absence of some practices from the gazetteer has been generally noticed, and equally there were some complaints subsequently from a few general practitioners that they were not included (they had not returned the questionnaires) and that it was their reception staff and attached nurses who had demanded to know why.

Of equal interest perhaps are the developments in general practice which the production of the gazetteer implies. An exercise of this nature and displaying this kind of information about virtually all the practices of an area would have been unthinkable a few years ago. It shows that general practitioners may be less defensive than they were and more outward-looking and reinforces the recent observation concerning "... the increasing readiness of general practitioners to provide data about their work and their readiness to discuss its quality and significance."¹³ Moreover, though general practices are traditionally isolated and suspicious of each other, consensus of a sort must always have existed in some degree to allow medicopolitical bodies and postgraduate training programmes to function. The fact that it has been possible at all to create a handbook of information given about themselves by most of the general practitioners in a "natural district" shows that an embryonic consensus of the kind needed can be created by collaborative effort. We were only the catalysts in this enterprise and any credit for it belongs to all the general practitioners whose willingness to co-operate made the gazetteer possible.

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References

- ¹ Ministry of Health, *Communications between Doctors, Nurses and Patients: An Aspect of Human Relations in the Hospital Service*. London, H.M.S.O., 1963.
- ² King Edward's Hospital Fund for London, *Working Together: A Study of Co-ordination and Co-operation between General Practitioner, Public Health and Hospital Services*. London, K.E.H.F.L., 1968.
- ³ Ministry of Health, *The Field of Work of the Family Doctor*. London, H.M.S.O., 1963.
- ⁴ McLachlan, G., *National Health Service Twentieth Anniversary Conference*. London, H.M.S.O., 1968.
- ⁵ Hockey, L., *Care in the Balance*. London, Queen's Institute of District Nursing, 1968.
- ⁶ Wessex Regional Hospital Board, *What Do They Really Want?* Oxford, Alden Press, 1964.
- ⁷ Rue, R. E., and Golding, D. E., *The General Practitioner and the Hospital Service in the 1970's*. Oxford Regional Hospital Board, 1969.
- ⁸ Rhodes, P., *British Medical Journal*, 1968, **4**, 509.
- ⁹ Maxwell, R., *British Medical Journal*, 1973, **1**, 160.
- ¹⁰ Lefever, R., West, J., and Trevelyan, T., *The Times*, 23 September 1972, p. 15.
- ¹¹ Loudon, I. S. L., *The Demand for Hospital Care*. Oxford, United Oxford Hospitals, 1970.
- ¹² British Medical Association (Glasgow Division), *Doctor's Handbook*, 3rd ed. Glasgow, B.M.A., 1972.
- ¹³ *Journal of the Royal College of General Practitioners*, 1972, **22**, 205.

Outside Europe

Regionalization of Medical Education at McMaster University

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Since confederation in 1867 the Canadian provincial governments have been responsible for education and, in recent years, for most aspects of health. With nudging and financial inducements from the federal government, in the last decade each province has provided universal health insurance, and once the provincial departments of health became responsible for the adequacy of medical care they naturally became concerned about medical education.

Ontario occupies 412,582 square miles, an area more than four times that of Great Britain. The population reached 7.7 million in 1971, four-fifths of whom live in the southern one-

tenth of the province (fig. 1). Abundant ore, lumber, and fertile land are valuable natural resources. People live under varied circumstances: from lonely isolation in northern areas to urban crowding in populous Toronto (two million).

In 1959 the Ontario government sponsored comprehensive hospital insurance; 10 years later the government introduced insured medical services. At each stage the government wisely enlisted planning help from industry—both labour and management—and from the professions—medical, legal, and other. The Ontario Council of Health was formed in 1966 as the senior advisory body to the Minister of Health and, through him, to the Government of Ontario. The Council submits recommendations to improve medical services and to ensure effective employment of the necessary human and physical resources. Its members are selected to reflect a reasonable balance of public interest, expert knowledge and experience, as well as geographic distribution,¹ and it has already published an impressive series of reports (see Appendix).²

Early in its history the Ontario Council of Health recognized the need for an organization which could respond to distinctive regional needs and allow efficient use of health personnel and

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FIG. 1—Ontario. About four-fifths of population live in southern (hatched) area.

APPENDIX—Titles of Reports Published by the Ontario Council of Health Covering 1966-70

Health care delivery systems: Rehabilitation Services Laboratory Services Dental Care Services Role of Computers Community Health Care Role of Computers in the Health Field Perinatal Problems	Health statistics (2) Health Research Health Manpower Physical Resources Library Services Library and Information Services Education of the Health Disciplines Future Arrangements for Health Education Regionalization of Health Services (2)
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facilities. (One of us (W.B.S.) served on the original committee on regional organization). The council agreed that “such regional organization should be based, in general and where specifically applicable, on university spheres of influence and interest.”^a Health sciences centres were regarded as the logical focal points in this scheme. These centres are university-based complexes which teach the members of various health professions in an integrated manner. They have developed from the five medical schools of Ontario. The newest, at McMaster University in Hamilton, was initiated in 1965, with the appointment of a vice-president of the division of health sciences. Each of the five health sciences centres (London, Hamilton, Toronto, Kingston, and Ottawa) is located in a separate region in Southern Ontario. Several of them have made special arrangements with areas of Northern Ontario to provide education for health professionals in the North. These designated areas do not—and should not—interfere with established patterns of referral. Thus in the case of Hamilton the referral pattern has traditionally been split between London and Toronto, and this will change only as Hamilton shows its quality. Nevertheless, it is common sense for the government to regionalize administration, specialized services, and educational responsibilities.

The Hamilton-McMaster Region

Our region, shown in fig. 2, extends downwards from the Bruce Peninsula between Lake Huron and Georgian Bay to the Niagara

Peninsula between Lake Ontario and Lake Erie. From the tip of the Bruce Peninsula to the Niagara River is about 220 miles. Within the region, much of which is farmland, live roughly one and a half million people, half a million of whom live in or close to Hamilton, an industrial city whose main product is steel.

FIG. 2—The Hamilton/McMaster region.

Integration and cooperation have taken place in a variety of ways (see table). From the beginning the planning of medical education has involved community physicians. Even before the medical school was established the Hamilton Academy of Medicine was invited by McMaster University to identify the greatest needs in medical education. A survey of the membership showed that most believed that the medical schools should employ new approaches to undergraduate education; moreover, many community doctors were interested in undertaking part-time teaching. The results of the survey encouraged those of us who were first appointed to try new approaches in medical education, to develop a network of teaching units in the Hamilton area, and establish a residency training programme for family doctors.

Developments in Regionalization of Medical Education at Hamilton and McMaster

District Health Council Continuing education of practitioners in region Establishment of teaching units in region	Family practice residency training Northern Ontario McMaster programme Regional library service Education of nurse-practitioners Education of other health personnel
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DISTRICT HEALTH COUNCIL

The Hamilton District Health Council consists of representatives from hospitals, the health sciences centre, the academy of medicine, and other health organizations. It reviews plans for new developments and approves the expansion or curtailment of existing activities. The department of health and the hospital commission of the province require that plans which need additional governmental spending should be recommended by the district council before receiving governmental consideration. The council has an education committee, an audiovisual committee, and a library committee—all of which influence the development of medical education in the region, particularly graduate and continuing education.

The district health council provides the necessary forum for discussion and decision involving practitioners, the health sciences centre, institutions, and organizations. The council has the essential task of taking proposals from one or more constituencies and determining whether they are for the good of the whole region. It also identifies and supports a specialized function or unit as a regional resource; thus duplication is prevented, wasteful competition avoided, and mutual support encouraged.

Examples of Regional Educational Planning

CONTINUING EDUCATION OF PRACTITIONERS

The earliest educational activity of the health sciences centre was continuing medical education in the region, arranging for speakers to be sent to various cities in the area. Local initiative determines the choice of topics, selection of patients, and the best format for teaching. At the meetings informal discussions by local doctors (and nurses and dietitians where appropriate) are encouraged by the visiting speakers. In at least one city these sessions were the stimulus to establish regular hospital staff educational meetings for the first time. The visitors have acted as catalysts by demonstrating ways in which productive learning can take place.

A weekly television programme, jointly sponsored by the academy of medicine and the health sciences centre, reaches viewers in the region over open circuit late on Sunday evening during the autumn and winter months. Some of the programmes are videotaped in advance, some are live, others are a blend. Often these consist of the showing of a film (the B.B.C. has been a frequent source) followed by a commentary by local experts and an "open line" telephone discussion. Topics are chosen with the needs and interests of practitioners in mind. Sometimes practitioners have joined the staff of the medical school as participants.

REGIONAL UNDERGRADUATE, INTERNSHIP, AND RESIDENCY EDUCATION

From the outset the medical school became integrated with the hospitals and practitioners in the region. For many years there had been internships and residencies (house-staff) positions in the Hamilton hospitals. The medical school co-operated with these training programmes, strengthened them, and has recently become responsible for them. Clinical teaching units which consist of designated portions of hospitals (both inpatient and outpatient departments) have been established in family practice and consulting specialties. Each hospital has a formal agreement with the medical school allocating shared responsibility for personnel and facilities in each unit, where only supervised clinical clerks and the house staff are allowed to write orders; thus the practitioner temporarily relinquishes some medical responsibility for his patient. Fortunately there are sufficient hospital beds in the city to allow a practitioner who does not want to admit patients to teaching units adequate non-teaching beds, but even these participate in teaching in that consultants asked to see such patients involve residents personally assigned to them. These teaching units, which have been in operation since 1967, provide experience for over 300 students, interns, and residents. Most specialists in private practice and some family doctors have accepted part-time faculty appointments, admit some of their patients to the teaching units, and teach students, interns, and residents.

In Hamilton there are three general hospitals of 600-800 beds each, and a smaller hospital associated with several specialized units—for example, tuberculosis, geriatrics, and arthritis. The renal unit for the whole region is located at St. Joseph's Hospital where all the haemodialysis and transplants are done. The major regional centres in cardiovascular disease and in neuro-

logical and neurosurgical conditions have been established at a Hamilton General Hospital. The regional cancer and radiotherapy unit is at the Henderson General Hospital. Clinical teaching units in laboratory medicine are located in each hospital and form a regional network. Residents rotate from one hospital to another for such specialty training, thereby obtaining experience with expert teams. In these teaching units learning rooms have been equipped with a few journals, monographs, and audiovisual learning aids. The faculty have produced more than 500 slide/tape cassettes on most of the major topics in the medical curriculum. A special projection unit has been designed and is now produced commercially. It allows one to watch and hear a 15 or 20 minute presentation of 35 mm slides synchronized with a recorded commentary. The slides are stored in a Kodachrome Carousel magazine and the spoken portion is on a standard two-channel tape cassette, one channel containing electronic signals which control the automatic changing of slides. At little expense these slide/tape sets can be copied; at present we are producing 10 copies of each set new, and have placed them in the learning rooms of teaching units in the region.

THE FAMILY PRACTICE RESIDENCY

In selecting priorities we began where there was the greatest need. Accordingly, two years before the medical school admitted its first undergraduates, a residency programme in family practice was launched, directed by the department of family medicine. At present there are three family practice units (group practices) in Hamilton, and one in the village of Smithville (population about 1,000) located in the Niagara Peninsula. The training lasts from two to three years and allows experience in several types of group practice as well as with solo practitioners. About half the time is spent in family practice, the remainder in internal medicine, surgery (predominantly emergency surgery), psychiatry with a strong emphasis on family psychiatry, obstetrics, and paediatrics. The number of family practice residents increased more slowly than was initially hoped but has now reached 40. The staff consists of family physicians with either full-time or part-time faculty appointments.

MEDICAL EDUCATION IN NORTHERN ONTARIO AREA

A group of family doctors practising in North-western Ontario (fig. 1) has enthusiastically agreed to supervise senior family practice residents associated with them as juniors in their practice. These doctors are in communities at the western end of Lake Superior. This plan is the first phase of the Northern Ontario McMaster Programme. Later, clinical clerks will go to Thunder Bay (population about 100,000) for much of their clinical experience. These clerks will include students specially selected from this part of Ontario. The hope is that by selecting "native sons," and having them obtain clerkship experience in familiar surroundings, the students may decide to practise in the north, which is short of doctors. Members of the faculty will travel 1,000 miles from Hamilton to this northern satellite and stay for several weeks to work alongside local practitioners in providing medical education.

MEDICAL LIBRARY SERVICE

A regional medical library service has been established in Hamilton based on the health sciences library. Community hospitals contribute financially to supporting a regional medical librarian, who helps to train librarians in the region and who co-ordinates services. Every day a pickup lorry goes from one institution to another in Hamilton delivering books and journals on interlibrary loan. A regional list of holdings is available allowing each librarian to determine quickly whether a particular volume is available in the region and where it is. Requests for

rare publications can be filled through the Ontario Universities library network linking libraries from Ottawa in the eastern part of the province to Windsor in the south-western part. Lorries travel this distance of 500 miles daily. Occasionally reprints or originals are obtained from the McGill medical library in Montreal or from the National medical library in Washington.

NURSE-PRACTITIONER EDUCATION

Particularly in remote parts of Ontario nurses do much of the medical work, practising medicine with part-time supervision from physicians and telephone or radio consultations about emergencies. Nurse-practitioners also are emerging as important members of doctor-nurse teams in family practice. McMaster has established a one-year course for nurse-practitioners in the region. The course requires four months' full-time attendance at the health sciences centre plus four months of supervised practice in a family physician's office. The nurses learn enough history taking and physical examination to carry out the initial assessment of patients, most prenatal and postnatal care, well-baby care, and the management of certain diseases such as hypertension and diabetes. The doctor with whom they work must be in agreement with the aims of the course before accepting the nurse, and he is expected to attend certain of the sessions.

EDUCATION OF OTHER HEALTH PERSONNEL

A regional approach to the education of a variety of health personnel has been developed, with some of the leadership and teaching being provided by faculty members of the division of health sciences. There are regional schools for laboratory technicians, radiographers, physiotherapists, and medical secretaries. The size of the class depends on the needs of the region.

Employees of social agencies, teachers, clergymen, nurses, and physicians told the division of health sciences that they would welcome advanced education to improve their knowledge of human behaviour and their ability to help people with personal problems. Rather than provide several courses according to the type of worker (social service, pastoral counselling, visiting nursing, and individual and family therapy) one clinical behavioural course was designed. The mixed backgrounds of

those in the course was found to enrich the discussions, while the use of evening classes allowed most of the participants to continue their normal occupations.

Conclusions

We have found that regionalization requires much energy, goodwill, and mutual confidence. Each institution relinquishes precious autonomy reluctantly; despite prolonged discussion, some remain frustratingly suspicious. Institutional pride and independence—valuable and necessary for esprit de corps—often breed resistance to change. (But then we hear that implementation of the Todd recommendations in London faces similar difficulties).

When the provincial government has encouraged local initiative in planning and making important decisions, progress has been gratifyingly rapid. In the last year the province has introduced financial cutbacks for education and health. At regional levels there is apprehension that local initiative will be stifled and potential benefits of regionalization deferred.

So far, the policy of the provincial government established over 10 years ago to involve citizens, academics, professionals, and civil servants in co-operative planning has been fruitful. Regionalization has become accepted. Because of local initiative and the chance to innovate which accompanied the establishment of a health science centre in Hamilton, this region has moved quickly in medical and health education, service, and research. We have described a variety of regional activities in medical education; similar activity has occurred in service and research in the region.³ Though the details would obviously differ with local circumstances, the concepts appear to be feasible and valuable anywhere.

We are indebted to Professor E. J. M. Campbell for helpful suggestions.

References

- ¹ *Ontario Council of Health on Regional Organization of Health Services*, Suppl. No. 1, Ontario, Department of Health, 1970.
- ² *Ontario Council of Health on Regional Organization of Health Services*, Annex A, Ontario, Department of Health, 1969.
- ³ *Journal of the Royal College of Physicians of London*, 1972, 6, No. 4.