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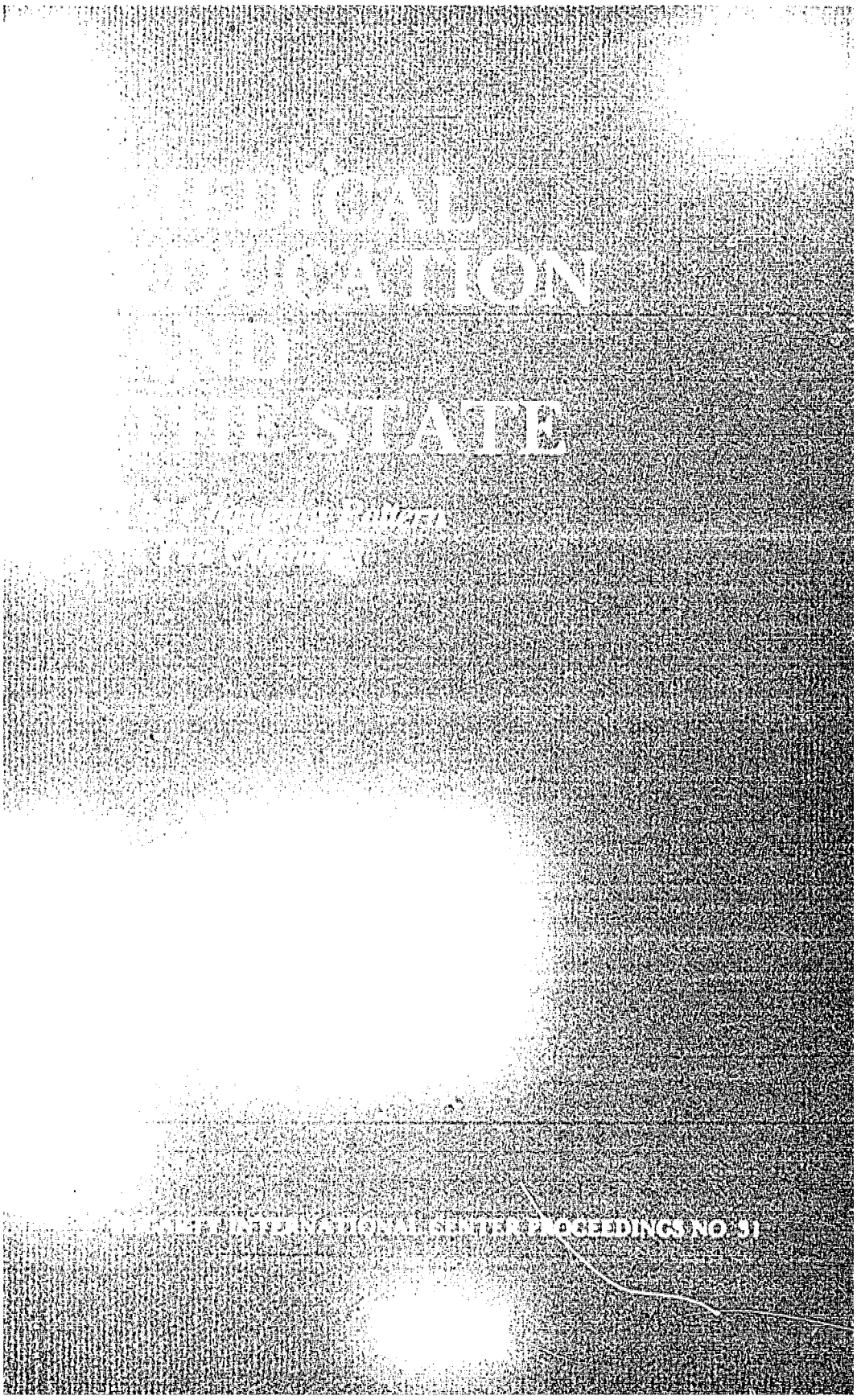
ABSTRACT

In most countries, it is the state that has been taking over the support of universities and of teaching hospitals, a trend that has accelerated rapidly over the past 25 years to meet the expanding needs of higher education and of health care. In medicine the problem of university autonomy is further complicated by the long-standing custom that license to practice, and even the curriculum that qualifies for this license, are regulated on a national or regional scale by some external body. Twenty-five years ago, most of the medical schools included in this survey received no significant financial support from the state, while today most are wholly dependent on the state for their survival. The purpose of this survey was to determine how the medical schools and their teaching hospitals are faring under these changed circumstances. The report is based mainly on the United States, Britain, Canada, Sweden, and Australia; a brief account of New Zealand, the Republic of Ireland, Denmark, Norway, and Finland is given in the appendixes. The topics discussed include operation expenses, capital expenditures, medical research and peer review, regulation of professional standards, medical schools, medical manpower, teaching hospitals, laboratory services in teaching hospitals, family practice and community medicine, undergraduate curriculum, and postgraduate education. (Author/MSE)



OGARTY INTERNATIONAL CENTER PROCEEDINGS NO. 31

MEDICAL EDUCATION AND THE STATE

The Changing Pattern in Ten Countries

Ronald V. Christie, M.D.
Fogarty Scholar
Fogarty International Center for
Advanced Study in the Health Sciences
National Institutes of Health
Bethesda, Maryland

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RONALD V. CHRISTIE, M.D.

A graduate in Medicine of Edinburgh University, Dr. Ronald V. Christie had his postgraduate education in the Rockefeller Institute, McGill University, and the University of Freiburg. Early in his career, he was appointed to the Chair of Medicine at London University and St. Bartholomew's Hospital, a post he held for 17 years. In 1955 he returned to McGill University as Chairman of the Department of Medicine and Physician-in-Chief at the Royal Victoria Hospital, and in 1964 he became Dean of the Faculty of Medicine. He has lectured in many countries on Respiratory Function, which has been his main interest in research. He has been given the degrees of D.Sc. by the universities of London, Edinburgh, and Dublin and an LL.D. by the University of Otago.

The expenses involved in the preparation of this survey were borne by the Commonwealth Fund of New York, and most of this book was written during Dr. Christie's tenure as a Fogarty Scholar at the Fogarty International Center, National Institutes of Health, Bethesda, Maryland.

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FOREWORD

The Fogarty International Center was established as a memorial to the late Congressman John E. Fogarty from Rhode Island. It had been Mr. Fogarty's desire to create within the National Institutes of Health a center for research in biology and medicine dedicated to international cooperation and collaboration in the interest of the health of mankind.

The Fogarty International Center is a unique resource within the Federal establishment, providing a base for expansion of America's health research and health care to lands abroad and for bringing the talents and resources of other nations to bear upon the many and varied health problems of the United States.

As an institution for advanced study, the Fogarty International Center has embraced the major themes of medical education, environmental health, societal factors influencing health and disease, geographic health problems, international health research and education, and preventive medicine. Our commitment to the study of preventive aspects of human disease is expressed in the Fogarty International Center Series on Preventive Medicine.

This volume, written by Dr. Ronald V. Christie during his tenure as a Fogarty Scholar at the Fogarty International Center, expands our investigation into medical educatic and elucidates the changing influence of the State on medical education in ten countries.

Important issues have arisen as a result of social pressures for improved medical care. These pressures are felt in every country around the world, but they seem to be particularly acute in certain of the industrialized countries. For educators, scientists, administrators, and others who have a role to play in medical education and the delivery of medical care, Dr. Christie's timely monograph will be an invaluable document.

Milo D. Leavitt, Jr., M.D.
Director
Fogarty International Center

PREFACE

During the course of my visits to the 10 countries involved in this survey, I received cooperation and help from so many faculty members and government departments that I am at a loss to know how to acknowledge their assistance, without which this survey would have been impossible. The list would be so long as to be meaningless and it would be invidious to pick a few and leave out the rest, so I can only thank them collectively.

I am greatly indebted to the Commonwealth Fund of New York for its generosity in giving me a grant in aid for this survey and to the Fogarty International Center of the National Institutes of Health where most of the report was written and where I received invaluable help from the staff.

Ronald V. Christie, M.D.

INTRODUCTION

Substantial financial support, whether it be from the church, the alumni, or the state, can be a threat to university autonomy, since a usual condition of continued support is the right to study the use to which these funds are put, and this can very easily be extended to the right to control policy. In most countries it is the state that has been taking over the support of universities and of teaching hospitals, a trend which has accelerated rapidly over the past 25 years to meet the expanding needs of higher education and of health care. In medicine the problem of university autonomy is further complicated by the long-standing custom that license to practice, and even the curriculum which qualifies for this license, are regulated on a national or regional scale by some external body. Academic freedom in medicine is thus rather a nebulous term, but most would agree that a medical school should be free to select its staff and students; it should have wide powers of discretion in organizing the curriculum and in the development of research. In one country or another all of these freedoms have been encroached upon by the state, but perhaps more important than any of them is the freedom to reward success so that areas of excellence will flourish and will expose mediocrity, and this is the freedom in greatest jeopardy under state control. In the past, centres of excellence have been encouraged to prosper and have stimulated progress by setting the standards for other universities. Their life span of excellence is usually limited by the complacency that tends to follow success, but with open competition, which is one of the most potent stimuli to efficiency, the mantle of leadership then passes to some other centre. Satisfactory standards of competence must be maintained but unless excellence is rewarded a general level of mediocrity is very likely to be the result. Universities exist, however, to serve the society from which they draw their support and there are some who believe that loss of these freedoms is a fair price to pay for the remarkable increase in the support from public funds given over the past 25 years.

Twenty-five years ago most of the medical schools included in this survey received no significant financial support from the state, while today most are wholly dependent on the state for their survival. The purpose of the survey was to determine how the medical schools and their teaching hospitals are faring under these changed circumstances.

This could only be done with the cooperation of those responsible for medical education. The 10 countries involved in this survey were chosen partly on account of the personal contacts I had previously made. My academic career has been divided almost equally between Britain and North America.

During the years 1969 to 1973, I visited all the medical schools in Australia and New Zealand, 9 in Britain, 2 in the Republic of Ireland, 8 in Scandinavia and Finland, 14 in Canada, and 5 private and 4 state medical schools in the United States. This report is based mainly on the United States, Britain, Canada, Sweden, and Australia, the last four of which have, as far as possible, been brought up to date until 1973 or 1974 and the United States, which is changing most rapidly, until 1975. The text contains but little information on the other five countries, which are the smallest, so a brief account of them is given in the appendices.

Countries such as Sweden, Britain, and the United States have very different traditions and social structures so that what may be good for one may be wholly unacceptable in another. For this reason I have been concerned mainly with giving the facts as I found them and have been cautious in discussing their relative merits. I have, however, tried to distinguish between changes in medical education due to the influence of the medical community and those due to public opinion or political expediency.

Ronald V. Christie, M.D.

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MEDICAL EDUCATION AND THE STATE

The Changing Pattern in Ten Countries

Chapter 1
FINANCIAL SUPPORT OF MEDICAL EDUCATION

During the 15 year period 1955 to 1970, public support of the universities in Britain increased tenfold (Fig. 1) and in other countries there was the same explosive growth. The public had been encouraged to believe that higher education and research could make great contributions to social welfare but in the late 1960's there was a varying degree of disenchantment in every country I visited. In some, the increase in funds came to a halt and many medical schools had to economize at a time when they were being pressed to increase student enrollment to meet the public demand for more doctors. In the 10 countries I visited, the methods used by the government to assess the universities' financial requirements can be grouped in five patterns.

BRITAIN

Britain is one of the few countries where the contribution of the state to its universities is accurately recorded. The rate at which this contribution has increased is shown in Fig. 1. These funds are controlled by the University Grants Committee (UGC) which is appointed by and responsible to the Secretary of State for Education and Science, an arrangement which appears to work well, and which, with the reservations discussed later in this section, continues to retain the confidence of both the universities and the government. The success of this arrangement depends on the care taken to select committee members who can command the confidence of the parties concerned. The chairman and one of the deputy chairmen have an academic background, and the other deputy chairman is non-academic. Thirteen members are recruited from the universities, two are concerned with other forms of education, three are from industry, and two others are concerned with salary questions only. Appointment is for 5 years and since members are expected to devote only one-fifth of their

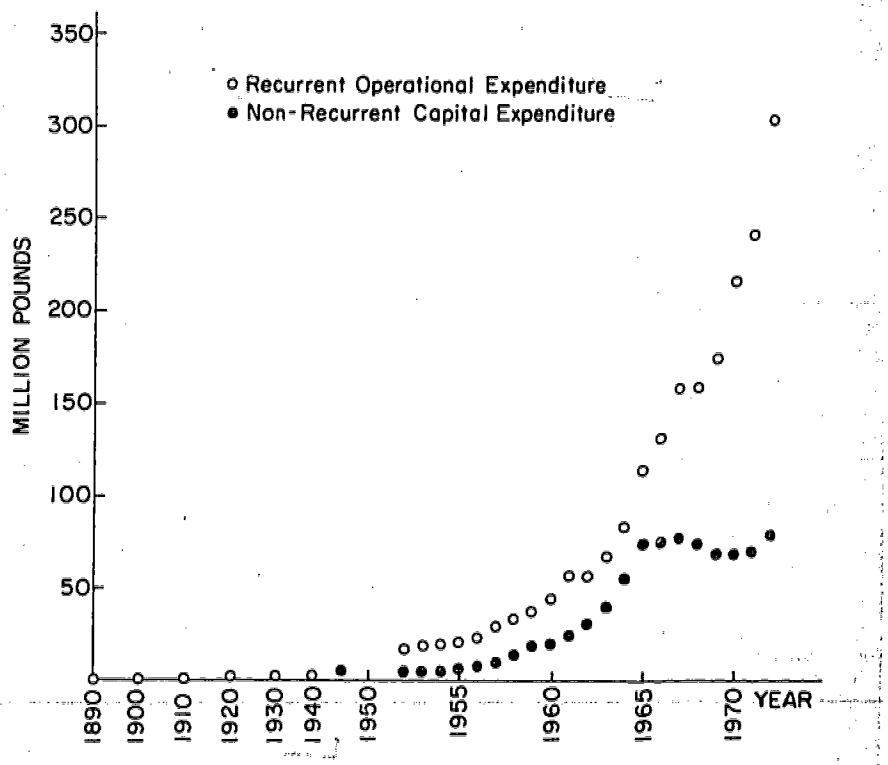

FIGURE 1.—Parliamentary grants to the universities of Britain. Data obtained from the University Grants Committee and from its annual reports.

time to the business of the committee, they are able to continue their professional work. The committee has a large secretariat and makes extensive use of expert advisory committees and panels so as to cover the whole range of academic subjects. The chairmen of the subcommittees are drawn from the main committee. (*1, 2, 3*)

The first task of the UGC is to estimate the financial needs of the universities, and this is done on a quinquennial basis so that the universities are able to plan ahead. As an initial step, the universities are asked to prepare estimates and development programs over the quinquennium. On the basis of on-site visits, advice from its expert subcommittees, one of which is devoted to medicine, and its own judgment and discretion the committee then decides how much should be requested for each university. If the government decides that the overall figure is too great, the UGC determines where the cuts will be made. The allocation to each university is given as a block grant, which is not earmarked, so the university has the legal right to spend the grant as it wishes. However, there are several factors which make this degree of academic freedom more apparent than real.

Each university is fully informed of the reaction of the UGC to the details of its quinquennial submission and is told which parts of the development plan have met with approval. The UGC "indicates" to the university those areas which should be given priority, and although none of these "indications" are mandatory, there is a natural feeling that it would be injudicious to go against the wishes of the UGC without very good reason. This is tacit in the "Robbins Report" (*5*) which states "If in retrospect the grant given for any quinquennium is regarded as having been spent in a way contrary to public needs as the committee conceives them, this may easily influence the size of the grant for the next quinquennium." The universities also are advised to consult the UGC on the use to which private donations are put. "It is customary for a university which is considering an offer of outside financial support for a development which may eventually become a charge on its general funds, to consult the committee; and universities are aware that unwise developments are liable to prejudice their claims in the next quinquennium." In the case of new medical schools the UGC sets the pace by giving an earmarked grant to cover the remainder of the quinquennium (*1*).

The universities' expenditures on academic staff salaries amount to some 50 percent of the total grant. Salary scales are strictly controlled in the light of the "prices and incomes policy" of the government and a ratio has been introduced by the UGC to control the ratio of senior to junior staff. The purpose of this ratio is to provide "a means of ensuring that broadly similar career prospects should be available in all universities and of limiting any increases in the higher posts on the part of individual universities in the competition for scarce staff." (*1, 4*).

The task of the UGC is not an easy one. In making its decisions the committee must allow scope for the universities to exercise judgment and discretion and it recognizes also that "the balance between committee influence and committee interference in university affairs is a delicate one." (*2*). There can be little doubt that the committee has maintained this balance with tact and skill. It has steered the universities through difficult times when the demands for higher education have exceeded the capacity of the country to give the support needed. The committee commands the respect and trust of the universities. Medical schools in Britain receive less generous treatment than in North America or Scandinavia, but I believe this is due more to the country's financial difficulties and to conservatism than to any fault in the system.

THE UNITED STATES

In the United States, Canada, and Australia, education is the responsibility of the individual states or provinces rather than the

Federal Government which can offer only financial assistance. Unlike Canada and Australia, the U.S. Congress has, until recently, been opposed to direct federal support for higher education, preferring indirect support, virtually all in the form of categorical or "earmarked" grants for specific projects or goals. A reason for this approach is given in a report of the Department of Health, Education and Welfare to the President in 1969 on the financial support of higher education, which stated that "one advantage of aid for particular categories of expenditure is its policital acceptability." (*6*). These categorical grants are made in a manner which has been described as follows in a report to the Carnegie Commission on Higher Education.

> There is probably no single person, perhaps not even any single agency in or out of Government who can define with accuracy all the ways in which the Federal Government channels funds to American higher education. . . . The funds come from more than 40 agencies; they ride piggy-back on legislation which, at first glance, seems to have no connection at all with higher education. (*7*).

This is a remarkable admission from a country that is generally considered to lead the world in business administration.

The federal grants which have made the greatest impact on medical education have been those for research, the support of which is discussed in the next section. Medical schools became dependent on these grants for the salaries of many of their teachers and thus it became common practice to recruit the staff, including departmental heads, on the basis of ability to attract funds for research. Departmental policies came to be governed by considerations of research rather than education. However, there can be little doubt that in most medical schools the indirect effects of this high level of research support was at that time beneficial in counterbalancing the lack of direct support for education. Much undergraduate and graduate teaching was, in fact, supported by research funds and indeed this mingling of research and teaching was encouraged by the National Institutes of Health. This paradox of generosity to medical research and parsimony to medical education was in contrast with most other countries where the trend was just the reverse.

The hazards of financial dependence of education on research were not generally realized until later. To receive money for one purpose and use it for another is always risky, even if intentions are above reproach. This danger was overlooked during periods of plenty but surfaced when research grants were cut in 1967 and 1968, exposing the lack of secure funds to cover commitments. This led to serious financial difficulties in many medical schools and in some, to financial crisis. It became clear that direct federal support would have to be provided if admissions of medical students were not to be curtailed at a time when all agreed that the number of graduates in medicine should be drastically increased. Congress granted direct financial aid and, by 1970, 43 of the 107 medical schools were receiving "disaster grants"

from the Federal Government to prevent them closing or reducing their standards, and another 18 received direct assistance (*9,10*). Many medical schools were in such financial straits that their survival was threatened and this led to the Comprehensive Health Manpower Training Act of 1971, which for the first time recognized a significant federal role in the financial support of medical education. (*11,12*, and Appendix I). As a result, the number of special awards to relieve financial distress had fallen to six in 1973 (*138*).

In accepting this responsibility, the government apparently remains unwilling to give unrestricted operational grants as is the custom in other countries. The various grants which are outlined in Appendix I are conditional on clearly defined responses by the medical school which may affect the choice of students, the size of the student entry, and the content and duration of the curriculum. These categorical grants have the appearance of giving the medical schools the option of several sources of additional support only if they wish to participate. In fact, the financial climate was such that many medical schools made extensive use of these options in order to survive. All medical schools except one were able to satisfy the requirements for capitation grants; that one obtained a waiver by proving convincingly that it was impossible to increase student numbers. Several of these options are highly controversial and involve difficult academic decisions. There is a widespread undercurrent of unrest and alarm over what is felt by many to be ill-informed political interference with academic affairs. There are others who feel that this is a necessary price to pay for the federal support that is essential if private medical schools are to survive. There was no indication as to whether these categorical grants would be continued for more than 3 years or would cease abruptly as had other types of grants for research and training and community service. However, the capitation grants are still being given in 1975 on a "continuing" basis and although no new act has been passed by Congress, it now appears unlikely that they will be discontinued. They represent between one-quarter and one-third of the cost of educating medical students and to withdraw them would create serious financial difficulties in the medical schools, some of which could hardly survive (*136,137,140*).

Contributions by the individual states are directed mainly toward the state medical schools. In 1972–73 each received an average of about $5 million, while each private medical school received only an average of $800,000, usually with the requirement that enrollment be increased, sometimes with the reservation that the increase be limited to residents of the state (*137,138*). Further details of the cost of medical schools are given in Chapter 5.

The majority of medical schools in the United States have a remarkable degree of financial independence from their parent

university. In 1966 and 1967 general university funds represented only about 5 percent of the support given to the "private" medical schools as compared to 31 percent usually in the form of an earmarked grant, in the medical schools which belong to the state (*8,10*). About 55 percent of financial support in the private schools and 45 percent in the state schools came from the Federal Government, mostly in the form of research grants and sponsored programs. These grants, together with fees for professional services, grants from foundations, tuition, and endowments, gave the medical schools either complete or a large measure of financial independence from their parent university. Even the older and most heavily endowed private universities give their medical schools little or no financial support and the number of medical schools with complete financial independence is increasing, a change favoured by most private universities. The very existence of the Association of American Medical Colleges is an indication of the independence of its medical schools from their parent universities.

CANADA

In Canada, education is a provincial responsibility although more than half the expense of the universities is borne by the Federal Government. Expenditure has been increasing at a rate of over 20 percent a year, but the rate of increase has recently been stabilized at 15 percent for the years 1972–75. In 1970, the Federal and Provincial governments' expenditures on higher education exceeded $2 billion, of which $1.3 billion was for the universities, representing over 85 percent of their operating and capital expenditures (*16,17*).

Most of the provinces have adopted an objective system of assessing the needs of their universities, based on a formula built around the "basic income unit" which is given different weights. Since the Provincial Government is responsible for distributing these federal and provincial funds, it usually appoints a committee, in consultation with the universities and so constituted that it will command their respect, to decide how this formula should be applied to the various categories of students. In Canada, the usual distribution has been one unit to arts and science students in the early years, rising to two for honours students, five for medical students, and six for doctoral candidates. In 1971–72 the value of the basic income unit varied from $1,330 to $1,730 in the various provinces. From this formula the university is given a block grant which is not earmarked in any way although it is not difficult for the faculty of medicine to determine what the university has received on its behalf. This is usually an effective safeguard which ensures adequate support. Formula financing of this kind has several

advantages. It gives the university considerable latitude in managing its own affairs and encourages private donations which do not become a substitute for public support. It has the appearance of maintaining university autonomy, but it also exposes any difference of outlook between the university and the government on the support which should be given to the faculties of medicine (*13*, *14*).

In most of the provinces, grants to the universities are made on a year-to-year basis which some believe is preferable to the triennial or quinquennial grants that are made in other countries, since governments may be more generous if they are not asked to make commitments for the future. It seems likely, however, that this argument would fail if lean years were encountered.

Most but not all of the provinces are advised on university affairs by committees with adequate academic representation. The advice given on medical affairs is being influenced, to an increasing extent, by the Ministries of Health which are closely concerned with the supply of physicians for the health services, with the special needs of the teaching hospitals, and with the orientation of medical schools toward the community. These and several other aspects of medical education depend on financial support from the Department of Health as well as from the Department of Education. This participation in the problems of medical education by government departments responsible for the delivery of health care is something new which has passed almost unnoticed although it has occurred in most countries.

An unusual extreme of this trend has developed in Newfoundland, where the operating budget of the medical school is covered by an annual earmarked grant from the Ministry of Health. An advantage claimed from this arrangement, which was approved by the university, is that the development of the medical school would not be at the expense of other faculties. This is a sacrifice of principle for a doubtful advantage which could have serious repercussions on medical education. A change as important as this, which resembles what has happened in Communist countries, carries the risk of taking medicine away from its academic environment and reducing it to the level of a training college. This risk is not justified unless it is based on an attempt to improve medical education.

The total operating expenditures of 12 medical schools in Canada increased from $25 million in 1966–67 to $52.5 million in 1970–71; or by 91 percent over this 5-year period. The expenditure per medical student was $10,367 in 1970–71, but this is a misleading figure since faculties of medicine are involved heavily in graduate and postgraduate programs and with students from other faculties. In addition, $38.5 million was spent from research grants from various sources (*15*). This gives a total expenditure in 1970–71 of $91 million or an average of $7.6 million per

Medical school. These amounts are considerably less than those in the United States, which are given in Chapter 5.

Capital expenditure in the health sciences in Canada is covered largely by the Health Resources Fund Act of 1966 which established a fund of $500 million to assist the provinces, on a matching basis, to pay the capital costs of new facilities for health training and research over a 15-year period. With a small adjustment in favour of the Maritime Provinces, the fund is distributed on a per capita basis among the provinces, each of which has to prepare a 5-year plan for the development of facilities for training in any of the health professions or occupations and for the conduct of research in the health fields. Since 1968, the total federal contribution has been limited to $37.5 million a year. Each project has to be approved by the Federal Government which decides whether it falls within the purposes of the Act. Within these limits, it is the Provincial Government which decides what the priorities will be and how the money is spent. Several of the provinces are spending considerably more than what is matched by the Federal Government.

SWEDEN

In Sweden all universities are owned and supported by the Government, which must approve any changes in the budgets of the various faculties. The government can thus exert considerable control over academic development and, in medicine at least, it also decides on matters of academic policy such as the framework of the curriculum. This central control is channelled through the Chancellor of the Swedish Universities whose office is peculiar to Sweden.

Until 1964, the Chancellor of the Swedish Universities had an academic background and was elected by the universities and was therefore their representative. Since 1964, the chancellor has been appointed by the government and is in the same position as the heads of other governmental offices, representing the government rather than the universities. He need not have any academic background. The office of the chancellor, with a staff of over 100, has a governing board which includes representatives of organized labour and the government. Budgetary control is exerted through five faculty planning boards, one of which deals with medicine, dentistry, and pharmacy. Each faculty planning board consists of nine persons, appointed by the government for a 3-year period, and four of these are professors nominated by the universities. The boards make a detailed survey of the proposals submitted by the various university faculties and recommend priorities on a quinquennial basis. If a professorial chair becomes vacant, its

future is reviewed by the faculty planning board which indicates whether it should be abolished, continued, or changed. Since 1966, the faculties of the universities have submitted their budgets directly to the chancellor's faculty planning board. The university council can also submit its comments, but it is the chancellor's office that assesses and coordinates the various plans for development that are submitted and then decides the direction in which support will be given. Central control of this kind has to be well informed and fair otherwise it will cause dissatisfaction and discontent. In Sweden I found very little criticism of the decisions made by the faculty planning board in medicine, although, of course, inadequacy of financial support is a universal source of complaint. The increasing degree of central control exerted by the government through the chancellor's office appears to be generally accepted insofar as budgets are concerned. But there is considerable unrest and even alarm over the intrusions in academic affairs, such as are discussed in the section dealing with undergraduate curriculum. One safeguard, which I am told is frequently used, is the rector's direct access to the Minister of Education and another is the readiness of the government to appoint special advisory committees on problems and reforms. Before action is taken, the reports of the committees are widely circulated for comments of those organizations that are likely to be concerned (*19,20,21*).

AUSTRALIA

The simplest method, which has given the greatest degree of autonomy to the universities but the least support for medical schools, is the one adopted in Australia (*22,23,24*). Under the Australian constitution, education is the responsibility of individual states but with their consent, financial support of the universities has been the joint responsibility of the Federal and State governments. Capital expenditure is divided equally between the two, while recurrent costs are divided in the ratio of 1 part from the Commonwealth to 1.8 parts from the State Government; the contribution of the latter includes fees from students. The Australian Universities Commission (AUC), which was created in 1959, is technically responsible for recommending how much federal support should be given to each university. However, in fact it decides the total income of the universities because the states very rarely fail to match the federal contribution. This allocation is made on a triennial basis. The commission consists of a Chairman, a Deputy Chairman, and eight others, of whom three are from universities, four from business, and one from a government department.

The policy of the AUC has been to avoid creating the impression that it determines how recurrent grants should be spent. It is not surprising, therefore, that the universities, mainly based on arts and science, should be reluctant to give more than minimal support to faculties of medicine, many of whose activities are "off campus" and are considered to be more professional than academic. The support given by Australia to its medical schools clearly has been inadequate according to the standards expected in other countries. The same pattern was followed in New Zealand and in the Province of Saskatchewan in Canada where the support given to medical schools was so meagre that their ability to maintain adequate standards was seriously threatened. In each case, an adverse report given by independent investigators was communicated to the government which gave a specially earmarked grant for revitalizing the medical school. (25) No independent investigation of this kind has been made in Australia nor has the AUC any effective advisory committee on the problems of medical education.

CAPITAL EXPENDITURE

It is in new construction that governments can exert the greatest influence on the way universities develop. In all countries capital grants for new buildings and equipment are earmarked for a specific purpose and although the university may make the initial request, it is the government that makes the final decision. This usually is based on expert advice but it is sometimes a political decision.

DISCUSSION

Each of these approaches to the support of medical education by the state has its advantages as well as its drawbacks. The simplest method is to give a lump sum to each university which it can divide among its faculties as it pleases. This preserves the principles of academic freedom, but it rarely gives medicine the support it needs. Medical education is expensive, partly because there has to be a high proportion of teachers to students and partly because the gap between academic salaries and those in private practice should not be so great as to impede recruitment. In contrast with other professional faculties, such as law and engineering, medicine has to teach the solution of complex disturbances of function at the bedside where the problems are actually being solved. This approach is expensive because it can be effective only if small groups of not more than three or four students

are involved, so that the critical outlook can be developed which comes from discussion and argument. In these circumstances students require teachers with skill and experience to stimulate and control them. This is particularly true of the application of the basic sciences to clinical problems since the contribution of science to medicine has been increasing at an unprecedented rate. Electives and integration are discussed in Chapter 10. These have also increased the need for a high proportion of teachers to students. For these reasons it is not surprising that medical education costs more per student than any except some in the graduate faculty. The administrative councils of universities which are usually based on arts and science are seldom sympathetic with these arguments and unless they are backed by influential persuasion or even coercion, the faculties of medicine will rarely get the support they require. This lack of support is obvious in Australia and Ireland and was evident in New Zealand and in the Province of Saskatchewan in Canada until special assistance was provided by their governments.

To ensure that adequate support is given to medicine without blatantly interfering with academic freedom, two methods have been adopted. The first is based on "indications," such as are given by the UGC in Britain. For this approach to be successful, the granting committee must be backed by sufficient expertise and be so constituted as to have the confidence of both the government and the universities. The second approach, used in Canada and elsewhere, is to estimate the universities' needs on the basis of a formula which takes into account the different costs of educating various classes of students as well as the numbers of those students. This gives the university considerable freedom in managing its own affairs and does not discourage private donations. It also gives the university a general indication of what should be spent on its faculty of medicine.

It is difficult to choose between the benign dictatorship of the UGC, strongly influenced by medical advisory committees, and the formula financing of Canada, which allows greater liberty of action but gives a clearer indication of the emphasis which should be placed on medicine. Perhaps the former is best suited to countries with a central government and the latter to those with a federal system. Most would prefer triennial or quinquennial budgets, which have been adopted by all countries except the United States and Canada. If adjusted for inflation, these allow future planning and are much less onerous than annual submissions.

Sweden has by-passed the universities through a faculty Planning Board, appointed by the government, which decides the financial support to be given to each faculty of medicine in Sweden. This ensures adequate support for medicine, but it tends to cut the Swedish medical schools to the same pattern at a time when it is not known

what this pattern should be. Most other countries would be reluctant to submit to this degree of regimentation.

There remains the United States, which appears to be in a very confused state of transition. Individual states are reluctant to support private medical schools while the Federal Government has been reluctant to give grants other than those for special projects such as are described in Appendix I. There are many obvious drawbacks to the insecurity of this seemingly haphazard system of categorical grants but there also are advantages. The insecurity which has followed public disenchantment with research has perhaps dislodged complacency and stimulated searching criticism of research as well as teaching programs. It has placed teaching and research in their proper perspective, which most would agree was lacking during the years of seemingly limitless research support. Many schools are turning to health care as a source of income and this may give undergraduate medical education greater orientation toward the patient. The opportunity also has been given to medical schools to take stock of the direction in which they are going. All of these advantages are, however, transitory and will be profitless if operational funds for medical education are not forthcoming. Unless it is a temporary expedient, this fragmented categorical approach of the U.S. Government to the problems of medical education is both inefficient and extravagant in contrast to the general operational support given to medical schools by the federal or central governments of other countries.

Most would agree that the United States leads the world in medical research and also in many of the clincal specialties, but this lead was earned and maintained in times of plenty when excellence was given its just rewards and when federal grants were directed toward research with no interference by the government in academic affairs. There are many who believe that this lead will not be maintained unless these freedoms are restored and direct operational grants are given, as is done in other countries. It is generally assumed that the capitation grants which were introduced in 1971 on a temporary basis will be continued, hopefully as unconditional grants. This could be the thin edge of the wedge leading to a more rational plan for financing medical education, particularly if cost-sharing between the Federal and State governments also were introduced.

Medical school expenditures, including those on research, are discussed in Chapter 5. In 1970–71 the average expenditure was $19.68 million in the United States and $7.6 million in Canada. In Britain, Australia, and New Zealand, the expenditure on medical schools was approximately half that of Canada. Most medical schools can spend usefully all they can get in times of affluence but for countries of moderate means I believe that Canada has struck a happy medium.

Chapter 2
SUPPORT OF MEDICAL RESEARCH

The cost of teaching and research are so intermingled that the financial contribution of the universities to research is impossible to quantitate. Superimposed on this contribution and those of research foundations, agencies have been developed by various governments which give direct support to universities for medical research. All of the countries I visited follow either the pattern developed by the Medical Research Council in Britain or the one more recently developed by the National Institutes of Health in the United States.

MEDICAL RESEARCH COUNCILS

The function of the Medical Research Council in Britain is to promote medical research in its broadest sense, and to do this it received a grant from Parliament which in 1970–71 amounted to £21,055 million. The council has the executive authority to spend this grant as it wishes but is responsible to the Secretary of State for Education and Science. The chairman of the council is usually a distinguished public figure who has not been engaged in medical research. In contrast, the Secretary and Deputy Chairman, who is the only full-time member of the council, has been a distinguished medical scientist who has given up a senior academic appointment to devote all of his energies to the work of the council. He plays a large part in deciding the policies of the council and also in advising on council membership, which consists of twelve persons, not less than nine of whom are concerned with medical or related biological research (*26*).

In 1970 the Medical Research Council spent about two-thirds of its income on its own institutes, research units, and administration, and about a quarter on the support of research groups and research projects in the universities. Clearly, the main effort of the Medical Research Council is to support research carried out by its own staff rather than research which is conducted by university departments. As a token of this policy, the universities are expected to take over financial responsibility for the "research groups" after a period of 5 years, and project grants are clearly labelled "short term research

grants" with the expectation that after 3 years, the university will either take over or discard the project. This is the system which, with less emphasis on institutes and with other minor variations, is followed by Australia (*27,28,29*), New Zealand (*30*), Ireland (*31*), Norway, Denmark (*32*), and Finland.

PEER REVIEW

In the United States

The system of peer review developed by the National Institutes of Health (NIH) for the reward of excellence in medical research has been copied by Sweden and Canada and, since others are likely to follow, will be described in some detail. The National Institutes of Health was created in 1930 but it was not until 1946 that it began a program of extramural research grants and fellowship awards. Only this extramural program is discussed in this section.

In 1967 the NIH, which is the primary agency of the Department of Health, Education and Welfare in support of medical research, distributed $641 million to 100 medical schools, about half of this sum (53 percent) being for the support of research, about one-quarter (26 percent) for various types of training grants, and the remainder (21 percent) for expenses related to research. In 1967 the amount distributed to each medical school ranged from $32,000 to $18 million, with an average of $6.4 million. (*8,95,96,97,98*)

The total allocation to the National Institutes of Health for research was reduced sharply in 1968. The rate of increase had been slowing down since 1963. In 1968 the total grants awarded decreased to $0.9 billion from $1.2 billion in 1967, a reduction which had serious repercussions on the medical schools across the country which had depended on these grants for operational support. This was followed by a slow recovery until 1970 when the total was restored to $1.2 billion, with a further increase to $1.3 billion in 1971, $1.6 billion in 1972, and $1.9 billion in 1973 (*98,101,147*). What these figures do not reveal is a highly significant shift toward directed research for what are considered by the government to be "high priority programs," a shift which was made at the expense of general research funds. Support for cancer research and for research on diseases of the heart, lung, and blood vessels increased from $362 million in 1970 to $854 million in 1974, with a corresponding decrease in the support of other areas (*147*). What is of even greater importance to the medical schools is that the allocation for competitive research projects is being reduced and training grants have fallen from a peak of $224.5 million in 1967 to $127 million in 1974 when they will probably be phased out (*99, 100,147*). Early in 1975 the future of fellowship awards and their

distribution had not yet been fully resolved, and the future of training grants was still in doubt.

The factors which govern the distribution of these funds for research and the various allocations that are made are complex. The NIH has some authority but the President, Congress, and other political groups can influence not only the amount which is spent but also the emphasis which is given to certain diseases and various areas of research (*92*).

The policy of the government regarding the distribution of funds for research was clearly stated in the report of the Senate Appropriations Committee for 1967 which included the following. "The committee continues to be convinced that progress of medical knowledge is basically dependent upon full support of undirected basic and applied research effort of scientists working individually or in groups on the ideas, problems and purposes of their selection and judged by their scientific peers to be scientifically meaningful, excellent and relevant to extending knowledge of human health and disease." This has been government policy in the past and to implement it a system has been developed that rewards excellence in a way that is both fair and efficient.

Applications for grants-in-aid of research projects are first considered by "study sections" which meet three times a year usually for 2 or 3 days. There are 48 of these, each of 12 to 16 members serving 4-year appointments and selected for their expertise in a specific area of research (*102*). Each panel has a full-time executive secretary who is usually a qualified scientist with research experience in the area covered by the panel. One of his responsibilities is to nominate the chairman and to maintain a balance between the various aspects of the subject and between youth and experience. The executive secretary distributes applications to two appropriate members of the panel for detailed review and if the need arises, obtains an evaluation from a scientist who is not a member of the panel. When the panel meets, the two reviewers discuss the application, giving a detailed critique of its merits, of the candidate's fitness to conduct the project, and of the budget requested. By a majority vote of its members, the panel then decides whether the application should be rejected or approved, with or without modification. On an average, each application will occupy 20 or 25 minutes of the panel's time. Those that are approved are given a numerical rating by each member of the panel. These scores are added to give the candidate a rating which is then adjusted to make it comparable with the ratings of other panels. The cut-off point at which funding is discontinued is governed by the funds available. Following the meeting of the study session, the executive secretary prepares a summary of the basis for the recommendation made on each application. This is used for various purposes, one of which is to provide this information to members of the appropriate council which is the next body to review

the application. There are 11 councils, one for each of the National Institutes of Health. Each council has 12 to 16 members who are mostly senior scientists with an established reputation. The council may review any application within the field of interest of its institute, but in practice only a few are discussed such as those involving policy or applications for large sums of money, e.g., project, training, and program grants. The council is concerned mainly with matters of policy and rarely questions the quality rating given by the study section.

In 1974 about 70 percent of new grant applications were approved, of which only 50 percent could be funded (*103,148*). It follows that only about one-third of those applying for new grants were successful; 60 percent of those applying for renewal grants were successful which is in contrast with the policy of the Medical Research Council in Britain.

There is no limit to the duration of support. About 15 percent of all applications being reviewed receive project site visits, usually by the executive secretary with two or more study section members. These visits are made usually when the grant is large or the project amounts to a program. Study sections have also been given a mandate to survey the state of research in their fields and indicate areas in which research should be initiated or expanded. Grants are given for the support of broadly based, long-term programs of research (Research Program-Project Grants), and "advancement awards" for adding strength to research and training potential (*104*).

A facet of grants for research which benefits the parent institution is the "general research" support grant which gives to the medical school, for general purposes related to research, a proportion of all research grants received. This can be substantial; for instance, an institution receiving research grants amounting to $1 million could be given an additional $235,000 for general support (*105*).

Research training until recently has accounted for about a quarter of federal funds given to medical schools. Training grants are made to expand existing programs or to establish new ones in selected institutions. Fellowships are awarded on an individual basis for training in research and the recipients are selected by a number of fellowship review committees covering the various areas of research. Career awards, carrying salaries of $25,000 and more, used to be given to outstanding young scientists with the implied intent of continuous support until retirement age (*106*). This kind of award which included security of tenure has proved unsatisfactory and has been replaced by the career development award which has a 5-year limit.

Support for medical research in the United States is unique not only because of the magnitude of the contribution by the Federal Government but also in the effort which is made to obtain an accurate assessment of the merits of each application for support. No one such as myself who has attended meetings of the panels and the councils of

the NIH can fail to be impressed by the meticulous care which is taken to reward excellence and to expose and discourage mediocrity in research. It has been said that this system of "peer review" is possible only in a country as large as the United States where there are reserves of talent to cover the various areas of research. It does not appear to be realized generally that there are two small countries which, although they still use the term Medical Research Council, have broken away from the British system described in Chapter 1 and have adopted successfully a modification of the one used in the United States. This has been done in Canada, which has a population of about 21,000,000, and in Sweden, with a population of about 8,000,000.

In Canada

The Medical Research Council of Canada reports to Parliament through the Minister of National Health and Welfare. The President is the full-time chief executive officer of the council, responsible for the supervision and direction of its work. The council itself is composed of 21 members, also appointed by the Governor General in Council, who serve without remuneration for terms of 3 years. A few lay members have been appointed to the council in recent years although the majority of the membership is drawn from health science faculties of Canadian universities. The council meets routinely three times a year but has an executive committee which meets more frequently.

In 1970 its budget was $31 million, over 99% of which was used for the support of research in university departments or in institutes linked with a university (*8*). Grants-in-aid of research accounted for 67% of the Council's expenditures in 1969–70. These grants are designed to assist in defraying the normal costs of research proposed by investigators holding the privileges of staff appointments at Canadian universities or other recognized Canadian institutes (*107,108*). These can be in the form of a renewable annual grant, a renewable term grant covering a period of 3–5 years, or an equipment grant. For the assessment of the application, there are 17 panels of scientists, each composed of about eight persons chosen for their expertise within the area of research covered by the panel. Each panel is also served by a scientific officer who is a university investigator employed by the council on a part-time basis for this purpose. The scientific officers assign applications to the appropriate panel and, in consultation with panel chairmen, select one or more external reviewers to whom each application will be sent. Each application, with the reports of the external reviewers, is then sent to the members of the panel which makes its assessment in the same manner as the panels of the NIH. It is the responsibility of the council to review the recommendations of the panels and, in the light of the

funds available, to determine the level below which applications must be refused. Less than 50% of applications are usually successful.

This procedure, which closely resembles that which has been adopted by the NIH in the United States, clearly is designed to support individual excellence in research. It also exposes mediocre or poor research and provides a valuable indication to the university of the quality of its research effort. The Medical Research Council in Canada, as in Sweden, but unlike the National Institutes of Health, has no "internal" program of research.

Direct support of research personnel accounted for 25% of the council's expenditure in 1970. The most junior form of support is the studentship, designed for those who are working toward an M.Sc. or Ph.D. in a health science complex. The next category is a fellowship, which is awarded to a limited number of highly qualified candidates who wish to take advanced training in research. Scholarships tenable for a maximum of 5 years are designed to provide support for those who have completed their training and are holding what is normally their first university appointment. The associateship, which is renewable on review every 5 years, is for the established investigator who has already embarked on a research career. For each of the four categories of personnel support, there is a special selection committee reporting directly to the council.

The third and last category, representing 8% of the council's expenditure in 1969–70, is research promotion, designed to exert some influence on the nature and distribution of the research effort in Canada. There is a development grant program, the main purpose of which is to assist in the recruitment of highly qualified investigators in areas where the research effort in Canada is considered inadequate, and a group program designed to facilitate multidisciplinary research in areas which appear to offer opportunities for rapid advance. The deans of medical schools in Canada also receive general research grants of $40,000 to be spent at the dean's discretion on the support of research in his faculty. Smaller amounts are spent on the support of symposia, visiting scientists, and travel grants.

As a Crown corporation, the council has full authority in the expenditure of the funds allocated to it within the broad terms of its act. No direct control is exercised by the Minister but, as in other countries, there is increasing pressure to relate research to the country's needs (*109,110*).

In Sweden

The Medical Research Council of Sweden was founded in 1946 on the English pattern, but in 1964 its policies were revised,

bringing its objectives and administration much closer to the pattern in North America. The council has a lay chairman and 16 members, each of the following nominating one representative—the Swedish Medical Association, the Hospital Association, the dental profession, the veterinary profession, the pharmaceutical houses, and each of the six medical schools. The other six members are appointed by the government on the recommendation of the Medical Research Council itself and are chosen to ensure coverage of the general areas of research. The office of director general of the MRC is a part-time one, being held now by a professor at the Karolinska Institute. Of a total budget of about 30 million kroner in 1968, about 23 million, or 75%, was spent on project grants in order to encourage the best research in university departments. The assessment of projects follows the American pattern, with 10 expert committees covering the various areas of medical research. The other 25% of the council's budget is spent in a variety of ways, all of which make a contribution to university departments. There are research fellowships and scholarships and also a limited number of "units" which cover subjects with little or no undergraduate teaching content so that the university finds it difficult to support them. In 1969 there were 11 of these units costing a little under 2 million kroner. The university provides the space and also the various services which are listed in a contract with the MRC. The council has a very efficient computerized reference system which serves all of the Scandinavian countries.

DISCUSSION

It is the balance between university support and "outside" support which varies widely and which is of particular importance in those countries where a planned society tends to overemphasize the advantages of security. Few of those involved in research in academic departments will admit even to themselves that their research is pedestrian or unprofitable, and those departments engaged in mediocre research are sometimes the last to recognize excellence in others. Partly for this reason it is difficult for a university organized along democratic lines to give recognition to excellence, much less reward it at the expense of others. Unless there is money and to spare, the sums given to a university for research usually will be divided among the departments in relation to their size and local prestige rather than to their scientific originality. To counteract this uninspired approach, there should be some method of giving substantial support to those with proven originality and enterprise in research. To do this, an independent body well equipped to assess the potential of research and with its own resources is needed. This system of outside support, if conducted

with impartiality and expertise, as is done in the United States, Canada, and Sweden, can be of great value in accelerating the progress of the best research in academic departments and in giving the university an impartial assessment of the merits of its own research.

The governments of several countries recently have made the initial moves that would give them greater control over their research effort. In Britain, partly as a result of the Rothchild report, there has been a transfer of a significant proportion of the funds of the Medical Research Council to the Department of Health and Social Security which will define its requirements and will commission the research and development required to achieve them on a customer-contractor basis (*33*). In the United States the emphasis recently has been a shift toward grants for "high priority programs" in clinical areas, at the expense of general research funds. In other countries there has been the same urge to take a closer look at the practical benefits that are coming from medical research. The public tends to assume that medical research is an applied science that can be planned as in any engineering project; the view that progress in medicine has come from individual initiative does not have the same political appeal.

It is generally recognized that the standards of medical care in teaching hospitals are high. One reason for this, if not the principal reason, is that an atmosphere of research encourages a critical and analytical outlook in both diagnosis and treatment, and so maintains the quality of clinical care. There is also a real danger of underestimating the value of research in providing teachers who can give the undergraduate a practical grounding in the scientific background of medicine which he must have if he is to understand the diagnostic and therapeutic procedures which have been developed or to keep up with the expansion of medical knowledge. The importance of medical scientists in teaching the mechanisms of disease is discussed in Chapter 10.

Chapter 3
REGULATION OF PROFESSIONAL STANDARDS

Professional standards and ethics depend so greatly on the conscience and reliability of the individual doctor that regulations can never determine the quality of the profession. It is nonetheless important that there should be close supervision of educational standards and imposition of such ethical regulations as can be enforced.

In Britain, the General Medical Council was established more than a hundred years ago with wide powers of control over medical discipline and the courses of instruction and examinations that must be taken in order to obtain the qualifications registerable under the Medical Acts. The council itself appears to be a rather unwieldy body, consisting of twenty-eight representatives chosen by various universities and colleges, eleven members elected by medical practitioners, and eight members nominated by the Crown. Five of these members are from the Republic of Ireland.

The General Medical Council now appears to be more concerned with the objectives of medical education than with the means by which these objectives can be achieved. Its recommendations are couched in such general terms that the medical schools have wide latitude in planning their curricula and in the conduct of examinations. The council does not conduct its own examinations but keeps a watching brief on those of the medical schools (*34,35*).

The General Medical Council is responsible for the registration of those qualified to practice and one of its most important functions is jurisdiction over matters of medical ethics, the standards of which are rigidly enforced. If a registered practitioner has been convicted of a criminal offense or is judged by the disciplinary committee of the council to have been guilty of serious professional misconduct, the council may erase his name from the medical register or suspend his registration for a probationary period. This duty of the General Medical Council is pursued energetically and has a significant effect on the ethics of the medical profession.

The Royal Commission on Medical Education (*44*) made the sensible recommendation that the General Medical Council should also be

responsible for the registration of specialists, but this has been opposed by various professional organizations.

The regulation of standards in the Scandinavian countries, Ireland, and New Zealand (*36*) is conducted along the same general lines as in Britain. The United States, Canada, and Australia, with their federal constitutions, have a rather different problem since the setting of standards is the responsibility of individual states or provinces rather than of the Federal Government.

In order to practice in the United States, a physician must have graduated from an approved medical school and must obtain a license from the state in which he intends to practice. To get this license, he must satisfy various personal and training requirements and pass an examination. The one usually taken by recent graduates is set by the National Board of Medical Examiners and is accepted by 42 of the 50 states. The examination is based on multiple-choice questions designed to test the knowledge of students as they graduate from their medical schools. The board provides the medical schools with an analysis of the performance of their students in the various subjects and of the standing of the school in relation to the national average. This gives not only an indication of general standards but of areas in which performance is good or bad. This information is of particular value in medical schools that have introduced drastic changes in their curricula. The principal hazard of an examination of this kind, taken in common by all or almost all medical schools, is that teaching becomes a cram course oriented toward a good performance in the examination. I believe that this hazard has been avoided in the United States and Canada through the anonymity which is rigidly observed in the dissemination of results. No medical school knows the performance of any other medical school and this secret is well kept (*38,41*).

The lines of responsibility in the United States for the standards of undergraduate and graduate education are now clearly defined. In 1972 the Coordinating Council on Medical Education was established by the American Medical Association, the Association of American Medical Colleges, the American Board of Medical Specialties, the American Hospital Association, and the Council of Medical Specialty Societies, with representation from the general public and the Federal Government. Responsible to this council are the Liaison Committee on Medical Education, the Liaison Committee on Graduate Medical Education, and a Liaison Committee on Continuing Medical Education, which was established in 1974. Each of these is responsible for inspection and official accreditation in their respective areas of medical education (*138*).

The most effective safeguard in maintaining satisfactory standards of medical education in North America is the periodic inspection of medical schools. The Liaison Committee on Medical Education is the

official agency for accreditation of medical schools in the United States. Representatives of this committee visit all medical schools at intervals of 5 to 7 years and, after a searching inquiry, make a confidential report, a copy of which is sent to the medical school. This report describes in no uncertain terms any deficiencies that may have been found and may indicate improvements that must be made if accreditation is to be granted or continued. This liaison committee, since 1942, has been largely responsible for maintaining the high standards of medical education in the United States. The Liaison Committee on Graduate Education is the official accrediting body for graduate training (*138*). The American Board of Specialties coordinates the activities of 20 specialty boards in the various specialties (*39,40*). These are discussed in Chapter II.

In the United States there is not the same clear-cut separation of specialists, who are consultants, from general practitioners, who are responsible for primary care, as there is in most European countries. Many specialists engage in family practice and many general practioners, without any special qualifications, claim to be specialists in the area of their own particular interest; the estimate that specialists have increased from 17 percent of those in practice in 1931 to 77 percent in 1969 must be taken in this context (*41*). In 1972 only 17 percent of active physicians claimed to be in general or family practice (*142*).

The ethical standards of the medical profession are controlled by the state licensing boards which can revoke the license to practice. The state and county medical societies and the American Medical Association are also concerned and, although the only penalty they can impose is censure or expulsion from the society, this is a public insult which can hardly miss the attention of the state licensing boards. State licensing boards generally appear to be concerned mainly with criminal conduct or moral turpitude of members of the medical profession in their own state. "Only 15 states permit a license to be challenged on the grounds of professional incompetence" and "only 8 states have provisions of law that will permit them, after hearings, to act against a practitioner whose license has been revoked in another state." (*146*). It obviously would be in the best interests of the public to have uniform standards of medical practice and of medical ethics throughout the country. In a federal system there may be obstacles to this uniformity but they are not insurmountable.

In Canada the regulation of professional standards is conducted along the same general lines as in the United States although it bears a superficial resemblance to the British system. Under the Canada Medical Act (*42*), the Medical Council of Canada includes two members representing each of 10 provinces and one member from each of the medical schools. It keeps a register of medical practitioners and conducts an examination of qualification at levels acceptable to all the provinces of Canada, provided the candidate holds a medical degree

approved by his own province and satisfies its regulations. The majority of provinces also have reciprocity with the General Medical Council of Great Britain and a few, with the National Boards of the United States. However, these physicians do not qualify for the Medical Register nor are their qualifications transferable from province to province. Periodic inspections of the medical schools are conducted jointly by the Canadian and American associations of medical colleges along the same lines as in the United States.

The registration of specialists is left to the provinces but all except Quebec, which has its own examinations, accept the specialist qualifications of the Royal College of Physicians and Surgeons of Canada.

Apart from convictions under the criminal code, the maintenance of ethical standards is left to the provinces although the Royal College of Physicians and Surgeons of Canada can rescind its specialist qualification.

Australia has no national medical council or board responsible for the registration of those qualified to practice medicine or for the maintenance of ehtical standards. I met no one who doubted the desirability of such a council, the formation of which is opposed by at least one of the states in Australia. Each state now has its own board, appointed by the state government, which prescribes the conditions for admission to its register and which is responsible for discipline within the profession in the state. Only Queensland has attempted a register of specialists but the standards of training required are low. The general practioners jealously guard their right to take part in any specialty including major surgery. What makes this reactionary outlook tolerable, in the cities at least, is the insistence of the larger hospitals on adequate standards of qualification and training in all staff appointments. With the introduction of a standard schedule of fees in 1970, the general practitioners were violently opposed to any preferential scale for specialists.

DISCUSSION

One of the weaknesses of the federal system is that it can be difficult to reconcile with situations where uniform standards are obviously in the best interests of the community. This is particularly true of the medical profession where the only section of the community that benefits from the control of professional and ethical standards by individual states or provinces is the small segment whose vested interests are involved. This fragmented approach will make even less sense when registration of specialists becomes an essential part of any health service.

The most reasonable and orderly system of regulation of professional standards and ethics is the one adopted by Britain, but the United

States and Canada lead in the use that is made of regular and thorough inspection of the medical schools to ensure that their standards are maintained. They are also ahead in the confidential use that is made of the National Board examinations to inform the medical schools of their standing in the various subjects in relation to the national average.

In all of the countries I visited there was a general conviction that their own family doctors and specialists were the best. All could not be right, but I know of no reliable method of making a comparative assessment. In North America specialization is more highly developed than elsewhere and the student is more likely to have a sound knowledge of the academic background of medicine. He will have had less clinical experience than his counterpart in Europe, but this will be compensated for after graduation by a better organized residency training program.

Chapter 4
MEDICAL SCHOOLS

When financial control of the universities is wholly in the hands of the government, and differentiation between private and public medical schools becomes insignificant. Thus, the United States is one of the few countries where this difference still has some meaning. In 1961 the number of privately owned medical schools was 44, rising to 49 in 1974–75. During the same period, the number of schools owned by the states had increased from 37 to 66, making a total of 115 medical schools. The average enrollment in the first year was 128 in the private schools and 129 in the public schools (*137,138,139*). The individual states have a considerable degree of authority over their "public" universities, some of which have boards of governors or "regents" elected by the state legislature which determine the functions, educational activities, and academic programs of the constituent institutions and the types of degrees to be awarded (*43*). In some of these medical schools, a detailed budget has to be submitted to the legislature which is a line by line budget leaving little or no room for maneuverability. This budget rigidity, which has been discarded by most other countries, tends to inhibit change, since continuing support for developments that have already been established can readily be obtained, even if redundant or inefficient, while support for new and more desirable developments may be given only if expansion can be afforded. Any deviation from the budget that is submitted may require official permission and this may be a time-consuming procedure. It is often mainly from fees for professional services that these medical schools derive the flexibility which is essential for healthy development.

THE RELATIONSHIP OF MEDICAL SCHOOLS TO THEIR UNIVERSITIES

The relationship of medical schools to their universities varies from one extreme in the United States, where most medical

schools are largely independent financially of their parent universities, to the other extreme in Australia where dependence is almost complete. In the United States, many medical schools of private universities are completely independent financially and are sometimes many miles distant from their parent university, while state universities may have several medical schools each directly or indirectly responsible to the state government for its budget and development. In general, the universities appear to be only too glad to be rid of the heavy financial burden and other complications of medical education and the medical schools have flourished under this arrangement. The Karolinska Institute, which is Sweden's largest and perhaps most famous medical school, since its foundation in 1810, has been an independent medical institution with no affiliation with any university although it awards degrees and creates chairs. In other Swedish medical schools the separation is almost as complete, with control largely in the hands of the Swedish Chancellor, whose appointment is a political one. His office, which is virtually a government department, controls the admission of students, academic appointments, new developments, and the curriculum, but fortunately there is a tradition that the advice of professional bodies and expert committees should be openly sought and for this reason well-informed decisions are usually made. There is, however, considerable discontent over the uniformity which comes from this type of control (*20*).

In Britain the medical schools, except those in London, are closely linked with their universities, both administratively and geographically. In London there are 12 medical schools based in hospitals some of which had their origins in the 12th century. These 12 medical schools supply more than half the medical graduates in England, some of whom take the examinations of the University of London and others, the examinations of Oxford or Cambridge or the Royal Colleges of London. Traditionally, these medical schools have been dominated by practicing physicians and surgeons and it was not until after World War I that any significant attachments to the University of London were developed. These have remained tenuous and in some of the London schools a tradition is still maintained that no full-time university professor may be dean. The university has some control over the curriculum and over academic appointments and provides financial support through the University Grants Committee. What is now proposed is the amalgamation of these medical schools into pairs, each admitting about 200 students and becoming an integral part of one of the multifaculty colleges of the University of London. It seems likely that, for geographical reasons, only five pairs will be amalgamated, leaving London with seven medical schools (*44*). Outside of London the administration of medical schools is closely linked to their parent universities. The same is true of Canada, Australia, New Zealand, Ireland, Denmark, and Norway (*18*).

DISCUSSION

Although many distinguished medical schools in the United States and Sweden are largely financially independent of their parent universities, it is also true that the medical schools in the United States and Britain that were not part of a university have deteriorated and have finally disappeared. If academic and educational standards are to be maintained, it seems important that a medical school should be affiliated with a university. There may also be cultural advantages in having both staff and students close to the other faculties of a university, but the extent to which this advantage is used is much less than is generally supposed. What is beyond question is that medical schools can flourish both academically and in research without being in close proximity to their parent universities.

The advantages of geographical proximity of the medical school to its parent university is debatable from another angle. The number of those that are medically qualified in the preclinical departments has been steadily diminishing and some now have no such qualifications. The contribution of these departments to students in science faculties has also been increasing, with medical students often representing about 50 percent of the teaching load, sometimes only 25 percent. In the medical schools of the United States only about 40 percent of the teaching load is devoted to undergraduate medical students (*45*). The academic orientation of many of these basic science departments is turning toward the faculty of science, but there is also the financial attraction of higher salaries and the more generous support which is given to research in the faculty of medicine.

Basic scientists, particularly those who are not medically qualified, are rarely equipped to discuss the application of their subject to the problems of disease. Thus, either this important educational contribution must be omitted or the help of clinicians, who have the necessary knowledge of the physiological and biochemical background of their specialty, must be sought. In some medical schools physiologists teach only the general principles of physiology and neurophysiology, while clinicians are responsible for its application to the various organs and systems. For this arrangement to be effective, the basic science departments should be in close geographical proximity to a principal teaching hospital.

An alternative is to complete the separation of the basic sciences from the teaching hospitals by transferring the preclinical departments from the medical school to the faculty of science on the main campus (*10*). This is already being done in varying degrees and in different ways in several medical schools. As part of the premedical course, students study human or mammalian physiology and biochemistry, with little or no reference to disease, but this knowledge will be of little use unless it

is later applied to the problems of medicine. In order to do this, the clinical school must have a sufficient number of clinicians with an adequate knowledge of the physiological, biochemical, and anatomical background of their specialty to relate it to all the organs and systems. This load, which is discussed more fully in the section on the curriculum, falls most heavily on the department of medicine.

There are many advantages in geographical proximity of the university and its medical school, but a serious disadvantage arises where the university campus cannot be close to one of its principal teaching hospitals. Separation of the medical school from its teaching hospital by a distance of more than about a mile raises difficult educational problems, particularly in integrating the curriculum and in demonstrating the application of the basic sciences to medicine. The ideal is to have the university, medical school, and teaching hospital in reasonably close proximity. Where this is not possible, the medical school should be near one of its principal teaching hospitals.

With the increase in students entering medical schools, many now have several fully equipped and fully staffed teaching hospitals, each of which could be called a clinical school. Only one of these need be near the medical school while the others can, without any significant handicap, be at a considerable distance. Extremes of this separation of clinical school from its parent medical school are to be found in Sweden and also in New Zealand, where a first-class medical school in Dunedin successfully operates a satellite clinical school in Christchurch, 200 miles distant. This clinical school has its full complement of academic staff and research facilities in both the clinical and paraclinical subjects.

THE OFFICE OF DEAN

The office of dean differs in medicine from most other faculties. In medicine the dean usually has to hold the loyalty of many faculty members who are paid little or nothing by the university but who play an important part in teaching. He is involved heavily in the complex relationships between the Department of Health, the hospital, and the university and should represent the university on boards of the teaching hospitals and other professional bodies. In addition to these heavy duties, he is placed in a key position at a time when medicine and the techniques of medical education are changing at an unprecedented rate.

In Britain, Ireland, and Scandinavia, the dean is usually the head of a department and is elected by the faculty as their part-time dean for a period of 2 or 3 years. He is given little assistance and is usually not expected to make important decisions. It is not surprising that the post of

dean is one that is often accepted out of a sense of duty rather than inclination. Decisions even on matters of minor importance are made by committees rather than by the dean. This is time-consuming for all concerned and tends to inhibit change since it is usually the conservative elements of the staff that are in the majority. In Edinburgh, which has been followed by several other medical schools in Britain, a full-time executive dean has been appointed who is responsible to the part-time dean elected by the faculty. Unlike the full-time dean in North America, he is in a subordinate position. In New Zealand and Australia about half the deans serve full time. This is a recent change which usually has been associated with more delegation of authority than in North America.

In the United States and Canada, the dean is almost always full time and has a wide range of authority over the affairs of the medical school. He controls the faculty budget, usually with the backing of a budget committee, and heads of departments must seek his approval of academic promotions and new appointments. To help him in his work he may have a team of part-time assistant deans responsible for such areas as the curriculum, student affairs, graduate studies and research, continuing education, residency training, and the selection of students. He also will have one or two senior executive officers and a secretariat. With this range of authority, the wrong man as dean can be a disaster and for this reason he usually is chosen by the same process as departmental heads but with even greater care. His appointment is usually from 1 to 5 years with eligibility for reappointment.

The full-time dean, with a wide range of authority over the affairs of the medical school long has been a characteristic of American medicine. It was the dean who held the purse strings but this hold became less secure in the 1960's when chairmen of departments gained a considerable degree of financial independence through the individual support given by federal research grants and, in the clinical departments, from fees for services. These departments came to depend, to an increasing extent, on their own research grants and earnings and many expanded without adequate attention to the hazards of "soft money." With the reduction of research grants and phasing out of training grants discussed in Chapter 1, departmental independence is becoming less secure although it is being maintained in some clinical departments from fees for service.

In some medical schools in the United States and Canada, the introduction of a more democratic system has broadened the process of decision-making and also slowed it down. This usually has reduced the authority of the dean or reduced the authority of departmental chairmen with a corresponding increase in the power of the dean. Often the introduction of democratic principles is more apparent than real, except perhaps in exposing more readily any inadequacies in a department head or dean. What most people prefer, and what I believe

is most effective, is a dean with wide executive authority who can be criticised at faculty meetings for any decision he makes and who must have the agreement of his faculty before making any major decision. He should be full time and appointed for a limited period, with eligibility for reappointment.

RELATIONSHIP WITH OTHER HEALTH PROFESSIONS

Particularly in the United States and Canada, there have been pressures on the medical schools to contribute to the problems of health care delivery by bringing together the health professions and medical auxiliaries in a way that encourages them to work as a team in caring for the sick. To promote this integration, at least six of the medical schools in Canada and many more in the United States have, or will have, health science centres which bring under one roof the various disciplines that are involved. To make this coordination possible, some form of central administration seemed to be indicated. Since schools such as those of dentistry, public health, nursing, pharmacy, and physiotherapy are usually reluctant to lose their autonomy by becoming subservient to the Dean of Medicine, it has become fashionable in the United States and Canada to create a vice-president or vice-principal of health sciences with overall authority in these areas. In 1972, 45 medical schools had a vice-president of health affairs, or its equivalent, as well as a dean, and in another 17 schools the dean also held the title of vice-president. In 51 medical schools, including most of the more prestigious, there was no vice-president of health affairs (*46*). These titles are not just a matter of semantics but represent a real difficulty in deciding how to introduce overall authority to coordinate the schools and faculties dealing with health affairs, without impairing the authority of the dean of medicine over what is the most important and complicated component of the health sciences. In some medical schools an ill-defined division of authority between vice-president and dean has led to uncertain lines of communication and to the instability that derives from divided leadership. The results of this can be disastrous which is why 17 medical schools, including several of the best known, have consolidated these titles in one person. If the dean of medicine also holds the title of vice-president for health sciences or health affairs, the other deans rarely object to his being the titular head of the health professions complex, while the faculty of medicine is left with a single leader to whom there are clear-cut lines of communication.

The same problem exists in Canada where six out of sixteen medical schools have a vice-president or vice-principal for health sciences but

the impression given is that this number will decrease rather than increase, mainly because of the difficulties which arise from dual leadership. The University of British Columbia has made an original approach to this problem by appointing a full time "coordinator" of the health sciences who is directly responsible to the university. He has his own independent budget and is responsible for facilities which serve all of the health sciences but has no authority over the conduct or budgets of the various faculties and schools involved.

HEADS OF DEPARTMENTS

In Europe, a professor is almost always the head of a department, while in North America most departments have several professors, sometimes a dozen or more, one of whom is the head or "chairman." The method of making these appointments is also different. It is a tradition in most West European universities, and in some a rule, that all vacancies in university posts, including chairs, must be advertized and it is usually assumed that the appointment will be made from among those who apply. The selection committee may be allowed to make an appointment by invitation but this is seldom done since it is taken as an indication that none of the applicants met the standard required. The care with which this selection is made varies. It is probably greatest in Sweden where membership on a selection committee is recognized as an onerous task that might occupy a considerable part of the individual's time over a period of several months. The advantages claimed for open advertisement are that it gives equal opportunity to those seeking promotion and is the simplest method of insuring that the field of potential candidates is covered. A major drawback is that the medical school may not get the best person available. Since applications are not confidential, a person with a senior appointment is unlikely to publicize the fact that he is applying for another position unless he has some assurance that he will get it. This tends to impede the healthy and competitive flow of talent from one medical school to another.

In the United States and Canada, applications for senior appointments are only rarely invited by open advertisement. If the chairmanship of a department becomes vacant, the usual procedure is for the dean to consult members of the department and to write to leaders in the relevant field asking for nominees. These are considered by an appointment committee which may recommend an appointment at this stage or may prepare a short list of those who should be asked to visit the department and be interviewed by members of the selection

committee. It is this system which encourages the free flow of senior staff from one university to another.

The heads of preclinical departments have the same responsibilities in most countries although in North America they are perhaps given a greater degree of authority over new appointments and promotions. The greatest difference is that in North America the department head is usually appointed for a period of 5 years or less, while in other countries he has security of tenure as head of his department until he reaches retirement age. One hazard of this security of tenure in positions of authority is that there is no remedy for the deterioration of a department that follows inefficient leadership. With the right person, security may generate a sense of responsibility, but it may have the opposite effect. To run an efficient department and to bring teaching and methods up to date involve a great deal of work and may raise questions on the need for new equipment and more staff. It is always easier not to change, leaving the impression of effortless efficiency and leaving more time for the head of a department to devote to his own interests. Another hazard is that the interests of the department may become restricted to the field of research that interests the professor, a narrow outlook which can influence what the student is taught. There can be little doubt that these defects are widespread in Britain, Australia, and perhaps to a lesser extent in Scandinavia. It is difficult to see how they can be resolved unless the system is changed. The change that is needed is not a drastic one; it would involve a limitation of security of tenure in positions of authority, a limitation which has been imposed without difficulty in other countries. Where this is done, the position of a professor and his salary should remain secure, but the appointment as head of a department should be only for a limited period which could be renewed. This is seldom a hardship because many inefficient heads of departments are individualists who would prefer to hand over administrative chores to others, allowing them to devote their time to their own work. There would, of course, be added expense since more professorial appointments would have to be made, but a good case can be made for this since the size of medical schools is increasing everywhere.

There are fundamental differences in the clinical departments in the countries I visited. In Britain and most Australian universities, the professors in the principal clinical subjects control only a small fraction of the beds in teaching hospitals. This fraction usually is called the professorial unit, which is only one of several units or "firms" in a clinical division controlled by the part-time staff. The professor is technically in overall charge of teaching, while the chairman of the division,who is elected by the staff, is more likely to be concerned with clinical and professional matters than with the promotion of academic developments in the teaching hospital. In matters of policy and of detail, the professor has only one vote among several, and the other

voters are mainly concerned with consulting practice. The problems that can arise from this division of authority are discussed in the section on teaching hospitals.

In the United States and Canada, chairmen of academic clinical departments are the heads of the corresponding department in the principal teaching hospital or, if there are several, in one of them. They are given extensive powers over departmental policies, new appointments, and promotions in relation to both hospital and medical school. To insure against the obvious hazards of this hierarchical system, the dean and the chairmen of departments are appointed for periods which may vary from 3 to 7 years, but most commonly are for 5 years. They can be reappointed, but only if they have earned the support of their faculty or department. This is usually an adequate stimulus to ensure that deans consult their chairmen and chairmen consult their departmental staff. This arrangement, with the safeguard of limited tenure, works smoothly and effectively although, of course, poor appointments are sometimes made. Lack of effective leadership is a more common complaint than arbitrary or despotic leadership. It remains true that a poor chairman can quickly spoil a good department.

In Scandinavia the organization of clinical departments has features in common with both Britain and North America. Each clinical professor has his own clinical department with security of tenure until retirement age. With the progress of specialization, this has resulted in a proliferation of independent departments and a degree of fragmentation of the major clinical disciplines that is causing concern. To rationalize the problems involved in dealing with so many departments, they are being arranged in six or seven groups, each with a head who would correspond with the "chairman" in North America.

It has been said that the authoritarian system of North America is undemocratic, but the word democracy can be interpreted in several ways. In England and Australia the heads of departments and the heads of "units" and "firms" in teaching hospitals have more or less absolute security in the continuation of their position of authority. Security of this kind can be associated with benign and efficient leadership, but it can be just as readily associated with inefficient despotism. Authority with security of tenure can be very undemocratic, while authority without this security can survive only if it has the backing of those who are being led. Security of tenure should not be expected in administrative posts since the purpose of tenure is to protect academic freedom, not to provide job security.

In some medical schools an integrated curriculum has reduced the authority of department heads over the teaching of their subject. With integration, the teaching of each system has sometimes become the responsibility of an interdepartmental committee, the members of

which are chosen usually by the dean or by a committee chaired by the dean. It is this interdepartmental committee that decides what will be taught and who will teach, often without reference to department heads. Less frequently, research is also controlled on an interdepartmental basis. An example of this interdepartmental control of teaching and research is given in Appendix II

STAFF

In the preclinical departments the staff:student ratios are difficult to establish since the contribution these departments make to other faculties and training schools varies from none to 75 percent of their time. In the medical schools of the United States, it has been estimated that less than half of the teaching load is devoted to undergraduate medical students (*136*).

In the clinical departments these staff:student ratios have more meaning, although the time devoted to research and to the teaching of graduates and students in other health professions varies considerably and is not taken into account. These ratios in some of the countries I visited are given in Table I (*44,47,48*). The United States has a clear lead in full-time clinical staff, followed closely by Canada and Sweden. It is unlikely that the distribution of part-time staff is of any particular significance since in some medical schools this amounts to a courtesy title with little or no involvement in teaching.

Table I—Part-time and Full-time Clinical Teachers

	Clinical students A	Part-time clinical teachers B	Full-time clinical teachers [a] C	All clinical teachers D	Col. A divided by Col. C	Col. A divided by Col. D
Great Britain (1966–67) [b]	6,687	1,629	419	2,048	16	3.3
U.S.A. (1967–68) [c]	16,252	—	15,435	—	1.2	—
Canada (1966–67) [d]	1,962	1,894	640	2,534	3.1	0.8
Sweden (1968–69) [e]	1,810	—	828	—	2.2	—
Australia (1970) [f]	2,505	1,349	254	1,603	9.9	1.6

[a] Includes those with limited private practice within the hospital.
[b] Ref. 44.
[c] Ref. 47 (No figures given for part-time teachers).
[d] Ref. 48.
[e] Includes students in 4th, 5th, and 6th years of study and 450 Assistant Physicians (Pers. comm.).
[f] Data obtained from 7 of the 8 Australian medical schools.
Note: In some countries more recent figures are available, but to use them would make comparisons less meaningful.

Except in the United States, full-time staff are paid by the government which controls directly or indirectly these staff:student ratios. Most of these countries also depend on part-time teaching staff paid either on a sessional basis or through fees for service.

The number of full-time clinical staff is increasing everywhere due to a variety of factors such as the needs of the specialties, the restriction of private practice in some countries, and in others the increasing attraction of full-time appointments financed by the government or from fees for service. Some of these factors are discussed in greater detail in Chapter 7. The high incidence of full-time clinical staff in the United States is due partly to the generous support which is given to research.

One difference in the countries I visited was the financial independence of medical schools from their universities in the United States, Sweden, and, to a lesser extent, in Canada, in contrast with the financial dependence of the other countries. It may seem paradoxical that it is the group with financial independence that has the highest proportion of full-time clinical teachers, the greatest involvement in research, and most emphasis on the scientific background of medicine in the clinical curriculum. One reason for this difference may be that financial independence allows the government to give medical education the support it needs.

I am not suggesting that medical schools should not have a close academic dependence on their parent universities. In the United States and more recently in Britain, all those without this academic dependence have not survived. The only exception in the other countries I visited is the Karolinska Institute in Sweden but since it was founded early in the 19th century, this institute has become, in many ways, the equivalent of a university.

FACILITIES FOR TEACHING AND RESEARCH

In the countries I visited, the facilities provided in most of the teaching hospitals in North America are equalled only in Sweden. Partly because of the conditions of federal aid in both the United States and Canada, the standards of new construction have been maintained at a high level with one-, two-, and four-bedded rooms, ample space for ancillary services, and generous provision for research. In a survey of 25 medical schools in the United States, the median space provided for teaching and research in departments of medicine, surgery, and pediatrics was 24,000, 20,000, and 11,000 square feet, respectively, in areas either within or close to the teaching hospitals (*55*). In departments of physiology the area provided was 13,000 square feet, including teaching laboratories.

In eight of the Canadian medical schools I visited, the space given to departments of medicine for research averaged 23,500 square feet, compared with 9,600 for physiology. This is in line with a survey made by the Medical Research Council of Canada in 1968 (*110*) which indicated that in Canadian medical schools the average research space in net assignable square feet was 32,000 divided among the basic (preclinical) sciences, 15,000 in the paraclinical sciences, 29,900 in medicine and the medical specialties, 9,900 in surgery and the surgical specialties, and 8,800 in multidisciplinary laboratories, making a total of 95,800 square feet. It was estimated that this total would increase to 217,000 square feet in 1972–73. These averages were for the 14 medical schools existing at that time, including two that were new and not fully developed.

In 1967 the average sums received by Canadian medical schools as grants for research from various agencies amounted to $654,000 in the preclinical sciences, $260,000 in the paraclinical sciences, $510,000 in medicine and the medical specialties, and $165,000 in surgery and the surgical specialties, making an average of $1.589 million for each of the 14 medical schools. Fifty-eight percent of these funds were from federal sources (*50,111,112*). In the same year, the average for research in 89 medical schools in the United States was $5.317 million, 82 percent of which came from federal funds. Support for research is on a more lavish scale in the United States than in Canada, but in both of these countries the emphasis on clinical research is much greater than it is elsewhere. The roots of this difference lie in the structure and staff of the departments themselves. In Britain and Australia, the academic clinical departments or professorial units are only a small part of the departments of medicine in the teaching hospitals, while in North America the clinical and academic departments are united as a single entity. Partly for this reason there is a much larger number of full-time academic appointments and greater emphasis on research. A byproduct of this, which has wide educational implications, is that most medical schools in North America have a variety of specialists who, in addition to clinical expertise, have a working knowledge of the basic sciences applicable to their specialty. The contribution which these individuals make to integration of preclinical and clinical subjects is discussed in the sections dealing with undergraduate education.

In the survey of 25 medical schools in the United States referred to above (*55*), the median numbers of beds available for teaching in the departments of medicine, surgery, and pediatrics was 457, 459, and 123, respectively. With a median of 82 students in the clinical years, these are remarkably high figures but they include affiliated hospitals used more for the training of interns and residents than undergraduates. In the 22 schools I visited in the United States and Canada, the number of beds controlled by the department of medicine in the

teaching hospitals that take an active part in undergraduate teaching was usually between 150 and 300.

Emphasis on the relevance of the patient's circumstances to his disease and the impact of his illness on his family rightly are being stressed by those who believe that medical education should be oriented to the family and community. If these and other social implications of disease are to be a part of medical education, provision for this kind of discussion must be made in close proximity to the wards. This is discussed more fully in Chapter 7. The space provided in the United States and Canada for teaching in the wards varies from none to one teaching room for every 10 beds, the latter being considered ideal. It is difficult to state an average, but from the figures I was given in the 21 medical schools I visited, there is about one teaching room for every 20 beds. This usually was considered inadequate.

In new construction of teaching hospitals, the Ministry of Health of Ontario has recommended three seminar rooms, a student room, and four multipurpose rooms that could be used for teaching for each block of 60 beds (*59*). This realistic yardstick or its equivalent is being used in the construction of several new health centres in Canada. These facilities are usually provided by the teaching hospitals which are also responsible for their maintenance.

In Britain the Dean of Medicine at the University of Newcastle, who is now its Vice Chancellor, wrote as follows: "it would be hard to find a more telling example of public squalor in an affluent society than the appalling physical conditions under which distinguished physicians and surgeons are expected to teach and practice twentieth century medicine than in some of London's most famous hospitals. . . . It is paradoxical that the two decades that have witnessed the greatest scientific advance in the history of medicine have also seen a decline in British hospital building unparalleled during the preceding century," (*113*). This may seem an exaggerated statement of the misfortunes of the teaching hospitals, but I am sure it is true. I am also sure that these troubles are not confined to the medical schools of London. Space for teaching and research and for developing the new frontiers of medicine is equally deficient in many of the teaching hospitals in the provinces and in Scotland (*114*). Some are better off than others and in these it is usually found that the space was provided either from endowments or from a foundation. This is a deficit which has accumulated over the past 25 years and which clearly shows a lack of perspective in establishing priorities. To contrast the teaching hospitals of Great Britain with those of Scandinavia, North America, and other countries is a depressing experience.

The Royal Commission on Medical Education has stated that "the undergraduate years can be regarded solely as part of the basic university education in medicine," (*44*). If this outlook is to be

implemented, adequate facilities for seminars and discussion groups should be available in the teaching hospitals. There should be rooms immediately adjacent to the wards for the kind of open and frank discussion which cannot or should not take place by the bedside. In most of the teaching hospitals I visited these facilities were lacking.

The space available in Britain for research in clinical departments is usually considerably less than in the preclinical departments, which seems paradoxical in a country that is stressing the importance of applied research. In Britain the space for research given to departments of medicine is a small fraction of that given in North America, while the space for physiology in these countries is about the same.

What is generally referred to as the Pater formula describes the responsibilities of the University Grants Committee and the Department of Health and Social Security in providing facilities for teaching and research in teaching hospitals (*60*). This description is in such general terms, however, that it is difficult to assign responsibility for the deficiencies that are so obvious. The responsibility for operating costs in areas that are shared by the university and the hospital is also often disputed, particularly in laboratory areas, since no general guidelines are given. In the two new teaching hospitals, however, a schedule of accommodation has been agreed at interdepartmental levels which sets out in some detail what should be provided. For each ward block of 60 beds the hospital will provide a clinical research room of 400 square feet and a teaching unit of 700 square feet which is perhaps adequate but certainly not extravagant. The university will pay the hospital for the upkeep of the areas it has provided.

In Sweden most of the teaching hospitals have been built or completely renovated since World War II. Facilities for teaching and research that are provided by these hospitals are very good and compare favourably with the average in North America. There are usually three or four patients to a room, and it is unusual to have more than six. Rarely is there any deficiency in accommodation for students, including seminar rooms and rooms adjacent to the ward for clinical discussion.

In general, the space devoted to research in the teaching hospitals is also generous, any deficiency usually being due to the unambitious outlook of the head of the department when the building was planned. In the teaching hospitals, as in the preclinical departments, research is high on the list of priorities as assessed by the politicians, the public, and the medical profession. It is this outlook that has brought distinction to Swedish medicine.

In Australia the distribution of space for research within the faculties of medicine is of considerable interest. Before World War II, the emphasis on space for research in all countries extended through the preclinical departments and on to microbiology and pathology, with an

abrupt decline in the space provided for the clinical departments. Since World War II, this position has been reversed in many countries but not in Australia, where the facilities for research in the major clinical departments remain much less than in the preclinical. For instance, departments of physiology usually have twice the space for research that is given to departments of medicine, a distribution resembling that of England but the converse of North America. Some departments are bustling with energy and bursting at the seams for more space while other, often larger, departments have an atmosphere of tranquility with more than enough space for the leisurely research that is being done. The impression given is that distribution of space is more often according to tradition than actual need.

An unfortunate feature of most teaching hospitals in Australia, also found in Britain and Ireland, is the "teaching block," which houses the facilities for clinical research and teaching and is usually quite separate from the hospital. As well as being inefficient, this separation serves to emphasize the dichotomy between the teaching hospital and its medical school (see Appendix VIII.).

New Zealand, which had followed the pattern in Australia, has taken the lead in realizing that the barriers between its teaching hospital and medical school must be broken down if they are to work together efficiently and in harmony. In the new ward block of 600 beds in Dunedin, 20 percent of the cost will be provided through the university so that patient care, teaching, and research are established on common ground as a joint responsibility. The schedule of accommodation, which had been approved when I saw it, will give Dunedin a teaching hospital that compares favourably with the best modern standards.

It is in the teaching hospitals that the facilities for teaching and research show the greatest variations in the countries I visited. If the lines of responsibility are clearly defined or accepted, as they are in North America, Scandanavia, and New Zealand, the hospital and medical school work together to provide an amicable solution to what must be a cooperative effort if it is to be efficient. If lines of responsibility are not clearly defined, as in Britain and Australia, both hospital and medical school are usually reluctant to accept the liability of providing these facilities.

The emphasis on facilities for teaching and research is greatest in the medical schools of the United States, Canada, and Sweden and least in the clinical departments of Britain and Australia. The provision of rooms in teaching hospitals for small discussion groups is everywhere deficient, except in a few hospitals that have been built recently.

Chapter 5
MEDICAL SCHOOL EXPENDITURES

In the United States, medical school expenditures increased from $72.5 million for an enrollment of 22,739 students in 1947 to $1,097.4 million in 1967 for a total enrollment of 34,304 students. The compound gross rate of increase of student enrollment was 2.1 percent per annum, while expenditure increased by 14.6 percent per annum or by 8.1 percent if corrected for inflation (*6,8,*). It should be remembered, however, that during this period there was a considerable increase in emphasis on research and on the responsibilities of medical schools for teaching science students, students in various medical technologies, graduate students, interns, and residents.

In 1970–71 the average expenditure of the medical schools, including research but excluding the cost of construction, student aid, and teaching hospitals, rose to $19,680,000, with a range of expenditure in the various medical schools from $4.946 million to $67.068 million. Forty-six percent of this expenditure was for regular operating expenses, the other fifty-four percent being spent on sponsored programs, half of which were research. Forty-five percent was derived from federal funds, mostly for research and training grants. Grants for sponsored programs not directly related to research totalled $229 million or an average over $2 million for each medical school (*29*).

In 1972–73 the average expenditure rose to $23.556 million, with a range in the medical schools from $5.725 million to $76.920 million. The average support for general operations was $10.183 million, a 10 percent increase over the previous year. The distribution of funds was much the same as in 1970–71, which is described above, but there was an increase in the proportion of revenues from professional fees which, in 1973 at an average of about $1.5 million per medical school, was the third largest source of operating revenue (*138*).

A little-publicized but interesting and important trend over the past 10 years has been an increasing dependence of many medical schools on fees for service from medicare and medicaid as well as private patients. Many medical schools are making an organized effort to increase this source of income to compensate for the loss of research and training grants and in some it has already become the principal source of unrestricted funds. It does not appear to be generally

realized, however, that this use of funds derived from patient care and community services carries the same risks as dependence on funds for research. Insurance companies, agencies for medicare and medicaid, and others are already questioning the extent to which these funds are being used for medical education (*29,95*).

State medical schools receive substantial appropriations from the state, but these are sometimes rigidly controlled by a line by line budget with central supervision of new developments. This leaves the university little authority over the development of its medical school (*9*). The appropriation for the medical school may be separate or included in the university budget but the boards of governors is appointed or elected by the state legislature which has full access to the financial records. Some of the states make payments to private medical schools based on the number of students enrolled, while in others this contribution is restricted to students who are residents of the state. In some, support is given only to state medical schools, while in others special financial incentives are given to all medical schools to increase student enrollment (*8*). In many if not most states these contributions have conditional or restrictive clauses which affect the medical curriculum. Perhaps the most clear-cut example of this concerns the exposure of students to teaching in general practice. There is also pressure to give preference to state residents. Of those admitted to all state medical schools in 1971, 88 percent were residents of the state compared with 47 percent in the privately owned medical schools (*29*).

The financial support of medical education has been described in general terms in Chapter 1, but additional information is available on how the medical schools spend their income. At intervals of approximately 7 to 8 years, the medical schools are subjected to a searching inspection by a team of three to six medical educators selected by the Liaison Committee of the American Medical Association and the Association of American Medical Colleges (see Chapter 3). Prior to these on-site visits, the medical schools supply detailed information on administrative and academic matters. In the 2-year period from 1966 to 1968, 26 schools were inspected and the data on 25 of these recently have been reported. These were found ". . . fully accreditable and therefore by definition adequate." (*55*).

The annual cost ranged from $3.68 million to $49.7 million, with a median of $11.95 million for an enrollment of 91 new students. About two-thirds of these sums were derived from sponsored programs and one-third from regular operating funds. The pattern among smaller schools with a class enrollment of about 70 students was a total expenditure of $5.5 million, with $3 million coming from regular operating funds.

From this survey it was possible also to define the median cost of individual departments during the period 1966–68. Departments of

physiology and biochemistry each had an average budget of approximately $0.5 million, two-thirds of which was derived from sponsored funds. Medicine, which not uncommonly was responsible for more than a quarter of the total school expenditure, had a budget of about $2 million, three-quarters of which came from sponsored funds. The budget for surgery was about $1 million, half of which was from sponsored funds.

An intensive study of 12 selected medical schools by the Association of American Medical Colleges in 1973 indicated that the annual cost, in 1972 dollars, of undergraduate medical education per student ranged from $16,000 to $26,000 (with an average of $20,000) which included an allowance for research of 15 percent of the time of those in the clinical departments and 40 percent of those in the basic science departments. The cost of this research component ranged from $3,700 to $10,000 per student (with an average of $6,500) (*136*). "When account is taken of contributed services and the funds for education derived from the joint activities of research and clinical activity, the estimates of the annual education cost of the M.D. program not financed by contributed services or income for research and clinical activity range from $9,000 to $19,000 per medical student, or an average of $12,000 per student." (*137*). This is reasonably close to an estimate of $9,700 per student per year made by the Institute of Medicine of the National Academy of Sciences using different methods and different medical schools (140).

STAFF SALARIES

It has been estimated that in 1964 the average net earnings of practicing physicians in partnership was approximately $28,000 per year, while in medical schools the average salary in the clinical departments was approximately $19,000 and in the basic medical sciences $13,000 (*8*). In 1970 these sums had risen to $42,000 for practicing physicians, $27,000 in clinical departments, and $19,000 in the basic sciences or, if adjusted for inflation over this period, to $34,000, $23,000, and $17,000, respectively. From these figures it is clear that the income of all three groups, after adjustment for inflation, has risen by over 20 percent in a 6-year period. In 1971, 49 percent of full-time faculty staff drew the whole or part of their salaries from research funds (*45*).

In clinical departments of the United States, the average salary in 1973–74 of 633 chairmen of departments was $48,000, of 2,348 professors it was $39,300, of 2,776 associate professors it was $32,400, and of 4,313 assistant professors it was $26,800. All were employed on

a strictly full-time basis. The comparable figures in the basic science departments of these medical schools was $35,800 for 503 chairmen of departments, $28,100 for 1,371 professors, $22,100 for 1,428 associate professors, and $17,700 for 1,957 assistant professors (*135,149*).

Medical school student:full-time faculty ratios have been decreasing steadily but have remained at 1.5 since 1969. Since undergraduate medical students are responsible for only about 40 percent of the teaching load (*45*), this ratio should be based on total student equivalence. Calculated in this way, the ratio has remained at 3.7 since 1969 (*29*). Now that many medical schools are faced with insufficient funds to meet their operating costs, the possibility or even likelihood of staff reduction or salary cuts is being widely discussed. In schools where those supported by "soft money" were given security of tenure, the legal aspects of these contracts are being considered and in some it is believed that a general reduction in salaries distributed to all of those with tenure would be the only answer. In others, including most of the state schools, legal tenure has been given only to those paid by the state, and in these schools the insecurity of those without this contract has become apparent.

In Canada, the average operating costs of 12 medical schools in 1970–71 was $4.4 million, with an additional average of $3.2 million for research, making $7.6 million in all (*15*). These operating costs are less than half of those in the United States described above, while the expenditure on research is about one-third. I could obtain only departmental costs from a few medical schools on a confidential basis but the impression given was that these were distributed in much the same proportions as in the United States.

Information on medical school expenditures in the other countries I visited was even more difficult to obtain. In only one school in Britain was I shown a printed statement of its expenditures for 1970–71. With a student entry of over 100, its annual expenditure was about £1.25 million, 50 percent of which was spent on the salaries of teachers and technicians, 30 percent on maintenance and administration, and 20 percent for various grants for research. The general impression I got from the verbal statements given in the medical schools I visited was that the average cost of a medical school with a student entry of about 100 would be in the vicinity of £1.5 million, including grants for research.

In Australia I also saw only one printed statement of medical school expenditures. With an annual entry of over 150, its annual expenditure in 1967 was about $2 million Australian, 60 percent of which was spent on salaries, 20 percent on maintenance, and 20 percent for grants for research. I visited all the medical schools in Australia and gained the impression that the support given to medical schools was slightly less than in Britain.

These medical school expenditures do not include the sometimes large contribution to medical education made by teaching hospitals. In Britain, the part-time staff is allowed to teach during sessions for which they are paid by the Ministry of Health, while elsewhere they may be paid through fees for clinical services. In the United States and Canada the teaching hospitals usually provide the facilities for teaching and research with federal assistance, while elsewhere these are usually provided through the university.

The cost of educating a medical student is a debatable figure and does not take into account the other contributions the medical school should be making to the training of graduates and to the instruction of those in other health services and in other faculties of the university. The total expenditure of a medical school is, however, a matter of accounting.

The total operating costs of the medical schools in the United States are far beyond the reach of most other countries. The cost of research is a major factor, but even if this is excluded, the regular operating expenses of the medical schools in the United States are twice those of Canada. In Britain operating expenses, excluding research, are probably a little more than half those of Canada, while in Australia they are probably a little less than half.

Chapter 6
MEDICAL MANPOWER

The principal stimulus to increase public support of medical schools is shortage of doctors, particularly those involved in primary care. In England, the United States, Canada, and Australia, this shortage would be much more serious without the influx of graduates from foreign medical schools, mostly from Asian countries that can ill afford to lose them. The rate at which new medical schools are being built ranges from Australia, New Zealand, and the Scandinavian countries, which have doubled the number of their medical schools since World War II, to Britain where only two new medical schools have been established since the turn of the century. All are also increasing the number of students in each medical school, a common objective being student entrants of about 200. Given the facilities, the preclinical departments can handle this number, but no teaching hospital of reasonable size can provide for more than 60 to 90 students. For this reason many medical schools are developing two or three teaching hospitals into "clinical schools," each with its full quota of academic staff so that there can be fair competition between them. Operating more than one "clinical school" long has been a successful tradition in a few medical schools; this concept is now spreading rapidly.

In all countries it is the minister or secretary of health who is principally concerned with medical manpower and the fact that these health ministries are taking an increasing part in decisions which affect the medical schools is passing almost unnoticed. Pressures are being exerted by them to increase student entrants to shorten the curriculum and orient it toward the community, to take part in community health services, and to train more medical auxiliaries and assistants so that physicians can use their time more economically.

In the United States it is generally agreed that there is a serious shortage of physicians, with some estimates indicating a deficit of about 50,000. This shortage would be much more serious without the 57,217 graduates from foreign medical schools (not including 6,174 Canadian graduates) who, in 1970, represented 17.1 percent of all physicians in practice and about 25 percent of the new physicians entering practice

in the United States in 1971. Only a small proportion of these are Americans who go abroad for their medical education. Most come from countries where the shortage of physicians is much more acute than in the United States. Of the 7,000 doctors admitted with immigrant visas in 1972, 75 percent were born in Asia. The impact of this flow of physicians on the medical services of the donor countries is now causing international concern (*10, 12, 29, 115, 116, 117, 118*).

In 1974, the Department of Health, Education and Welfare published an estimate of what the future supply of health manpower in the United States may be if the manpower production system continues to operate in the same direction it was headed as of late 1972 (*142*). The supply of active, U.S.-trained physicians is projected to increase by about 60 percent, i.e., from 263,000 in 1970 to 429,800 in 1990. During the same period, the supply of active, foreign-trained medical graduates is projected to increase from about 60,000 to 164,000. In 1972, 11,427 foreign medical graduates were admitted to the United States, of whom 7,144 were immigrants and 4,283 non-immigrants (*142*). However, it should be remembered that the "distinction between immigrant and exchange visitor status has been blurred by an easing of the process by which exchange visitors in the U.S. can transfer to immigrant status". (*143*). It seems improbable that the foreign countries involved will permit this drain on their resources to continue, much less allow it to increase.

Over the 10-year period 1963 to 1972, the number of medical schools in the United States increased from 87 to 108 and the number of first-year enrollments increased from 9,063 to 12,355. In 1974–75 the number of medical schools has increased to 115, with a first year enrollment of 14,763 (*29, 139, 141*). This rate of increase is most unlikely to meet either the needs of the country for more physicians or to reduce dependence on the immigration of doctors from countries that can ill afford to lose them (*119*).

Among American graduates, there is evidence that it is favourable opportunity that attracts physicians to any particular area and that more move out of the state where they graduated than remain (*8*). Those prosperous states with attractive climates and rapidly growing populations can produce less than their share of physicians and yet have no shortage. The free flow of physicians from one state to another cannot be prevented, which is one of the reasons why medical education should be a federal rather than a local responsibility.

In Britain, reviews of medical manpower have led to the inescapable conclusion that Britain is now faced with a serious shortage of physicians which will become even more acute in the future. This shortage has been masked by a flow of doctors from underdeveloped countries and obviously this dependence should not be allowed to continue. Unless the present output can be quickly increased, it is

estimated that by 1975 Britain will be some 11,000 short of the number of practicing doctors necessary to maintain the National Health Service at a satisfactory level. The government, which has been responsible for comprehensive medical care for over 25 years, has paid scant attention to the future. Scotland and Ireland produce more than enough for their needs, but England depends on immigration of doctors for the maintenance of its health service. Precise figures are not available but there is an annual inflow of approximately 3,000 doctors from overseas and a return flow of 2,300, leaving an annual gain of approximately 700. (*56*). In 1969, 49 percent of all doctors in training posts were from overseas, while 12.5 percent of those in general practice and one-quarter of new general practitioners joining the health service in 1970 were born overseas.

All agreed that there should be a substantial increase in the output of English graduates and yet, since 1893, only two new medical schools have been established in Britain, one in Nottingham, one in Southampton, and a clinical school in Oxford. In lieu of new facilities, medical schools have had to increase student numbers and will have to increase them still further. In 1969 there were 2,139 graduates in medicine from the United Kingdom (*120*). It is recommended that this number should be increased to an average of 3,150 during the years 1975–79 and 3,850 during the years 1980–84. These objectives are to be achieved by expanding the annual intake of students in medical schools to approximately 200 a year (*44*).

In spite of these shortages, the number of graduates from England and Scotland that emigrate to other developed countries, mostly North America and Australia, has been estimated at between 300 and 400 a year. (*44, 56, 121*). The principal reason for the emigration of physicians from Britain to other English-speaking countries is that in Britain, due to a lack of time and opportunity, they cannot practice the kind of medicine they wish to practice. The salaries earned in general practice are not unreasonable compared with those elsewhere, nor is the prestige of the general practitioner less. The number of patients seen during consulting hours and the number of forms to be filled in for the bureaucrats, many of which are difficult to justify, can lead only to frustration. It is from difficult and interesting clinical problems that the practitioner improves his clinical knowledge, but most of these problems have to be handed over to the district hospital with which he has scant contact. Such a system tends to stifle any ambition to become a better doctor. It is true that the Todd Report (*44*) recommends various improvements in the conditions under which general practitioners work, but unless more active steps are taken than are indicated and unless large sums of money are made available, it will be a long time before these improvements materialize.

In Canada, the number of medical schools has increased from 10 to

16 since 1945, and student numbers in the older medical schools have also increased. In 1964–65 there were 810 medical graduates, increasing to approximately 1,280 in 1971–72 and to 1,778 in 1973–74. This represents a doubling of the output over a period of 10 years (*122, 111, 138*). In 1970 there was one graduate in Canada for 20,500 of the population compared with 24,000 in the United States and 29,500 in Great Britain in 1966 (*123*). The number of Canadian graduates who emigrate to the United States is more than counterbalanced by an inflow to Canada from other countries. British Columbia, which is a prosperous and expanding province with many attractions, has one physician for each 653 of the population, which is the highest concentration in Canada (*124*) while its medical school graduates only one physician for 41,000 of the population which is half the average national output and the lowest in Canada (*123*). This maldistribution of effort is characteristic of many countries and is a strong argument in favour of financial support of medical education by the federal or central government.

The problems in Australia and New Zealand are the same as in Britain but in a less acute form. In Scandinavia, the flow is into Sweden, mostly from Norway and other European countries.

There are some who deny that there is a shortage of medical manpower in the United States or in Britain, but none can deny that both of these countries have depended on a flow of physicians from less developed countries that can ill afford to lose them.

Chapter 7
TEACHING HOSPITALS

In most countries and in this report, the term teaching hospital is confined to those that play a major part in the instruction of undergraduate medical students. It does not include those that are used only for postgraduate instruction. Some of these teaching hospitals are owned by independent corporations, others by the state and a few by the church, but all, except in the United States, are subject to control by the government which pays the cost.

RELATIONSHIP WITH MEDICAL SCHOOLS

Medical schools and their teaching hospitals everywhere accept the principle of working together with the common objective of high standards of patient care, teaching, and research but it is sometimes more difficult to convert this objective into reality. There is ample evidence that this objective is more likely to be achieved if certain conditions are fulfilled. Perhaps the most important of these conditions is adequate representation of the medical school and of the teaching staff on the board of governors of the hospital so that the board can be accurately informed on the merits of competing claims for support.

In Britain and in several of the provinces of Canada, this representation is mandatory but the conception of what is adequate representation ranges from two-fifths of the governing board in Britain to one or two representatives in some of the provinces of Canada. In many of the teaching hospitals in Australia and a few in the United States, Canada and New Zealand there are no medical representatives, on the principle that there should be no conflict of interest, an arrangement that almost always leads to discord. The evidence suggests that good cooperation between hospital and medical school is unlikely to be achieved unless both teaching staff and the university are represented on the governing body of the hospital. It is not enough to have only university representatives unless some of them are directly concerned with the problems that arise in a teaching hospital. A substitute for this

representation, one that is rarely effective, is a liaison committee that includes representatives of the governing bodies of both hospital and medical school.

Another important factor in the relations between the teaching hospital and its medical school is the background and outlook of the hospital's chief administrative officer, since he is usually the most important connecting link between the two institutions. He has wide authority over matters that are vital to the medical school but his primary loyalty and immediate responsibilities are to the hospital.

The administration of teaching hospitals has become so complex that most countries are changing from the medical executive director or medical superintendent to the lay executive director who has had business training as well as experience in hospital administration. In Sweden and England this transition is almost complete, while in most of the others it is moving rapidly in the same direction. Only in Scotland, New Zealand, and two states in Australia is the government still in favour of the medically qualified executive director.

One reason for this change is that very few who are medically qualified have the training or ability for administrative responsibility. Some medically qualified executive directors are dedicated to their task and are highly respected members of the hospital community, but more often efficiency becomes impaired by concern over the extent of their authority. They are usually recruited either from among those who became disenchanted with the practice of medicine or those who have failed in their chosen careers. Whatever the reason, it has been difficult to recruit men of the right calibre. They rarely have higher degrees or qualifications and in the teaching hospitals they find themselves in a position of power over the leaders of the profession who have scant respect for medical administrators. In these circumstances the easiest way to assert one's authority is to be obstructive, particularly to any suggestion of change. The medical superintendent is especially well placed to be an effective obstructionist because he usually has the last word in the distribution of space and is often the closest connecting link between the Board of Governors and the staff. In the interests of morale as well as efficiency, the authority of the chief executive officer, whether medically qualified or not, should be modified by good lines of communication between the hospital board and both the university and the medical staff of the hospital.

The extent of this discord between medical superintendents and medical staff and the harm it can do to the efficiency of the teaching hospital have not been generally realized because it is a personal matter that is rarely discussed and even more rarely reaches print. This conflict can perhaps be seen at its worst in Australia and New Zealand.

The executive director who is not medically qualified is less likely to be a misfit. Professional jealousies do not arise and the director has to seek the

advice of his medical colleagues on medical matters. I have not encountered a teaching hospital that would prefer to return to a medically qualified executive director once it had made the change.

FINANCIAL SUPPORT

One of the most common sources of friction between the medical schools and their teaching hospitals is the division of financial responsibility for activities concerned with teaching and research as well as patient care. Various estimates indicate that teaching hospitals cost between 15 percent and 35 percent more than other hospitals. In Canada, where the Federal Government shares hospital costs, teaching hospitals cost about a third more than non-teaching hospitals (*49, 50*). In Sweden the cost is about 25 percent more than other specialized general hospitals, about half of this differential being paid by the Federal Government. In England the differential is about the same as Sweden (*51, 52*), while in Scotland, where the teaching hospitals are responsible to the regional boards, the differential is only about 15 percent (*53*). This differential is in part due to the contribution of teaching hospitals to teaching and research (*54*) and in part to the higher incidence of problem cases that require expensive diagnostic and therapeutic procedures and skills. Several attempts have been made to assess how much of this differential is in fact due to the teaching load but these have been fruitless since it is impossible to divide with any accuracy time and effort spent on patient care, teaching, and research. For this reason most countries make an extra contribution for increased staff but usually leave it to the teaching hospital and medical school to decide what proportions each should pay for the special facilities and services that must be provided. This can lead to unproductive debate as to what belongs to patient care and what to teaching and research and to argument over which government departments should pay for what may be insignificant amounts. This kind of argument is frustrating and often leaves both sides convinced that they are getting the worst of the bargain. Rule of thumb decisions by central authorities responsible for health and education, leaving little or no room for peripheral argument, are more efficient and more conducive to a cooperative atmosphere. This is done in Scandinavia and most of the provinces of Canada.

Almost all teaching hospitals have to submit a line by line budget and in most this must be followed closely unless special permission for deviations are obtained. This inhibits change and leaves a long lag between the recognition of a need and the implementation of a planned response. Most countries are now changing to the award of a

block grant. This is to the advantage of the hospital since what is saved by economies in one area can be spent on another, and it is to the advantage of the government since there can be no arguments on points of detail over the funds provided.

In all countries there is a trend toward decentralization of authority by transferring it to smaller regions that are also responsible for other aspects of health and social care. This change may benefit the medical schools in several ways, particularly by allowing greater flexibility in the provision of facilities for teaching, but experience shows that these benefits can be outweighed by the hazard of inadequate financial support. Where hospital costs are a local responsibility, the needs of the patient are usually given priority over the needs of teaching and research. This seems reasonable but is a short-sighted policy, since the quality of health services of the future must depend on the quality of the doctors who are being trained today. Medical education should be a national and not a local responsibility, and only if funds are earmarked by the state for the special requirements of the teaching hospitals will they get the funds they need.

CLINICAL DEPARTMENTS

In the United States and Canada, the chairman of academic clinical departments are the heads of the corresponding department in one of the principal teaching hospitals, while in other hospitals used for teaching, the heads of clinical departments are usually given the appropriate academic rank. None of these administrative appointments has security of tenure and in many medical schools they are reviewed every 5 years. The beds in these teaching hospitals are nominally under the direction of heads of departments but usually they are subdivided into a number of "services" some of which may involve subspecialties, each with a head of service. Day-to-day care is supervised by "attending" physicians and surgeons, nominated by the heads of the clinical departments or heads of services, usually to serve for periods of from 1 to 3 months. The line of clinical responsibility is clearly from the resident staff to the attending physician to the head of service, with final authority in the hands of the head of the department, usually called the physician- or surgeon-in-chief, who in fact rarely interferes with clinical decisions. The control of what is taught and who will teach is in the hands of the academic head serving in his dual capacity as physician- or surgeon-in-chief and "chairman" of the department.

A characteristic of teaching hospitals in the United States and Canada is the development of subspecialties with their own consultant and outpatient services, their own laboratories with involvement in research,

their own weekly conferences, and sometimes their own beds and resident staff. There are the usual complaints that these are displacing "general" medicine and surgery but with one person in overall charge of the clinical and teaching functions of the department, there is little difficulty in fitting these specialities into the main stream of both undergraduate and postgraduate education. It is in those countries that do not have this unified leadership that difficulties arise.

The staffs of teaching hospitals in the United States and Canada are either full time, geographical full time, or part time. An increasing number of medical schools, including many of those with established reputations, prefer the full-time system of renumeration which does not given any additional reward from fees for service. This penalizes those who can earn the most, such as radiologists, anaesthetists, and particularly surgeons, but once the system has been established it is surprising how little discord arises. The majority of medical schools adhere to geographical full-time appointments, with practice confined to the teaching hospitals but with a ceiling on the earnings that can be retained. This ceiling, which is variable, is usually negotiated between the head of the department and the dean. In a few medical schools the limitation of earnings is based on the time that can be devoted to private practice, usually two half-days a week. Emergencies cannot be fitted into this kind of timetable nor can ward visits or consultations, and most agree that it is the least satisfactory arrangement since it encourages the individual to devote his energies to his private practice rather than to the interests of the medical school.

The earnings of geographical full-time staff in excess of the "ceiling" are distributed in various ways. In some medical schools these earnings are used for general purposes but more often a certain proportion is returned to the department in which it was earned to be used for that department's development, while the rest may be used by the dean for general purposes or earmarked for a building fund. The proportions vary but a common contribution to the dean's fund in the schools I visited in the United States was between 8 and 15 percent of excess earnings.

I believe that the full-time system which does not give any additional rewards from fees for service is preferable for those with clinical appointments that are primarily academic. Where this is not feasible, the best system of reconciling a full-time appointment with fees for service is a "geographical full time" appointment with a uniform financial "ceiling" that applies to all departments. This system has been adopted by several new medical schools without difficulty but can be difficult to introduce in well-established medical schools where wide differentials already exist. The amount received from fees for service should be less than the salary from the university. Earnings in excess of the "ceiling" should be reserved for the payment of those whose

involvement in teaching or research does not permit them to reach the ceiling. Of the remaining income, some may be returned to the department for its development and the rest reserved for general faculty purposes.

The number of faculty paid on a part-time basis is small but there is a much larger number of volunteer faculty who receive little or no remuneration. In 1971–72 there were, in the United States, 29,469 full-time faculty, 7,403 part-time faculty, and 53,732 volunteer faculty in 107 medical schools serving 43,650 medical students (*29*). By 1973–74 the number of full-time faculty had increased to 34,392 and the number of medical students to 50,881 (*138*). In a survey of 25 of these medical schools made in 1967–68 the median number of full-time staff was 51 in departments of medicine, 25 in surgery, and 17 in pediatrics (*55*). With the clearly defined leadership of the chairman of the academic department who is also physician- or surgeon-in-chief of the hospital department, there is rarely the rivalry and distrust between various segments of the clinical staff which is common in other countries. Since positions of authority in medical schools do not carry tenure, heads of clinical departments who do not command the loyalty and respect of their staff can be displaced.

Most agree that, in the recruitment of clinical staff and heads of clinical departments in the United States, emphasis on research has been at the expense of clinical ability but this is changing. Several of the schools I visited have in the past looked for distinguished research workers who have an adequate clinical background; now they are looking for excellent clinicians with an adequate research background. The decrease in federal support for research already has been discussed and it seems likely that the increase in staff that will follow any increase in student numbers will be recruited mainly from those whose primary interest is patient care and teaching, rather than research. This desire to recruit clinically oriented staff is particularly strong in university hospitals that have no part-time clinical staff.

In Britain and Australia, the professor of medicine is usually one of four or five physicians in the teaching hospital each of whom has his own beds, his own waiting list, and his own staff. These are called "firms" and the one which belongs to the professor of medicine is usually referred to as the professorial unit. In deciding matters of policy and detail, the professor is only one among several, the others being mainly concerned with consulting practice. A recent Royal Commission in Britain stated that this traditional division of the department into "firms" has "hindered the emergence of any clearly defined educational policy for the hospital as a whole, impeded the formation of cohesive teaching teams, and restricted the freedom of medical schools to change their aims and methods." (*37, 44*).

Since the professorial unit represents only a small fraction of the beds in the specialty, the influence of the professor on departmental affairs is relatively small. In Britain and Australia fragmentation of clinical departments into units or "firms," one of which is the "professorial" unit, has provided a system which is becoming untenable. Not only does it impede or prevent coordination but it also tends to divide the staff into three factions. Usually the largest group is the part-time staff of specialists or "consultants" who are fighting a rear-guard action to retain their traditional authority. Another group, growing in numbers, is the full-time employees of the hospital, sometimes suspicious if not intolerant of university influence, whose loyalties clearly are oriented toward the hospital administration. The third and usually the smallest group is the "professorial" unit that is appointed and paid by the university. This uneasy situation, which is more acute in Australia than in Britain, can be complicated further by joint appointments with agreed proportions paid by hospital and university, but with different salary scales and different conditions of service.

Fragmentation of the major clinical departments has also been encouraged by the departmental independence gained by many of the subspecialties. For this reason the Ministry of Health in Britain plans to follow the pattern in North America and recently adopted in Scandinavia, i.e., to introduce heads of major disciplines, such as medicine and surgery, who will be responsible for coordinating the various splinter groups in the interests of patient care. Britain, however, has evaded the main issue in teaching hospitals by recommending a clinical head who is elected by the staff, leaving the responsibility for teaching with the professor who is appointed head of the academic department. To have one clinical head and another academic head in the same discipline in the same hospital is a combination that has been tried elsewhere without success. For one person to head both the clinical and academic aspects of a discipline seems more logical, and this is the pattern that has developed in other countries. Both hospital and university must agree on the person to be appointed, but with a joint appointment committee this seldom presents any difficulty. The advantages of unified leadership in clinical departments were discussed in Chapter 4.

The number of specialists or consultants, as they are called, practicing within the health service in Britain is strictly limited and there is keen competition for these appointments. Appointments to teaching hospitals are made by a committee which has equal representation from the university and the hospital. The applicants usually have had more than 10 years of postgraduate training and yet, in 1970, full-time salaries started at only £4,512 a year, rising after many years of service to a maximum of £6,330. Most specialists prefer to work on a part-time basis so that they can engage in private practice. Payment is made on a sessional basis, each session of approximately half a day being paid at

the rate of one-eleventh of the full-time salary. Teaching may be included in these sessions.

Superimposed on this modest salary scale for highly trained specialists is an ingenious system of financial incentives called "merit awards." In 1970, one-third of Britain's specialists or consultants received a merit award that ranged from a Grade A+ award of £6,330 a year received by 110 specialists, doubling their full-time salary to a level of £12,660, to a Grade C award of £1,200 received by 2,400 specialists. Clinical teachers who are paid by the university are on the same salary scales and are also eligible for these merit awards but are not allowed to practice privately. The number of specialists receiving the various grades of award in 1970 was 4,210 at a total cost of £9,422,700 (*56, 57, 58*). The awards are made by a group of distinguished medical men usually under the leadership of a former president of the Royal College of Physicians, and are confidential in the sense that only the recipient is informed. They have been part of the system for over 20 years and are one of the few examples of a conscientious and successful effort to reward excellence in an operation wholly controlled by the state. The merit awards also provide an additional salary differential between clinical and non-clinical university appointments which is rendered less controversial by coming from the Ministry of Health rather than the university.

In Australia and New Zealand, clinical departments traditionally have been modelled on the same pattern as in Britain. It seems significant, however, that many of the new and some of the older teaching hospitals are being planned on the basis of unified clinical departments, with the clinical professors in charge of the clinical as well as the teaching activities in their specialty, along the lines which are usual in Scandinavia and North America. That this is being done in new medical schools seems to be a tacit admission that this kind of structure is thought to be the best for a teaching hospital. This trend appears to have full state support, but if it is to be successful, the university must play its part. It will have to be less reluctant to award academic rank to those of high professional standing and will have to give the hospital a say in the appointment of those members of the academic staff who have clinical responsibilities.

In Sweden, all professors are in charge of a department and in teaching hospitals all departments are headed by a professor. One result of this tradition is a proliferation of departments. In the Karolinska Hospital alone there are now 48 departments and the resulting fragmentation is causing concern. To rationalize the administrative problems involved in dealing with so many departments, it is now proposed to arrange them in six or seven "blocks" or groups, each with a head who would correspond to the "chairman" of North America but who, in Sweden, has been given the unfortunate name of

"block head." This system will probably become the pattern in other Scandinavian hospitals.

The rapid development over the past few decades of specialization and team work in teaching hospitals has had a major effect on teaching as well as on clinical care. The many problems that arise have been solved either by chosen leaders appointed for a limited period but given extensive authority in both hospital and medical school, as in North America, or by a complicated system of committees as is usual in Britain and Australia. With individual leadership it is easier to adapt to changing circumstances and to integrate the minor specialties within the major disciplines both in teaching and clinical care. It is also easier to avoid the division of loyalties which can easily arise from differing sources of income and different lines of responsibility. The domination by committees of British medical schools often allows the conservative elements to rule the faculty; it tends to inhibit change or slow its progress and to encourage factions among the medical staff with different loyalties.

CLINICAL FACILITIES FOR TEACHING AND RESEARCH

Almost all teaching hospitals in the United States, Canada, Sweden, and Finland have been built since World War II. This is also true of many in Australia, New Zealand, Denmark, and Norway but of comparatively few in Britain and Ireland. The rare exceptions in the United States and Canada are some of the city and county hospitals which may be as deficient as anything to be found in Britain or Australia, but these are being discarded as new construction becomes available. Partly because of the conditions of federal aid, the standards of new construction have been maintained at a high level with ample space for ancillary services.

In these new hospitals the pattern is usually of one to four beds to a room except in Britain, where six to a room is more common, a number which, for various reasons, is elsewhere considered less desirable than four. For teaching purposes these smaller rooms provide less rather than more privacy than the large, old-fashioned ward since the patient's neighbours hear every word that is spoken during the teaching session.

Emphasis on the relevance of the patient's circumstances to his disease and the impact of his illness on his family rightly are being stressed by those who believe that medical education should be oriented to the family and community. These and other aspects of the patient's history should not be discussed at the bedside within hearing of other patients and yet often the only convenient alternative in teaching

hospitals is the corridor. If these and other social implications of disease are to be a part of medical education, provision for this kind of discussion must be made in close proximity to the wards so that reference back to the patient is possible. The space provided on the wards for this purpose varies greatly in all the countries I visited, and was usually inadequate. I have the impression that in the United States and Canada the average would be about one room for every 20 beds, which is usually considered inadequate. There is more in Sweden but less in other countries, where not infrequently there is none. Perhaps the worst arrangement is in Australia where inadequate teaching space is usually concentrated in a teaching block, far from the wards and owned by the university. A recent recommendation for new building in Canada gives the more realistic allocation of one teaching room for every 15 beds, with another multipurpose room that can be used for teaching (*59*). In Canada and the United States the financial responsibility for providing and maintaining teaching space is usually borne by the teaching hospital, while elsewhere it is usually borne by the university.

There are even greater variations in the provision of space for research in teaching hospitals. The figures given in Chapter 4 correspond to the impression gained by the visitor that space provided for research in the basic science departments is much the same on the two sides of the Atlantic, but support for research in clinical departments, particularly in medicine, is very much greater in North America.

In Britain, Ireland, and Australia, where responsibility for the provision of facilities for teaching and research is ill-defined (*60*), the result is usually inadequate. The hospital usually avoids this responsibility and one result may be a separate building near the hospital provided by the university for teaching and research in its clinical departments. This is unsatisfactory and serves only to emphasize the separation of the medical school from its teaching hospital. In North America, where the facilities for teaching and research are an integral part of the hospital, there is rarely this cleavage between hospital and medical school. The practical advantages of this type of integration are obvious.

Chapter 8
LABORATORY SERVICES IN TEACHING HOSPITALS

An unexpected finding was the widespread discord that has arisen in teaching hospitals regarding the emphasis which should be given to the academic and service functions of the clinical laboratories. The main source of friction is the division of financial responsibility between hospital and medical school which can be disputed as hotly when both are supported by the state as when they are private institutions. Another source of discord is the departmental status of the four components of clinical pathology which are anatomical pathology, clinical chemistry, microbiology and haematology.

ANATOMICAL PATHOLOGY

Anatomical pathology in the principal teaching hospital is almost invariably under the direction of the academic department, but how the hospital should recompense the department for pathological services rendered is still being argued in most teaching hospitals. In some, the hospital pays for the technical expenses of these laboratory services, with professional salaries shared between hospital and medical school, but the calculation of professional time devoted to routine work is difficult and can easily be disputed by either side. These difficulties have led some hospitals to pay an agreed percentage of the departmental budget, but arguments may still arise when this has to be adjusted to meet increased demands for laboratory services. In other hospitals, payment is made on a fee for service basis but the schedule of charges does not usually take into account the higher standards expected in a teaching hospital nor the greater complexity of the services rendered. Some departments of pathology have given up their hospital responsibilities because of the difficulties involved in making a financial settlement. As has been found in Australia and elsewhere, this quickly converts the department into one of experimental pathology which has to rely on others to teach the application of pathology to clinical

problems. This is an unsatisfactory solution from the point of view of the medical school.

In the United States and Canada, the university department of pathology is almost always in charge of the whole range of anatomical pathology in the principal teaching hospital but the pattern of responsibility for clinical chemistry, hematology, and microbiology shows wide variations. Sometimes the department of pathology is in charge of all these laboratory services or the department of medicine may be in charge of clinical chemistry and haematology, with the department of microbiology usually in charge of its clinical services. Sometimes there is a director of laboratory services responsible either to the hospital or medical school and in charge of all except post-mortem services. There are other patterns and the reason for this diversity is that whichever system is adopted leads to problems which may cause friction. The profits from laboratory services can be very large in the United States and difficulty can arise over their division between the hospital, the medical school, and the departments concerned. The hospital may prefer unification under a director of laboratory services but, particularly if he is responsible to the hospital, this may lead to a pedestrian service which is slow to become involved in new developments that are not profitable. For this reason and also because of their interest in research, other departments and subdepartments may tend to develop their own laboratories which is an extravagant duplication. Most of these sources of discord are based on financial considerations. Both hospital and medical school usually feel they are getting the worst of the bargain while salaries in pathology, although high in relation to other departments, may be half those in private practice. Another complicating feature is that all the divisions of "clinical pathology" must work together as a department in the postgraduate training of pathlogists, while in the undergraduate curriculum only anatomical pathology is taught by the department of pathology with the departments of microbiology, biochemistry, and medicine principally responsible for the other areas.

In Britain, there is the same trend as elsewhere to concentrate pathological services in the larger hospitals with specialists in charge of the four services of pathology, microbiology, clinical chemistry, and haematology. This is already true of the teaching hospitals, although whether the allegiance of the haematological laboratories should be to medicine or to pathology is still disputed (*61*). In 1973, 23 of the 28 medical schools had departments of chemical pathology or of clinical chemistry and 17 had departments of haematology (*62*).

The service functions of academic departments of pathology, microbiology, and clinical chemistry in the teaching hospitals raise the same administrative problems as elsewhere. These are usually left to the university and the hospital to solve. In some departments the university

pays the senior staff and the hospital pays the junior and technical staff, an arrangement that allows plenty of scope for argument. In others the costs are divided on a percentage basis, but this leaves the annual increase in total cost in dispute. In still others some attempt is made to establish the cost of services rendered but this can be calculated in different ways with different results. The existing situation is just another example of the conflicts that are likely to arise when decisions as to whether financial responsibility should belong to one government department or another are left to the medical school and the teaching hospital.

In Australia, most of the teaching hospitals have their own independent departments of pathology. The university department usually is assigned on a courtesy basis, enough post-mortems for undergraduate teaching but it has little or no contact with surgical or biopsy specimens. These are sorely missed, since without them and without the clinical contacts that go with them, the pathologist quickly becomes rusty on the clinical application of his subject. Sooner or later the department will become one of experimental pathology, which teaches the general principles of pathology to undergraduates but leaves the application of these principles to the hospital pathologists over whom the department has no control. The hospital departments also have become largely responsible for the training of pathologists. This is what has happened in most of the Australian medical schools, for the basic reason that the universities have been unable or unwilling to overcome the vested interests of the pathologists employed by the teaching hospitals.

In the few medical schools where the hospital services are controlled by the university departments, there are the same financial difficulties as in other countries. There are usually two scales of salary within the department, one for those paid by the hospital and another for those paid by the university.

In Sweden, the building of facilities for departments of pathology is usually the responsibility of the university rather than the hospital, although the latter may build an additional area for its own services. In some departments the professor and senior members of the staff are appointed and paid by the university, while most of the junior and technical staff are paid by the hospital. In others only the technical staff is paid by the hospital. These arrangements can lead to arguments and real difficulties in maintaining a proper balance between senior and junior staff. In some cases the senior staff is paid on a pro rata basis for autopsy and other reports, but only if these were not used for teaching. In one hospital a fee for an autopsy report was forthcoming only if no students had watched the autopsy.

CLINICAL CHEMISTRY

In Sweden, clinical chemistry has become an independent academic department with its base in the teaching hospital. In Britain, most schools have chairs of clinical chemistry and there is the same trend in Australia and New Zealand.

In the United States and Canada, clinical chemistry is very rarely an independent department but is usually linked with either medicine or pathology. When linked with medicine, no difficulties arise regarding ambiguous areas such as endocrine, renal, and gastrointestinal function laboratories which, although mainly biochemical, are usually part of the clinical specialty. When, however, clinical chemistry is part of a department of laboratory medicine or a subdepartment of pathology, difficulties can arise in its relation to the medical specialists who are involved in biochemical research on patients. The extravagance of duplicate laboratory facilities is sometimes the result. A compromise which is sometimes adopted is for clinical chemistry to be responsible for tests which could be considered as routine, leaving to the clinical department those tests which are in the developmental stage.

Anatomical pathology and clinical chemistry have very little in common and a good case can be made for their separation as is common in Europe. Departments of biochemistry are becoming divorced from clinical problems and some medical schools have already made general biochemistry a prerequisite for entry, relying on clinicians with special knowledge to teach its application to disease. In this context a department of clinical chemistry or biochemistry would have an obvious place but only one department of clinical chemistry is listed in the Canadian Medical Directory (*63*) and one in the American (*46*).

MICROBIOLOGY

The usual pattern is that the academic department is responsible for services in its teaching hospital. The same financial problems may arise as in anatomical pathology but they are less complicated because the service load can be separated more easily from teaching and research.

HAEMATOLOGY

Supervision of the laboratory aspects of haematology long has been a bone of contention between departments of pathology and

medicine. Pathology claims the blood as one of its tissues, while medicine claims that its subdepartment of haematology cannot flourish or even survive unless it is responsible for its own laboratory work. Where these services are controlled by the department of pathology, recruitment of well-trained clinical haematologists is usually difficult. In Britain, there are a few departments of haematology that are independent of both medicine and pathology, but in general it is more usual for them to be linked with the department of medicine in teaching hospitals, while in non-teaching hospitals they are more often under pathology or the director of laboratory services.

In Sweden, most of the routine haematology is usually the responsibility of the department of clinical chemistry. This unusual arrangement appears to raise no difficulties since the haematological service also has its own laboratories. This shared responsibility is more sensible than it may seem. The mechanization of routine blood analysis involves no skills peculiar to haematologists but has much in common with the mechanized techniques used in clinical chemistry.

CLINICAL PHYSIOLOGY

A postwar development in Sweden has been the establishment in the teaching hospitals of academic departments of clinical physiology which are responsible for tests of function in the various systems, such as heart, lungs, and kidneys. This development, which was started in the Karolinska Hospital and had the approval of the Ministry of Health and Social Affairs, was meant partly as a gesture to encourage clinical research, partly to encourage teaching of clinical physiology which in the prewar years had been neglected, and partly as an economy of space and effort. There is a considerable body of opinion that this venture has failed on all three of these scores.

In some medical schools the department of clinical physiology closely guards its rights, so that the specialties within the department of medicine are unable to conduct the laboratory investigations which are closely linked with progress in their specialty, unless these are done in the department of clinical physiology and under its direction. This development, therefore, tends to strengthen the barriers between the clinical and the laboratory approach to disease, instead of breaking them down as is being done in some other countries where clinicians are teaching the application of physiology to disease. For this reason, departments of clinical physiology are considered to be a step in the wrong direction by several if not most departments of medicine in Sweden. In those hospitals where clinical physiologists have adopted a more liberal outlook, any advantage of economy of space and effort

breaks down since there is duplication of facilities in the department of medicine. This is not an example which should be followed by other countries.

DISCUSSION

The various administrative difficulties which have been described in this section on laboratory services have often led to decisions based on expediency rather than common sense. These arise from two controversial elements both of which are capable of solution. One is that departments of pathology claim responsibility for clinical chemistry and haematology because they are responsible for the training of "clinical pathologists." This claim, however, has an insecure foundation since most pathologists agree that this concept of clinical pathology is or should be obsolete even in community hospitals. The general trend is to centralize these services with specialists in charge of each of the components of clinical pathology.

I believe that the independence which is being given in Europe to all four components of clinical pathology is the direction that should be followed. The academic department of pathology must be in full charge of the application of its subject in a teaching hospital if it is to fulfill its teaching duties, while the academic department of microbiology should have a connecting link with clinical microbiology that need not be as close. Clinical chemistry should be an independent department linked with medicine, while haematology should include clinical haematologists as well as the laboratory services and be strongly oriented toward the department of medicine.

The second controversial element is the share of the departmental budget which should be paid by the Ministry of Health through the hospital and the share which should be paid by the Ministry of Education through the medical school. These problems are usually left to the university and the hospital to solve. At first this appears to be a desirable form of local autonomy but the factors involved in deciding what proportion should be paid by each of the parties concerned are so complicated that general lines of policy have to be laid down if acrimonious disputes and inefficient decisions are to be avoided. It is difficult enough to decide the proportions of salaries and running expenses to be paid, but the budgetary timetables of the hospitals and universities may also be out of phase and the salary scales for technical staff may be different. There are also difficulties in drawing the line between service and research. The futility of leaving this imponderable to local argument has already been emphasized. The best solution is a decision made at a level higher than the teaching hospital or medical

school, based on an intelligent estimate or approximation and leaving no room for argument. This should not be difficult in countries where both universities and hospitals are supported by the government.

Chapter 9
FAMILY PRACTICE AND COMMUNITY MEDICINE

The terms family practice and general practice usually are accepted as meaning the same but in the United States there is the difference that general practice may be taken to include minor or even major surgery.

The trend in the larger cities of the United States has been to confine the activities of the family doctor to medicine and paediatrics. It has been stated that 75 percent of the members of the American College of Physicians engage in family practice and that the "college thinks a man certified for the American Board of Internal Medicine is the ideally trained man for adult family practice as currently defined." (*64*).

In the United States and Canada, patients can bypass their family doctor and go directly to the specialist with no questions asked, while many of those on the staff of teaching hospitals who are specialists in internal medicine practice both as consultants and as family physicians. This is part of the egalitarian background of American medicine and is very different from European countries where there is no overlap between specialists and general practitioners. Because of this overlap, most departments of medicine in North America are better equipped to teach the principles of family medicine than their counterparts in Europe, where teaching hospitals are staffed by specialists who see only patients referred to them by general practitioners or through the outpatient department. It is also true, however, that in the United States, as elsewhere, most medical schools have been remiss in not giving students direct exposure to family practice. As a result, they may graduate without any experience of this branch of medicine.

In all countries, the prestige of general practice, both with the public and among the profession, reached its lowest level after World War II and only started to recover in the 1960's when the emphasis of public opinion veered from scientific to social progress and to the needs of the community. This change was quickly taken up by the general practitioners themselves whose colleges and associations began to press for the recognition of family practice as a specialty, one result of which

was the recognition of the programs and standards provided by colleges and specialty boards of family practice. Pressures were also exerted on the medical schools to give family practice the recognition they felt it deserved. The public and the profession itself were dissatisfied with the serious shortage of family doctors and laid the blame, in part at least, on the specialized nature of medical education. Particularly in the United States, this led to a pragmatic appraisal by politicians of the objectives and resources of the medical schools.

DEPARTMENTS OF GENERAL OR FAMILY PRACTICE

The argument usually used in favour of establishing departments of family practice in the medical schools is that most students prefer to be specialists because they are trained by specialists and only if they are trained by family doctors will they be attracted to general practice. This is a plausible argument which has led to the establishment of many departments of general practice but the evidence suggests that it is untrue. This evidence comes from published surveys and from the medical schools I have visited.

One of the best of the published surveys rarely is referred to because it is hidden in an appendix to the report of the Royal Commission on Medical Education in 1968 (*44*). In appendix 19 there is a seventy-page analysis of a questionnaire submitted to 2,522 first-year medical students and to 3,591 final-year students, with a 95 percent response. General practice was the career choice of about 18 percent of first-year students, increasing to 26 percent in the final year. A detailed analysis "did not suggest that a major effort on the part of the medical school to interest students in general practice results in a larger number choosing that career."

A report by Last and Stanley (*129*) on 1,737 undergraduates followed for 1, 3, and 5 years after qualification, with an 86 percent response, showed that in the first preclinical year 10 percent of students gave general practice as their career preference, increasing to 25 percent in the first clinical year, to 31 percent on qualification, to 54 percent 3 years after qualification, and to 62 percent 5 years after qualification. During the 5-year period, two out of three altered the preference first given. This survey suggests that the great majority of students do not make their career choice until after they graduate and that opportunity is a large factor in reaching this choice.

Another carefully planned survey is by Prywes, Sarell, and Yodfat (*130*) in Israel. Students in their final year spent 4 weeks as apprentices in specially selected urban group practices or with general practitioners

in rural areas. All of these practitioners were on salaries. The opinions of the 190 students involved were assessed by questionnaires specially designed to promote an objective response. Two separate types of assessment were made. The first was concerned with the value of the apprenticeship as a learning experience. The expectations of the student before this experience were slightly higher than after, which gave a final rating between "moderately important" and "important." The second assessment was on the effect of this experience on the students' attitudes toward becoming general practitioners. The conclusion was that "most students did not change their attitude towards a career in general practice: this attitude tended to be either a moderate disinclination or indecision." There was no evidence of increased motivation toward general practice as a career.

There are three further surveys (*131*, *132*, *133*) which include reviews of the literature and an analysis of medical schools ranging from those with a traditional approach to those with emphasis on "comprehensive medicine." These also failed to show the expected effect on career choice of teaching programs in comprehensive medicine. I have been unable to find in the literature any controlled investigation which shows this effect.

In any assessment of the effect of changes in the curriculum on the choice of careers, the influence on the student of public opinion and of the rapidly increasing prestige of family practice should be taken into account. In one of the schools I visited, 14 percent of the 1969 graduating class indicated family practice as their first choice for a career. A year later in 1970, with no change in the curriculum, 58 percent made this choice. This trend, not due to any changes in the curriculum, also has been suggested in more comprehensive surveys (*131*).

In many of the medical schools I visited, the belief was expressed that exposure to general practice affects the career choice of the students, but in instances where a serious attempt was made to establish this correlation, the impression given was that experience of general practice is as likely to turn the students away from general practice as to attract them to it. The great majority of those involved in medical education, however, are agreed that sufficient exposure of the student in his final year to general practice, enabling him to appreciate its nature and scope, is an educational experience that should be part of the curriculum.

There are many who view with alarm the intrusion of the state into academic affairs, for example, into family medicine. The financial incentives offered in the United States by the Federal Government to establish departments of family practice have already been described, but many of the individual states have gone even further. For instance, the medical school in North Carolina wished to have a division of

family practice within the department of medicine but the state passed an act in 1969 (*65*) establishing a department of family practice to be "coequal with other departments of the school." This was the first time the state had passed an act to establish a chair. The university did not include adequate support for this new department in its 1971-73 biannual request, so another act was passed in 1971 (*66*) giving this department $200,000 in the first and $300,000 in the second year, with the qualification that the "department shall not be abolished nor shall its operations be curtailed without the express approval of the General Assembly."

In Florida, the state legislature included the following paragraph in the budget act of 1970-71 (*67*)

> Section 23: recognizing the serious shortage of physicians in the State of Florida and in an effort to immediately aid in alleviating this condition, it is the legislative intent that all state financed medical schools and all medical schools within the state receiving state funds will develop a teaching program in family medicine. Plans for the development of a department of family practice at each state university medical school shall be developed under the supervision of the Board of Regents and such unallocated funds as may be at its disposal may be used to implement this high priority item. A report of the development and implementation of this proposal shall be presented to the legislature on the first day of the next regular session.

In New York and in many other states similar types of legislation have been enacted.

In the 1972-73 directory of the Association of American Medical Colleges (*46*), 23 of the 113 medical schools had independent departments of family practice, another 15 had family practice linked with community medicine, and 6 had family practice as a subdepartment of medicine. In Canada, 7 of the 16 medical schools have established departments of general practice and some others have subdepartments.

All medical schools have been or are being faced with the problem of deciding whether they should establish an independent department of general practice, have a subdepartment, or leave the student's exposure in the hands of selected general practitioners. Once a department of family practice has been established, it is almost impossible to reduce it to the status of a subdepartment. A sensible compromise, until the place of departments of family medicine in undergraduate education is established, is either to merge it with another department, make it a subdepartment, or base it in the teaching hospital. The impression I gained was that the most satisfactory arrangement is to have family practice linked with community medicine including the relevant aspects of preventive medicine, epidemiology, and public health. This association places family practice in its natural academic environment and gives it the research outlet it needs if it is to have an academic identity.

Community medicine has been described by the exponents of family practice as "one of its unique components." (*64*). It would seem more reasonable to say that family practice is a component of community medicine.

It has been said that family practice must have the status of an independent department to give it the prestige that is needed if students are to be attracted to it as a career. In my experience students are not particularly impressed by this kind of prestige and are more likely to be impressed by a subject which is taught in its own natural setting. It also has been said that the drift toward specialization and away from family practice has been a natural sequel of the adoption by the United States of the Flexner Report in 1910. It would be fairer to say that it was the rapid expansion of medical knowledge, which was in part due to the adoption of the Flexner Report, that first emphasized and then overemphasized the need for specialists.

In Britain the same pressures have been exerted on the medical schools by the public and by the profession itself to create departments of general practice staffed by general practitioners (*68*). There is now a Royal College of General Practitioners and in 1973 there were six departments of general practice in the 28 medical schools of the United Kingdom (*62*). The oldest of these is in Edinburgh University which, since the 18th century, has been linked to "dispensaries" in the slums of Edinburgh that are staffed on a voluntary basis by physicians and students from its teaching hospital. By 1952, this general practice teaching unit was looking after approximately 6,000 patients with a full-time staff, paid by the university. This staff consisted of five doctors, two social service workers, two nurses, and three secretaries, and the unit has remained more or less unchanged. The department gained its independence in 1957 and in 1964 a chair of medicine in relation to general practice was created.

The second oldest department of general practice is in Manchester. It was established as a university health centre in 1954 and became an independent university department in 1969. A staff of six full-time doctors, three nurses, three health visitors, and one psychiatric social worker look after about 12,000 patients on a capitation fee basis which pays about half of the expenses, the other half being met by the university. These two departments of general practice have been in operation for 20 years or more but their contribution to undergraduate medical education has not yet been clearly established. In Britain, as in Canada, fees for service cover less than half the cost of these departments of family practice. The place of family medicine in the curriculum is discussed in the next chapter.

Science has introduced a healthy skepticism of time-honoured beliefs and doctrines which has replaced the mystique of medicine and the prestige that went with it. Science has also widened the scope of

medical knowledge to such an extent that the general practitioner cannot have the satisfaction of being master of what he is practicing without the assistance of special facilities and advice. He may therefore prefer either to specialize or to practice in an urban area where this specialized assistance is readily available and where he and his family can have the social amenities they find most desirable. These trends appear to be inevitable and are most unlikely to be altered significantly by changes in the curriculum. At least some of these trends are highly desirable and it might be better to accept them and concentrate on improving the conditions of family practice. Medical graduates will usually choose what they consider to be the most satisfactory career, provided they have the opportunity. If governments wish to have more family doctors, they must play a part in providing these opportunities. Postgraduate training in general practice must be given adequate support if it is to be well organized and attractive. Particularly in rural areas, there should be subsidies to improve the conditions of family practice and to create the facilities for group practices which should include adequate assistance from other health professions and services. As in any profession, the family doctor needs not only interest in his work but also adequate help to give him time for leisure and study. This outlook is not politically popular because it would require a considerable expenditure of public funds. It is much more acceptable politically to blame the medical schools for the shortage of family doctors.

COMMUNITY MEDICINE

The contribution which most medical schools have made to the neighbouring community has by tradition been left to their teaching hospitals but in many countries pressures are being brought to bear on them to widen the scope of this contribution. Some are now using most or all of the community hospitals in their vicinity for undergraduate instruction. However, this degree of decentralization and diffusion of effort is difficult or impossible to reconcile with an organized approach to clinical teaching. What can be much more successful is a close linkage of the medical school with its community hospitals in organizing an efficient residency training program including general practice. This is being done or planned on a wide scale in North America and Scandinavia where there is ample evidence that it can be very successful in raising the standards of community hospitals as well as the standards of professional training.

The departments of community medicine that have been created in medical schools are usually concerned with the health resources of the

community, often including the principles of epidemiology, preventive medicine, public health, and environmental health. In most medical schools this has been a change in the name of departments previously called public health, epidemiology, social medicine, or some variant of these titles. In the 113 medical schools listed as members in the 1972-73 directory of the Association of American Medical Colleges (*46*), 56 had departments associated with the name community medicine or community health.

Another development in community medicine which many believe to be only a passing phase is the use of remote community hospitals as a base for undergraduate clinical instruction. For instance, Michigan State University has a community-based program of medical education in which community hospitals in distant parts of the state are formed into "corporations," with local physicians responsible for about 70 percent or 80 percent of teaching. The student is assigned to one of these corporations throughout his period of clinical training. The university has no control over patient care but pays the cost of education. A similar approach has been adopted by others, including the University of Indiana (*69, 70*).

A different approach is being developed in the University of Washington which is decentralizing a large part of instruction in basic science and a smaller part of clinical teaching. This is being done in the universities and hospitals of the neighbouring states of Alaska, Montana, and Idaho, in the hope that graduates will be attracted to these areas (*71*). Federal regional medical programs have also encouraged the medical schools to become involved in the health problems of the community. There were many at the time who doubted the validity of regional schemes such as those under the terms of the heart disease, cancer, and stroke programs (*72*), doubts that seem to have been justified by the recent withdrawal of federal support on the grounds that they have not been successful. Teaching hospitals and community hospitals are better equipped than medical schools to take over this kind of responsibility.

PHYSICIAN ASSISTANTS AND ASSOCIATES

The case for the medical assistant or associate is that, if properly trained, he will increase the contribution that the family doctor can make to the community. In most countries this need is filled by the experienced nurse, but in the United States the shortage of nurses is just as great as that of physicians. I was told that some of the nursing associations are opposed to nurses playing a role that is subservient to the physician.

In 1971 the AMA approved the "essentials of an approved educational program for the assistant to the primary care physician" and by 1972 there were 22 of these approved programs associated with medical schools and hospitals with a capacity of 1,125 students (*29*). After graduation from high school, a 1-year program is required for a grade one medical assistant and a 2-year program for grade two.

One of the best established programs has been in operation since 1965 at Duke University, offering a 24-month course which leads to certification as a physician's associate. There are 40 graduates a year, most of them ex-servicemen. An academic year is devoted to the basic medical sciences including anatomy, physiology, pharmacology, and an introduction to clinical medicine. This is followed by 15 months of clinical rotations when the associates are taught to take histories, perform comprehensive physical examinations, and collect and interpret data from procedures such as gastric analysis, bone marrow examination, lumbar puncture, and electrocardiograms. They are expected to provide patient care services such as wound suturing, the application of casts, and the assessments of patients who are ill. Many of these associates are now successfully employed in practice under the supervision and responsibility of a physician. It is claimed that they are readily accepted by patients and the demand is greater than the supply. It is also claimed that in favourable circumstances the physician associate can increase the physician's productivity by 50 percent or even 75 percent. Several states have specific statutes legalizing the activities of the physician's assistant (*73*).

The Johns Hopkins University has an even more ambitious program involving 2 years of "college education" which must include biology, chemistry, psychology, and sociology, followed by 2 years of clinical training and the award of a baccalaureate degree in the health associate program. This program claims that "the health associate is a semi-autonomous practitioner functioning in collaboration with other health specialists." (*74*). Many other medical schools are taking part in the less ambitious "Medex" program designed primarily for ex-servicemen who have had 2 or more years of experience in patient care. This program usually includes at least 3 months training in the medical school followed by a preceptorship of 1 year or more with a practicing physician (*75*, *76*).

One of the hazards of creating a class of physician's assistants and associates is that after a few years they may consider themselves as good as the physicians under whom they are working. Since the shortage of family doctors is likely to continue, the various associations of physician's assistants that have already been formed may find it not too difficult to obtain the right of independent practice. Where nurses with special training and experience are used, particularly in rural areas, this hazard does not arise.

In Europe, the district nurse or nurse assistant long has been of great value in extending the usefulness of the general practitioner, but except in rural areas this usually has been in the direction of followup cases rather than primary visits. More recently, the concept that a nurse with special experience and training could relieve the general practitioner of much of his work load has spread to the United States and Canada. By 1969, 19 nursing schools in the United States had courses for "family nurse practitioners" and fourteen for "paediatric nurse practitioners." (*77*). Since then the numbers have been increasing rapidly (*145*). All require the candidate to be a graduate of an accredited nursing program and most schools require previous experience in ambulatory or outpatient care which may be as long as 2 years. The length of the course is usually between 10 weeks and 1 year, depending partly on the experience the nurse has had. It includes history taking, physical examination, and emergency or palliative treatment, recognizing that the nurse will be responsible to a physician. In Canada the approach is much the same, with almost all schools of nursing giving courses for nurse practitioners (*78, 79*).

The nurse practitioner, rather than the medical associate, seems to be the best answer to the clinical help which is needed by the general practitioner if his work is to become more effective in relieving the shortage of family doctors. They have been successful in Europe and northern Canada for many years and compared with medical associates, the danger of any demand for the right of independent practice is negligible.

Chapter 10
UNDERGRADUATE CURRICULUM

An analysis in depth of the changes in the medical curriculum that have been introduced over the past few years is beyond the scope of this survey. We are living at a time when all or almost all the countries of the civilized world are convinced that there must be drastic reforms in both undergraduate and graduate medical education, but even the most progressive countries are uncertain what these drastic changes should be. The success of any change in the curriculum is usually based on opinion rather than measurement so that much of the evidence on which rational decision could be based is lacking. It is also true that some evidence which is available is being neglected, and that decisions are being based on opinion or expediency as distinct from knowledge or principle. Discontent over the orientation of the medical curriculum has expressed itself in four principal directions.

1. *Integration*—With integrated teaching, departmental barriers are broken down so that the curriculum becomes the responsibility of a team rather than of individual departments. Teaching is based on organs or systems, each department giving its contribution, so that the student is presented with a complete picture of the system usually including its clinical applications. This approach allows clinical situations to be introduced to the student in a natural setting at a much earlier stage in the curriculum and can stimulate the interest of the student by giving him a grasp of the significance of what he is learning. It is expensive in teachers' time and to be a success integrated teaching must be supported by a group of dedicated teachers. It tends to destroy the identity of individual departments and yet it must have the full support of departmental heads.

Opinion is divided on the success of integration of the preclinical subjects and in some schools both staff and students have been glad to return to the departmental approach. An exception is the nervous system, which more readily lends itself to integration. What is more likely to be successful is a substantial introduction to each of the

preclinical subjects followed by their integration with the disturbances of function which can occur in disease. Experience has shown, however, that this is seldom a success when exposure of students to clinical situations is the responsibility of basic scientists who know little about the clinical aspects of disease or by physicians who only have a superficial knowledge of the basic sciences that are involved. This integration is much more likely to be effective if there is a sufficient variety of specialists whose principal interests are in one particular organ such as the kidney, heart, or lung. They should know more about the clinical aspects of their particular interest than most physicians and as much about its physiology and pharmacology as most physiologists or pharmacologists. More commonly in North America, those who are good teachers are now being used in many preclinical departments to cover the area of their own particular interest. The spectacle of a clinician teaching the basic sciences does not fail to impress the student with the relevance of what he is learning. The clinician is in a position to talk with authority on the application to medicine of what he is teaching. The burden of this contribution to integration falls mainly on the department of medicine.

Integration of the paraclinical subjects, such as pathology, microbiology, and epidemiology, is usually easier than integration of the preclinical subjects but, as in any form of integration, success depends on the enthusiasm of those concerned and their willingness to sacrifice the added time necessary for this approach. Integration of the clinical subjects is not difficult in some of the medical and surgical specialties but, in general, clinicians have difficulty in adhering to a timetable which is rigid and yet has no regular pattern.

2. *Electives*—Courses that allow the student to concentrate on the subjects that interest him are now the rule rather than the exception in most countries, but the proportion of the student's time which can be used in this way varies widely. The proportion is greatest in the United States where more than a quarter of the curriculum is elective in most medical schools (*80*). In some medical schools electives can be based on three or four "tracks" which lead to the principal types of career. Stanford University is of particular interest in having successfully operated a wholly elective program since 1968 (*81*). Elective programs, like integrated teaching, involve a considerable increase in the teaching load and this usually falls most heavily on the department of medicine.

3. *Family Practice and Community Medicine in the Curriculum*—Over the past 10 years, many departments of family practice have been created but, in assessing the contribution they are making, it should be realized that published curricula are often misleading since topics previously listed under introductory course, outpatient clinics, social medicine, epidemiology, and even public health are sometimes listed as family medicine although they may not be taught by that department. In

addition, these departments may take part in activities such as history taking and examination of the patient which also is done by other clinical departments. They may take over the responsibility for general outpatient and casualty work and most of them operate one or more family practices, with other family practices affiliated for teaching purposes. Undergraduates are usually given a superficial exposure to family practice in the early years, with something more substantial of 2–6 weeks duration, as well as electives, in the final year or years. In the schools I visited, these electives were usually chosen by less than 10 percent of the students. Most departments of family practice are finding difficulty in establishing their identity in the undergraduate curriculum but this does not mean that family practice should not have a place there. A brief exposure to family practice under the best conditions can be a rewarding experience for the student but this exposure should be limited to giving him a general understanding of what is involved. A more thorough exposure should be postponed until after graduation when the student is better equipped to understand the difficult decisions which have to be made, often on evidence which may appear to be inadequate to the student. Most agree that much of this undergraduate and graduate exposure is best given through a salaried group of family practitioners linked with a medical school or its teaching hospital. This allows the added expenses of the medical clinic and of involvement in teaching to be borne by the medical school or hospital. Under these conditions the contribution which other health services and professions can make to family practice can be taught in their natural setting, which is a part of community medicine. The relationship of family practice to community medicine has already been discussed in Chapter 9.

4. *Duration of the Medical Course*—Most governments have been exerting pressures to reduce the duration of the medical course and to increase the output of graduates in medicine. Most medical schools have reduced the time spent on the minutiae of anatomy and many no longer require the student to make dissections. In other departments there has been the same pruning of the unimportant with some replacement of practical classes by demonstrations. In shortening and reorganizing its curriculum, each country has its own approach.

In the United States in 1973–74, 88 percent of those admitted to medical schools had obtained a bachelor of science or of arts degree after 4 years at a university, usually including specified courses in chemistry, physics, and biology (*29, 138*). The traditional pattern of the medical curriculum in American medical schools has been 2 years of the basic sciences, including pharmacology, pathology, microbiology, and an introduction to clinical medicine, followed by 2 years of structured clinical instruction in the teaching hospitals. The initiative in reform of medical education has come from the United States and in

most schools this pattern is now only a shadow of the past, with curriculum revision the rule rather than the exception. Today, there are no standard patterns but "innovative" programs are the fashion partly because financial inducements have been given by the federal government and by foundations and partly because of dissatisfaction with the traditional methods. In 1972-73, 21 of the 113 American medical schools had courses in the basic sciences which were predominately integrated, but many others had interdepartmental systems teaching designed to integrate in varying degree the basic sciences with the clinical subjects (*80*). Sixty medical schools had an all elective final year and many had electives in other years as well.

Stanford University is of particular interest because since 1968 it has had a wholly elective 4-year program. The student is given several curricula tracks which he may modify or change with the help of faculty advisors. The only requirement is that the student must satisfactorily complete 192 "units" of approved courses, which must include 64 "units" of clinical clerkship of which 48 must be full time in at least three different departments (*81*). By working in the summer, the student can complete this course in 3 years but 90 percent prefer to take 4 years or more. After 4 years of experience with this program, both faculty and students elected that it should be continued and that a core program should not be introduced as had been suggested. The only part of the program that will be revised is the system of faculty advisors. It is also interesting that the students have proved to be conservative in their curricula choice, with a heavy concentration on traditional courses. Ninety-five percent of students choose what would be generally considered the core subjects. Since there are no captive audiences, courses that interest the teacher rather than the student have disappeared and the standards of teaching have improved. The performance of these students in the National Board Examinations is said to be excellent but this may be evidence of the students' natural ability which, from the process of selection, is known to be high.

Another pattern which has been adopted by several schools, including the one at Duke University, is to concentrate, in the first year, on a core curriculum in the basic sciences including pathology and microbiology, followed in the second year by a general exposure to clinical subjects. In the third and fourth years the student has the choice of a wide variety of electives.

One of the most common patterns is to concentrate on the basic sciences, including pathology and microbiology, in the first year, followed by interdepartmental systems teaching conducted by clinicians and basic scientists in the second year, clinical rotations in the major clinical subjects in the third, and leaving the fourth year as one which is entirely elective. The general trend is a reduction in time spent on the basic sciences, particularly on anatomy. Over a 10-year period, there

has been an average decrease of 30 percent in the time devoted to physiology, with a similar progressive decline in the other basic sciences including pathology and microbiology (*82*). In most schools this reduction has been mainly in practical classes, which has sometimes allowed expansion of student numbers without the addition of new space.

It seems illogical that emphasis on the basic medical sciences should be so greatly reduced at a time when the practice of medicine has become increasingly dependent on its scientific background. There has been some increase in the time devoted to the social aspects of medicine and to family medicine but, as already emphasized, this increase is not usually as great as the timetables suggest.

Both electives and integrated systems teaching involve a considerable increase in the time which must be given to teaching. This falls most heavily on the department of medicine which in some schools is said to bear about 40 perecnt of the total teaching load. This burden is becoming even heavier with increasing student numbers and staff retrenchment from reduction in training and research grants. It is also true, however, that the full time staff:student ratio in the United States is higher than in other countries (Chapter 4), so that some increase in the teaching load should not be difficult to tolerate.

A development which is becoming increasingly popular is the use of audio-visual and computor-assisted self-instruction. The National Library of Medicine in Bethesda has a large collection of these audio-visual aids and about 30 medical schools are now using the computor network which is being developed.

The recommendation that the medical course should be reduced from 4 to 3 years has been considered by most to be a retrograde step in American medicine although both Federal and State governments are offering financial inducements for this reduction to be made. In the United States and Canada there were, in 1974–75, 17 medical schools in which the regular course was of 3-years duration, with an option of a 4-year program. This is seven schools less than there were in 1973–74. In another 24 medical schools, the course is designed to be of 4-years duration, but students have the option of reducing this to 3 years if they work during the summer. This is 15 schools less than gave this option in 1973–74. It is clear that the number of medical schools willing to reduce the medical course to 3 years is decreasing in spite of the financial inducements offered by the Federal Government. It seems very likely that this trend will continue, with a general return to the 4-year course. Most are agreed, however, that the age at which students in America graduate in medicine is too high, but it would seem more sensible to reduce the period of "college" education rather than the period of medical education. In 1972–73 there were nine medical schools with programs on the university campus leading to the M.D.

degree in 6 years or less after graduation from high school. In 1974–75 the number of these schools had increased to 29 (*84, 144*). Some of the basic sciences usually included in the medical course could be taken in the faculty of science rather than in the medical school, but for this approach to succeed, it would be essential that the medical school be fully equipped to cover the application of these basic sciences to medicine.

If the standard of graduation from American high schools could be equated with those of Britain, Australia, New Zealand, and Scandinavia, where students entering medicine have already qualified in chemistry, physics, and biology, there would be no reason why the medical course in America could not be reduced so that students could finish 5 years after leaving high school. This is being planned in Europe (*44*).

Many schools make use of the National Board examinations which allow them to assess the school's standing in relation to others. Where there have been drastic changes in the curriculum, this assessment is particularly valuable and some schools have been so shaken by it that they have returned to a more conservative approach.

This is a period of unsolved experiments in American medical education. Out of its uncertainty and disarray it is hoped that a clear sense of direction will soon emerge. Over the past 10 years, the United States has taken the lead in curricula reform, mainly due to the enterprise of some of the older and best known medical schools although the stimulus of support from foundations, and more recently from government, must also have been an important factor. This is in contrast to the other countries involved in this survey where the older universities have preferred to be more conservative, leaving it to the newer medical schools to introduce more radical reforms.

In Canada the general pattern of medical education is much the same as in the United States but there have not been the same political pressures for "innovative change" in the curriculum. The more radical changes in the curriculum are to be found in the new medical schools which have the advantage of defining the educational pattern before the rank and file are recruited. This insures the support of faculty since only those that approve are appointed. Three of the new medical schools in Canada have a curriculum based on integration. The medical school at McMaster University in Ontario, which in 1965 was the first of the three to be established, has set the pattern for the others. (Appendix II) The older medical schools in Canada have shown greater caution in changing the curriculum. Most have developed electives and programs of integrated teaching which are within the framework of departmental autonomy and are not beyond their means. Some, however, are finding that these changes impose a much heavier teaching load on the staff than had been foreseen. With integration, this load falls most heavily on the departments of medicine which are

often understaffed for the task and sometimes resent having to implement what others have planned. There is the same trend in Canada as elsewhere to shorten the period between leaving school and graduation in medicine. In 1973–74, less than one-third of those starting the medical course had a Baccalaureate Degree (*138*).

In Britain most medical students are admitted directly from school, but the entrance requirements are such that they already have had the equivalent, in North America, of about a year of college education including courses in chemistry, physics, and biology. It is now proposed that direct entry from schools should continue and that the duration of the medical course should be reduced to 5 years (*44*). The first 3 years would include the basic medical sciences but would provide a more liberal education than previously, 1 year being devoted to a variety of options. At the end of this 3-year period, the student could qualify for a B.Sc. or Bachelor of Medical Sciences degree, graduating in medicine after 2 further years of clinical instruction. Following the lead of Newcastle, several medical schools have introduced a modest degree of integration and the same is true of electives. The two new medical schools in Southampton and Nottingham have an elective period of 1 year. In the preclinical period there has been some reduction in the time devoted to anatomy but it still holds the dominant position it has inherited by tradition. Detailed dissection of the body has been discouraged by royal commissions, medical educators, the General Medical Council, and even by surgeons. However, so long as professors of anatomy are sole arbiters on what has to be learned of this subject, it is likely that students will continue to be examined on the minutiae of anatomical structure. Similarly, in other preclinical subjects, a course of didactic lectures is sometimes considered the easiest and most economical way of covering the subject. The dangers of allowing the curriculum to be controlled by heads of departments is emphasized in the report of the Royal Commission in 1968 which recommends that "the planning of medical education need not and cannot any longer be left to individual heads of departments." (*44*).

The Royal Commission also recommended that the clinical stage of instruction should consist of basic university education in medicine, compulsory internship being taken to mean that the medical schools are released from any suggestion that they need produce a graduate fit to practice medicine independently. To implement this change, the staffing structure of teaching hospitals should be changed to emphasize "geographical full time appointments" and greatly improved accommodation for teaching. "Open ward rounds" and the open demonstration of outpatients should be discouraged; emphasis should be rather on an integrated approach and on the kind of personal instruction that will stimulate the interest and curiosity of the student. There should be greater emphasis on electives in the clinical as well as in the preclinical

period. This orientation of the medical curriculum which is recommended by the Royal Commission would, if it is implemented, bring medical education in Britain much closer to the pattern which has developed in North America over the past 20 years.

In Australia almost all medical schools have the conventional curriculum of a premedical year, 2 preclinical years, and 3 clinical years, a pattern which includes orthodox examinations often with a high failure rate. Several schools have introduced short elective periods, while the universities of New South Wales and Monash are attempting integration with continual assessment and a revised system of examinations. In some other medical schools similar changes, with a reduction of the course to 5 years, are being planned.

In Sweden the medical curriculum, particularly since 1954, has to an increasing extent been subjected to national control and has, therefore, a greater degree of uniformity than in other countries where the medical schools have more freedom. A distinguished professor of medicine in Sweden has written as follows: "In Britain and Sweden opposite philosophies seem to govern medical care and education. Britain has centralized the former but fortunately permits considerable freedom in educational programs. Sweden has centralized education, even at university levels, but there is a fair amount of freedom in the organization of medical care. Personally, I regard freedom as an essential prerequisite for rapid progress, both in education and in the care of the sick." (*20*). This is characteristic of the concern, which is voiced by many heads of medical departments, over the tightening grip that the government is exerting on the pattern of medical education. It is now proposed that all studies in medicine, lasting 5.5 years, be tied to a given schedule. This framework, which is based on the "block" system, defines the time to be devoted to each subject as well as its sequence. It has to be followed by all medical schools, and this is at a time when the best approach to medical education is quite uncertain. The new curriculum which was approved by Parliament in 1969 is found by many heads of departments to be disappointingly conservative or even reactionary.

An unusual feature which deserves special comment is that entry into the medical schools can be either in the spring or autumn, a more or less equal division of students being made. It follows that most departments have to repeat their courses twice a year and, surprisingly enough, there appears to be little objection to this duplication. It reduces the size of classes and has another advantage which is of considerable educational importance. Every student starts his clinical studies in a department of medicine and only when this rotation has been completed will he get his first experience of surgery. Most would agree that this sequence is ideal for the education of the student, but

with a single annual entry it is only possible for half the class unless teaching beds are to be left unused for half the year.

In a country which, for its size, has made such a remarkable contribution to medical science and whose medical care programs and hospitals are so progressive, it is most surprising to find so little evidence of change in the medical curriculum or in the methods of teaching. It may be that the high quality of the medical profession in Sweden is due to the greater freedom which medical education enjoyed until recently, or it may be that the conservative educational pattern adopted by Sweden is, in fact, the best. Probably more important than how he is trained is the high calibre of the Swedish medical student.

EXAMINATIONS

It is now generally agreed that the kind of examination which has traditionally dominated the medical course is not only unreliable but may also become a serious interruption of the students' education. Particularly in North America, many medical schools now rely on progressive individual assessment, usually backed by oral or written examinations of the short answer type. If it is to be fair, progressive assessment should involve both senior and junior instructors who have an intimate knowledge of the students' progress and performance and who should discuss the merits of each student before establishing his grade. Several medical schools in North America discontinued examinations altogether but most of these have returned to the view that grading is an important part of the learning process. Usually only pass or fail is posted, but the student may be given his mark or grade upon request together with a class distribution curve or average so that he may identify his own position (*44, 80, 138*).

The competence of a physician and the contribution he will make to the community depend as much on his character and temperament as on his natural ability. The proper selection of students from the large numbers that apply is probably more important than the details of the curriculum and yet there is no agreement as to how this selection should be made. In Sweden the student is selected on his scholastic record but in other countries the method varies from school to school. The principal drawbacks of the interview are the natural bias of the interviewers and the ability of an articulate and confident applicant, who has a fair idea of the questions he will be asked, to give a false impression of his honesty and dedication to a medical career. Many medical schools accept the best and reject the worst judged on their records, interviewing only those considered to be borderline. The use of "intelligence" and "aptitude" tests as part of the record is widespread in North America but less common in Europe.

DISCUSSION

Most would agree with a statement, made by a recent Royal Commission in Britain, that compulsory internship has relieved the medical schools from any suggestion that they need produce a graduate fit to practice medicine independently (*44*). It is partly for this reason that it is very difficult to assess and contrast the product of the medical schools in the countries I visited. I have taught and examined students of the graduating class both in Europe and North America. The impression I gained is that European graduates, in general, are more likely to accept without question what they are taught and are less critical of teachers who are dogmatic. In North America the students have more curiosity and are more argumentative; they are taught more about the application of the basic sciences to disease and are therefore more conscious of what is not known of the background of medicine. Probably for these reasons they are more anxious to keep up to date, as evidenced by the more extensive use they make of postgraduate education. The European graduate has the confidence which comes from greater clinical experience than his American counterpart, but the significance of this can be exaggerated since the assessment of clinical experience and ability has much more meaning after the period of postgraduate training.

The demand in the 1960's for reform of the curriculum was based on the criticism that it had not kept pace with the changing pattern of medicine. Reform was directed toward replacing what had become unrelated to medicine with what had become relevant, and toward a curriculum that would interest the student so that he would remember what he had been taught and be encouraged to keep up to date. These rational objectives have been pushed aside in response to a popular demand that the duration of the medical course be shortened and that the medical school and its students become involved with the needs of the community. Particularly in the United States there has been a danger of overemphasis on change for its own sake, with sweeping curricula reforms based on relevance as defined by the student or the community, rather than any rational educational policy. In 1974 and 1975 the enthusiasm for innovative change has been on the wane as lessons are being learned from the experience of the past few years. Many medical schools are considering a return to a more conservative approach. It is, however, from extremes of this kind that the best answers often emerge. It seems likely that the lasting contribution to progress from this period of experimentation will be the regulation of what is contained in the curriculum by a group chosen for this purpose, rather than by heads of departments. It also seems likely that this will be associated with electives and integration in appropriate areas and with greater emphasis in the basic sciences on their relevance to

medicine and less on the details of research. There certainly will be increased emphasis on the needs of the patient and on primary care.

In Europe it seems likely that most countries will reduce the medical course to 5 years while in America it seems probable that the medical schools will return to the 4-year course for all but exceptional students, with a period of college education that will be reduced to 1 or 2 years. The time which has to be spent on postgraduate education has become so great that the age of graduation in medicine must be reduced.

Much has been said, particularly by those whose primary interest is family practice, about the need to discard the concepts put forward in the Flexner Report of 1910. Less vocal, but probably much more numerous, are those who believe that after 60 years Flexner himself would have added to his recommendations rather than change them. He would have been pleased with the progress of research in the medical schools and with the emphasis in the curriculum on integration and on the application of the basic sciences to clinical problems. It seems unlikely that he would have disagreed that clinical instruction should now extend beyond the teaching hospital with greater emphasis on primary care and the needs of the community. He might have added that the nursery for learning primary care is still the hospital where the student can follow the changes in his patient from hour to hour and day to day.

Chapter 11
POSTGRADUATE EDUCATION

In most countries graduate education in the specialties has, until recently, been an apprenticeship with no organized background except an examination conducted by one of the specialist associations. It is now generally agreed that the training of a specialist is more important than his ability to pass an examination. This is the principle which has guided specialist training in the United States and Canada over the past 30 years, where the content and duration of the training required is set out in detail and must be taken in hospitals that have been inspected and approved.

In the United States, hospitals are approved for the training of interns and residents by the Liaison Committee on Graduate Medical Education which reports to the Coordinating Council on Medical Education. Each year a directory of approved internships and residencies including the opportunities and facilities available in these hospitals is published by the American Medical Association. The general requirements are sufficient teaching beds and a well-qualified and well-organized staff, with an educational committee responsible for the organization of the residency program which must have sufficient educational content and must include scheduled conferences. In 1973 there were 4,840 programs approved for residency training, about 90% of which were affiliated with medical schools (*138*). The required training in the various specialties is set out in some detail both as to content and duration. (*83*). The trend is clearly toward increasing the responsibility of the medical schools for these programs.

The American Board of Specialties coordinates the activities of 20 specialty boards in the various specialties of medicine and surgery. These are responsible for the standards of training required in each specialty and for providing examinations to determine competence for certification and inclusion in the Directory of Medical Specialists. The specialty boards include representatives of the American Medical Association and the various colleges and other organizations associated with the specialty (*39,41*). The training requirements which have been in operation since 1941 now require 3 to 6 years of residency or other formal training, with considerable variations among the various special-

ties. As an example, the requirements for internal medicine are as follows: the candidate must have graduated from a medical school approved by the American or Canadian medical associations or must have passed the examination of the Educational Council for Foreign Medical Graduates. In an acceptable training program, he must have spent 1 year in an approved internship, 24 months in general internal medicine and, under supervision, have had primary patient responsibility. The director of this program is responsible for providing a detailed account of the candidate's performance and competence. From this and other supporting references the board decides if the candidate is eligible to take the examinations which are of the objective multiple choice type designed to test the candidate's clinical acumen as well as his knowledge. Having passed this examination, the candidate may, if he wishes, proceed to one of nine subspecialties in internal medicine. Two further years of full-time training in the subspecialty will be required, followed by an examination (*40*).

The formation of a Specialty Board in Family Practice was approved in 1969. The first examination was held in 1970 by which time over 30 residency training programs in family practice had been approved. In 1973 this number had increased to 257 (*138*). The requisites were that training should be of 3-years duration after graduation, based on a model family practice but with additional training in medicine, paediatrics, psychiatry, community medicine, and other options (*83*). Most medical schools are now taking part in these programs.

In Canada, residency and specialty training, although a provincial responsibility, is largely controlled by the Royal College of Physicians and Surgeons of Canada and by the medical schools. Fellowship of the Royal College has for the past 30 to 40 years been conditional on rigid training requirements extending to 5 years or more after graduation. All applicants must have been trained in hospitals approved by the College as part of a training program organized and supervised by a medical school (*84*). This brings the medical school into closer contact with the community hospitals and also ensures a proper balance between service and the process of learning in these residency training programs. The examinations of the Royal College in the specialties are recognized in all the provinces except Quebec as a qualification for specialty registration. Quebec conducts its own examinations, but reciprocity is now being seriously considered. Some of the provinces give the university an annual grant for those registered in residency training programs. This may be half as much as is given for a medical undergraduate. The provinces also pay salaries to residents-in-training which may range up to $10,000 a year or more.

The College of Family Physicians of Canada conducts an examination for Certification in Family Medicine, the usual prerequisite being 2 years of training in a program based in a medical school. All of the 16

medical schools with their affiliated hospitals are now involved. The programs vary but a common pattern would include 6 months of medicine and 1 year divided between paediatrics, psychiatry, and obstetrics, with emphasis on out-patient work and experience in family practice.

In Canada there were many unsuccessful attempts in the 1950's and early 1960's to establish residency training programs in family practice very similar to the ones that are a success today. These failed because very few students wished to become general practitioners. Now these programs are fully subscribed, a clear indication that general practice has become more popular within the profession itself. This may be due, in part at least, to the increased prestige of general practice in the minds of the public, to increased opportunities in general practice, and to the increased social consciousness of recent graduates.

In Britain, postgraduate education is contributed to by Royal colleges, universities, foundations, health ministries, and local enterprise (*85*). Since responsibility for this effort has not been defined, it is not surprising that it has been uncoordinated and sometimes ineffective.

The report of the Royal Commission on Medical Education (Todd Report) contains recommendations on the postgraduate training of specialists and general practitioners, which, in many respects, are more ambitious than in North America or elsewhere (*44*). It recommends that a central council for postgraduate medical education and training in Great Britain should be established, which would represent the universities, the National Health Service authorities, and the professional colleges. This council would be responsible for postgraduate professional training in all the specialties, including general practice and community medicine, and also for continuing education. After the intern year, there would be a 3-year period of "general professional training" for future general practitioners as well as specialists. This period of training would be vocational rather than academic and would be based on a series of appointments most of which would be in hospitals. The aims of the 3-year training would be sufficiently broad that a change of career intention could be made at any time. The number of trainees allowed to proceed for further training in any particular specialty would be decided by the number of vacancies expected in that specialty. Those selected would proceed to advanced training in intensive training posts, usually for 4 or more years. This is longer than is required in most countries but is considerably shorter than has been customary in England, where the average age of first appointment to a consultant post during the years 1963–67 was 39 years (*86*). The number taking this long period of training has greatly exceeded the number of vacancies in the National Health Service. Since a consultant appointment in the National Health Service is essential for

consultant practice, many of those who did not succeed in getting this appointment emigrated rather than admit failure.

Those wishing to be general practitioners would, after the 3-year period of general professional training, have at least 2 further years of advanced training as an assistant in general practice. The general practitioner of the future will thus have 5 years of medical undergraduate training and 5 or 6 years of graduate training before he is allowed an independent practice.

To meet the needs of this plan it is recommended that the National Health Service adopt a new hospital staffing structure, and in order to make these periods of training compulsory for all who wish to practice their profession, it is recommended that there should be vocational registration based on specific periods of training and experience, (*44*). The government recently prepared a bill that would have given the General Medical Council the same legal authority over the training and qualifications of specialists and general practitioners as it now has in undergraduate education and to set up a register of specialists. This was opposed by various professional organizations and was withdrawn.

Major changes in the structure of a profession are almost certain to be associated with controversy as to the hazards involved. However, there are certain dangers in these recommendations that have perhaps not been sufficiently emphasized.

Before increasing the period of postgraduate training for general practice, it would seem more sensible first to improve the conditions of general practice and to give the practitioner more incentive to be a good family doctor. Once this has been accomplished, the sweeping changes in the training of general practitioners that are recommended could be considered. In the meantime, it might be wise to establish a period of training for general practice that is more in line with what is demanded elsewhere (*87*).

The Royal Commission states: "We have no doubt that some of the more popular specialties will be oversubscribed; there will be a need for some systematic form of selection on a national basis for training in these specialties" and "this selection should be made as early as possible and certainly no later than the end of the first year of general professional training." (*44, 86*). This early selection of specialists is something that has not been tried elsewhere, and it therefore deserves close scrutiny. To make this important assessment after 1 year would be difficult, and I do not believe that these young people would accept as fair an arbitrary decision by their elders at such an early stage. Most would prefer a more competitive chance of embarking on the career they feel is most wothwhile, and if this is denied, the number who leave for training in other English-speaking countries may increase rather than decrease.

It is thought, however, that early "job security" may stem the flow to the Commonwealth and elsewhere of registrars who are unable to obtain consultant posts. At present this "weeding out" process takes place about 5 years after graduation when the number of "senior registrars" appointed is approximately the same as the number of consultant posts likely to be vacated.

Since the publication of the Todd Report in 1968, progress has been slow. The British Medical Association was opposed to the proposal that all doctors should undertake 3 years of professional training, one of the reasons given being a fear that the general professional training period might, in some cases, turn out to be a 3-year period of national service in the National Health Service. The recommendation that the General Medical Council should establish a register of specialists was also opposed by the British Medical Association and the Royal Colleges. No further progress has been made, although it seems that some form of registration is desirable if not essential. There has been no apparent opposition to the recommendation that there should be a central council for postgraduate medical education and training, provided its influence is only advisory. In 1970 the Secretary of State for Social Services set up such a council of 31 members including representatives of specialist groups, universities, and the profession at large, emphasizing that it was to be advisory with no executive authority (*89, 91*). For general practice it was generally agreed in 1972 that there should be 3 years of vocational training, but this is not yet obligatory (*134*).

In Australia, New Zealand, and Ireland the pattern of postgraduate education is very much the same as in Britain.

In 1964 the Nordic Council (representing Denmark, Norway, Sweden, and Finland) recommended a uniform plan for the training of specialists and general practitioners. In 1965 the Swedish government asked the National Board of Health and the office of the Chancellor of the Swedish Universities (both government departments) to work out the conditions for Swedish participation in these proposals (*90*). A committee was set up that sought advice from many professional sources, but its report was altered considerably by these government departments before being submitted to and passed by Parliament in 1969. Following graduation, there will be 21 months of "general compulsory service" which must include medicine, surgery, psychiatry, and outpatient care or general practice. The further training that will be required of specialists is along fairly orthodox lines, with between 4 and 5.5 years of specialty training which will include courses of instruction given by the medical schools and examinations.

The further training that is proposed for general practice is far from being orthodox and, if implemented, will be more than what is expected in most other countries. This will be of 3-years duration and will include 18 months of medicine, 6 months of psychiatry, and 3

months of paediatrics, together with courses of instruction and examinations. This will bring the general practitioner closer to the "internist" of North America and may well be a pattern that other countries will follow. They would be ill advised to do this, however, unless, as in Sweden, the working conditions are of a standard which will allow the physician to make use of the advanced training he has received.

CONTINUING MEDICAL EDUCATION

Continuing medical education plays a more prominent part in American medicine than in any other country I visited. In 1973–74 80 medical schools in the United States reported 354,569 registrants in their regular continuing education courses for physicians, as well as radio, television, and tape programs (*138*). These courses are of several types; 72 percent of them are "continuous" courses given on several consecutive days; the others are either "intermittent" with one or two sessions per week or month, or "circuit" courses by touring faculty groups. There are also residency-type "traineeships" and home study courses. A list of "continuing education courses for physicians," sponsored by medical schools, hospitals, and other agencies, is published annually as a supplement to the *Journal of the American Medical Association*. The largest number of courses offered is in general medicine. The American Academy of Family Physicians and several state medical associations require continuing medical education for maintenance of membership and several states are considering legislation to make it a condition of license to practice (*29,88,138*).

In Canada there is the same demand for continuing education, which is conducted principally by the medical schools and their teaching hospitals. This urge to keep up to date, which is much greater in North America than elsewhere, may be due, in part at least, to the more critical and liberal education that undergraduates have received.

DISCUSSION

The importance of regulating the postgraduate period of education so that there will be adequate coverage of the theoretical as well as the practical aspects of the specialties is now generally recognized. Other countries are following the lead of the United States in recognizing that more important than the ability to pass an examination is the quality of the training the candidate has received.

This can only be assured if it is well organized in hospitals adequately equipped for the purpose, with a staff that has the necessary qualifications. To have this assurance, some form of inspection is essential.

In any form of national health service it is almost as important to have a legal register of qualified specialists as it is to have a register of those qualified to practice medicine. This involves a definition of the training the specialist should be given, as well as an assessment of his competence. There is a trend, most marked in Scandinavia and Canada, to increase the responsibility of medical schools in this phase of education. This seems reasonable, since in many of the specialties, a greater knowledge of the scientific background of the specialty than is given in the undergraduate course is required. This can best be provided where there is the variety of talent that is to be found in a medical school.

The principle that the vocational part of the students' training should be given after graduation has been accepted by most countries. To give this postgraduate vocational training effectively, the plan adopted in Scandinavia, which will probably be copied by Britain, appears to be the best. This expands the internship to a period of 2 years of general professional training, followed by 2 to 4 years of training in the specialties, including general practice. This gives the graduate adequate time and experience to make up his mind on his future career, without wasting his time on false leads in specialties for which he is unsuited or does not have the ability. If more general practitioners and fewer specialists are wanted, there are two plans that can be adopted. The number of trainees allowed to proceed to further training in any individual specialty can be limited to the number of expected vacancies in that specialty. This is the approach that is being planned in Britain but which would be very difficult to implement in countries without a comprehensive health service that includes the hospitals. An alternative, which may be a partial solution to the problem, is the approach that has been tried principally in the United States and Canada. With the cooperation of the medical schools, attractive 2 or 3-year training programs in general practice are being developed that are designed to include education as well as service. This approach is expensive and if it is to be successful, considerable financial support from the government must be given. Very few good physicians are attracted to general practice unless they know they can have an adequate training for such a responsible career.

Governments have realized their responsibilities to undergraduate medical education but only now are beginning to realize that postgraduate and continuing education are just as important and almost as expensive. Departments of general or family practice in medical schools

have found that fees for service cover only about half or less of their salaries due, in large part, to the time spent on postgraduate education. These departments can make a much more valuable and extensive contribution to postgraduate than to graduate education.

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Appendix I
THE U.S. COMPREHENSIVE HEALTH MANPOWER TRAINING ACT OF 1971

Proposals to provide direct federal assistance for medical education were put before Congress as early as 1949 but were rejected, partly because they were opposed by the American Medical Association which saw federal intrusion in medical education as a precursor of socialized medicine (*92*). In 1958 the Bayne-Jones and Bane reports again stressed that federal support was essential if the needs of the country for more physicians were to be met. This view was supported by the Association of American Medical Colleges although still opposed by the American Medical Association. It was not until 1963, with the passage of the Health Professions Education Act, that federal assistance to medical schools was provided in the form of construction grants and student loans. This was followed by a series of acts involving scholarships and small capitation grants which, with other measures, were designed to improve education in the health professions and to relieve the shortage of medical manpower (*8, 41, 93, 94, 95*). In 1965 the Bureau of Health Manpower Education was established to control federal spending in the area of medical education.

The most recent legislation, the Comprehenisve Health Manpower Training Act of 1971 (*11*), deserves a close look since it recognizes for the first time a significant federal role in the financial support of medical education. It also marks the first time that federal agencies have intervened in "the internal program decisions of the educational institutions" (*29*). The principal features of this act are as follows:

1. Construction grants, increasing from $225 million a year in 1972 to $275 million in 1974, were authorized for the construction of new schools or major expansion of existing schools. The schools must raise at least 20% of the cost but $16 million a year is available for loan guarantees and interest subsidies for private institutions.

2. Capitation or formula grants, rising from $200 million a year in 1972 to $238 million a year in 1974, were authorized to cover capitation payments to medical schools which must fulfill the following requirements. There must be a specified increase of student enrollment and the school must embark on at least three of the following projects for which about $140 million dollars a year has been appropriated.

A. A reduction in the duration of medical course.
B. Interdisciplinary training among other health professions and the use of the team approach.
C. Training of physicians' assistants and other health professionals' assistants.
D. "Innovative" programs of education.
E. Programs for training and increasing the supply of health personnel.
F. Increased enrollment from low-income or minority groups.
G. Programs in clinical pharmacology, drug abuse, and nutrition.
H. Programs for training in family medicine.
I. Utilization of computer technology.

These capitation payments amount to $2,500 dollars for each student in the first, second, and third year and $4,000 dollars for every student who graduates, with an extra $2,000 for those graduating from schools with either 3-year programs or programs which allow graduation within 6 years after leaving high school. This provides a substantial financial reward to schools with a 3-year medical course. They will recover an average of $4,500 a year for each student, while those with the usual college requirement and a 4-year course will recover only an average of $2,875 a year. There is also a bonus of $1,000 a year for those in a class enrolling 5 percent more students than is required as a condition of these capitation awards.

3. "Start up" assistance for new medical schools, which amounts to about $25,000 for each student in the first year enrollment. Ten million dollars a year is appropriated for this purpose.

4. An average of $15 million a year is appropriated for schools in financial straits.

5. Forty-five million dollars in 1972 increasing to one hundred and thirty-five million in 1974 is appropriated for "Health Manpower Education Initiative Awards" for improving the efficiency of health personnel and the delivery of health services.

6. An average of $50 million a year is authorized for loans to students studying in the United States and $1.75 million for American students attending foreign medical schools. These loans, which have a ceiling of $3,500 a year, can be written off at the rate of 10 percent or 15 percent per year in return for service in certain areas where there is a shortage of physicians. Another $3 million a year is appropriated for scholarships not exceeding $5,000 a year for students who agree to practice primary care in these areas, for a period which must not be less than the period during which the scholarship was awarded.

7. Twenty-five million dollars in 1972 increasing to forty million dollars in 1974 is authorized for grants to hospitals for training programs in family medicine and for the provision of traineeships and fellowships. Another $7.5 million in 1973 increasing to $15 million in

1974 is authorized to provide capitation grants for hospitals and medical schools to the amount of $3,000 a year for each trainee in family medicine.

8. Ten million dollars in 1972 increasing to twenty million in 1974 is authorized to support traineeships and fellowships for the development of teaching skills.

9. Five million dollars in 1972 increasing to fifteen million in 1973 is authorized to support the application of computer technology to the problems of health care.

This act of 1971 is described in some detail because it clearly indicates the expanding role of the federal government in the support of medical education. In accepting this responsibility, the government apparently remains unwilling to give unrestricted operational grants as is the custom in other countries. The various grants outlined above are conditional on clearly defined responses by the medical school and may affect the choice of students, the size of the student entry, and the content and duration of the curriculum. The precedent has been established for a substantial contribution by the Federal Government to the costs of medical education.

CAPITAL GRANTS

During the period 1948 to 1960, the emphasis on new buildings for medical schools was in their teaching hospitals. From 1960 to 1965 the emphasis changed to buildings for research, while since 1966 it is on the construction of teaching facilities, with the Federal Government taking over the major share of the expense (*8*).

From 1968 to 1971 the contribution of the Federal Government averaged $125 million a year (*12*). In 1972 the Federal Government authorized the expenditure of $225 million for the construction of teaching and research facilities in the health sciences, increasing to $250 million in 1973 and $275 million in 1974, with the medical schools providing 20% of the cost. Probably not more than two-thirds of these authorizations will be funded.

Appendix II
AN INTEGRATED MEDICAL SCHOOL

The medical school at McMaster University in Canada has made a radical approach to the problems of full integration which has been planned more carefully than most. The first step was to decide how best to organize this new medical school in order to implement an integrated curriculum. After 3 years of planning the first class of students was admitted in 1969 (*125,126*).

The administrative structure within the faculty of medicine is an unusual blend of participatory democracy with departmental and program management. With one or two omissions, there is the usual division of the faculty into departments but, cutting across departmental autonomy, there are two distinct lines of authority which can influence departmental decisions at all levels. The first of these lines of authority consists of three area coordinators, one concerned with teaching, another with research, and the third with clinical services. These three individuals sit with the heads of departments on the executive committee and have a say in the staff and facilities that may be required in the area they represent. The second line of authority which crosses departmental barriers is held by "coordinators" who are responsible for subjects such as the renal, respiratory, or cardiac systems. They have more than a watching brief over the teaching, research, and service functions of the school. Although they do not sit on the executive committee, they have direct access to it and are responsible for giving advice on the efficiency of the services provided and the direction in which expansion should be encouraged, particularly in relation to staff requirements. In most other medical schools, the "systems" are covered by the creation of subdepartments but McMaster has gone further than this by giving to the systems a considerable degree of independence from departmental control. For instance, the coordinator of the renal system is responsible for the surgical as well as the medical aspects of service, for teaching and research in this specialty, and is given a say in the allocation of staff as well as of space. His authority crosses departmental boundaries and diminishes the responsibilities of departmental chairman. Primary responsibility for the direction and coordination of education, research,

and service rests with the systems and area coordinators. The approach in these areas is interdisciplinary but departmental chairmen have a watching brief to ensure that high standards of patient care and research are maintained within their departments. They also represent their discipline in both academic and professional fields and, as members of the executive committees, can play a large part in the development of faculty policies.

On the whole, this complex organizational structure is working efficiently and without friction although there is an undercurrent of dissatisfaction over the amount of committee work that is involved. Within the "areas" and the "systems" as well as within the departments, there is an extensive committee structure to ensure "participatory democracy" and to promote discussion and criticism of faculty policies. In these discussions there is extensive student participation.

The Health Sciences Centre, which will contain the principal teaching hospital of the university, is on the campus. It is designed to bring together, in shared teaching areas, the various health professions in order to emphasize team responsibility in the delivery of health care. The health centre has four floors, each with 360,000 square feet, including a hospital of 418 teaching beds with extensive ambulatory clinics and 130,000 square feet of space for research, most of which will be distributed on a multidisciplinary rather than a departmental basis. The plans allow for threefold expansion up to 3,500,000 gross square feet within which the hospital could be increased to 1,000 beds. The typical medical ward units will have 36 beds with ten single rooms, eight double rooms, and two four-bedded rooms. The ward will have two conference rooms, two rooms for residents and interns, and one doctor's office. Each pair of wards will have a students' laboratory, a large room with ten study cubicles for students, a conference room, and a small library. On the same level and in close proximity to each pair of wards, there will be an area of approximately 5,000 square feet for multidisciplinary research. Heads of clinical departments will also be the chairmen of the corresponding departments of the faculty of medicine.

The first class of 20 students was admitted to McMaster in 1969. This number has been increased to 80, with a further increase to 100 in 1975. The entrance requirements are 3 years in university, with a preference for those who have had courses in biochemistry, cell biology, and behavioural sciences. After one year in medicine, the student will receive his B.Sc. (Med.) or, if he does not gain entry into medicine, he can finish his program in biology or biochemistry. A few exceptional students may be excused from biochemistry, biology, and the behavioural sciences and instead will be given a 2-month preliminary course. The academic program is spread over 3 years, each of 40 weeks duration. The curriculum is planned by an education committee consisting of staff representatives from all departments at all levels of

seniority and four students. The various parts of the curriculum are not implemented by departments but by subcommittees, with emphasis on integration, problem-solving, small group teaching, and self-learning under the guidance of tutors. The slide and tape "carousel" is used extensively, with a library of over 500 items. The medical curriculum is divided into four phases. The first is of 14 weeks duration and presents an outline of human structure and function and an introduction to the technical skills of medicine. Phase 2 is of 6 weeks duration and is an intensive course in cell biology including the reaction of cells and tissues to injury. Phase 3 is of 40 weeks duration and is devoted to organ systems in health and disease on an interdepartmental basis. The systems are divided into eight, each being allotted 5 weeks and each with a coordinator helped by a committee derived from preclinical and clinical departments. The preparation required for this system approach and the work involved in its delivery are indeed formidable and fall most heavily on the Department of Medicine. This is particularly true of McMaster University since there is no department of physiology, most of the physiological approach being taught by physicians who have specialized in the organ concerned. A Medical Research Council research group of neurophysiologists supplies the expertise in this area. Phase 4 is a clinical clerkship with rotations among the principal clinical departments.

Superimposed on these phases and cutting across them is the so-called "horizontal" part of the curriculum in which about 2 hours each week is devoted to professional attitudes and ethics and to problems of the family and community. Most of these sessions are illustrated by clinical problems and situations. There are three elective, 4 weeks in each of the first 2 years and 8 weeks in the third. There are no traditional formal examinations but students are assessed on the reports of their tutors and on class tests of various types. The only grades given are pass or fail (*125, 126, 127, 128*).

McMaster has enjoyed leadership of the highest quality from the start, when its policies and objectives were being defined. It has recruited a staff with unity of purpose, dedicated to the success of this experiment in education, but already the teaching load is considered by many to be excessive. Committee work is also considered by most of those I met to be excessive and there will have to be some shift from committee to individual responsibility if unrest is to be avoided. One hazard of the teaching and committee load is that those who are interested in and therefore good at basic research will be lost and those who are left will either neglect research or will engage in research that is superficial. To avoid these hazards, an increase in staff is essential but in view of the almost universal reduction in financial support of universities, the extent of this increase is problematical.

Within the curriculum the complete integration of systems teaching

has been skillfully planned and the only menace to its success appears to be the work load involved. This medical school has made a more imaginative start with fewer irreversible mistakes than any other new medical school I have encountered. This grand experiment should be followed with great interest by those concerned with medical education.

Several classes have now graduated and the staff as a whole still supports the plan. It is too early to pass judgment on the quality of the graduates, some of whom find the 3-year course a stressful experience. There are some who believe that the school will change to a 4-year course.

Appendix III
COMMENTS ON NEW ZEALAND (1971)

FINANCIAL SUPPORT OF MEDICAL EDUCATION

There are two medical schools in New Zealand, one at the University of Otago in Dunedin, which was founded in 1874, and the other at the University of Auckland, which admitted its first medical students in 1968. Financial support of the universities is under the guidance of the University Grants Committee (UGC) of New Zealand which was established by Act of Parliament and has a membership that clearly is designed to gain the confidence of the universities. The chairman is appointed by the government but only after consultation with the chancellors and vice-chancellors of the universities who submit a panel of names from which the government selects the seven other members of the committee. Three of these must be teachers in a university and four must not be employees of any university. One of the functions of the act is "to initiate and consider in consultation with the universities and other bodies, plans for such balanced university development as may be required to make the universities fully adequate to the needs of New Zealand." [1] The committee performs this function in a tactful manner and, in contrast with Australia, has the confidence of the universities in presenting their case to the government.

Capital developments are considered on the basis of a 5-year "rolling" program. The universities are asked to submit a list of priorities in the order of their importance and the UGC gives the "cut off" point. The order of these priorities is rarely changed since verbal advice often is given on the occasion of an on-site visit so that the universities usually have considerable insight into the policies of the committee.

In the allocation of recurrent grants, which are on a quinquennial basis, the principles of academic freedom are scrupulously maintained. The university submits its proposed budget and the UGC provides a block grant, the size of which depends on what the government can afford and on other factors such as the size of the university, its faculty spread, and student numbers that are "weighted" in a manner not

[1] References are given at the end of this appendix.

revealed. The university can spend the block grant in any way it wishes, with the exception of new developments leading to capital expenditure that have to be approved by the UGC. The salary scales approved by the government must also be followed.

Another function of the UGC, which some would say is a gross infringement of academic freedom, is to set up a curriculum committee. Each university must submit for approval any proposed course regulations and these cannot become effective without the approval of the curriculum committee which may recommend conditions or modifications (*1*). Central control usually leads to conformity and, unless it is so liberal that it amounts to no control, tends to inhibit experimentation at a time when, at least in medicine, most are uneasy or dissatisfied with the curriculum as it stands today. It is hoped that when the second medical school in Auckland is fully developed, no attempt will be made to standardize the curriculum, as has been done in Sweden. As yet, the UGC has not interfered with the medical curriculum.

There were several features of these policies and methods which made it difficult for a medical school to progress. No funds were earmarked for medicine by the UGC that did not give the university "indications" as is done by its counterparts in Britain and elsewhere, nor was it known by the university if any "weighting" was given to medical students, and if so, how much. This left the faculty of medicine of Otago University in the hands of the central administration on the campus and it was dominated by members of the faculties of arts and science who were reluctant to give substantial support to medical education, particularly to the off-campus activities in teaching hospitals. Support for the faculty of medicine became so meagre that its ability to maintain adequate standards was seriously threatened (*2*). The government had to give the medical school a supplementary, earmarked grant of considerable magnitude to meet this critical situation. This amounted to an earmarked recurrent grant since in the following quinquennium, the university had to continue to cover this expenditure. Even closer to an earmarked grant was a promise given by the UGC to review the finances of the medical school if it increased its annual intake of students. These vicissitudes have led to a much better understanding between the university and its medical school which are now working harmoniously together.

New Zealand has depended on the immigration of doctors, mostly from the United Kingdom, to maintain its medical manpower. The government now realizes that there is already a deficit which is likely to increase rapidly unless the output from its medical schools increases. Between 110 and 120 students now graduate each year from Otago, but there has been pressure from the government to increase this number to 200. The output from the new medical school in Auckland

must also be increased and Otago will develop a second clinical school at Christchurch.

THE FINANCIAL SUPPORT OF RESEARCH

The Medical Research Council of New Zealand was established in 1937 and now plays a leading role in the support of medical research. The chairman and deputy chairman are lay people and are appointed by the government. The other eleven members are mostly elder statesmen representing universities, colleges, and government departments, with three members nominated by the council itself. There are two secretaries, one of whom is medically qualified and has had experience in research (*4*).

The policies of the council resemble those of the Medical Research Council in England but with no "internal program" and with greater emphasis on the support of project research in the universities and hospitals and less emphasis on its own research units. Its annual budget is $1.2 million, of which about half is spent on project grants. Applications for these are not assessed by expert committees as they are in Sweden and North America. It is true that New Zealand, with a population of about 3 million, is too small to provide the range of expertise needed for individual assessment, but this could be done easily if New Zealand and Australia pooled their resources.

Another function of the Medical Research Council is the support of research units in the universities and teaching hospitals. These are organized along the same lines as those in Britain. The staffs are encouraged to have university appointments and are allowed to devote 6 hours a week to teaching.

REGULATION OF PROFESSIONAL STANDARDS

The Medical Council of New Zealand is a statutory body which includes the Director General of Health, the deans of the two medical schools, representatives of the Medical Association of New Zealand and of the professional colleges. The council maintains a register of those it considers qualified to practice medicine and is responsible for the discipline and ethical conduct of the profession. Steps are now being taken to establish a register of specialists. Through its medical education committee, the council has made a survey of hospitals approved for preregistration appointments. This committee is also empowered to exert supervision over training in the practice of

medicine and to take all reasonable steps to satisfy itself that the course leading to graduation in medicine in New Zealand is adequate (*3*). I could find no record of any occasion when either the UGC or the Medical Council interfered in any way with the medical curriculum although both appear to have the right to do so by Acts of Parliament.

THE MEDICAL SCHOOLS

At the University of Otago the Dean of Medicine is selected by an advisory committee appointed by the University Council, which includes representatives elected by the Faculty of Medicine. The appointment is for 5 years on a full-time basis, with eligibility for reappointment. The lines of communication and of authority within the faculty which were obscure have been clarified (*2*). The dean now represents the faculty on the university budget committee and staffing committee so that he has some controlling influence over departmental allocations and staffing. Another recent change is the adoption of the principle that there should be multiple chairs in the larger departments, with a chairman whose appointment is reviewed every 5 years. At Auckland the dean is appointed in much the same way as at Otago.

THE TEACHING HOSPITALS

Although the teaching hospitals are the financial responsibility of the Ministry of Health, it has been a tradition in New Zealand that all members of hospital boards, including the chairmen, are elected by the local community. In Dunedin University representation long has been denied although curiously enough the hospital board has the right to appoint a member of the university council. In Dunedin both the university and the hospital board realized that relationships between hospital and medical school were unsatisfactory and requested that there be university representation on the hospital board. This was at first refused, but in 1968 an Act of Parliament was passed which gave the university five seats on the hospital board. This has led to an improvement in the lines of communication between hospital and medical school with the formation of an efficient joint planning committee and improved morale.

At the Dunedin Hospital the professors of the major clinical subjects are in charge of their clinical division, following the North American and the Scandinavian patterns. The medical staff falls into four categories, full-time hospital staff, full-time university staff, full-time

staff paid jointly by the hospital and the university, and visiting staff. These are in about equal proportions so that the visiting staff, which is paid on a sessional basis, constitutes a small minority. With a unified department under the leadership of the clinical professor, there is less evidence of divided loyalties than in Australia, but there is the same unrest and dissatisfaction from the different conditions of service which arise from having two paymasters, the hospital and the university. These differences relate to salary grading, promotion, conditions of appointment, and leave privileges. The hospital staff is usually better paid but promotions are decided centrally in the office of the Director General and adequate sabbatical leave which, in an isolated country like New Zealand, is essential for those who wish to keep up to date, may be denied. These differences are all the more frustrating since it is often more or less by chance whether those doing the same work are appointed to the university staff or the hospital staff or appointed jointly. Since the source of both hospital and university funds is the taxpayer, one might think that the solution to this problem would not be difficult. Indeed, the solution has been simple in other countries where the university pays the full-time staff and recoups an agreed proportion from the Ministry of Health. This proportion should be agreed upon by the ministries involved since it is a poor solution to leave the hospital and university to argue each individual case. An arrangement along these lines is now being considered.

For the appointment of hospital staff in Dunedin, there is an advisory committee which has joint hospital and university representation. The recommendation of this committee is sent by the hospital board to the Director General in Wellington who, on the advice of his hospital grading committee, decides whether the appointment should be made and also the salary. As a result, it is usually impossible to tell an applicant how much he will be paid; a formidable obstacle to recruitment since those who are abroad are often unwilling to apply under these conditions. This is another example of the inefficiencies which can arise from the orientation of authority to a central bureaucracy.

For university appointments the chairman of the hospital board and his deputy sit on the selection committee. They have the right to consult the hospital board so that no one is appointed without its support. This is a simple arrangement which works well

FACILITIES FOR TEACHING AND RESEARCH

Over the years, disunity between the hospital and the university led to a deplorable lack of facilities for teaching and research

in the Dunedin Hospital (2). Most of these deficiencies are still apparent but recently there has been clear evidence that the need for harmony is realized by the Ministry of Health and the need for increased support recognized by the university grants committee. The introduction of university representation on the hospital board has already been referred to and an effective joint planning committee of the university and hospital has been established. Plans are underway for a new ward block of 600 beds, 20% of the cost of which will be borne by the UGC, an arrangement that follows the pattern so successful in Sweden. Patient care, teaching, and research will be established on common ground as a joint responsibility and, as a result, the geographical barriers between what belongs to the hospital and to the university should disappear. The schedule of accommodation, which had been approved when I saw it, will give Dunedin a teaching hospital which meets the best modern standards. The Department of Medicine will have 18,000 square feet for teaching and research in contrast with its previous space in the hospital of 1100 square feet.The university has also placed the Welcome Research Institute under the aegis of the Department of Medicine.

The government has brought strong pressure on the university to increase its medical student entrants from 125 to 150. To make this possible, a second clinical school for Otago University has been established in Christchurch and has made an excellent start. The university is now being pressed to plan for 200 medical student entrants and it is being suggested that a third clinical school be established in Wellington. Other universities have successfully operated two clinical schools separated by a considerable distance, but I know of none with three clinical schools as widely separated as Dunedin, Christchurch, and Wellington. Political pressures have been a factor but it might have been more prudent to consider an increase in student entrants at Auckland University, leaving Otago with two clinical schools in the South Island.

In Auckland the first medical students were admitted in 1968 so that when I was there in 1970, clinical teaching was still in the planning stage. The Auckland Hospital Board is unlike its counterpart in Dunedin in having many heavy responsibilities in addition to its teaching hospitals. For this reason the controversial decision was made that university representation was unnecessary and that cooperation could be achieved by a joint relations committee, with equal representation from the hospital board and the university. It remains to be seen if this unusual arrangement will give the medical school an adequate voice in the affairs of its teaching hospitals.

It is likely that the Auckland Medical School will regret its decision to have small professorial units without any authority over other clinical units in the same discipline. This has been the English system and is

one which Australia is changing in most of its new medical schools. Both the teaching hospitals in Auckland and the university have extensive plans to develop their medical schools. The UGC has allocated $4.5 million for a new clinical building, which will include research as well as teaching space. The hospitals, without any help from the UGC, are also providing space for research.

Both in Dunedin and in Auckland an impediment to progress has been the reluctance of the Ministry of Health in Wellington to decentralize authority. I gathered that the office of the Director General is overworked and understaffed. Yet all sorts of trivia such as the appointment of residents and surgeons and applications for leave had to be approved by the Minister. The order of priority regarding promotions, as given by the teaching hospitals, could be changed and this naturally caused resentment. This degree of central control and failure to delegate authority was, at the time of my visit, a source of a great deal of frustration and discontent.

MEDICAL SUPERINTENDENTS

Throughout New Zealand, medical superintendents are given a great deal of authority in hospital affairs and have been the main line of communication between the hospital staff and the hospital boards. They also have security of tenure until retirement age, a combination which may have unfortunate results. The reasons why England and Sweden have decided against appointing medically qualified hospital superintendents are discussed in Chapter 5.

PATHOLOGY

In Dunedin there was a single department serving both university and hospital until discord between these two institutions over how much each should pay reached such a pitch that they decided to separate into two departments. However, with the development of closer cooperation over the past 2 or 3 years and with changes in personnel, there have been second thoughts on the wisdom of this separation, and a resolution of this problem seems imminent. There is a new head of the department and it is too early to say how this unification will be accomplished.

In Auckland a unified department of pathology is planned, but the relationship of the university department to the Auckland Hospital has not yet been clearly defined.

UNDERGRADUATE MEDICAL EDUCATION

Over the past few years there has been a very active curriculum committee in Dunedin made up of younger men rather than heads of departments. The principal changes have been the introduction of electives, an integrated course in "clinical science," and an imaginative course in the behavioural sciences. The whole sixth year will be elective and vocational in its orientation. There will be progressive and continuous assessment instead of prescribed examinations in the fourth and sixth years, but there will be a combined examination in all of the clinical subjects at the end of the fifth year.

POSTGRADUATE MEDICAL EDUCATION

The hospitals of Auckland long have been concerned with postgraduate education which is now the responsibility of the Postgraduate Committee, chaired by the Associate Dean for Graduate Studies in Medicine. Annual postgraduate courses are given in the basic medical sciences and in some of the specialties. In Wellington, Christchurch, and Dunedin, there are similar types of arrangement, but the bulk of New Zealand specialists get most of their postgraduate training in England or North America.

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Appendix IV
COMMENTS ON THE REPUBLIC OF IRELAND (1971) [1]

The Republic of Ireland, with a population of 2.75 million, produces about 380 graduates in medicine a year, which is in excess of its requirements. The country is far from affluent and clearly would be better off if it raised the standards in a smaller number of medical schools. There are five medical schools in the Republic of Ireland, but I visited only the three in Dublin.

The history of higher education in Ireland is one of a long struggle between the state and the church. Trinity College, Dublin, was founded in 1591 by Queen Elizabeth and the first Regius Chair of Physic was founded in 1637. Both staff and students were restricted to those who belonged to the Established Church until the Catholic Relief Act was passed in 1793 which allowed the college to accept both Catholics and Protestant non-conformists. "However fellowships and scholarships continued to be restricted to members of the Established Church and this fact, together with the disapproval of Trinity College by the Irish Catholic Hierarchy and the relatively high cost of university education, meant that only a small minority of Catholics from the well to do sections of the community took advantage of the opportunities offered by Trinity." (5). In 1873 an Act of Parliament removed all religious discrimination but in the minds of many, Trinity College still is regarded as a Protestant institution. In the 1840's the British Government founded three "Queen's Colleges," each with a medical school, in Belfast, Cork, and Galway. The colleges were forbidden to use their public endowment for the teaching of religion and both their staff and their students were entirely free from religious tests. For this and other reasons, the colleges were condemned by the Catholic hierarchy. In 1854 the bishops founded their own university in Dublin, the medical school of which was incorporated in 1908 in the National University. Also within the National University are the colleges of Cork and Galway.

[1] References are given at the end of this appendix.

Trinity College is the only college of the University of Dublin, so that these two institutions can reasonably be regarded as identical. The constitution of the college and the university and the lines of authority over academic affairs are very complicated and appear to be based on tradition and the kind of democracy that would tend to inhibit change. The only person appointed by the government is the Provost, who holds office until the age of retirement. He is head of the college and presides at meetings of the board, which is the principal executive body of both the college and the university (*6*)

There are thus two universities in the Republic of Ireland, the University of Dublin and the National University of Ireland with its three colleges in Dublin, Cork, and Galway. In Dublin there is also the medical school of the Royal College of Surgeons. All are now "multi-denominational" (*2*). The government has recently proposed that the university colleges of Cork and Galway be constituted as separate universities, while the University College and Trinity College in Dublin be joined in a reconstituted University of Dublin, with its Faculty of Medicine located in Trinity College (*2*). It is not surprising that this last proposal has met with vehement protests from the University College in both the lay and ecclesiastical press (*9, 10*). All are agreed, however, that with four faculties of medicine and the Medical School of the Royal College of Surgeons serving the 2.75 million inhabitants of the Republic, the output of doctors is clearly excessive. Retrenchment is inevitable in a country which is far from affluent.

The higher education authority of the Republic of Ireland is comparable in most respects to the University Grants Committee of the United Kingdom. It was established in 1968 and given statutory authority by Parliament in 1971 to administer the governmental financial support of the universities. Its chairman is appointed by the government and it has eighteen members, of whom at least seven are academic and at least seven are other than academic (*1*). There is no earmarking of recurrent grants, which are based on the previous year's costs plus a small addition for expansion. Capital grants are earmarked and are based on a 5-year "rolling" plan.

Although Trinity College is multi-denominational it is still thought by many to represent the Protestant minority, which is only about 5% of the population. It is of particular interest, therefore, that I heard no suggestion of any discrimination against it in the matter of financial support by the government. In fact, a case could be made that Trinity College is receiving preferential treatment in spite of the fact that in 1969 only two-thirds of its students came from the Republic of Ireland as compared with 94% in the three colleges of the National University (*2*). In 1969 University College, Dublin, had 7,603 students and Trinity College, Dublin, had 3,996 students, while the grant-in-aid from the government in the following year was £2.222 million for University

College and £1.494 million for Trinity College (*3*). It is true that certain expensive items such as the library at Trinity College, which serves national needs, must be taken into account. It is nevertheless clear that the government is making every effort to ensure that no suggestion of discrimination against Trinity College can justifiably be made.

The Medical Registration Council is the counterpart of the General Medical Council of the United Kingdom and serves the same functions. There is the surprising but very sensible arrangement that the Republic of Ireland is fully represented on the General Medical Council of the United Kingdom, which ensures complete reciprocity between the two countries. Irish graduates are automatically eligible to be on the register of both countries. The Medical Research Council of Ireland has very similar policies regarding the support of research as its counterpart in the United Kingdom. It receives only about £100,000 a year from the government and partly for this reason has not embarked on a research institute. There is only one Medical Research Council "unit" and the rest is spent on fellowships and on grants-in-aid which are usually short term (*4*).

TEACHING HOSPITALS

The "voluntary" hospitals of Dublin include those owned by the church and are used as teaching hospitals in preference to the local authority hospitals. The term voluntary is, however, an anomaly since they now depend on public funds for their support. Under the health act, they are paid a fixed sum for each occupied bed, but this usually leaves a deficit which is met from the hospital's trust fund. This fund is derived from the profits of the Irish Sweepstakes, which up to 1967 had benefitted the hospitals to the extent of over £62 million, including capital development (*7*). The per diem cost of hospital beds varies greatly and although there is no defined policy, the teaching hospitals, in general, are allowed a higher rate than others.

Trinity College has the use of seven "voluntary" hospitals, most of which had their origins in the 18th century. Each has its own board but all seven are controlled by a council of three lay and two medical representatives from each hospital, with two from Trinity College and five from the Health Authority. The total number of beds is about 1,200 but the largest hospital has only 290 beds. This scattering of teaching beds in a collection of small hospitals is inefficient. There is a plan to use the municipal hospital of St. Kevin's, which will be modernized, with a capacity of over 1,000 beds. University College has St. Vincent's (500 beds) and Mater Misererecordiae (450 beds) hospitals, both owned by the church. St. Vincent's Hospital is owned by the Sisters of Charity and the Mother Rectress is the ultimate authority. She

is advised by the Medical Board but there is no Board of Governors of the hospital. The new hospital was built by the government but is owned by the Sisters of Charity since they owned the site. If the medical schools of University College and Trinity College unite, it is likely that St. Vincent's, the Mater, and St. Kevin's hospitals will be the three teaching hospitals (*8*).

In the hospitals associated with Trinity College, appointments to the consulting staff are made jointly by the hospital and university. In the case of hospital appointments, the Appointments Committee is weighted in favour of the hospital while with the university appointments, it is loaded in favour of the university. At St. Vincent's Hospital the position is somewhat different. Applications for hospital appointment are first considered by the Sisters of Charity who submit to the selection board up to three names of those whom they consider to be "qualified and suitable." (*12*). Clinical professors are appointed by the university. Most of the clinical consultant staff receive no salaries but are allocated a specified number of beds. A fee is paid by the Health Authority to the consultant for looking after public patients in these beds (*7*). This fee amounts to about £120 per annum for an occupied bed and since the consultant may have 20 beds or more, this can amount to a sizable sum. Work in the outpatient department is paid on a sessional basis. As yet, there are very few consultants who are employed by the hospitals on a salaried basis. They are paid from several sources, with a guaranteed minimum. In the professorial units of Trinity College, payments for hospital work are handed over to the university. Earnings from private patients, however, may be retained according to an agreed ceiling in Trinity College and according to a time limitation in University College.

At Trinity College the medical professorial unit is one of three medical "firms," each of 25 beds at Meath Hospital. The wards are eight-, four-, or one-bedded rooms and there is no provision on the ward for teaching. The professorial unit has a staff of five, including the professor, for whom about 2,000 square feet of office and research space are provided by Trinity College in a small building adjacent to the wards, and in a biomedical laboratory of Trinity College. Full use of this space is made by this active department.

At University College the medical professorial unit is at St. Vincent's Hospital where it is one of four medical firms. The wards are of recent construction and each has 40 beds in 6-, 3-, or 1-bedded rooms, with one room designated for the teaching of students which is considered to be adequate. The professorial unit has a staff of three, including the professor and a half-time professor of therapeutics. Offices and research labs are in a house about half a mile distant on the edge of the university campus. This has 22,000 square feet of space, most of which is devoted to the medical library and conference rooms.

Executive directors of the teaching hospitals in Ireland are not medically qualified. Even in the smaller hospitals the part-time medical administrator is disappearing.

The group of hospitals which serves Trinity College has its own laboratory services in haematology, clinical chemistry, and bacteriology, with the university paying about half the salaries of the heads of these divisions. Anatomical pathology is under the direction of the university department, with the hospitals paying the service costs and five-sixths of the salaries of the technical staff. The university pays the salaries of the academic staff, seven in number, but the hospital provides the registrars and senior house officers.

In the University College the relationship of the university to pathological services is very confused. The professor of pathology has no hospital responsibilities but his department does some surgical pathology for outlying hospitals. The professor of microbiology is on a half-time basis with the university and during the other half of his time is in charge of all laboratory services at St. Vincent's Hospital, including anatomical pathology, haematology, and chemistry. According to an agreement between the university and St. Vincent's Hospital (*12*), the professor of pathology is an honorary member of the staff of St. Vincent's Hospital with the general direction of teaching and the right to lecture at post-mortems.

THE MEDICAL SCHOOLS

The dean is selected rather than elected and although the appointment is for 3 years, he may be reappointed. The dean at Trinity College has held his appointment for 12 years. The university distributes the grant it receives from the government on the basis of the previous year's expenditure. Funds left over are used for new appointments. In 1970 this amounted to £20,000 for the six faculties of Trinity College.

The curriculum in all Irish schools follows the same orthodox general pattern. The premedical year, which students enter at the age of about 18, concerned mainly with chemistry, physics, and biology. This is followed by 5 years of medical study. The first year and the first two terms of the second year are devoted principally to anatomy, biochemistry, and physiology. In the third term of the second year there is an introduction to the clinical subjects. The last 3 years are devoted to clinical subjects, with emphasis in the third year on those which are paraclinical. There is but little evidence of change in these curricula, and apparently no pressures toward involvement with the community.

The medical schools take a small part in postgraduate education,

which is disorganized and lacks any central authority. Most of those who wish to take up an academic career leave the country for their postgraduate education.

The Medical School of the Royal College of Surgeons was established in Dublin by Royal Charter in 1784 and since it has no affiliation with the university, can only grant a license to practice medicine. The school admits 100 students each year and it is indeed remarkable how these can be accommodated in the meagre space provided by the college. There is only token space for research and almost all the teaching staff are part time. The curriculum is, in general, the same as that in the other Irish universities (*5*), but the kind of instruction given must be very different. The government contributes only £13,000 a year to this institution, which is dependent on students for its support. Only about a quarter of the students are from the Republic of Ireland and they are charged £160 per annum. For others the standard fee is £550 per annum, which can be reduced to £350 in special circumstances. It is this differential that enables the school to survive (*11*).

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Appendix V
COMMENTS ON DENMARK (1969)[1]

Denmark has three established medical schools; one in Copenhagen, another in Aarhus, and a third, which was opened in 1966, in the new university at Odense. The University of Copenhagen was founded in 1479 as an independent institution with its own jurisdiction but, as state support has increased, it has come under state control. Similarly, the University of Aarhus was founded by the City of Aarhus in 1928 as a private institution but is now supported and controlled by the state. Professors and other teachers, although chosen by the university, are appointed formally through the Ministry of Education. The medical curriculum is subject to government sanctions but Parliament has recently passed an act which is only a general directive and which leaves considerable latitude to each medical school.

According to Danish law, the university is open to everybody who has passed the final examination of the gymnasium. Tuition is free and the student is also free to choose the faculty he wants to enter. Consequently, there is no possibility of selecting students or of limiting the number of students who want to enter medical school (*1*). For this reason the annual number of entrants can vary from time to time and in the faculty of medicine of Copenhagen University alone has exceeded 800 students. These numbers are reduced by a failure rate in the preclinical years which is so high that only about 60% of the students qualify for the clinical years (*7*). This not only represents a fantastic waste of time and money but seriously interferes with the efficiency of the preclinical departments. It is a system which is condemned by the faculties of medicine but which the state has refused to alter, clearly for political reasons.

The organization of medical schools and the method of appointing the staff are very much the same as in Sweden and there is the same degree of student participation in faculty affairs. There has been the same fragmentation of departments and, as in Sweden, consideration is now being given to the grouping of these departments with a head or chairman on the North American pattern.

[1] References are given at the end of this appendix.

RESEARCH

The facilities for research in Danish medical schools are fairly good but particularly in the clinical departments are not as generous as can be found in other Scandinavian countries. The Danish Research Council has a medical committee which distributes most of its limited funds to university departments. In 1971 this amounted to 10.4 million kronor, of which 58 percent went to the University of Copenhagen.

THE TEACHING HOSPITALS

Since 1806, it has been the duty of the counties and cities to provide the hospitals needed for medical care. Today this is still the basis of the hospital system, including the teaching hospitals, with the one exception which is discussed below. There is, however, a central "supreme hospital board" which advises the National Health Service on the effective coordination of hospital services. All plans for new buildings must be approved by the National Health Service, which must also be consulted when senior appointments are made. Treatment in hospitals is free and the medical staff is paid on a salaried basis (*6*). The state makes a financial contribution to municipal hospitals which varies and which, in the case of teaching hospitals, may range from 35 percent to 90 percent of their operating costs.

The Rigs Hospital in Copenhagen, which is the exception referred to above, is fully owned and supported by the state. It was built in 1910. Bedside teaching in medicine has to be on wards, some of which have 30 beds with 4-bedded bays, and the provision of seminar rooms is meagre. These conditions are as bad us in the United Kingdom. The Department of Medicine moved into a new building in 1970 where they have excellent modern facilities. One curious anomaly is that the senior staff at the Rigs Hospital is paid less than that at the municipal teaching hospital and its pensions are lower. Naturally this arouses considerable resentment. Another anomaly, the purpose of which is obscure, is that the professors at the Rigs Hospital must see their private patients in their own homes, while in the municipal hosptials they must see them in the hospital.

Like the Karolinska in Stockholm, the University of Copenhagen recently has established two new clinical schools, each taking 120 or more clinical students. The payment of clinical teachers, partly by the hospital and partly by the university, is also similar to the Swedish pattern.

As in Sweden, the established rule is that the chief administrator or

director in the teaching hospital must be a non-medical man. On important matters he consults the medical committee, which consists of the heads of departments, but more often he goes straight to the head of the department concerned. Opinion is strongly in favour of the change from medical to non-medical hospital directors. These are usually men who have had business training followed by a subordinate administrative position in a hospital. An increasing number are graduates in commercial science and there are also organized courses on hospital administration which they attend (*2, 3*).

UNDERGRADUATE MEDICAL EDUCATION

As in Sweden, the framework of the curriculum is passed by Parliament and has to be followed by all three medical schools. I was told, however, that in the new medical school at Odense, an integrated curriculum is planned which suggests that a greater degree of latitude is contemplated.

The curriculum, which is of 6.5 years duration and is punctuated by examinations, shows little evidence of change. There are 3 preclinical years, the first of which is concerned mainly with chemistry, physics, and biology followed by 2 years of anatomy, physiology, and biochemistry. The fourth year is devoted to pathology, microbiology, pharmacology, and to an introductory clinical course. The last 2.5 years have the orthodox clinical rotations, with considerable emphasis on the specialties. After a further year of internship, the licence to practice is awarded (*4, 5, 8*).

POSTGRADUATE MEDICAL EDUCATION

The postgraduate training of the specialist and general practitioner is very much the same as in Sweden although the period of training for the latter will probably be less than that envisaged by the Nordic Council (*7*).

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Appendix VI
COMMENTS ON NORWAY (1969)[1]

UNIVERSITY CONTROL

There are two medical schools in Norway, one in Oslo and the other in Bergen, and a third is being planned in Tromso. These are state universities, but each has its own statutes and complete autonomy over matters such as the curriculum, the government being concerned only with financial matters. Recently, there was a proposal that there should be uniform university statutes and that the curriculum should be decided by the state. This was opposed by the univerisities and the proposal was defeated in Parliament. There is no university grants committee, but the Ministry of Church and Education has close lines of communication with the universities. The university submits its budget, with new expenditures listed in their order of priority. This usually is cut by the ministry but it is the university that decides how the cut will be distributed.

Education is free but the universities can limit the number of students who are accepted. However, as in most countries considerable pressure has been brought on the medical schools to increase their student enrollment. When this was done, the government failed to provide the increase in staff that had been requested.

The choice of Tromso as the site of the third medical school was made by the government. There are many in Norway who believe that this was an unfortunate decision, based on political motives as a gesture to those living within the Arctic Circle. Tromso is 200 miles north of the Arctic Circle. It seems likely that the recruitment of academic personnel and even students may be difficult. Many believe that Trondheim, which is on about the same latitude as the University of Umeo in Sweden, 150 miles south of the Arctic Circle, would have been a wiser choice.

[1] References are given at the end of this appendix.

RESEARCH

The Medical Committee of the Research Council has no "internal" program, but otherwise it operates in much the same way as the Medical Research Council in the United Kingdom. The grants made to university departments are usually for a limited period after which the university is expected to take over support.

As in Sweden, a stimulus to medical research is the proportion of graduates who go on to take the M.D. degree for which several years of research is needed. More than 15 percent of the graduates from Oslo go on to take this doctorate.

THE MEDICAL SCHOOLS

The organization of the medical schools is similar to that described in the section for Sweden. Chairs usually must be advertized but if the faculty decides it wishes to invite an individual to take the chair, it can do this without advertizing, provided the permission of the Ministry of Church and Education is first obtained. This seems a good compromise between the American and European systems.

THE TEACHING HOSPITALS

The Rigs Hospital in Oslo is owned and supported by the state. The other teaching hospitals in Norway are financed in a more complicated way. Because of their contribution to education, all teaching hospitals receive from the Ministry of Church and Education 5 percent of their annual operating costs in addition to salaries in academic departments. In some teaching hospitals the other 95 percent is divided equally between the state, the county, and the city but these proportions can vary. Such a division of responsibility impedes efficiency and progress and there are many who feel that more unified control is desirable. For this reason it has been suggested that the state should take over the teaching hospitals, a change that would be the opposite of the trends in Sweden and the United Kingdom where responsibility for the teaching hospitals is being transferred to the local authorities.

There is also no clearly defined policy regarding the payment of salaries. Some receive the principal part of their salary from the hospital and others receive it from the university. The contribution of the state to the building costs of teaching hospitals also varies. The

government is now considering a new system which will relieve the local authorities of much of this burden.

The Rigs Hospital in Oslo is owned and supported by the state and, like its counterpart the Rigs Hospital in Copenhagen, the staff is paid less than those in other hospitals in Oslo. It is said that the reason for this apparent discrimination is that, being a state hospital, the salaries must be in line with others in the civil service.

The facilities for teaching and research are, on the whole, good in Norwegian teaching hospitals but are not up to Swedish standards. Older buildings both in Oslo and Bergen will be replaced in the early 1970's.

There are still a few medically qualified hospital directors in Norway but they are being replaced by non-medical men. This is not being done on the basis of national policy as it is in Sweden, but rather because very few good medical administrators are available.

There are no university departments of clinical physiology. It seems unlikely that Norway will follow the example of Sweden although in Bergen the hospital itself has created such a department on a service basis (*1*).

UNDERGRADUATE MEDICAL EDUCATION

The usual age of the student when he starts medicine is 19 and, as in Sweden, competition for places is high. It is so high that a considerable number of Norwegian students take their medical training abroad. Some of them are able to return to a Norwegian medical school after they have completed the preclinical course. Undergraduate training is of 6-years duration, the pattern being very similar to that in Sweden and Denmark with considerable emphasis on the various specialties. One difference from Sweden is that there is only one annual entry to medicine which is in September. In the third year, however, those who have fallen behind, together with a number of those who have taken their preclinical training abroad, form a second class so that there are two annual entries to the clinical period. This enables all students to start their clinical activities with a period of clinical medicine. In the new medical school in Tromso, the curriculum is being planned on an integrated basis (*2*).

As in other Scandinavian countries, there is still considerable emphasis on the formal lecture but in the clinical period many of these take the form of clinical demonstrations and discussions. Personal contact with the student in small groups and bedside teaching is left largely but not wholly to the junior staff. Electives form a negligible part of the curriculum.

In Oslo a department of general practice, which takes part in undergraduate education, recently has been established. It is expected that similar departments will be established in Bergen and Tromso (*3*).

The training requirements for specialists are very much the same as in Sweden and Denmark. The recommendation of the Nordic Council that the period of training for general practitioners should be the same as those for specialists was rescinded by the Norwegian Medical Association in June 1969. It is now recommended that the general practitioner should, after the period of internship, have only one and a half years of general medical training, part of which will be in a medical school. This will be followed by short refresher courses. I was told that one of the reasons for this reduction in time was the fear that a longer period of training might increase emigration to Sweden.

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Appendix VII
COMMENTS ON FINLAND (1969) [1]

There are medical faculties in the three universities of Finland of which Helsinki, which was founded in 1640, is the oldest. The universities of Helsinki and Oulu are state universities, and although the third one at Turku is technically a private university, its medical faculty is entirely financed by the state. The medical faculties at Turku and Oulu were established in 1943 and 1960, respectively. A fourth medical school already is being planned (*1*).

In all academic matters including the curriculum, the universities have complete independence but the state is clearly concerned with any financial implications and thus exerts indirect control. A special advisory committee, equivalent to a university grants committee with both government and university representation, makes yearly recommendations on the amounts given to each university. This committee has a large say on which new developments should be supported.

The medical faculty, which includes all professors, decides on matters affecting the faculty. Two students and two of the younger teachers attend faculty meetings when teaching or other matters concerning the students are discussed. The professors are appointed in the same manner and have the same autonomy over their departments as in the Scandinavian universities. The dean is part time and is elected by faculty from among its members for a period of 3 years.

RESEARCH

Emphasis on medical research is a more recent development in Finland than in Denmark or Sweden. Facilities for research are good and support is given by the university, by private foundations, and by the medical division of the research council. The research council has no "internal" program in medicine but gives grants to institutes and university departments.

[1] References are given at the end of this appendix.

THE TEACHING HOSPITALS

The three teaching hospitals in the three medical schools are owned jointly by the university and the local authorities and are called university central hospitals. Two-thirds of the capital cost and 50 percent of maintenance, which is 10 percent more than other central hospitals, is provided by the state (*2*). The other 50 percent is provided by the local authorities, of which about 10 percent comes from charges to patients (*3*). In Helsinki the governing body consists of three representatives from the university, three from the town, and three from the surrounding communities.

The Helsinki University Central Hospital is a most impressive structure containing 3,170 beds (*3*), the planning of which is fully up to Swedish standards. The wards contain from one to six beds, with examining rooms as well as seminar rooms for students. In general, the facilities for teaching are good. There is no department of clinical physiology and the example of Sweden in this regard is not likely to be followed.

Clinical professors have a basic salary from the university which is the same as that for non-clinical professors, but they also get a salary from the hospital and with the same pension rights. In the university hospitals there are between 14 and 15 doctors per 100 beds, which is about twice as many as in non-teaching hospitals. As in Scandinavia, there are no "visiting" or "attending" physicians. The hospital buys its services from the university departments of pathology and microbiology.

UNDERGRADUATE MEDICAL EDUCATION

Since 1933, Finland has placed a limit on the number of students admitted to faculties of medicine. As in Sweden, two groups of equal size are admitted each year, one in September and one in the spring. The medical curriculum is also very similar to that in Sweden. It lasts 5.5 to 6 years and is followed by an internship year. Unlike Sweden, each medical school can plan its own curriculum and it is expected that in the new medical school now being established there will be an integrated curriculum quite different from that in Helsinki.

POSTGRADUATE EDUCATION

The health service is under the direction of the state

medical board which has appointed an advisory committee with three representatives from the universities and three from the state medical board to consider the future of postgraduate education. It is likely that the committee will recommend the same kind of specialty training as in the Scandinavian countries and that the original recommendation of the Nordic Council that general practitioners should receive 4 years training after internship will be modified considerably.

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Appendix VIII
THE TEACHING HOSPITALS OF AUSTRALIA (1971) [1]

Many of the principal teaching hospitals in Australia are independent institutions, incorporated by Act of Parliment, but in fact they are administered directly or indirectly by the Ministry of Health of each individual state. More than two-thirds of the cost of public hospitals is met by the government which exerts tight financial control. As in other countries, the cost of teaching hospitals is more than the non-teaching hospitals, which has led to bureaucratic criticism, although the principal reasons for this differential are the high standard of medical care and the concentration in these hospitals of expensive diagnositc and therapeutic procedures. The extra costs of teaching, both in capital expenditure and maintenance, are borne by the Australian Universities Commission (AUC) and this leads to fruitless debate on what belongs to patient care and what to teaching and research.

The boards of governors of teaching hospitals vary greatly in their composition and their method of appointment. In most of the states there is representation of the university on the hospital boards, which is usually more substantial in the newer teaching hospitals than in those with a long tradition of independence. In some there is inadequate or no university representation and these usually illustrate the principle that there is no substitute for adequate university representation if satisfactory cooperation between the medical school and its teaching hospitals is to be achieved.

In Queensland a dean of the faculty of medicine had this to say about the background of his medical school.

> The university was entering a hospital system which had a positive policy to exclude all private practitioners and later university personnel from any part of its administrative structure. As a result of this there was no medical advisory committee (previously there had been) and there were no doctors on the hospital board. This was not due to oversight since it was one of the most strenuously defended tenets of Queensland Hospital philosophy. . . . The other unusual feature was that of tight centralized control vested in the state health department. In

[1] References are given at the end of this appendix.

theory the hospital board had managed the institution but in actual fact the real power lay with the department and still does. (5).

An important factor in the relations between the teaching hospital and its medical school can be the background and outlook of the hospital's chief administrative officer since he is usually the most important connecting link between the two. He is appointed either by the hospital board or by the Ministry of Health but in either case his ultimate responsibility is to the latter, which provides the funds both for the hospital and his own salary. In Victoria, South Australia, and West Australia, the chief administrative officer or hospital manager in the teaching hospitals is not medically qualified. There is also a medical superintendent who has limited administrative and coordinating duties and who often looks after the health of the nurses and the hospital staff. He has but little power in the direction of medical policy, which is in the hands of the medical staff committees which advise the hospital manager and usually have direct access to the governing body. In the opinion of almost all except the medical superintendents themselves, this is a vastly more efficient system than the autocratic powers which are given to medical superintendents in several other states in Australia.

In Queensland and Tasmania, the chief executive officers of the teaching hospitals are medically qualified, while in New South Wales the medical superintendent is sometimes chief executive officer and sometimes not. A few of these medically qualified executive directors are greatly respected by their colleagues but many are more interested in maintaining a tight hold on the reins of authority than in progress. In such cases, their influence can be more disruptive than constructive. I have the impression that most of these medical schools in Australia would welcome the decision made by England and Sweden to appoint only lay hospital administrators.

Whatever his qualifications, the chief executive officer of a teaching hospital has wide authority over matters that are vital to the medical school. In the interest of morale as well as efficiency, his authority should be modified by good lines of communication between the hospital board and both the university and the medical staff of the hospital. Experience has shown that this can be satisfactorily achieved only by direct representation on the board.

FACILITIES FOR TEACHING AND RESEARCH

The report to the Australian Universities Commission on tertiary education in Australia (2) had this to say about the teaching hospitals: "Teaching hospitals are geographically, administratively, and

sometimes psychologically separated from our universities. This has resulted in neglect by the universities of their responsibilities to the hospital . . . the overall result has been that clinical schools, instead of developing as university schools and hospitals have emerged as hospital clinical schools." This was written in 1964 and the same could be said today of most teaching hospitals in Australia.

The facilities for teaching vary considerably. In some teaching hospitals they are adequate but in others there are so few teaching resources on the wards that the students have to write their notes at the bedside and must retire to the "teaching block" for the kind of discussion that cannot or should not be conducted at the bedside. This separation inhibits or even prevents free discussion with reference back to the patient, which is only possible if there are special teaching facilities on the ward itself. What has been provided by the AUC is inadequate and most hospitals consider that these facilities are not their responsibility. The principal contribution of the AUC is the teaching block, which is divorced from the wards and serves to emphasize this separation between the university and the hospital.

The AUC pays the hospital for the maintenance and service of those areas used for teaching including cleaning, heating, light and power, and repairs. (4). The amount of work involved in making these calculations can be considerable and increases the cost to the taxpayer as well as emphasizing the separation of the hospital from its medical school. It would surely be better for all concerned if a top level decision were made that the maintenance costs should be borne by the hospital. This is done in most other countries.

Separation of hospital from medical school may also extend to research. Many teaching hospitals have their own research laboratories and research staff supported either by the hospital board or by endowment funds. The research facilities provided by the hospital are often kept entirely separate from those of the academic departments which may be denied the clinical contacts they require. It is also true that many of the research workers employed by the hospital are eager to do a limited amount of teaching and to have academic rank. This separation of research space and of staff does not make sense; it would be more efficient and more economical for the hospital and university to pool their resources with all research serving as a joint venture. This is done in other countries.

In seven of the departments of medicine that I visited in Australia, an average of 5,900 square feet of usable space was provided for research, compared with an average of 10,500 square feet in five departments of physiology. The provision for physiology was very much the same in Australia as in North America but what is given to medicine is very much less.

THE MEDICAL STAFF

In the teaching hospitals of Australia, the medical staff can be divided into three categories or groups.

The honorary staff is usually the largest group and in 1970 was paid nothing, in most of the states, for its clinical contributions to the hospital. Many honorary staff members found it difficult to make a reasonable living since, as in Britain, most see patients only on a consultative basis. They are paid a nominal sum by the university and many of them consider teaching as a favor to the medical school. In general, their loyalty is to the hospital rather than to the university. Senior physician vacancies are advertised, but the only applicant is almost always the most senior of the junior physicians since it is generally known that other applicants are not likely to be successful. Since the junior physician is usually appointed at the age of 30 or 35, he can look forward with equanimity to progressive promotions as more senior vacancies occur because of retirement, resignation, or demise. As in Britain, the beds in the teaching hospitals are divided among the honorary physicians and surgeons and the numbers "owned" is of considerable prestige value as well as having indirect financial rewards.

Full-time employees of the hospital are usually the second largest group. They are referred to as hospital or staff specialists and are rapidly growing in number. In 1968 the state of New South Wales employed 1,251 doctors on a full-time basis in its public hospitals, of whom 250 were staff specialists (*6*). In the past they were concentrated mainly in pathology and service departments such as radiology and anesthesia. In recent years many have been put in charge of surgical and medical units in specialties such as hematology, renal disease, cardiology, pulmonary disease, endocrinology, neurology, and psychiatry. These staff specialists are paid by the hospital and are often technically responsible to the medical superintendent. In general, their loyalty is to the hospital, and in some cases the university has no say in their appointment. Promotion and salary increases are more or less automatic and although there may be an efficiency barrier to the most senior rank, this is rarely used. Most of them are highly intolerant of any interference by the university, while the university on its part is often unwilling to give them academic rank.

The professorial units are the third and frequently the least important group. They were modelled originally along the lines of the London teaching hospitals, but some of them receive less support even than their counterparts in London. Others are better off but all suffer from lack of support and from the discriminatory scale of salaries

which is affecting recruitment in most clinical academic departments in Australia. The salaries of clinical professors are slightly better than those received by senior hospital specialists. However, the salaries of associate professors and the various grades of lecturer may be considerably less than those of their counterparts who are hospital specialists (*3*). Another impediment to academic recruitment is frequently the inaccessibility of patients in specialties such as hematology which may be under the charge of hospital specialists who have their own research subsidized by the hospital.

With the unpaid honorary staff struggling for survival, the hospital specialists increasing in numbers and secure in their appointments and comparatively well paid, and the professorial units very much in a minority and with lower salaries it is not surprising that there is often discord, particularly in the older teaching hospitals. Any business concern would quickly go bankrupt if it had employees working at the same bench on the same tasks but serving different masters at different rates of pay although all of the salaries were derived from the same source. In Australia these complicated staff relations and the uneasy relationship between the medical schools and most teaching hospitals are far from conducive to the atmosphere of good will and community of interest in medical care, teaching, and research which should be part of the framework of any teaching hospital. This kind of cooperation is likely to occur only when responsibility for a joint effort is clearly defined.

The vested interest of the older teaching hospitals has, as in the United Kingdom, usually prevented the professorial units from playing an important part in the hospital. It seems significant, however, that some of the new teaching hospitals, which have been or are being created, are being planned on the basis of unified clinical departments, with the clinical professors in charge of the clinical as well as the teaching activities in their specialty, along the lines which are usual in Scandinavia and North America. That this is being done seems to be a tacit admission that this kind of structure is the best for a teaching hospital. This trend appears to have full state support, but if it is to be successful, the university must play its part. It will have to be less reluctant in giving academic rank to those of high professional standing and will have to give the hospital a say in the appointment of those members of the academic staff who have clinical responsibilities.

The financial support given to medical schools in Australia is no better than in Britain but the system is younger and more elastic. Eight medical schools with two more on the drawing board is a good score for a country of 13 million inhabitants. The government will have to provide increased support, with some clear indication to its universities that this should be directed toward medicine, if high standards are to be achieved in the face of increasing student numbers.

In most of the states of Australia, the ministries of health do not appear to realize that the quality of future medical care will depend largely on the experience given to medical students in their teaching hospitals. The impression given is rather that the immediate care of the sick is in competition with the needs of medical education and not complimentary to it although, paradoxically, it is generally admitted that teaching hospitals have the highest standards of medical care. If medical education in Australia is to progress, the individual states must provide the administrative background in their teaching hospitals which will encourage a unity of purpose in their medical schools and teaching hospitals rather than an uneasy relationship in an atmosphere of discord and discontent. Equally important is the contribution of the Australian Universities Commission to clinical teaching and research, which should be an integral part of the teaching hospital and not an isolated academic outpost.

The Australian Universities Commission takes a passive role in medical education, leaving its development to the universities, many of which are disinterested and concentrate on other priorities. What is needed is the kind of leadership that could be given by the Australian Universities Commission if it had a medical advisory committee that was given the powers of its counterpart in Britain, the University Grants Committee.

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INDEX BY COUNTRY

[1] The page in italics has the greatest detail.

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