today. James Cook's discovery of a cure for scurvy; Jenner's and Pasteur's early vaccination procedures; hygiene and sewage disposal to prevent dysentery and typhoid; and even Alexander Fleming's penicillin—all of these were without a penetrating scientific base, yet they have so lengthened the median life-span of Western man as to make life-threatening disease in young people an exception rather than a dreaded norm. Thus at times the medical research man of today's contribution seems marginal by comparison; it *is* marginal in a statistical sense, es-

pecially as regards mortality, though of course infinitely precious to that non-statistical entity, the individual patient in need of a kidney transplant, a heart valve repair or a safe blood pressure-reducing tablet. In other words, the science-based research of today chips away at specific problems in restricted areas of medicine. This brings us to the core of our theme, namely the fact that the correct application of this new, restricted type of research demands the existence of highly detailed and specialized medical knowledge. If a patient falls ill in West Footscray or East St. Kilda with a serious disease and wishes to obtain the most up-to-date, effective care, he must enter the medical mill. By a series of contingent and at times chancy steps, he must leave the comforting care of his local general practitioner and work his way through the maze of general consultants and unfamiliar offices and clinics performing special tests to the (to him) still less familiar confines of an ultra-specialized teaching hospital unit. Whether this is a coronary care unit, an eye team specializing in detached retinas, or a Hall Institute ward knowledgeable in immunological disorders, the process is puzzling, traumatic and can even be undignified.

The Medical Mill

I wonder how many of my colleagues, working in specialized clinical units, fully realize the effects of the medical mill on their patient. The tests are worrying and cause discomfort or pain; the inevitable coterie of residents, registrars and students is confusing and their presence can make the patient think he must be especially ill; all too frequently, the "boss" of the show is an extremely hard-working leader in his field whose time is just too precious for the extensive friendly chit-chat which can so greatly smooth the path. The more high-powered and research-oriented the unit is, the greater the need to assess the patient in detailed quantitative terms and to regard him as a case that will make part of a publishable series. The more renowned the group, the more young people are attracted to it, and the more its functioning becomes that of a team. The relationship can easily change from that of individual patient and individual guide, philosopher and friend to that of interesting case and prestigious group. All these factors tax the common sense of the patient and the tact of the specialists.

Another interesting feature of the medical mill is its all or none quality. You cannot be "half-in" a teaching hospital. When

you go in, the mill grinds on inexorably. For serious or trivial case alike, the history is taken by student, resident, registrar and honorary in relentless progression; the rigmarole of pulse charts, blood tests, X-rays, urine collection must unfold with preordained precision. I mentioned a moment ago the concept of common sense. This quality is *not* a hall-mark of the teaching hospital viewed as a collective whole. As in any large organization, there are inevitably people who find it easier to follow routines (ordering the unnecessary blood test, giving the unwanted sleeping pill) than to use common sense. Thus every trip to a major hospital becomes a "performance", and the decision to send a patient there is one by no means to be taken lightly.

Virtues in Ultra-Specialization

What I have said so far sounds negative, but indeed is intended only as a cautionary tale told by a devil's advocate. I mention these dangers of depersonalization only because I am convinced they can be overcome by greater awareness. As a research man, I am, of course, passionately committed to the goal of better health through science and technology, and thus to the vision of the ultra-specialist as the agent who brings research dreams to life. This audience is much too sophisticated for me to spend much time on proving that extreme concentration of effort on a single theme pays off. It must surely be as true for legal practice as for medical practice. I do, however, wish to recall a remark which I heard Sir Ernst Chain attribute to Louis Pasteur, but which I have not been able to trace to its original source. Pasteur is said to have advised his disciples to stick to a single line of research for a long period of years, for only in this way would they develop an "instinct for truth". How aptly that phrase describes much of the functioning of the expert! If you treat diabetics all day, every day, you come to *know* which patient needs insulin and which does not. If you operate on the abdomen ten times per week, you *know* where the common bile duct runs and how not to cut it accidentally! Each of us, through specialization, develops his own "instinct for truth", his own complement of confident reflex responses. I am sure it will not surprise any one to hear that though the gifted generalist is still respected and even envied, the vast bulk of documented advances in medicine and science is attributable to full-time careerist, highly-focussed specialists with years of training and experience in their chosen field. Time and again, mortality and morbidity statistics

prove that life-threatening diseases are best handled by such groups. Time and again, the complex nature and rapid change of modern medical problems dictate the need for a trained "in-group", that speaks the jargon, taps the grapevine, culls efficiently the unwieldy literature, brings the "good oil" to the individual patient. So ultra-specialization is here to stay, and we must now learn to reap maximum benefits from its advantages, while learning to adapt to its disadvantages and limitations.

Patterns of Medical Practice in Late 20th Century Urban Communities

What I have said so far can be summarized as follows: many great empirically-based medical advances have been incorporated into the ordinary life pattern of urban Western man, making serious disease much less frequent. Most of current medical research is a patina of many individual or group efforts each chipping away at a restricted problem area. The resulting progress is a steady creep forward, necessitating, for effective implementation of research discoveries, a veritable army of highly trained ultra-specialists—or biocrats, if you will. The risks that we run with such a system are depersonalization and loss of common sense values. The advantages, however, are so patent that the risks must be run.

For a young people, we in Australia are singularly conservative. We have resisted the trend, so obvious in Scandinavia, the United Kingdom, the United States and Canada, to a fundamental change in the pattern of health care delivery. Yet, inexorably, we are drifting slowly towards ultra-specialization. Interestingly, the major impetus is coming *not* from the clinical leaders of the profession, nor from the public, nor from Government, but from a very crucial group, namely the young up-and-coming practitioners of the twenty-five to thirty-five year age group. Almost to a man, the more gifted of this group have realized the need to develop a sub-specialty skill. If they are physicians, they will become trained in cardiology, gastro-enterology or nephrology and so forth. If they are surgeons, they will develop a special interest in gall-bladder, or colon, or vascular surgery. If their interest is in laboratory or diagnostic medicine, they tend to obtain research training from leading groups, frequently in America or England, and on their return to Australia apply very salutory pressure to have their chosen sub-specialty pushed along in their

home hospital. So, almost willy-nilly, and certainly without policy decisions at high levels, Australia is drifting towards increasing sub-specialization and proliferation of full-time salaried super-experts having their base in the teaching hospitals.

This being so, what patterns will medical practice assume in urban Australia towards the end of this century? Let us deal first with the doctor of first contact—the general practitioner of today. Unlike many academics, I am quite a fan of the old-style G.P., and I retain great admiration for the best examples of the species. Moreover, I do not believe the G.P. is doomed, though I do think his role will change progressively. I believe patterns of general practice will develop to take cognisance of what I call the "doctor's wife" rule. Very few doctors in Melbourne would take their wives to a solo G.P. to have their appendix or uterus removed; nor for obstetric care; nor for the total management of diabetes or hypertension. These and most other major medical procedures are the responsibility of highly-trained specialists. If the solo G.P. is not satisfactory, today, for the doctor's wife, he will not be satisfactory, tomorrow, for the increasingly educated general citizen. A partial answer is to be found in group practice. There are already several groups in Melbourne which include recognized surgeons, obstetricians, paediatricians and so forth. Such groups, however, are vulnerable without links with diagnostic clinics and major hospitals. Therefore the trend will be towards larger and more complex groups with progressively stronger affiliations with the local community hospitals. In California, for example, group practices with 200 partners, embracing almost the full range of specialties, are quite common. In Australia, we will not go that far. Rather, I foresee groups of say 8 to 12 doctors, each with a higher degree of some sort, dealing confidently with the majority of the ills of their local community, but increasingly ready to refer the very grave or very complex problems from their community hospital setting to the university-based major centres.

A second means of salvation for the G.P. will be the growth of the specialty of social medicine. This term is still a rather vague one. Social medicine includes elements of sociology, psychology, psychiatry, human biology, geriatrics and, hopefully, a large component of old-fashioned virtues such as charity and good sense. It is the task of social medicine to look at disease in its total human setting, with due weight being given to factors such as family, occupation and environment. Within the framework

of this new discipline, there is unlimited scope for creative research and imaginative development. I foresee that a general practitioner with a post-graduate interest in social medicine could lead a rich and incredibly useful life, while never lifting a scalpel nor needing to remember the correct dose of the latest blood pressure pill. His human involvement with the families in his district, his instinct to look beyond the mechanistic aspects of organic disease, will be the factors that prevent him from becoming merely a referral clerk. The G.P. who views his calling in this constructive light will triumph in the years ahead much more than the one who fancies himself as the slick occasional surgeon or the handy anaesthetist.

Let us now turn once again towards the biocrat. Let us assume that a goodly proportion of the graver problems did percolate from the group practice or casualty room to the expert hospital unit, with or without an intermediate step involving a general physician or surgeon. Could our present system cope? The answer to that today is certainly no. In most teaching hospitals, the resources of these units are stretched very thin indeed. One way or another, we must develop more opportunities for full-time specialists There is an urgent need for the general implementation of the concept of geographic full-time, such as exists already at the Royal Children's Hospital, where the honoraries conduct their private practice within the general confines of the major institution. In parallel, we must aim, perhaps more gradually, for an expanding army of university hospital-based full-time salaried officers who mix high-powered clinical practice with teaching and some research. I am frequently and deeply distressed at the limited capacity for research in the various clinical units as presently staffed and financed. Our great hospitals process such large amounts of clinical material, and frequently dispense first-class medical care, but only rarely are the opportunities for studying this clinical material, so as to benefit the whole of medical science, seized. Proposals for more research are usually rebuffed with the generalization "oh, but it is so expensive". I have recently had occasion to study this claim with some care, and have published my conclusions elsewhere. Let me simply summarize by saying that all of medical research, no matter how widely the term is interpreted, currently represents only a minute fraction of total health expenditure. For example, in the United States, the most research-oriented medical economy in the world, research expenditure totals only three per cent of the total health

bill. In Australia, the equivalent figure is two-thirds of one per cent. Our nation-wide research expenditure is about one-eighteenth of the cost of our drug bill. It happens, in fact, to just about equal the cost of the free milk for school children scheme. That is how much we, as a nation, care about medical research. However, I will resist the temptation to whip this particular hobby-horse any further tonight.

There are two further changes which I foresee in medical practice, and they relate to ancillary personnel and automation. The two concepts are at root related, because both of them boil down to a need to curb the escalation of health care delivery costs. The technological revolution in medicine, fed by research, has proven very expensive, though interestingly people still spend more than twice as much on their motor cars as on their health. Worst of all, the rate of rise of health costs is much faster than that of the gross national product. Amongst the very expensive items is the doctor's personal remuneration, so society will demand that he husbands his time effectively. This means that doctors, particularly in private practice, will have to become much more skilled in collaboration with para-medical workers such as nurses, social workers and therapists. Most importantly, some formula will have to be developed to subsidize the cost of this to the individual patient.

Automation in Medicine

The second, related area is that of automation. This is very topical, and the Hall Institute is deeply immersed in one aspect of this field. Basically, there are two types of activity to consider. The first is rather simple, and relates to the use of computers and automated scientific instruments for simple data processing in medicine. For many types of blood examination, for example, a single specimen of blood can be drawn by a nurse or technician, and can be processed twenty different ways untouched by human hand to yield twenty different biochemical results; the simplest of programmes can then instruct a computer to print out for the physician those tests which are abnormal. Given a sufficient volume of work, these systems are commendably cheap and will certainly be useful. I suppose we are all a little on guard about the dangers of commercial over-exploitation of such systems, particularly in the context of government subsidized, fee-for-service remuneration for particular investigations. Despite this, research and development in this area must go on, and personally, I

believe such a mass screening approach may eventually replace much of diagnostic medicine as we know it today.

At the Institute, we are interested in a different and much deeper problem involving computers. This work, spearheaded by Dr John Mathews and Mr. Vance Gledhill, seeks to harness the computer not just as a clerk but as an active partner in medical decision-making. The reasoning behind this is that doctors make their decisions by obtaining data from patients, and then relating this information to a memory bank of first-hand or second-hand experience. Fortunately, this process is usually reasonably effective, but it does sometimes break down; there truly are examples where a doctor just did not *think* of thyrotoxicosis or a stomach cancer as the cause of the trouble. Also, the classical process can be slow and tortuous, and experience accumulates slowly. What my colleagues are trying to do is to teach a computer to learn by experience, and then to use its extraordinary speed and memory capacity to collaborate with the doctor in diagnosis and the planning of treatment. They believe that nearly all medical information can be so structured as to be machine-processable, and in demanding this precision, have already made us blush at the inadequacy of some of our broad descriptive phrases. Already, the computer is adept at taking a medical history, converting the responses to a self-administered symptom questionnaire into acceptable narrative form, and already its capacity to make a provisional diagnosis on the basis of history alone outranks that of a physician. Next, it is learning how to interpret the physical signs which the doctor elicits on examining the patient, and finally it will be taught how to make the best use of specific tests. It is far too early to tell whether this kind of exercise will be of real use in hospitals, either as a time- and labour-saving device or as a genuine decision-helping innovation. Nevertheless, the early progress has been heartening and Gledhill and Mathews have already won a major international prize, the Karger Award, for their work. It does, perhaps, illustrate the concept of the medical mill at its most technological, least personal, extreme.

The Maintenance of Individual Dignity

This brings us both to the beginning and to the end of our story. It takes us back to the dilemma of our two cases, to the agonizingly difficult task of deciding when the medical mill should grind on and when the wise counsellor should rise up and

say: "Desist!" In this situation, there are no easy answers. A major part of the burden falls on the biocrat himself. However ultrascientific his clinical duties may be, he must constantly and consciously strive to protect his patient's dignity and to preserve an aura of human warmth, and personal concern. I have been splendidly fortunate in having been taught how this can be ideally accomplished by my two clinical mentors, Ian Wood and Ian Mackay, but not everyone is thus favoured. It is clear that the human aspects of medical care need constant and heavy stressing in our curricula. The patient, too, must play his part in making the new kind of doctor-patient relationship a realistic one in this more complex age. I suspect that—the days when patients looked on doctors as little tin gods have already gone forever. Nevertheless, I am still frequently amused at the way many individuals decry the medical profession as a whole, while stoutly extolling the virtues of *their particular doctor.* The patient must become used to the idea of his doctor as the head of a team, as an individual whose effectiveness is dependent on a fluctuating nexus of connections with both colleagues and institutions. The patient must be educated to accept some degree of impersonal processing by the medical mill as a reasonable price for more accurate diagnosis and more informed care. To end on an optimistic note, it is my feeling that the basic sanity and cheerfulness of the Australian citizen is rapidly achieving this goal.

What of the future of medical research? I can see no end to the hard grind and the steady creep forward. There will undoubtedly continue to be occasional quantum jumps in both basic knowledge and treatment, but the bulk of progress will depend on the patient, highly professional chipping away at restricted problems. In the long run, the investment *is* worthwhile. If I look at our achievements decade by decade, the panorama is much more pleasing than if I looked year by year. In fact, the only correct way of looking at medical research is on a much longer-term basis even than that. The nature of science is such that a key fact, once discovered, can never be undiscovered. The valid breakthrough is a gift to the whole race for as long as it survives in civilized form. It is this historic quality of medical research which provides at once its major thrill and its most impressive justification. Science and technology can be harnessed to help mankind in medicine as in most fields, and I feel a great sense of privilege in forming a miniscule part of this,

perhaps the greatest of twentieth century adventures. There *are* risks on the way, and the most prominent one is that we shall come to think of human individuals in purely mechanical and chemical terms. This is why your society is important, and why every endeavour must be made to marry medicine with all the humanities. I salute your efforts towards the preservation of individual dignity in the age of the medical mill.

Discussion

DR. J. V. C. DE CRESPIGNY: I am not entirely clear which of the horses Professor Nossal is backing in general practice. It seems to me that he has given us several varieties, including the fact that the general practitioner may become one of twelve doctors or so, all having some specialty. It seems to me that if this type of general practitioner is to perform in this community, he will, in fact, be what we have but should not have now, the general practitioner who does some surgery, some obstetrics, some anaesthetics, and so on. It seems to me that the latter picture that he painted of doctors with ancillary help is a much better one, in that the general practitioner of the future, as I see him, would be the leader of a team, the team being the ancillary workers, the health visitor that you describe, the social worker, the marriage guidance counsellor and so on, who will do only those things which he does better than anybody else. This is family medicine, and, in particular, the role of a diagnostician, because I feel that if we are to achieve and maintain man's individuality, someone is going to have to see him in the beginning and lead him into the right channels.

It seems to me that the role for the general practitioner in the future should be more as a diagnostician *par excellence*, because this of all his roles must be the one that is most important. I would feel that the idea of a large group in our urban setting just will not work, because I think we are far more spread out in our cities. I believe that the general practitioner is someone of first contact and has to be, in fact, within almost pram pushing distances of the people around, and this will limit him to the size of numbers, three, four or five general practitioners working in a group, but I foresee him in a group setting with a number of ancillary workers.

PROFESSOR NOSSAL: I am on Dr. De Crespigny's side. I think the ambivalence he detected in my remarks was an ambivalence between what he would like to see happening, what I would

like to see happening, and what will happen. I think there is something in people that tends to make them see this role of the general practitioner as a diagnostician who then refers on very widely as somehow a little bit less dignified. Only 38 per cent in graduating classes are going into general practice, and in that 38 per cent the pattern that most of them say they would like to see, and are going to do, is not the one that you and I would like. They say, "I am going into general practice for a few years and get my house, and then I am going to do anaesthetics and go into a group where someone else is doing paediatrics, and general practice, and we will have a pretty tidy little show", which I think can work in some settings, but is not likely to develop in Australia. It could work well where a group is large enough to embrace every sub-specialty skill, so that I think that what is going to happen is that we are going to have more of these groups with individual specialists, and perhaps we are going to find it difficult to achieve the kind of family doctor that both you and I want. Now, there are some people, like Professor Hetzel, who are manfully struggling to update that other type of doctor and make him into a reality, and if that, indeed, is the way the pattern develops, I would be happier with that than the former, but I think the former one is the more likely one for the immediate future.

DR. AINSLIE MEARES: The discussion has rather concentrated on the medical mill, rather than on the human dignity aspect of Professor Nossal's paper. As a psychiatrist, I see many people whose human dignity is threatened, and I see quite a surprising number whose human dignity has been shaken following long illness and extensive investigation. I would just like to make one point. I think that when our human dignity is threatened, we can get protection from one person, but we cannot get protection from a whole group of people or an organization. I say this very definitely.

Perhaps I can explain what I mean. Last year, I saw a woman who had been through the medical mill, and her dignity, human dignity, was shaken. She was talking about her experiences in the teaching hospital, and this had done quite a bit to shake her human dignity, but each time as she was talking about this, she came back to what a little nurse said. Now, it seemed to me that this little nurse somehow or another integrated what all the biocrats had been doing to her, that she somehow or another put them all into place, and that somehow

or other her contact with this one person had saved most of her human dignity. The point, sir, that I am trying to get around to is that, in the human mill, and in the public hospitals, and when the person is subject to a whole row of biocrats, I think that we should try and work it somehow so that the patient has one person who can, somehow or another, integrate things for the patient and to whom the patient can turn.

SIR EDWARD DUNLOP: Professor Nossal states his point of view with such compelling fluency and grace, that one feels a little diffident in challenging him on any point. I would just like him to elaborate a little bit on this concept of what I took to be the university campus hospital with a fully paid full-time medical staff, which strikes me as being one of those concepts which, when it comes to actual practice, usually falls flat on its face, but the whole legislation of the Government at the moment is rather against this sort of concept. Start to create this, and you have not got the patients, you have not got the finance or anything that goes with it. In point of fact, the best of the human kind of hospitals usually arise in the market place, where people get sick, and the first step is a group of doctors that treat the sick, and secondly they start to teach other people to treat the sick, then the research officer comes in, "How can you prevent sickness, and how can you treat the sick better?", and this is not really an awfully bad yardstick in our organization. I just wonder really whether this sort of highly inbred institution of a campus hospital does not introduce some of the worst features of a public service, together with a slightly university sort of arrogance, an intellectual sort of arrogance. I do not think this would be a good hospital. I think if you set to work to create a hospital with admirable facilities and admirable minds, you have got to try and promote the sort of circumstances where people can come from outside and work in it. This, I think, is the really important thing. That largely, in these full-time fully paid hospitals, there are people who are treated by people who are away most of the time, and I took Ainslie Meares's point very well, that I think the essential thing that a person needs is someone who will be responsible for them, and if that someone cannot see the patient himself, he will arrange complete continuity of treatment. I have stated some rather extreme views in this. All my life I have hankered for the opportunity to work practically full-time in a hospital, pretty close to a university. I have never been able to achieve that. I think universities should do their best to assure

that people can work at least with a great deal of their time, and with economy of time, in an institution, but I look with worry at some of the concepts that are coming forth today.

PROFESSOR NOSSAL: Sir Edward, I told you, I think at the beginning of my talk, that I was really posing questions, and I was not going to boast any global solutions to what I think are really profound issues. I could not find myself in greater agreement than with Dr. Meares, and yourself, and the concept of having one person who cares for the patient. I am not quite sure how we are going to achieve it for a patient who is in dire danger of death, who, in fact, needs a biocrat to cure him, rather than someone to hold his hand, because increasingly the biocrat is not going to be the kind of individual who has got the time to do the hand-holding.

To answer the question a little more specifically, I think there are two answers I would give in a strong belief, and I hope this has emerged from my talk, in a tier system of medicine. I think it is ridiculous for a person with a common cold to come to hospital, and ridiculous for people with gall-bladders, hernias and routine prostatectomies to be attended to in a huge mill like a teaching hospital with a full-time teaching staff. In other words, I think medical problems should be phased in certain tiers, each one being dealt with quite adequately at a certain level. It would be a terrible pity if everyone with a common cold had to make the trip in, say, from Glen Waverley into the Royal Melbourne to be told, "You have got a common cold," and I agree that a large amount of the semi-serious medicine, the person with mild hypertension, the treatment of the diabetic who is obviously not in serious trouble, and so forth, all ought to be done by the medical mill, so I think we have got this middle tier, then all the disease that is organic and does require specialty care. You would not want the general practitioner taking out the routine gall-bladder. You would want it done by a surgeon, and done at the Essendon and District, Box Hill and District, or out at Footscray and so forth. But then there is the third tier of the grave problem, the life threatening disease, the complex thing, the person who has—let us take an example, a controversial one—the person with an acute coronary is, I believe, better looked after in a coronary unit than in a general ward of the hospital. The person who needs open heart surgery, who needs lung surgery, should not, I believe, be attended to at the local hospital ever. He should, I believe, enter the third tier. The same

should be done in all the specialties, and, as regards that third tier, which is the one that I am interested in, all experience shows that this is best looked after by people who are specializing in that specialty full-time, whether or not they are doing this in the setting of a private practice, or the setting of a university paid position. I do not think I would like to differentiate between those two, but I would like to see the thoracic surgeon doing thoracic surgery and not sewing up fingers, and vice versa. There is another thing that ought to be said of what might be termed research advances. In this, your thinking will tend to be diminished, I think, by the many people that you have cured, who are grateful to you, whom you have looked after superbly, and they form, of course, your experience, and also the cordial atmosphere that exists in surgery. I would ask you though, if you are to think of the really big things that have happened in surgery in the last 20 years, the things that have changed the pattern, that have made new things possible that were not possible before, is it not true that most of these advances have come from this framework of someone who has devoted his full time to a particular school? If we ask, Who is it that invents new techniques for inserting plastic hips? Who makes it possible for us to go into the right ventricle? Who teaches us that large segments of bowel can be resected from patients and they still live? This is someone who has come up from the full-time unit, not the person who is scurrying about in his car to twelve different institutions.