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Perspectives in Medicine

We are fortunate to span a revolutionary epoch in medicine. In this issue we welcome contributions which illustrate the changing phases of medicine from the turn of the century to glimpses into the future.

As depicted graphically in Dr. Quinlan's article, tuberculosis was the number one disease in Canada in the early 1900's. Many an aspiring author died of the dread disease. In fact, tuberculosis seems to have brought the pathos and cerebral stress particularly conducive to creative genius. Thousands of migrants died of the disease, which bred on poverty, overcrowding and malnutrition. In the West, Indians deprived of a nomadic life chasing buffalo, contracted the disease and died like flies.

The Anti-tuberculosis League was formed. A publication was produced in Cape Breton¹ and distributed free to 26,000 inhabitants in 1912. It spelled out simple rules of hygiene, proscribed spittoons and forbade kissing among sufferers! The outstanding achievement, however, was the establishment of an efficient sanatorium. Dr. Miller² in 1918 outlined his concepts of open air treatment, but the sanatorium could only treat a small proportion of victims at the time. It was not until chemotherapy and efficient surgery combined, that tuberculosis was controlled. How Dr. Miller achieved his success makes encouraging reading to anyone trying to organise medical facilities against bureaucracy and mass indifference. Tuberculosis is still with us, especially among the Indians and Eskimos. Here too, modern chemotherapeutic advances in microbiology continue to battle the changing susceptibilities of this ancient disease. The recent meeting of the Nova Scotia Tuberculosis and Respiratory Society emphasized their new role in the management, diagnosis and prevention of all Respiratory Diseases.

Mental illness at the turn of the century was crudely understood, as described by Dr. Murray. Advances have liberated thousands of people from the stigma of mental disease and mental institutions. Many patients can be treated in general hospitals, although mental illness remains one of our greatest problems. Our forefathers certainly never foresaw the tremendous increase in the medical use of drugs and their impact on society.

The article on Vanadium poisoning in Nova Scotia, by Dr. O. C. MacIntosh, is most important as it alerts to the danger of a wide group of diseases and the need to legislate accordingly.

A forecast of the future by Dr. Gordon gives us an excellent idea of the mileu we shall enjoy by the end of this century. There will be lots of old people, and we will require hospital and nursing care and geriatric facilities. If we cure cancer, relieve heart disease, alleviate degenerative diseases we will be busy looking after octogenarians.

Like it or not we have to tell society where we are going and prescribe appropriate medicine and legislation to cope with the situation.

A warm welcome is extended to Dr. Hatcher as new Dean of the Medical School. The background of his experience and his wisdom evident in this *Bulletin* augur well for the future of medicine in Nova Scotia. □

References on page 86.

B.J.S.G.

Address to the Faculty of Medicine, Dalhousie University February 18, 1976

J. D. Hatcher,* M.D., Ph.D.,

Halifax, N.S.

I am grateful for the opportunity to speak to you briefly on this occasion. For the past six months I have been living in two academic worlds — the one involving me at Queen's University where, until a few weeks ago my successor as Head of the Physiology Department had not been selected (I am now free of this responsibility except as an advisor to my successor, Dr. Vivian Abrahams); the other as Dean-designate at Dalhousie where I have been, at least philosophically and emotionally, ever since I decided to accept your invitation to come.

Because of these conflicts of time and space and trying to be two things at once, what I have to say today will be brief. In a sense, hearing an inaugural speech from a new Dean is, I suspect, a relatively new experience for most of you — please remember that giving one is an absolutely unique experience for me. I am fully aware of the line of apostolic succession I find myself in and am awed and not a little humbled by it. Perhaps, in an act of self-protection at the outset, it would be wise for me to take the same stance as the speaker who told his audience that whenever he was dull they might be assured there was a design to it.

Now I have been at one university — Queen's — which has a long Scots tradition and I come to Dalhousie which has a comparable historical background. So, from this experience I, like some of the other non-Scots in the audience, have become Scots by adoption or adaptation when necessary and have long ago recognized the truth of the generalization that mankind is divided into 2 groups — Scotsmen and those who wish they were. What I have felt here at Dalhousie lends the final proof to a new natural law in cardiovascular science which states that "Nowhere beats the heart so kindly as beneath the Tartan Plaid."

When I was a graduate student at the University of Western Ontario, I had the enormous advantage of being taught by Dr. Alan Burton whom many of you will know. On the wall of his office in the old medical school hung a framed quotation from Francis Bacon defining a scientific attitude or scientific mind. It read as follows:

A scientific mind is a mind nimble and versatile enough to catch the resemblances of things which is the chief point and at the same time steady enough to fix and discern their subtle differences, endowed by nature with the desire to seek, patience to doubt, fondness to meditate, slowness to assert, readiness to reconsider, carefulness to set in order and neither affecting what is new nor admiring what is old and hating every kind of imposture.

*Dean, Faculty of Medicine, Dalhousie University, Halifax, N.S.

Undoubtedly due to his influence, this quotation occupies a large expanse of wall in the foyer of the new Medical Science Building at Western, presumably enjoining all who work and learn there to keep it as an objective.

My process of familiarization with and indoctrination to Dalhousie is obviously still incomplete but I am nonetheless certain of one thing, and that is that the impact of these philosophical Baconian principles are evident in students, faculty, and administrators in their cooperative aspirations to create the academic environment for the health sciences that is required in today's society.

As at least some of you know, through circumstances and my own natural aggressive tendencies (which, depending on your point of view, you will come to judge as an asset or a liability), I have become involved in some of the problems of the Faculty at a level and intensity which I did not anticipate happening quite so soon. I appreciate the degree of understanding and assistance you have provided. Dean Macpherson, and the Assistant and Associate Deans, the office staff, Vice-President Stewart, Faculty Council, the Department Heads and many individual Faculty members and students, President Hicks and the various Vice-Presidents have been helpful beyond measure. I wish to state my thanks publicly.

I am under no delusion that I have done more than make a small dent in understanding and grappling with the issues but I promise you diligence born of an affection for work in rapidly becoming involved.

It is perhaps not unnatural, if you think on it for a moment, for a new Dean to concentrate more on what he foresees his problems to be than on the accomplishments of his predecessors. After all, those successes were yesterday's problems. But your accomplishments are great; many are unique and not fully appreciated, I think, by the rest of Canada. You have a superb student body with very high standings in the Council examinations and who are highly involved in Faculty affairs. This is an obvious credit to the curriculum which brings science and clinical practice face to face, and to a dedicated group of teachers. You are doing strong and viable research of international standing. At Dalhousie there is a remarkable and rare capacity for self evaluation and self criticism ranging from the department review process to student feedback on instruction. The Faculty government is strongly democratic. You have a unique internship programme and an exceptional record on Royal College examinations. The university offers exciting new programmes, one for example, in Family Medicine. Unique to Dalhousie is the foremost Continuing Medical

Education programme in Canada. And, not least of your accomplishments is this impressive Tupper Building. What magnificent base from which to be launched as new Dean. I am grateful to all of you who have put so much into these achievements.

And yet, if you think on it some more, this is not a time one would select to become a Dean unless one had a perverse desire to wear a hair shirt. Such Freudian analyses I'll leave up to Ben Doane and his staff.

We cannot pick up a newspaper without reading about the critical balance our society is in from the two edged sword of inflation and recession. The costs of Health Care and the costs of Health Care education are coming under increasing criticism and financial paring.

Ronald Watts, speaking before the Canadian Club in Toronto last month, stated the situation as follows: "Gloom is very much in fashion these days within our society. Ecologists, economists, the Club of Rome, climatologists and even philosophizing Prime Ministers are all warning us of the disasters ahead." Universities are certainly feeling this strain, and faculties of medicine are particularly vulnerable for they, along with the methods and costs of health care, are identified as a key part of the inflation problem. So the years ahead for those of us involved in the mix of teaching, research, and patient care, which are the essence of our mission, will be more difficult than any of us have faced before, although, as a child of the depression and a youth of the last war, I'm not sure that these experiences will not have some Pavlovian value. As Ronald Watts stated later in his speech, "Hard times are not necessarily ennobling but often it is only in such times that difficult decisions about priorities are made", that might have been made earlier.

As the well known Canadian economist, John Deutsch recently pointed out,¹ the programmes of Universal Health Insurance and the concept of universal accessibility to higher education were implemented through institutions and organizations which had evolved under radically different principles which emphasized voluntary effort and self help, individual initiative and responsibility, self determination and autonomy. Laudable as these characteristics may be in themselves, they are at odds with much of the inner logic of a system of collective and central government finance of health care and education and the necessary corollary of closely coordinated planning and rationalization in order to avoid needless and costly duplication. As evident as the need may be for collective and coordinated planning it comes into sharp opposition and conflict with local autonomy and with local and individual responsibilities and ambitions, which as long as the well contained water as it did during the 1960's permitted unprecedented expansion and duplication.

The reconciliation of local autonomies with the needs of, indeed the responsibility to the taxpayer for coordination and rationalization is probably the prime job we must face as a Faculty in the next few years if the teaching, research and patient care we do to meet this Faculty's objectives are to be maintained and flourish in a measure commensurate with our mission.

This does not mean that new programmes and new facilities cannot be created or that all growth will stop. It does mean that, as a Faculty, we must become involved in planning at a high level of sophistication. And we cannot plan in isolation, but must do so with sensitivity to and in cooperation with the planning in other Health Science Faculties and Schools and particularly to that in our teaching hospitals. Rates of growth will undoubtedly be slower than many may wish and may involve us in difficult decisions and trade-offs to preserve the essential excellence already attained. Whatever we are currently doing and whatever we plan for in the future must be eminently rationalized and coordinated if we expect to convince Government from whence most of our financial nourishment flows of the merits of our case.

Vice-President Stewart in his address to Faculty in September 1975, and Dean Macpherson in a recent Friday-at-Four presentation, have already emphasized the need for long term or strategic planning and enunciated some of the important issues requiring attention. You will recall they mentioned and gave cogent reasons for:

- 1) the need to redefine our requirements for teaching units in affiliated teaching hospitals and other institutions and suggested the need to define different types and locations of teaching units which are more directly applicable and relevant to the types and stages of the learning process undertaken by our students in the four undergraduate years and by internes and residents.
- 2) the need to define the proper and appropriate role of the several metro hospitals for patient care, teaching and research.
- 3) the need to collect data to permit evaluation of the costs to preclinical departments of educational costs to other schools and faculties.
- 4) the need to collect data in clinical departments to allow a more accurate definition of University costs relating to the academic activities of teaching, research and administration as distinct from the costs of such things as, for example, the administration of hospital services.

To this list many other items could be added, all of which interlock to a variable degree with the affiliated teaching hospitals, other schools and Faculties in the University, a welter of professional societies and agencies, and ultimately, of course, Government which can by no means be considered simplistic in organization. In admonishing the various sectors responsible for health care education, research and health care delivery to rationalize and coordinate their efforts, Government must also react by providing access to a decision-making process which is capable of responding to the interdependence of teaching, research and patient care in the modern Health Science Complex.

To paraphrase Dean Macpherson, to retain appropriate control of our academic destiny has become an incredibly complex undertaking. But complex or not it must be done.

To me, academic planning involves all aspects of short, intermediate and long range programme development in relation to academic programmes, personnel, facilities, and finances as they bear on agreed objectives and contingencies. *Within a faculty such as ours it must proceed on a wide base of input and information and broad consensus.* Planning involves five essential steps:

- 1) position assessment — where we are
- 2) strategic planning — where we want to go and how soon
- 3) operational planning — how we will get there and what the possible operational options are
- 4) budgeting and finance — the financial plan in getting from where we are to where we want to go by the route selected
- 5) rolling adjustment — the ability to keep the first four items updated with the vicissitudes of the times, — a capacity to roll with the punches.

After my arrival in mid-March, I intend to embark on my own attack on position assessment by inviting myself, with your agreement, to a department meeting with each department. I want to meet as many of you as I can on your home ground, to hear of your successes and your problems and to let you know I have an open ear despite a 20% bilateral hearing loss.

I have but limited faith in serendipity; I have unlimited faith in the capacity and ability of faculty and students either through existing structures or by evolving suitable new mechanisms to accomplish what is right for the good of the whole. This Faculty is not lacking in this resource and I ask for your help in this vital work. □

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1. Deutch, J: AC MC Forum, Vol 8, No 5, 1975.

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The Dean

Talks to the Bulletin

For the former head of the Queen's physiology department an inaugural Dean's Address to the Dalhousie Medical Faculty was "an absolutely unique experience". However novel the experience, Dr. J.D. Hatcher, in confirming his own "naturally aggressive tendencies", outlined clearly his views on the administration of a regional medical school and major research centre in the face of an ever-increasing nation-wide fiscal crunch.

Citing the particular vulnerability of medical education and health care delivery costs to public identification with the problems of inflation, he promised his audience that "the years ahead for us involved in the mix of teaching, research and patient care — which are the essence of our mission — will be more difficult than any of us have faced before." But he conceded a glimmer of hope could be seen along the inflationary route to a gloomy horizon because — in a kind of expression of Pavlovian value of his own past experiences — hard times tend to lend themselves to concrete decisions on priorities. Still, "this is not an age when one would most likely select to become Dean, unless you have a perverse desire to wear shirts with the hairy side in".

But, sartorial (and psychological) inelegance notwithstanding, the new Dean had words of caution for those who would take the words of modern-day Cassandras too much to heart, as he explained in a subsequent interview with the *Bulletin*.

"It's easy to predict that at the current rate of expansion — of escalation — health care costs will eventually consume nearly all of the national budget. But such predictions are easy to make and have several fallacies. It's equally easy to predict from current indicators that by about the year 2000 the entire population of the United States will live in California, own their own pleasure craft and have VD. Now we know that's not going to happen.

"The same applies to dire prophecies on out-of-control health care costs. The truth is, there are factors which tend to blunt these predictions. With the advent of universal health insurance, growth in quantity of service and costs was predicted and it was also estimated that the amount of service would eventually level off, which, in fact, is occurring. What was not predicted was inflation, so we are experiencing other forms of control of costs than that occurring from levelling of amount of service. Some of these are being felt right now across Canada such as the cutbacks in beds in Ontario, for instance. These methods are pretty crude and are based on inadequate planning; but they exist, or are coming into existence almost daily. While we may not be happy with them, at least — or at best — they may afford enough of a breathing spell to allow us to develop a rational approach to the main problem.



"Quite frankly, in terms of medical education, at Dalhousie we have to rationalize economy with the high standards the medical school here is famous for. Dalhousie has an internationally recognized eminence in the field of medical education and research. We have to preserve that eminence and make sure that what we know to be true holds true in whatever economies we attempt to effect."

Dr. Hatcher is not entirely convinced that sufficient co-ordination exists between the health care structure and its funding agencies, governments. "We have a public trust, you know, in that we operate with public funds. This applies to the whole health care system, not to education alone. Obviously, this implies that people in the health field have to explain their specific goals to government — and the public benefits which we hope will accrue — and on the other side of the fence government decision-makers must be willing to lend an understanding ear while at the same time keeping us apprised of their own goals and limitations.

"I've already said that the reconciliation of local autonomies with the need for co-ordination and rationalization — as well as our responsibility to the taxpayer — must be this Faculty's prime job in the next few years. We have to do this in concert with other health science faculties and schools and in particular with our teaching hospitals. If we don't, then how can we expect to convince government — our major source of funds — of the merits of our financial case?"

"This is going to require sophisticated long-term planning, all of which must interlock with the needs and aspirations of our teaching hospitals, other schools and faculties within the university, a pretty significant number of professional societies and agencies and, of course, with government. I think there are five essential elements in any form of planning. Those elements or steps are: 1) position assessment — the evaluation of where we stand right now; 2) strategic planning — that is, what our goals are and when we want to achieve them; 3) operational planning — in fact, the nuts and bolts of methodology, including all possible options; 4) budgeting and finance — which tends to speak for itself; and, 5) — something I think is vitally important — the ability to

make rolling adjustments: that is, the ability to adjust to the demands of changing times; a capacity to roll with the punches, as it were.

"At the same time, the university can't expect to exercise planning and economic controls without a sensitivity to what's happening in the field. The school has to have feedback from the field — and not only from physicians — if we're going to establish planning systems based on appropriate priorities. This is going to call for a fairly sophisticated and formalized form of communication — and, I must admit, I tend to believe that a bit of formality tends to improve communication rather than the reverse. In this regard I am pleased that The Medical Society of Nova Scotia and the Faculty administration have formed a joint liaison committee to promote consideration of issues of mutual concern."

What about the practising physician — the doctor "in the field?"

"First of all, let me stress that Dalhousie has the foremost continuing medical education program in the country. I'm extremely proud and happy to have become associated with it. The CME people here are really working wonders.

"From an academic point of view, I would predict a greater involvement on the part of practising physicians in some areas of research such as screening programs and the assessment of health needs and delivery systems. I realize that a great deal of this work is going on already, but I think that preventive medicine is such an important field that we cannot afford to give any less than our best effort.

"In terms of cost controls at the delivery end of the spectrum, I sympathize with doctors who are daily faced with what can only be termed a moral dilemma. On the one hand there is the patient's expectations of service and the resultant pressure on doctors to provide it, and on the other hand we have the intrusion of economic restraint programmes in the health field."

Any planning concept can be broken down into short-range, intermediate and long-term components. While Dr. Hatcher feels that a rationalized planning program based on priority-selection and cost-benefits is today's best — and possibly only — bet, his concern about some of the current manifestations of economic restraint is evident.

"Take research, for instance. A cut-back on research grants can play absolute havoc with a university medical program. Researchers on, say, a five to seven-year project who find their ability to carry through their work restricted or even denied because the financial well is suddenly drying up are going to get pretty discouraged. And if they leave, you're going to have a darned hard job getting them back into the fold. It's particularly discouraging when you consider that some of these projects may result in eventual cost-savings in health care."

Could savings be effected — or could the line be held — by streamlining the medical curriculum?

"Yes, that could be a pretty popular argument for greater economies. The only problem is, people tend to forget or ignore what they don't see. The fact is, the curriculum has been streamlined in a fairly remarkable manner.

"When you consider the tremendous explosion in medical knowledge and scientific technology which has taken place over the last ten years, let alone the last twenty, medical schools have done a remarkable job in containing the time it takes to produce a qualified physician. In fact, the duration of a doctor's training is essentially the same now as it was twenty years ago. That's pretty remarkable when you consider the amount of new knowledge the medical student has to absorb today.

"This is a clear-cut example of how medical schools have responded to economic demands. I wouldn't venture to guess what our costs would be if we expanded the duration of the curriculum to meet the flood of new knowledge rather than adapt by developing more sophisticated and more efficient teaching methods and curricular changes."

In spite of economic restraints which, like death and taxes, enjoy a begrudged universality, Dr. Hatcher is optimistic about his new job.

"I've already mentioned my approach to planning based on an appreciation of priority demands and goals. I am convinced that co-ordination, communication and effort will allow us to maintain the school's high educational and service standards. And I think there are some other positive points we should consider.

"Dalhousie has a superb student body, a curriculum which brings science and clinical practice face to face and a truly dedicated group of teachers. The school has an enviable international reputation in the field of research and a truly remarkable capacity for self-evaluation — something for which past and present Faculty members deserve a great deal of credit and praise. I've already brought up the fact that Dalhousie has Canada's foremost CME program — but I think it warrants repeating — and I mustn't neglect the exciting new programs Dalhousie has initiated under the auspices of a strong, democratic faculty government.

"I must say, too, that I am delighted at the close relationship between the School of Medicine and The Medical Society of Nova Scotia. I suppose it's unique in the sense that the Society has offices in the same building, but the established working relationship itself is what's important and I look forward to maintaining it and to working together with the Society in the achievement of common goals.

"In my first speech to the Faculty I said I had limited faith in serendipity and that I preferred to put my faith in the capacity and ability of Faculty and students to accomplish what is right for the good of the whole. I think it might be appropriate to drop those intra-mural limitations and to extend that faith to the similar and already demonstrated qualities of Nova Scotia's entire health care community." □

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Nova Scotia Sanatorium 1904-1975

J. J. Quinlan,* M.D., F.R.C.S.(C),
Kentville, N.S.



Aerial view of the Nova Scotia Sanatorium, circa 1962.

On December 21, 1975, the Nova Scotia Sanatorium was amalgamated with the Blanchard-Fraser Memorial Hospital of Kentville, and is now known as the Miller Hospital for Diseases of the Chest. Most fittingly the name honors the memory of Dr. Arthur Frederick Miller (1877-1965) who came to Kentville in 1910 to become the first Medical Superintendent of the then Provincial Sanatorium which had been opened June 15, 1904 and which, in 1910, contained 18 beds for the treatment of consumptives. Through his untiring effort and his missionary zeal, he was to see it grow to a complex of 20 buildings with 400 beds and to become one of the foremost institutions for the management of tuberculosis on the continent.

It is an understatement to describe the late Dr. Miller as a remarkable man. A native of Prince Edward Island, one can say it was fortunate for the Province of Nova Scotia and for the fight against tuberculosis in general that he, himself, developed the disease shortly after his graduation from Dalhousie University in 1904. He went to Saranac Lake where, first as a patient and, later as a physician, he became associated with Dr. Edward Livingstone Trudeau, the originator of sanatorium treatment for the tuberculous in North America.

It was at Trudeau's urging that Dr. Miller accepted the offer made to him by the Province of Nova Scotia to become the first superintendent of the Sanatorium. When he arrived in 1910, the task ahead of him seemed insurmountable. To

*Thoracic Surgeon, The Miller Hospital for Chest Diseases, Kentville, N.S.

begin with, he was to deal with a disease that, in 1910, was killing 1,500 Nova Scotians every year, and the newly established Provincial Sanatorium was not making much of an impression on either the medical profession or the general public. It was quite depressing for him to read from the annual report of 1909 submitted by the then Matron, "Fully one-half of all admissions to the Sanatorium to date are now in their graves". Everywhere he looked, he was faced with apathy and ignorance, not only from the public but from his own medical associates. He knew he had to preach the gospel that tuberculosis could be conquered.

When he died in 1965, his widow made his records available to me. He was meticulous in retaining everything concerning the Sanatorium. Included were copies of the numerous addresses he gave to a surprising variety of audiences, which included not only medical societies but service clubs, schools, women's institutes, labour unions, the public in general and, on several occasions, to the congregation of the then Methodist Church of Kentville from the pulpit on Sunday evenings. One is amazed at the opposition he encountered, most of it, regrettably, from the profession. He was a fighter, however, and he persevered and won.

From 1910 to 1916, Dr. Miller was alone. He made the regimen of fresh air, rest, and good food the basis of his treatment and, if some innovation was proposed, he was quick to evaluate it. One of the most exciting episodes in his entire career must have been the night in 1914 when he carried out the first artificial pneumothorax treatment in a

patient who was having uncontrollable lung hemorrhage. The x-ray was some years into the future and he had but his stethoscope and his hands to determine from which lung the bleeding was occurring. He then introduced a needle into the chest and injected air between the lung and chest wall. It was successful and the hemorrhage ceased. This was a daring maneuver, and one shudders at the complications that could have ensued.

The growth of the Sanatorium was rapid. In 1912, Pavilions I and II were erected, with each containing 18 beds, raising the total capacity to 54. In 1916, the Federal Government asked Dr. Miller to accept 100 tuberculous soldiers and agreed to build three pavilions on the Sanatorium grounds. Pavilions III and IV were completed in the winter of 1917. Later the same year, a sudden request was received from Ottawa to accept 100 additional soldiers who were already en route from England to Nova Scotia, and an emergency tent colony was created which served reasonably well until all the tents were flattened by the August gale of 1917.

The Federal Government again got busy and quickly erected a large infirmary, a nurses' residence, a service building, an isolation hospital, four pavilions, a recreation hall, a vocational retraining workshop, a laundry, and power house. By May 1918, there were 24 buildings with a bed capacity of 350, a staff of five physicians, 24 nurses, and a large number of clerical workers, orderlies, maids and other employees. Of the 350 patients, 300 were soldiers in uniform. X-ray equipment was obtained in 1921. Artificial pneumothorax was now used more frequently and surgery which at that time was restricted to removal of ribs, was begun. Patients for these primitive thoracoplasties were referred to the Victorial General Hospital where the operations were performed by Drs. J. G. MacDougall and H.K. MacDonald. In 1932, the then New Infirmary was opened at a total cost of \$250,000. This was the last structure erected to actually house patients and, today, is the only building being used for that purpose.

Surgery was being used more and more throughout the world for the treatment of pulmonary tuberculosis, and in 1934 a young surgeon, Dr. Vernon D. Schaffner, who had just finished his training at the Royal Victoria Hospital in Montreal, under the guidance of one of the great pioneers of thoracic surgery, Dr. Edward William Archibald and his assistant, Dr. Norman Bethune, came to Kentville and was appointed Consultant Surgeon to the Sanatorium. A surgical program was begun, the first operations being performed at the Eastern Kings Memorial Hospital in Wolfville. It was not until 1936 that the Department of Public Health in Halifax was sufficiently impressed to allow conversion of a portion of the patients' quarters on the third floor of the then New Infirmary to an operating room suite. Throughout the years since then, it has been in these cramped quarters that one of the most active thoracic surgical programs in the country has been carried on.

In the meantime, in 1935, a young doctor, who was in the future to play such a large part in the development of the Sanatorium, was appointed to the staff in the person of Dr. J. Earle Hiltz who planned to stay only for three months prior to

entering general practice. Actually, he remained until his sudden death in 1969. Dr. Hiltz became Assistant Medical Superintendent in 1938.



Medical Staff N.S. Sanatorium. May 1935.

Left to right: Unidentified (interne), Dr. H.R. Corbett, Dr. J. S. Robertson, Dr. A. F. Miller, Dr. D. K. Murray, Dr. C. J. W. Beckwith and Dr. D. M. MacRae.

In 1939, the Second World War broke out and by 1941 its impact on the Sanatorium was beginning to be felt. Physicians, nurses, and dietitians left to join the Armed Forces and, at the same time, there was a considerable influx of patients who had developed tuberculosis while on active service. To replace the physicians, three young graduates of the medical class of Dalhousie in 1941 were appointed to the staff, among them the writer. By 1944 a marked shortage of both physicians and nurses existed. Fortunately, the Royal Canadian Navy began to help out, and a series of naval medical officers arrived for detached duty at the Sanatorium. I list them because one of them obviously was to have considerable influence in the later development of the Sanatorium and, in particular, on the life of one of the physicians on the staff. In May 1944, Surgeon-Lieutenant John McCulloch was appointed; in January 1945, Surgeon-Lieutenant Alastair MacDonald; on May 3, 1945, Surgeon-Lieutenant Helen M. Holden; and, in June 1945, Surgeon-Lieutenant Gordon Stewart. Surgeon-Lieutenant Holden returned to the Sanatorium in November 1945 after demobilization, left in August 1946, and came back permanently in August 1947, having married in the previous month.

Dr. Miller retired October 1, 1947, but not before he witnessed the performance of a drug which was to herald the beginning of the end for tuberculosis. Streptomycin was first used at the Nova Scotia Sanatorium in February 1947, and

was the first of a number of potent antituberculosis drugs which, in 25 years, were to render most other modalities of treatment obsolete and, incidentally, to pave the way for the amalgamation of the Nova Scotia Sanatorium and the Blanchard-Fraser Memorial Hospital.

Dr. Miller was succeeded as Medical Superintendent by Dr. J. Earle Hiltz, the physician who had come for three months in 1935. Dr. Hiltz was an outstanding example of the right man at the right time. There was a lot to be done, he was superbly equipped to do it, and he did it well. The medical staff was augmented, a program of affiliation of student nurses from other parts of the Province was begun, a school for Nursing Assistants was established, newer surgical procedures involving lung resection were encouraged, and above all, the impact of the newer drugs was having on the disease was fully appreciated.

While Dr. Hiltz, with his drive, his expertise, and his personality exerted a tremendous influence on the control and treatment of tuberculosis throughout the Province, I would like to remember him as the real founder of the Miller Hospital for Chest Diseases. By 1956, drug treatment of tuberculosis had not only reduced the death rate to a minuscule proportion, it had also radically changed the type and duration of treatment so that a large number of sanatoria were closed and there were unused beds at the Nova Scotia Sanatorium. In spite of having to fight at every turn the medical hierarchy in the capital city, he was able, surreptitiously at first, but later with the consent of the Department of Health, to begin the treatment of chest conditions other than tuberculosis. Members of his staff, both medical and nursing, were encouraged to broaden their interests by becoming knowledgeable in chest disease in general and, soon, a rudimentary department of respiratory technology was established. As the years went by, more and more individuals with lung cancer, lung abscess, lung dust diseases, miscellaneous chest conditions and, in particular, a number of the huge segment of the population of Nova Scotia who suffered from chronic obstructive pulmonary disease were admitted and treated. When he died suddenly on March 22, 1969, he had been in the process of attempting to get the name of the institution changed and, in particular, to eliminate the word "sanatorium".

On his death, Dr. H. M. Holden became Acting Medical Superintendent and, later, the first Medical Director. While she made an outstanding contribution to the increased efficacy of tuberculosis treatment in her study of the first major drug since 1952, Rifampin, she has given even more time to the development of programs for the management of nontuberculous chest diseases. Three years ago, she began a survey to reinforce her impression that chronic obstructive pulmonary disease was a major problem in Nova Scotia and found it to be far more prevalent than she had feared. Under her guidance, a program of trying to do something for these unfortunate individuals both in the institution and by outpatient and home care facilities is well under way. Today, over 80 percent of admissions to the Sanatorium are for conditions other than tuberculosis. The Sanatorium regimen has become obsolete as tuberculosis responds so well to

drugs, and it is most appropriate that the Sanatorium is to be the Miller Hospital for Chest Diseases.

It is not without a feeling of sadness that we see the end of an institution that has lasted for 72 years. Tuberculosis is still with us but there is now no reason why it cannot be treated like any other disease in the mainstream of medicine. There is an even greater challenge today in attempting to control far more lethal lung conditions. With the great tradition behind it, the Miller Hospital for Chest Diseases is prepared to meet that challenge. □

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"Pheu is all Pneu to me"

Apologies for a glaring error in the advertisement for a visiting professor in Pheumonology* in the last issue.

Pseudo classical words are proliferating, methodology, nephrology, and oncology. Each new development brings its collection. There is a move for simple plain terms, thank goodness.

The Nova Scotia Tuberculosis and Respiratory Disease Association unanimously supported a notice of motion by Dr. Landrigan to call itself the Nova Scotia Lung Association.

The Editor

*Correct spelling is pneumonology

43rd Annual Report of the Medical Superintendent of The Nova Scotia Hospital for the Insane 1899-1900

T. J. Murray* M.D., F.R.C.P.(C),

Halifax, N.S.

On a quiet Sunday afternoon I was browsing through some old medical books accumulated at local book sales and became interested in the Medical Superintendent's Report on the Nova Scotia Hospital for the Insane at the turn of the century. It illustrates some of the striking changes that have occurred in psychiatric care and concepts, and provides an enlightening picture of one aspect of medical and social life at the end of the 19th century. The following highlights from the report are of considerable interest even today.

Hospital Statistics

Dr. W. H. Hattie, the Medical Superintendent, reported that in 1899 there were 127 admissions, 25 of them return cases. Fifty-one patients, or 40.2% of admissions, were discharged as "cured"; this was below the hospital's previous average of 44%. The number of males and females on the lists of those admitted and those cured were about equal. Dr. Hattie regretted the tragedy of patients who were not cured and laid much of the blame on the hospital's defective equipment and inadequate facilities although he did recognize other causes of persistent insanity such as degeneration, imperfect development and causes which were "beyond the reach of human skill".

Dr. Hattie's era closely followed the time of barbarous and punitive approaches to the mentally ill, both in European and North American institutions. In view of this, it is interesting to note the significant cure rate in the Nova Scotia Hospital which, like its predecessors, had a large population of chronically ill patients. Dr. Hattie noted with some pride that, "mechanical restraint is but seldom used, save for surgical reasons and as much freedom as is possible is granted to all those whose condition will permit it. The use of sedative, hypnotic and depressive drugs is avoided as much as is possible, while every effort is made to improve the general health in the hope that as this end is attained it may be accompanied by corresponding result in the mental condition." But he also lamented the lack of money to provide facilities and equipment to help the patients, stating, "the possibility of being doomed to chronic insanity as a result of insufficient provision for proper care is almost too terrible to think of, and yet it is a possibility that must not be overlooked."

Finances

Dr. Hattie apologized for going over his budget of sixty-five thousand dollars by \$70.79. Today it seems amazing that

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one could run an institution with over 400 patients for sixty-five thousand dollars a year. His complaints of increasing costs for food, fuel and clothing show a definite parallel between conditions at the turn of the century and today.

Expenditures during the year 1899-1900 included a long list of foods from apples (\$127.26) to wheat (\$7.20), with a total cost of \$16,481.63 to feed over 400 people for one year. That works out to about \$41.00 per patient per year for food. Other expenditures included a gavel (\$25.95), a rustic seat (\$1.70), a buffalo robe (\$10.50) and expenses for the library (\$2.60). The cost of recapture of patients was listed as \$8.50. Household expenses included the cost of clay pipes (\$8.45), shoe blacking (\$8.50), and washboards (\$2.25).

There is an interesting comment that one patient, who had been a resident of the hospital for 42 years, had cost the province a total of not less than six thousand dollars exclusive of the interest which this outlay might otherwise have accumulated. Imagine what 42 years would cost at present hospitalization rates!

Improvements

The superintendent felt that the Nova Scotia Hospital for the Insane ranked well in comparison to other hospitals of the same type, but suggested that such hospitals were universally understaffed, especially with regard to nurses. One nurse looked after an average of 12 patients and had to do the housekeeping for the ward as well.

He requested a number of improvements in facilities including a reception area and accommodation for recent admissions because it was deleterious to new and potentially curable patients to be suddenly admitted to a ward "full of insane people, many of whom may be of objectionable habits, many chronically alienated, and many hopelessly insane".

In that year a new barn and piggery were built on the hospital grounds, and the cattle barn was moved to another location. Dr. Hattie reported delight at the addition of electric lights to a few of the buildings and found this to be very efficient, definitely preferable to the gas lights upon which they depended in the other buildings.

Training School for Nurses

The Lieutenant-Governor, Sir Malachy B. Daly, presented the DeWolf Medal to Miss Irene Settle for leading in the nursing examinations that year. Because they had found that

the trained nurse greatly improved patient care, they decided that year to extend the nursing training to male attendants. In 1894 they had graduated the first two nurses, Harriet Sampson and Elizabeth Ogilvie; in 1900 their graduating class had increased to nine, four of them men.

Causes of Death

There were 786 deaths in this institution from 1860 to 1900 (Table I). The commonest causes of death were pulmonary tuberculosis (234), general debility and old age (85), paretic

dementia (74), exhaustion from chronic mania and melancholia (70), apoplexy and paralysis (66) and epilepsy (38). Of interest also, were several other causes of death: phrenitis (3), pemphigus vulgaris (1), homicide (1), suicide (14), and accidents (3).

Causes of Insanity

Table II shows the interesting list of causes of the mental illnesses of patients admitted to the hospital in one year.

TABLE I
THE CAUSES OF DEATH

Showing the Causes of Death, from the opening of the Hospital in 1860 to the present date, September 30th, 1900.

| CAUSES OF DEATH | TOTAL |
|---|------------|
| Diseases of Nervous System: | |
| Apoplexy and Paralysis | 66 |
| Epilepsy | 38 |
| Paretic Dementia | 74 |
| Locomotor Ataxia | 4 |
| Exhaustion from Chronic Mania and Melancholia | 70 |
| Phrenitis and Abscess of the Brain | 3 |
| Acute Meningitis | 2 |
| Multiple Sclerosis | 1 |
| Diseases of Respiratory System: | |
| Inflammation of the Lungs | 30 |
| Inflammation of Bronchi (Influenza) | 5 |
| Pulmonary Tuberculosis | 234 |
| Abscess and Gangrene of Lung | 7 |
| Diseases of Circulatory System: | |
| Organic Disease of Heart | 25 |
| Aneurism | 4 |
| Gangrene of Extremities | 1 |
| Diseases of Abdominal Viscera: | |
| Peritonitis | 11 |
| Enteritis | 3 |
| Diarrhoea and Dysentery | 27 |
| Gastric Ulcer | 3 |
| Hepatic Cirrhosis | 5 |
| Hepatic Abscess | 1 |
| Chronic Nephritis | 15 |
| Acute Cystitis | 1 |
| Psoas Abscess | 1 |
| Diabetes | 1 |
| Specific Diseases: | |
| Pemphigus Vulgaris | 1 |
| Acute Delirium | 21 |
| Septicaemia | 1 |
| Erysipelas | 10 |
| Enteric Fever | 9 |
| Cancer | 8 |
| Acute Osteomyelitis | 1 |
| General Causes of Death: | |
| General Debility and Old Age | 85 |
| Homicide | 1 |
| Suicide | 14 |
| Accident | 3 |
| TOTAL | 786 |

TABLE II
ASSIGNED CAUSES OF INSANITY

Showing the probable cause, apparent or assigned, of the disorders in the admissions, from October 1st, 1899 to September 30th, 1900.

| CAUSE | TOTAL |
|--------------------------------|------------|
| Puberty | 1 |
| Parturition | 5 |
| Lactation | 3 |
| Climacteric | 8 |
| Senile decay | 6 |
| Business worries | 8 |
| Domestic worries | 9 |
| Disappointment in love | 3 |
| Epilepsy | 2 |
| Grief | 10 |
| Fright | 1 |
| Onanism | 8 |
| Intemperance | 6 |
| Syphilis | 2 |
| Debility | 18 |
| La Grippe | 2 |
| Unknown | 35 |
| TOTAL | 127 |
| History of Heredity in | 56 |
| History of previous attacks in | 29 |

Regulations for the Admission of Patients

Although anyone could recommend the admission of a patient to the hospital, two medical certificates and completion of a warrant chargeable to the municipality were required for admission. If a patient's admission was not chargeable to the municipality, a bond for a private patient had to be posted. Because of the crowded state of the hospital, the office of the Commissioner of Public Works and Mines, where the medical certificates, warrants and bonds were to be presented, was obliged to give preference of admission to presumably curable cases. When admitted, each patient was expected to have two good suits of clothing; a third suit for occasional use was considered very desirable. It was stated that those about to be committed to the hospital should invariably be informed of the fact before leaving home, as "everything like deception must be scrupulously avoided".

I wonder what our present care of psychiatric patients will look like to future physicians 75 years from now. □

The Impact of Changing Population Structure on Hospital Utilization in Nova Scotia

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Halifax, N.S.

Declining fertility rates and lengthening life expectancy are leading to an unprecedented increase in both the number and proportion of persons aged 65 and over in all industrialized countries. This changing population structure will be increasingly reflected in changing demands for hospital beds brought about by a decrease in hospital utilization by children and an increase in hospital utilization by the elderly. The extent of these changes and their impact on hospital bed requirements in future years is examined for Nova Scotia. This analysis was inspired by a report from the Long Range Health Planning Branch of Health and Welfare Canada¹ which projected the increase in hospital utilization by the elderly in Canada up to the year 2001.

Current Utilization

The distribution of the population and patient-days of hospital use for Nova Scotia in 1971 is shown in Figure 1 and Table I in the Appendix. These show the heavy demands placed on hospitals by young children (0-4), fertile females (15-34) and the older age groups of both sexes. It is the

Table I

Patient-Days/Person by Age & Sex Nova Scotia — 1973*

| Age | Male | Female |
|-------|--------|--------|
| 0-4 | 1.906 | 1.4724 |
| 5-9 | .5088 | .4248 |
| 10-14 | .4266 | .3648 |
| 15-19 | .4878 | 1.0406 |
| 20-24 | .6763 | 1.7890 |
| 25-29 | .5784 | 2.0151 |
| 30-34 | .7164 | 1.8416 |
| 35-39 | .9020 | 1.7519 |
| 40-44 | 1.1739 | 1.8087 |
| 45-49 | 1.6680 | 1.8340 |
| 50-54 | 2.3042 | 2.1016 |
| 55-59 | 2.8613 | 2.2616 |
| 60-64 | 3.5691 | 2.8703 |
| 65-69 | 4.3005 | 3.4333 |
| 70-74 | 5.8560 | 4.4264 |
| 75-79 | 7.5546 | 5.6909 |
| 80-84 | 8.4329 | 6.5240 |
| 85+ | 8.8525 | 7.1970 |

PER CENTAGE DISTRIBUTION OF POPULATION AND PATIENT-DAYS BY AGE AND SEX NOVA SCOTIA, 1971

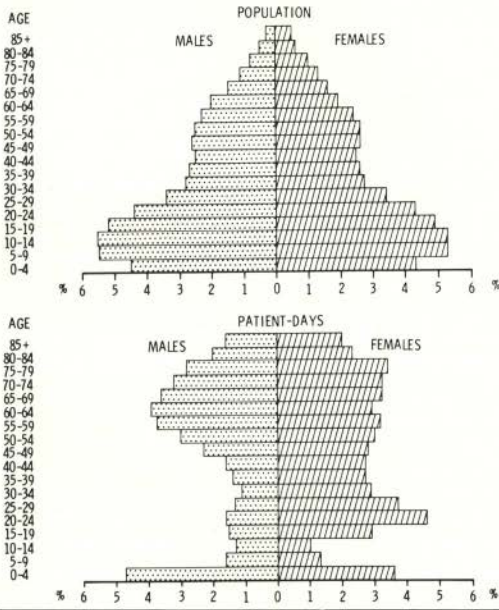


Figure 1

*Nova Scotia Hospital Insurance Commission Annual Report Year Ending March 31, 1973.

growth in the older age groups with the highest rates of use, however, which will have the greatest impact on hospital beds in the future. In 1971, for example, 9.2% of the population was 65 years of age and over but they accounted for 29.3% of the hospital patient-days utilized.

Future Trends

To assess the impact of the projected ageing of our population, the age and sex-specific rates of hospital use, expressed as patient-days per person, were applied to the population projections for Nova Scotia for the years 1981, 1991, and 2001 contained in the report, "Population Projections for Canada and the Provinces, 1972-2001"² which delineated three main projections.* Here, as in the report of Health and Welfare Canada,¹ projection B was

*ASSUMPTIONS FOR NOVA SCOTIA POPULATION PROJECTIONS

| | Fertility Changes (1971 to 1985) | Net Migration (per year) | Expectation of Life at Birth by 1986 | |
|---------------------------------|----------------------------------|--------------------------|--------------------------------------|---------|
| | | | Males | Females |
| Projection A (high fertility) | 2.50 to 2.76 | — 4,383 | 69.3 | 78.1 |
| Projection B (medium fertility) | 2.50 to 2.12 | — 4,737 | 69.3 | 78.1 |
| Projection C (low fertility) | 2.50 to 1.94 | — 2,368 | 69.3 | 78.1 |

*Professor and Head, Department of Preventive Medicine, Faculty of Medicine, Dalhousie University, Halifax, Nova Scotia.

chosen as probably the most reliable. The Patient-Days per person by age and sex for 1973 (the most recently available) are shown in Table I. These are the rates which were applied to the population projections to estimate the number of patient-days of care to be utilized in future years by each age and sex group. Thus, the patient-day projections are based on 1973 patterns of hospital use and hence involve the

implicit assumptions that 1973 patterns of use will remain the same over the years and that diseases leading to hospitalization will be distributed in the same manner throughout the population. Therefore, we are examining the effects of the projected changing structure and overall growth of the Nova Scotia population on future hospital utilization while holding all other variables constant.

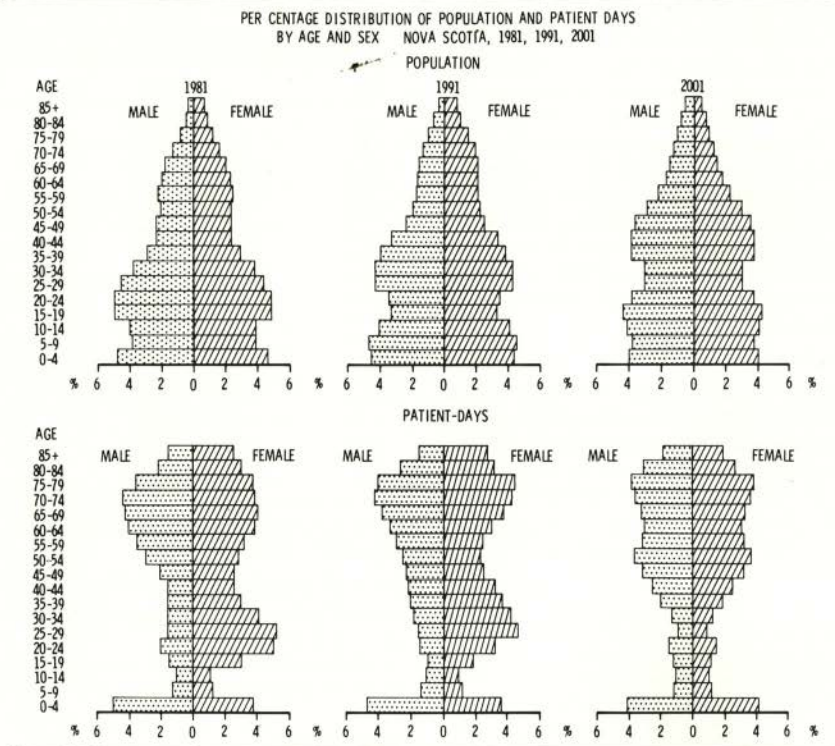


Figure 2

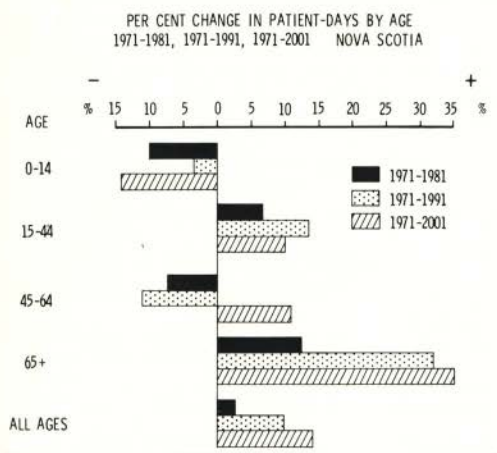


Figure 3

The projected changes in the proportional distribution of the population and patient-days of hospital care by age and sex are shown in Figure 2 (Appendix Tables II and III). The 1971 bulge in the population in the five to 24 year age group (Figure 1) is seen to push progressively up the population pyramids with a corresponding increase in the proportion of patient-days required for older people.

Tables II to VI and Figure 3 summarize these anticipated changes for four age and sex groups. The total population is projected to increase by only 11% (Table VI) by 2001 while the patient-days will increase by 14%. The striking feature in these tables, however, is the anticipated considerable decline in the population under 14 as early as 1981 which is reflected in a 10% decrease in patient-days required for this age group, together with a large increase in the population and patient-days for those persons aged 65 and over. This latter group is projected to increase by 14,800 in 1981 which will require a 12.5% increase in patient-days of hospital care. By 2001 there is a projected increase of 39% in the older age group with an accompanying 35% increase in patient-days.

Table II

Distribution of Population & Patient-Days by Sex & Four Age Groups Nova Scotia — 1971

| Age | Males | | | | Females | | | | Both Sex | | | |
|-------|------------|------|--------------|-------|------------|-------|--------------|-------|------------|-------|--------------|-------|
| | Population | | Patient-Days | | Population | | Patient-Days | | Population | | Patient-Days | |
| | N | % | N | % | N | % | N | % | N | % | N | % |
| 0-14 | 123,400 | 31.1 | 115,272 | 17.8 | 117,400 | 29.8 | 90,579 | 11.6 | 240,800 | 30.5 | 205,851 | 14.4 |
| 15-44 | 165,100 | 41.6 | 129,394 | 20.0 | 161,400 | 41.0 | 296,318 | 37.9 | 326,500 | 41.3 | 425,712 | 29.8 |
| 45-64 | 75,100 | 18.9 | 197,335 | 30.6 | 75,000 | 19.1 | 182,477 | 23.3 | 150,100 | 19.0 | 379,812 | 26.6 |
| 65+ | 32,800 | 8.3 | 203,813 | 31.6 | 39,700 | 10.1 | 213,071 | 27.2 | 72,500 | 9.2 | 416,884 | 29.2 |
| Total | 396,400 | 99.9 | 654,814 | 100.0 | 393,500 | 100.0 | 782,445 | 100.0 | 789,900 | 100.0 | 1,428,259 | 100.0 |

Table III

Distribution of Population* & Patient-Days by Sex & Four Age Groups Nova Scotia — 1981

| Age | Males | | | | Females | | | | Both Sexes | | | |
|-------|------------|-------|--------------|-------|------------|-------|--------------|-------|------------|-------|--------------|-------|
| | Population | | Patient-Days | | Population | | Patient-Days | | Population | | Patient-Days | |
| | N | % | N | % | N | % | N | % | N | % | N | % |
| 0-14 | 104,200 | 25.6 | 105,387 | 16.1 | 100,000 | 24.2 | 79,980 | 9.9 | 204,200 | 24.9 | 185,367 | 12.7 |
| 15-44 | 194,000 | 47.6 | 135,919 | 20.7 | 189,800 | 45.9 | 319,364 | 39.6 | 383,800 | 46.7 | 455,283 | 31.1 |
| 45-64 | 70,700 | 17.3 | 181,979 | 27.8 | 75,400 | 18.2 | 170,908 | 21.2 | 146,100 | 17.8 | 352,888 | 24.1 |
| 65+ | 38,600 | 9.5 | 232,165 | 35.4 | 48,700 | 11.7 | 236,797 | 29.3 | 87,300 | 10.6 | 468,962 | 32.1 |
| Total | 407,500 | 100.0 | 655,451 | 100.0 | 413,900 | 100.0 | 807,049 | 100.0 | 821,400 | 100.0 | 1,462,499 | 100.0 |

*Population Projections for Canada and Provinces, 1972-2001, Statistics Canada, 1974.

Table IV

Distribution of Population* & Patient-Days by Sex & Four Age Groups Nova Scotia — 1991

| Age | Males | | | | Females | | | | Both Sex | | | |
|-------|------------|-------|--------------|-------|------------|-------|--------------|------|------------|-------|--------------|-------|
| | Population | | Patient-Days | | Population | | Patient-Days | | Population | | Patient-Days | |
| | N | % | N | % | N | % | N | % | N | % | N | % |
| 0-14 | 116,700 | 27.6 | 112,306 | 16.3 | 112,400 | 25.5 | 85,660 | 9.7 | 229,100 | 26.5 | 197,965 | 12.6 |
| 15-44 | 196,600 | 46.4 | 146,962 | 21.3 | 195,100 | 44.3 | 337,183 | 38.2 | 391,700 | 45.3 | 484,146 | 30.8 |
| 45-64 | 68,800 | 16.2 | 172,598 | 25.1 | 73,800 | 16.7 | 165,170 | 18.7 | 142,600 | 16.5 | 337,767 | 21.5 |
| 65+ | 41,400 | 9.8 | 256,386 | 37.3 | 59,300 | 13.5 | 294,096 | 33.3 | 100,700 | 11.7 | 550,481 | 35.1 |
| Total | 423,500 | 100.0 | 688,251 | 100.0 | 440,600 | 100.0 | 882,108 | 99.9 | 864,100 | 100.0 | 1,570,350 | 100.0 |

*Population Projections for Canada and Provinces, 1972-2001, Statistics Canada, 1974.

Table V

Distribution of Population* & Patient-Days by Sex & Four Age Groups Nova Scotia — 2001

| Age | Males | | | | Females | | | | Both Sexes | | | |
|-------|------------|-------|--------------|------|------------|------|--------------|------|------------|-------|--------------|-------|
| | Population | | Patient-Days | | Population | | Patient-Days | | Population | | Patient-Days | |
| | N | % | N | % | N | % | N | % | N | % | N | % |
| 0-14 | 106,200 | 24.9 | 100,207 | 14.2 | 102,400 | 22.7 | 76,557 | 8.3 | 208,600 | 23.8 | 176,764 | 10.9 |
| 15-44 | 191,700 | 45.0 | 145,698 | 20.6 | 191,900 | 42.5 | 322,465 | 34.9 | 383,600 | 43.7 | 768,163 | 28.7 |
| 45-64 | 89,100 | 20.9 | 213,477 | 30.2 | 95,600 | 21.2 | 208,122 | 22.5 | 184,700 | 21.1 | 421,599 | 25.9 |
| 65+ | 39,100 | 9.2 | 246,615 | 34.9 | 61,100 | 13.5 | 315,823 | 34.2 | 100,200 | 11.4 | 562,437 | 34.5 |
| Total | 426,100 | 100.0 | 705,997 | 99.9 | 451,000 | 99.9 | 922,966 | 99.9 | 877,100 | 100.0 | 1,628,963 | 100.0 |

*Population Projections for Canada and Provinces, 1972-2001, Statistics Canada, 1974.

Table VI

Change in Distribution of Population & Patient-Days by Age Group from 1971 to 1981, 1991, 2001 — Nova Scotia

| Age | 1971-1981 | | | | 1971-1991 | | | | 1971-2001 | | | |
|----------|------------|-------|--------------|-------|------------|------|--------------|-------|------------|-------|--------------|-------|
| | Population | | Patient-Days | | Population | | Patient-Days | | Population | | Patient-Days | |
| | N | % | N | % | N | % | N | % | N | % | N | % |
| 0-14 | -36,600 | -15.2 | -20,484 | -10.0 | -11,700 | -4.9 | 7,886 | 3.8 | -32,200 | -13.4 | -29,087 | -14.1 |
| 15-44 | 57,300 | 17.5 | 29,571 | 6.9 | 65,200 | 20.0 | 58,434 | 13.7 | 57,100 | 17.5 | 42,451 | 10.0 |
| 45-64 | -4,000 | -2.7 | -27,241 | -7.2 | -7,500 | -5.0 | 42,045 | -11.1 | 34,600 | 23.1 | 41,787 | 11.0 |
| 65+ | 14,800 | 20.4 | 52,078 | 12.5 | 28,200 | 38.9 | 133,597 | 32.0 | 27,700 | 38.6 | 145,553 | 35.0 |
| All Ages | 31,500 | 4.0 | 34,240 | 2.4 | 74,200 | 9.4 | 142,101 | 9.9 | 87,200 | 11.0 | 200,704 | 14.1 |

If these projections are valid, then, we may expect an increase by 2001 of 200,700 patient-days of hospital care for all ages combined. Of these, 145,553 patient-days, or 72.5%, will be attributed to the age group 65 and over.

Thus, while there will only be a relatively modest increase in the total population and patient-days of care in future years, because of the changing population structure, there will be a marked change in the distribution of patient-days by age with a decline in care required for children and a heavy increase in care required for the elderly.

The anticipated impact that these shifts will have on projected hospital bed requirements is shown in Table VII. These changing bed requirements were derived from the changing patient-days, assuming an occupancy rate of 80% (patient-days ÷ 365 × .80 = Hospital Beds). It is noted that, if rates of hospital use continue at current levels and the population projections are valid, this Province will require a net increase of only 116 hospital beds over our present supply by 1981. This also assumes that the beds not required for children (e.g. 70 by 1981) can be converted to adult use. This may not be entirely possible, of course, but even if none of these can be utilized for adults (an extreme position) then our anticipated requirements by 1981 will still only amount to 186 beds. Currently, there are 467 hospital beds under construction. When these are completed and after older units are phased out, it is anticipated that there will be a net increase of 255 — sufficient to supply our needs, again it is stressed, at current levels of use, until well past 1981. Note, however, the decline in beds required for children and middle aged persons (up to 1991) and the relatively large increase in beds required for the aged.

While it is generally felt that population projection B is probably the most valid, changing bed needs based on

Table VII

Changes in Bed Requirements by Age Group and All Ages From 1971 to 1981, 1991 & 2001.

| Age | 1981 | 1991 | 2001 |
|----------|------|-------|-------|
| 0-14 | - 70 | - 27 | - 100 |
| 15-44 | 101 | 200 | 145 |
| 45-64 | - 93 | - 144 | 143 |
| 65+ | 178 | 458 | 498 |
| All ages | 116 | 487 | 686 |

projections A* and C* are shown in Table VIII. The major difference in the assumptions underlying these three projections is that projection A assumes a higher fertility rate than projection B, and projection C assumes a lower fertility rate than projection B. Thus, the major difference in projected bed needs based on these three projections is in the number of beds required for children and young adults.

Table VIII

Changes in Bed Requirements by Age Group and all ages from 1971 to 1981, 1991 and 2001 Using Population Projections A* and C* — Nova Scotia

| Age | 1981 | | 1991 | | 2001 | |
|----------|------|------|------|------|------|------|
| | A | C | A | C | A | C |
| 0-14 | 14 | -144 | 113 | -147 | 79 | -238 |
| 15-44 | 139 | 101 | 251 | 187 | 313 | 46 |
| 45-64 | -85 | -92 | -123 | -144 | 189 | 143 |
| 65+ | 187 | 178 | 472 | 458 | 532 | 498 |
| All ages | 254 | 44 | 713 | 353 | 1112 | 450 |

*Population Projections for Canada and the Provinces 1972-2001, Statistics Canada, 1974.

Discussion and Implications

The estimates of hospital patient-days projected for future years in Nova Scotia are only as valid as the assumptions underlying the projected trends in population and hospital utilization. Population growth and age composition are influenced by trends in fertility rates, mortality rates and net migration, and the reader is referred to the publication, "Population Trends for Canada and the Provinces, 1972-2001"² for a detailed description of the assumptions underlying these projected trends. Now, of course, there is some uncertainty regarding the course of future trends (especially in fertility rates) and thus of the *proportional* distribution of the population, but we can be reasonably certain that the *absolute number* of people in the older age groups will increase considerably in future years as projected. Only a substantial increase in mortality rates and out-migration in middle-aged and older persons can reverse *this* trend and neither of these is considered at all likely. It is, therefore, almost certain that the age groups with the highest rates of hospital utilization will increase substantially — at least in absolute numbers in future years.

*see footnote page 77.

The really critical point, then, in assessing the reliability of the projected patient-days is the validity of the estimated hospital utilization rates for future years. We have assumed that these rates would continue at the level of the rates for 1973. How valid an assumption is this? On the one hand, one could argue that because the hospital utilization rates in Nova Scotia have stabilized (even declined in some age groups) in recent years, the demand is being met and thus it is reasonable to plan future needs on a continuance of current utilization rates. On the other hand, one could also argue that there are substantial hospital needs which are not being met and thus, future hospital planning should allow for increasing rates of utilization up to some optimal level. Optimal levels of hospital use, however, are unknown or, at least not agreed upon. In lieu of this, it might be considered reasonable for Nova Scotia to strive to reach rates of hospital utilization which are consistent with national rates, on the premise that we would then have at least as "good", or, if you like, as "bad", levels of use as the average.

Rates of hospital use, expressed as patient-days per person by age and sex for Canada as a whole and for Nova Scotia, in 1971, are compared in Table IX. By applying the Canadian utilization rates as shown in Table IX to the population of Nova Scotia, on an age and sex-specific basis, one can arrive at the number of patient-days one would "expect" in Nova Scotia if we were experiencing similar rates of use as that of Canada as a whole. The results of this application, together with the number of patient-days actually provided, and the difference between the actual and the "expected" patient-days, are shown in Table IV in the appendix and summarized in Figure 4, which shows the

percentage difference between the actual patient-days and the "expected" patient-days by age for both sexes combined.

PER CENT DIFFERENCE IN PATIENT-DAYS PROVIDED IN NOVA SCOTIA AND PATIENT-DAYS "EXPECTED" AT CANADIAN RATES 1971

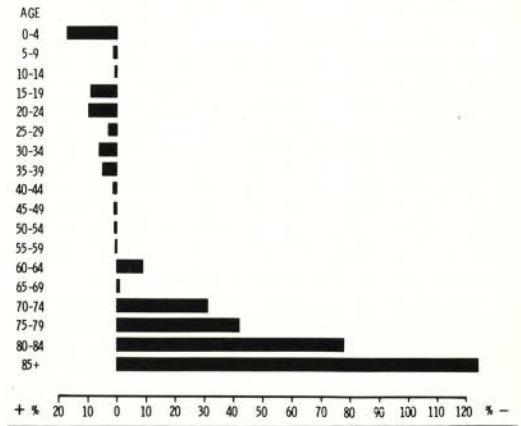


Figure 4

In Figure 4, it is observed that up to the age of 60 years the patient-days of care provided are very similar to or *somewhat higher*, especially in the 0-4 year age group, than the national average. In terms of the number of days, Nova Scotia provided 47,094 *more* days of hospital care for the population under 60 years of age than for Canada as a whole. After age 60, however, the picture changes dramatically, with Nova Scotia hospitals providing from 8.7% less (age 60-64) to 124.5% less (age 85 years +) days of care than for Canada as a whole. Thus, for the age group 60 and over this amounts to 214,036 days of care less than that provided on a national basis. The net result of this tendency to provide more hospital care for the young and less for the old is that, for the provincial population as a whole, Nova Scotia hospitals provided 166,942 (or 11.7%) *fewer* patient-days of care than the Canadian average. This is the equivalent of 572 hospital beds (at 80% occupancy).

Since 1971 there has been no consistent tendency in the older age group for Nova Scotia to approach the Canadian rates, in fact, the rates have declined somewhat. Suppose, however, that over time, the utilization rates in Nova Scotia for all age and sex groups, conform to the 1971 Canadian rates. This would mean that, if these rates were reached in future years and population projection B is valid, in 2001, Nova Scotia would be required to provide 609,000 more patient-days of care than it is currently providing; the equivalent of 2,080 more beds (a 44% increase) over our current supply, the vast majority of which (83%) would need to be allocated for the elderly. This is in sharp contrast to the projected need for an additional 686 beds by 2001 if current levels of utilization (including the higher than average rates for the younger age groups) are maintained. It is extremely doubtful, however, if Nova Scotia should pursue the course of attempting to provide hospital care for the elderly at

Table IX

Patient-Days per Person by Age and Sex Canada* and Nova Scotia,** 1971

| Age Group | Canada | | Nova Scotia | |
|-----------|---------|---------|-------------|--------|
| | Male | Female | Male | Female |
| 0-4 | 1.6969 | 1.3228 | 2.0196 | 1.6004 |
| 5-9 | 0.5573 | 0.4610 | 0.5478 | 0.4894 |
| 10-14 | 0.4112 | 0.3938 | 0.4336 | 0.3807 |
| 15-19 | 0.5845 | 0.9716 | 0.5645 | 1.1489 |
| 20-24 | 0.6878 | 1.8125 | 0.6976 | 2.0592 |
| 25-29 | 0.6477 | 2.0821 | 0.7226 | 0.1827 |
| 30-34 | 0.7574 | 1.9586 | 0.8154 | 2.0733 |
| 35-39 | 0.9840 | 1.8954 | 1.0084 | 2.0103 |
| 40-44 | 1.2810 | 1.9074 | 1.1978 | 2.0163 |
| 45-49 | 1.6655 | 2.0526 | 1.6930 | 2.0317 |
| 50-54 | 2.2563 | 2.3034 | 2.3356 | 2.2405 |
| 55-59 | 2.9475 | 2.6560 | 2.9669 | 2.6394 |
| 60-64 | 3.9678 | 3.4371 | 3.8062 | 2.9966 |
| 65-69 | 5.2473 | 4.4440 | 4.7423 | 3.8502 |
| 70-74 | 7.3954 | 6.4555 | 5.8036 | 4.7721 |
| 75-79 | 10.0114 | 9.1013 | 7.0079 | 6.4068 |
| 80-84 | 13.5438 | 13.1139 | 8.1484 | 6.8918 |
| 85+ | 18.3842 | 18.7915 | 9.4553 | 7.5682 |

*Hospitals and the Elderly: Present and Future Trends, Health and Welfare Canada, May, 1975.

**Nova Scotia Hospital Insurance Commission, Annual Report, Year Ending March 31, 1971.

national rates and not only because of the costs involved but because of the current trend to explore alternatives to institutional care. Moreover, a survey carried out in all the mainland hospitals of Nova Scotia in 1972 found that over 30% of patients aged 60 years and over could have been more appropriately cared for in alternative facilities were these available.³

"These alternatives involve the concept of ambulatory care in some form or another. Programs for Home Care seem, at present, to be the best alternative. Such programs are rapidly multiplying in several European Countries, countries which, as we have discussed earlier, are ahead of Canada in terms of experiencing the ageing phenomenon. There are many advantages in favor of the home care approach over the institutional approach for disabled elderly persons; evidence to date indicates this is a far less costly form of care; but more importantly it would allow many elderly people to remain in their own home environment, allowing them to maintain the highest possible degree of independence and psychological well-being".¹

"To date we have approached the problem by providing more Homes for Special Care; but this approach, while it may provide the optimal answer for many of our aged, is still an institution-oriented one. In 1974 there were, in Canada, an estimated 2000+ Homes for Special Care with over 113 thousand beds. We must give Home Care a real trial; for one thing, if only because it is just and fair that the elderly sick or disabled person be offered a choice other than institutionalization. If we do not explore this alternative, we will have to continue to provide more acute care beds, as this paper has shown, and more beds in nursing homes and other such facilities, not only a costly venture, but from the humane perspective, probably an undesirable one".¹

In conclusion, while some of the assumptions underlying the best available population projections may be questioned, it seems inescapable that the number of older persons in Nova Scotia will increase substantially in future years. The

result is that even if the current relatively low utilization rates for the elderly compared with Canadian rates continue, we will be required to allocate considerable more hospital beds to accommodate their needs. Attempts to provide sufficient hospital beds for the elderly to allow, or even encourage, their utilization rates to rise to the national average should be resisted, however. Rather, in keeping with trends elsewhere, including current Federal-Provincial discussions regarding insurance programs for home and nursing home care, it is our view that this Province should actively pursue the provision of alternative methods of providing health care for the elderly in an attempt to, at least, hold hospital utilization rates at their current levels. Finally, it is obvious that the projected changes in population structure, and consequent care needs, have implications, far beyond their impact on hospital bed supply, for example, for the training of health professionals, the provision of social and recreational facilities and services, general educational programs, housing etc. These are beyond the scope of this paper. Due to the lead times involved, however, planning and action regarding all these inter-related matters are becoming increasingly urgent. □

References

1. Hospitals and the Elderly: Present and Future Trends. Staff Papers, Long Range Health Planning, Health and Welfare Canada, May 1975.
2. Population Projections for Canada and the Provinces 1972-2001, Statistics Canada, 1974. Catalogue 91-514 occasional.
3. Nova Scotia Council of Health, Background Papers. Volume Two. Communications and Information Center, Province of Nova Scotia, P.O. Box 488, Halifax, Canada, 1972.

Appendix Table I

Distribution of Population & Patient-Days by Age & Sex — Nova Scotia — 1971*

| Age Group | Population | | | | | | Patient-Days | | | | | |
|-----------|------------|--------|-------|---------|--------|-------|--------------|---------|-----------|---------|--------|-------|
| | Number** | | | Percent | | | Number | | | Percent | | |
| | Male | Female | Total | Male | Female | Total | Male | Female | Total | Male | Female | Total |
| 0-4 | 35.8 | 33.9 | 69.7 | 4.5 | 4.3 | 8.8 | 72,305 | 54,256 | 126,561 | 5.1 | 3.8 | 8.9 |
| 5-9 | 43.6 | 41.7 | 85.3 | 5.5 | 5.3 | 10.8 | 23,887 | 20,408 | 44,295 | 1.7 | 1.4 | 3.1 |
| 10-14 | 44.0 | 41.8 | 85.8 | 5.6 | 5.3 | 10.9 | 19,080 | 15,915 | 34,995 | 1.3 | 1.1 | 2.4 |
| 15-19 | 41.1 | 39.1 | 80.2 | 5.2 | 5.0 | 10.2 | 23,205 | 44,924 | 68,129 | 1.6 | 3.1 | 4.7 |
| 20-24 | 34.6 | 33.8 | 68.4 | 4.4 | 4.3 | 8.7 | 24,140 | 69,601 | 93,741 | 1.7 | 4.9 | 6.6 |
| 25-29 | 26.7 | 26.7 | 53.4 | 3.4 | 3.2 | 6.6 | 19,296 | 56,096 | 75,392 | 1.3 | 3.9 | 5.2 |
| 30-34 | 21.9 | 21.2 | 43.1 | 2.8 | 2.7 | 5.5 | 17,859 | 43,956 | 61,815 | 1.2 | 3.1 | 4.3 |
| 35-39 | 21.0 | 20.5 | 41.4 | 2.7 | 2.6 | 5.3 | 21,177 | 41,231 | 62,408 | 1.5 | 2.9 | 4.4 |
| 40-44 | 19.8 | 20.1 | 39.9 | 2.5 | 2.5 | 5.0 | 23,717 | 40,528 | 64,245 | 1.7 | 2.8 | 4.5 |
| 45-49 | 20.6 | 20.9 | 41.5 | 2.6 | 2.6 | 5.2 | 34,876 | 42,643 | 77,519 | 2.4 | 3.0 | 5.4 |
| 50-54 | 19.8 | 20.4 | 40.2 | 2.5 | 2.6 | 5.1 | 46,245 | 45,708 | 91,953 | 3.2 | 3.2 | 6.4 |
| 55-59 | 18.9 | 18.7 | 37.6 | 2.4 | 2.4 | 4.8 | 56,075 | 49,357 | 105,432 | 3.9 | 3.5 | 7.4 |
| 60-64 | 15.8 | 15.0 | 30.8 | 2.0 | 1.9 | 3.9 | 60,139 | 44,949 | 105,088 | 4.2 | 3.1 | 7.3 |
| 65-69 | 11.7 | 12.5 | 24.2 | 1.5 | 1.6 | 3.1 | 55,485 | 48,128 | 103,613 | 3.9 | 3.4 | 7.3 |
| 70-74 | 8.5 | 10.1 | 18.6 | 1.1 | 1.3 | 2.4 | 49,331 | 48,199 | 97,530 | 3.5 | 3.4 | 6.9 |
| 75-79 | 6.2 | 8.0 | 14.2 | .8 | 1.0 | 1.8 | 43,449 | 51,255 | 94,704 | 3.0 | 3.6 | 6.6 |
| 80-84 | 3.8 | 5.0 | 8.8 | .5 | .6 | 1.1 | 30,964 | 34,459 | 65,423 | 2.2 | 2.4 | 4.6 |
| 85+ | 2.6 | 4.1 | 6.7 | .3 | .5 | .8 | 24,584 | 31,030 | 55,614 | 1.7 | 2.2 | 2.9 |
| Total | 396.4 | 393.5 | 789.9 | 50.3 | 49.7 | 100.0 | 645,814 | 782,643 | 1,428,457 | 45.1 | 54.8 | 100.0 |

*Nova Scotia Hospital Insurance Commission Annual Report Year Ending March 31, 1972.

**in thousands

Appendix Table II

Distribution of Population* & Patient-Days (At 1973 Patient-Day Rates) for 1981, 1991, 2001 Nova Scotia — Males

| Age | 1981 | | | | 1991 | | | | 2001 | | | |
|-------|------------|--------|--------------|--------|------------|--------|--------------|--------|------------|--------|--------------|--------|
| | Population | | Patient Days | | Population | | Patient Days | | Population | | Patient Days | |
| | Number | % | Number | % | Number | % | Number | % | Number | % | Number | % |
| 0-4 | 39,400 | 4.8 | 75,096.4 | 5.1 | 40,000 | 4.6 | 76,240.0 | 4.9 | 35,200 | 4.0 | 67,091.2 | 4.1 |
| 5-9 | 32,200 | 3.9 | 16,383.9 | 1.1 | 40,700 | 4.7 | 20,708.1 | 1.3 | 34,400 | 3.9 | 17,502.7 | 1.1 |
| 10-14 | 32,600 | 4.0 | 13,907.1 | 1.0 | 36,000 | 4.2 | 15,357.6 | 1.0 | 36,600 | 4.2 | 15,613.5 | 1.0 |
| 15-19 | 40,900 | 5.0 | 19,951.0 | 1.4 | 29,400 | 3.4 | 14,341.3 | 0.9 | 37,900 | 4.2 | 18,487.6 | 1.1 |
| 20-24 | 41,400 | 5.0 | 27,998.8 | 1.9 | 30,000 | 3.5 | 20,289.0 | 1.3 | 33,300 | 3.8 | 22,520.7 | 1.4 |
| 25-29 | 37,800 | 4.6 | 21,863.5 | 1.5 | 37,400 | 4.3 | 21,632.1 | 1.4 | 26,100 | 3.0 | 15,096.2 | 0.9 |
| 30-34 | 31,100 | 3.8 | 22,280.0 | 1.5 | 37,500 | 4.3 | 26,865.0 | 1.7 | 26,300 | 3.0 | 18,841.3 | 1.2 |
| 35-39 | 23,600 | 2.9 | 21,287.2 | 1.5 | 34,200 | 4.0 | 30,848.4 | 2.0 | 33,800 | 3.9 | 30,487.6 | 1.9 |
| 40-44 | 19,200 | 2.3 | 22,538.8 | 1.5 | 28,100 | 3.3 | 32,986.5 | 2.1 | 34,300 | 3.9 | 40,264.7 | 2.5 |
| 45-49 | 18,700 | 2.3 | 31,191.6 | 2.1 | 21,100 | 2.4 | 35,194.8 | 2.2 | 31,300 | 3.6 | 52,208.4 | 3.2 |
| 50-54 | 17,500 | 2.1 | 40,323.5 | 2.8 | 16,900 | 2.0 | 38,940.9 | 2.5 | 25,300 | 2.9 | 58,296.2 | 3.6 |
| 55-59 | 17,900 | 2.2 | 51,217.2 | 3.5 | 16,200 | 1.9 | 46,353.0 | 3.0 | 18,400 | 2.1 | 52,647.9 | 3.2 |
| 60-64 | 16,600 | 2.0 | 59,247.0 | 4.1 | 14,600 | 1.7 | 52,108.8 | 3.3 | 14,100 | 1.6 | 50,324.3 | 3.1 |
| 65-69 | 14,600 | 1.8 | 62,787.3 | 4.3 | 13,800 | 1.6 | 59,346.9 | 3.8 | 12,500 | 1.4 | 53,756.2 | 3.3 |
| 70-74 | 10,900 | 1.3 | 63,830.4 | 4.4 | 11,400 | 1.3 | 66,758.4 | 4.3 | 10,000 | 1.1 | 58,560.0 | 3.6 |
| 75-79 | 6,800 | 0.8 | 51,371.2 | 3.5 | 8,500 | 1.0 | 64,214.1 | 4.1 | 8,100 | 0.9 | 61,192.2 | 2.8 |
| 80-84 | 3,800 | 0.5 | 32,045.0 | 2.2 | 5,000 | 0.6 | 42,164.5 | 2.7 | 5,100 | 0.6 | 43,007.7 | 2.6 |
| 85+ | 2,500 | 0.3 | 22,131.2 | 1.5 | 2,700 | 0.3 | 23,901.7 | 1.5 | 3,400 | 0.4 | 30,098.5 | 1.8 |
| Total | 407,600 | (49.6) | 655,450.8 | (44.9) | 423,600 | (49.1) | 688,251.1 | (44.0) | 426,100 | (48.6) | 705,996.9 | (43.4) |

*Population Projections for Canada and the Provinces, 1972-2001, Statistics Canada, 1974.

Appendix Table III

Distribution of Population* & Patient-Days (At 1973 Patient-Day Rates) for 1981, 1991, 2001 Nova Scotia — Females

| Age | 1981 | | | | 1991 | | | | 2001 | | | |
|-------|------------|--------|--------------|--------|------------|--------|--------------|--------|------------|--------|--------------|--------|
| | Population | | Patient Days | | Population | | Patient Days | | Population | | Patient Days | |
| | Number | % | Number | % | Number | % | Number | % | Number | % | Number | % |
| 0-4 | 37,600 | 4.6 | 55,362.2 | 3.8 | 38,200 | 4.4 | 56,245.6 | 3.6 | 33,600 | 3.8 | 49,472.6 | 3.0 |
| 5-9 | 30,900 | 3.8 | 13,126.3 | 0.9 | 39,100 | 4.5 | 16,609.6 | 1.1 | 33,100 | 3.8 | 14,060.8 | 0.9 |
| 10-14 | 31,500 | 3.8 | 11,491.2 | 0.8 | 35,100 | 4.1 | 12,804.4 | 0.8 | 35,700 | 4.1 | 13,023.3 | 0.8 |
| 15-19 | 39,800 | 4.8 | 41,630.8 | 2.8 | 28,900 | 3.3 | 30,229.4 | 1.9 | 37,100 | 4.2 | 38,806.6 | 2.4 |
| 20-24 | 39,700 | 4.8 | 71,023.3 | 4.9 | 29,300 | 3.4 | 52,417.7 | 3.3 | 32,900 | 3.8 | 58,858.1 | 3.6 |
| 25-29 | 36,400 | 4.4 | 73,349.6 | 5.0 | 37,000 | 4.3 | 74,558.7 | 4.7 | 26,200 | 3.0 | 52,795.6 | 3.2 |
| 30-34 | 31,200 | 3.8 | 57,457.9 | 3.9 | 36,900 | 4.3 | 67,955.0 | 4.3 | 26,500 | 3.0 | 48,802.4 | 3.0 |
| 35-39 | 23,400 | 2.8 | 40,994.4 | 2.8 | 33,900 | 3.9 | 59,389.4 | 3.8 | 34,500 | 3.9 | 60,440.5 | 3.7 |
| 40-44 | 19,300 | 2.3 | 34,907.9 | 2.4 | 29,100 | 3.4 | 52,633.1 | 3.4 | 34,700 | 4.0 | 62,761.8 | 3.9 |
| 45-49 | 18,800 | 2.3 | 34,479.2 | 2.4 | 21,600 | 2.5 | 39,614.4 | 2.5 | 31,900 | 3.6 | 58,504.6 | 3.6 |
| 50-54 | 18,500 | 2.3 | 38,879.6 | 2.7 | 17,800 | 2.1 | 37,408.4 | 2.4 | 27,300 | 3.1 | 57,373.6 | 3.5 |
| 55-59 | 19,400 | 2.4 | 43,875.0 | 3.0 | 17,400 | 2.0 | 39,351.8 | 2.5 | 20,100 | 2.3 | 45,458.1 | 2.8 |
| 60-64 | 18,700 | 2.3 | 53,674.6 | 3.7 | 17,000 | 2.0 | 48,795.1 | 3.1 | 16,300 | 1.9 | 46,785.8 | 2.9 |
| 65-59 | 16,400 | 2.0 | 56,306.1 | 3.8 | 17,300 | 2.0 | 59,396.0 | 3.8 | 15,400 | 1.8 | 52,872.8 | 3.2 |
| 70-74 | 12,500 | 1.5 | 54,444.7 | 3.7 | 15,700 | 1.8 | 69,494.4 | 4.4 | 14,200 | 1.6 | 62,854.8 | 3.9 |
| 75-79 | 9,200 | 1.1 | 52,356.2 | 3.6 | 12,500 | 1.4 | 71,136.2 | 4.5 | 13,200 | 1.5 | 75,119.8 | 4.6 |
| 80-84 | 6,000 | 0.7 | 39,144.0 | 2.7 | 7,800 | 0.9 | 50,887.2 | 3.2 | 10,000 | 1.1 | 65,240.0 | 4.0 |
| 85+ | 4,800 | 0.6 | 34,545.6 | 2.4 | 6,000 | 0.7 | 43,182.0 | 2.7 | 8,300 | 0.9 | 59,735.1 | 3.7 |
| Total | 414,100 | (50.3) | 807,048.6 | (55.3) | 440,600 | (51.0) | 882,108.4 | (56.0) | 451,000 | (51.4) | 922,966.3 | (56.7) |

*Population Projections for Canada and the Provinces, 1072-2001, Statistics Canada, 1974.

Appendix Table IV

Actual, "Expected" Difference in Patient-Days for Nova Scotia, 1971. Both Sexes Combined

| Age | Actual Patient Days In N.S. 1971 | Expected Patient-Days At Cdn. Rates (1971) | Difference (Actual-Expected) | % Difference |
|-------|----------------------------------|--|------------------------------|--------------|
| 0-4 | 126,561 | 105,591 | 20,970 | 16.6 |
| 5-9 | 44,295 | 43,521 | 774 | 1.7 |
| 10-14 | 34,995 | 34,552 | 443 | 1.3 |
| 15-19 | 68,129 | 62,011 | 6,118 | 9.0 |
| 20-24 | 93,741 | 85,059 | 8,682 | 9.3 |
| 25-29 | 75,392 | 72,885 | 2,507 | 3.3 |
| 30-34 | 61,815 | 58,109 | 3,706 | 6.0 |
| 35-39 | 62,390 | 59,519 | 2,871 | 4.6 |
| 40-44 | 64,245 | 63,701 | 544 | 0.8 |
| 45-49 | 77,339 | 77,208 | 131 | 0.2 |
| 50-54 | 91,953 | 91,663 | 290 | 0.3 |
| 55-59 | 105,432 | 105,374 | 58 | 0.1 |
| 60-64 | 105,088 | 114,247 | — 9,159 | — 8.7 |
| 65-69 | 103,613 | 116,943 | — 1,333 | — 1.3 |
| 70-74 | 97,530 | 128,060 | — 30,530 | — 31.3 |
| 75-79 | 94,704 | 134,880 | — 40,176 | — 42.4 |
| 80-84 | 65,423 | 117,035 | — 51,612 | — 78.9 |
| 85+ | 55,614 | 124,843 | — 69,229 | —124.5 |
| Total | 1,428,259 | 1,595,201 | —166,942 | — 11.7 |

GUIDELINES FOR AUTHORS

Reference to these guidelines and recent issues of the Bulletin will help authors in preparation of their papers. Send the original typed copy to the Editor and keep a carbon copy.

The entire manuscript (including references and captions) should be typed double-spaced, with a generous margin on the left, on only one side of the pages. Do not underline unless the type is to be set in italics. Standard abbreviations (e.g., hr, mg, ml) are acceptable without definition; less-common abbreviations should be written in full the first time they are used. Give generic as well as proprietary names and the manufacturer's name for drugs.

References. Identify references by numbers within the text, and list them in numerical order on a separate sheet [see (f)].

Figures. Provide an unmounted glossy print of each, clearly marked on the back with a SOFT marker, indicating top, figure no., and author's name. Show scale when relevant. Do not write legends on them [see (h)].

The usual framework of a paper is as given in (a) to (h) below, starting each section on a new page and numbering pages consecutively to the end of (h).

- Front page, showing title, author(s) and degrees, whether the author is in family practice or the institution where the work was done, and address for correspondence.
- Brief summary.
- Introduction.
- Materials and methods, then Results; or Case report.
- Discussion.
- References.
Examples: **Journal papers** — EBBERT, A., Jr. Two-way radio in medical education. *J. Med. Educ.* 38: 319-28, 1963.
Books — MAJOR, R. H., and OELP, M. H. *Physical Diagnosis*, 6th ed. Philadelphia, Saunders, 1962, p. 51.
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- Tables (each, including heading and footnotes, on a separate page).
- Figure legends (all listed on one page); state magnification of photomicrographs.

Summer calls for an extra safe driving effort because of increased traffic. Don't demand the right of way. Instead make courtesy and patience your constant companions, the Nova Scotia Highway Safety Council asks. Share the road is more than a slogan — it could save your life.

Vanadium Poisoning from Fuel Oil Ash

O. C. MacIntosh,*M.D., and Brian Steeves,**M.D.,

Antigonish, N.S.

Workers engaged in the manual cleaning of tubes and combustion chambers of oil-fired furnaces, burning Bunker C #6 fuel, are exposed to the danger of vanadium poisoning, an influenza-like illness which may have permanent effects.

Vanadium is one of the rare earth elements resembling antimony and is widely used in the chemical industry and in metallurgy, as it is particularly useful in hardening steel. It occurs in the earth of certain countries and in petroleum from Colorado, Peru, Central and South West Africa¹, Venezuela, the Mexican Gulf and Iran². Venezuelan oil has a high content of vanadium, constituting approximately 40% of ash. Vanadium reaches high concentrations in heavy fuel oils produced by distilling off the more volatile fractions. Combustion of vanadium occurs around 700°F and the main product is its pentoxide.

The toxic effects of vanadium, in industry, have largely occurred through contact with, or inhalation of, its dust which may be formed when processing slags produced in the smelting of alloyed steels, and in grinding and machining them. Dust may also enter the working area in mixing, packing and loading powdered compounds containing the element. Toxic effects have been reported from the breathing of air containing as little as 5 mg. vanadium per cubic meter.

Dust from ash formed through combustion of heavy fuel oil has produced a large proportion of cases of vanadium poisoning, since vanadium is present in all bunker fuels. The pentoxide formed by their combustion remains in the ash and when inhaled comes in contact with moisture, forming a toxic, irritating, acid solution. If unprotected, the workers engaged in cleaning ash from the combustion chambers and from the tubes of boilers burning Bunker C#6 fuel, inhale large quantities of dust containing vanadium pentoxide.

The toxic effects of vanadium are exerted mainly on the respiratory tract, where it has marked irritant effect on the mucosa and the blood vessels. H₂SO₄ present in the soot may aggravate the effect of vanadium.¹ The resulting inflammatory process is, therefore, often hemorrhagic in nature and has a spastic effect on the smooth muscle of the bronchi, resulting in bronchospasm³. In the case of repeated insults pulmonary fibrosis may occur³. High concentrations may affect the brain, kidneys and other internal organs.

In many instances the symptoms of acute vanadium poisoning imitate those of the common cold, influenza or even pneumonia⁴. Nasal catarrh, sometimes associated with bleeding, occurs initially. It proceeds in a few hours to soreness of the throat and chest and a "hacking" dry cough. Later, wheezing, shortness of breath, pains in the chest with rales, rhonchi and general malaise may result, and the

sputum may be flecked with blood. These symptoms may be associated with irritation of the eyes, nausea, vomiting, abdominal pain, tremors of the hands and mental depression.

A diagnostic finding is the presence of a greenish discoloration of the mucous membrane of the mouth, said to be due to the excretion of vanadium trioxide in the sputum³. The discoloration, due to the formation of green salts by the pylin and acid-forming bacteria in the mouth, disappears two or three days after exposure. Skin rashes may occur later on exposed parts and pulmonary fibrosis and chronic bronchitis with emphysema may occur following repeated attacks¹.

A leucocytosis occurs³. Urinary levels correlated with illness range from 0.01 mg./l. in Vanadium so called borderline exposure to up to 0.3 mg/l where exposure is excessive¹. X-Ray findings include linear striations in the lungs, reticulation after longer periods of exposure and finally emphysema¹.

Chronic poisoning with vanadium is not experienced, as 80% of vanadium is excreted by the gut and the remainder by the kidneys.

Case Histories

J. R. Age 46

Occupation: Maintenance worker in hospital.

This man developed head and chest congestion associated with persistent irritating dry cough, several hours after having been employed in scraping fine ash residue inside the firebox of a boiler which burned Bunker C #6 oil. The same evening he developed fever, chills, and nausea, which persisted unabated for several days and a diagnosis of pneumonia was made by his physician. Penicillin therapy was instituted but in spite of this treatment, his illness lasted for several weeks.

J.D. Age 38

Occupation: Hospital Stationary Engineer.

On two occasions, while shoveling ash from a firebox of an oil burning boiler but not acutally working inside, this man developed anorexia, nausea and severe persistent vomiting with headache, dizziness and epigastric pain. These symptoms persisted for several days.

W. A. Age 48

Occupation: Hospital Maintenance Worker.

This man, who was the senior worker, had had many toxic reactions after cleaning fireboxes of boilers burning Bunker C #6 oil. His history included all variations in severity, depending upon the time spent in contact with the ash dust.

From the Departments of Pathology* and General Practice**, St. Martha's Hospital, Antigonish, N.S., and Department of Pathology*, Dalhousie University, Halifax, N.S.

His mildest reaction consisted of a "head cold" and chest tightness with a dry cough and malaise. These symptoms began shortly after completing such work and lasted for four days.

On one occasion he developed a particularly severe toxic reaction after spending four hours cleaning a boiler, and developed marked shortness of breath shortly after leaving it. The symptoms were only relieved by resting. This was followed by symptoms of upper respiratory infection and fatigue and the anoxia persisted. That night, he developed nausea, headache and chills and intensified anoxia, and this illness persisted for two days. One week later, he developed an intense rash on his forearms and cheeks which cleared in approximately five weeks.

Discussion

These three workers suffered toxic effects similar to those commonly associated with vanadium poisoning, after inhaling ash dust from the fireboxes of boilers burning Bunker C #6 fuel, which is known to contain a significant amount of vanadium.

The affected worker in the third case, W.A., was the senior of those affected and on many occasions had cleaned fireboxes of boilers burning Bunker C #6 oil. He had come to suspect that some of the effects suffered by him and his associates were associated with the job but he had learned to "put up" with them. However, after a particularly severe reaction in one of his co-workers, he sought medical assistance and related his suspicions.

During the course of the investigation, a number of workers in nearby institutions with boilers burning Bunker C #6 fuel were also questioned. Their boilers were cleaned more frequently than those referred to above and these workers indicated that they were accustomed to similar, though less severe, reactions after being associated with the ash dust. They invariably complained of head colds, malaise and at times chills, lasting from one to two days.

It is noteworthy that the foregoing incidents all occurred in association with institutional medium-sized boilers which are of the horizontal return-tube type, fourteen to sixteen feet in length. Cleaning them requires entering the firebox, scraping off the ash and brushing it out of the tubes. A similar danger does not exist in cleaning the smaller type domestic household furnaces, as their fuel does not contain significant amounts of vanadium. Similarly, many of the modern large industrial boilers burning Bunker C #6 fuel have automatic cleaning devices and their care does not expose workers to the toxic properties of the ash dust.

It is necessary to add that since the recognition of the cause of their illnesses, J.R., J.D. and W. A. now wear dust masks*, protective goggles, caps, long sleeved heavy coveralls and gloves, when cleaning the fireboxes. To date, they have not had a recurrence of the symptoms that they previously experienced after performing this unpleasant and potentially dangerous duty.

*Wilson No. 1400 Disposable Respirator Stock No. 4110021 Safety Supply Company, 214 King Street E, Toronto.

Summary and Conclusions

1. Vanadium poisoning is a potential danger to workers cleaning the tubes and fireboxes of boilers burning Bunker C #6 fuel because the ash contains potentially toxic amounts of the pentoxide of the element.

2. Vanadium poisoning has rarely, if ever, been diagnosed in Nova Scotia. The symptoms often mimic those of the common cold, influenza or even pneumonia, it is possible that clinicians who are unaware of this condition may, in effect, be misdiagnosing cases as upper respiratory infections or pneumonia.

3. Workers engaged in cleaning the fireboxes of tubes and boilers burning Bunker C #6 fuel should be made aware of the potential dangers involved. They should also be provided with a reliable dust mask, appropriate caps, goggles and heavy, long-sleeved coveralls, which should be washed after each use.

4. Should toxic effects occur, however, a urine specimen for vanadium content should be referred to the division of Clinical Chemistry, Department of Pathology, Victoria General Hospital. Since the incidents referred to above, these Laboratories have acquired the necessary equipment for performing the required vanadium estimation. The present maximum urinary level in the U.S.A. thought to reflect a safe body burden is 0.5 mg./l. □

Acknowledgements

The authors wish to acknowledge the help of Dr. J. T. Hindmarsh, Medical Biochemist, Department of Pathology, Victoria General Hospital for suggesting the diagnosis in the first case referred to; to Dr. C. R. May, Director of Occupational Health, Dept. of Public Health, Province of Nova Scotia and to Mr. A. W. Anderson and others of Gulf Oil of Canada, Point Tupper, N.S., for helpful advice and assistance in providing much of the material necessary for the preparation of this manuscript.

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†complete clearing of localized signs; no subjective complaints

‡partial improvement of drum inflammation; no systemic signs, but usually some residual hearing loss

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GASTROINTESTINAL TRACT INFECTIONS.

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Standard dosage: Two tablets twice daily (morning and evening).
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Maximum dosage:

Overwhelming infections: Three tablets twice daily.

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Young children should receive a dose according to biological age:

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†In children this corresponds to an approximate dose of 6 mg trimethoprim/kg body weight/day plus 30 mg sulfamethoxazole/kg body weight/day divided into two equal doses.


DOSAGE FORMS: SEPTRA TABLETS, each containing 80 mg trimethoprim and 400 mg sulfamethoxazole, and coded WELLCOME Y2B. Bottles of 100 and 500, and unit dose packs of 100.

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REFERENCE: 1. Cameron G.G., Pomahac A.C., Johnston M.T.: *Canad Med Ass J* 112 (Special Issue): 87, 1975.

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Gemini felices

Chen and Ang — The Brothers

B. J. S. Grogono,*M.B.,B.S.,F.R.C.S.(C) F.A.C.S.,

Halifax, N.S.

There can be no happier union than that of Chen and Ang. Joined together by a tube of tissue some three and a half inches long, they never showed any desire to be separated. In fact their close proximity brought them fame, strength, co-ordination and unusual dexterity.

If you're a twin — an identical one, you share an extraordinary sympathy with your fellow. I took this for granted for many years but the piquancy of the relationship was brought home to me, when I was discussing twins with a young woman whose twin is now living in Lebanon.

Twin's childhood is different from untwins. You shun rival classes, detest the thought of beating your other half in games, exams; you share praise, problems and dreams but you suffer from the same faults and deficiencies.

Alice realized this when she greeted Tweedle Dum and Tweedle Dee, shaking hands with both so that one would not be offended. That's not to say that twins do not quarrel. Romulus killed Remus when he laughed at the walls of the Palatine hills. They couldn't agree on the site for the Roman Capital. Perhaps that is what liberated Romulus to greater deeds.

Certainly I quarreled with my twin unless someone cared to criticize or attack either of us — we'd join forces to attack them with a vengeance.

Most twins drift apart, develop as separate individuals, and live different lives. A certain liberation is mixed with a twinge of nostalgic compassion for the strange communion of minds.

The Brothers Knot

Chen and Ang of course, had to get along. They became world famous but were also good natured and well adjusted.

Born in Meklong, sixty miles from Bangkok in 1811 their birth caused little trouble to their mother. Their mutual bond was described by Dr. Bolton in 1823. A bridge of tissue connected the ensiform cartilage of each twin and arched upwards, some three and a half inches long, and the greatest thickness was one and five-eighths inches. It contained hernial sacs in the lower part, which protruded when each twin coughed. The scar of a single umbilicus was present inferiorly. It is reported that the twins gradually stretched their bond until it was quite pliable. They could stand half sideways and, when age twelve, one could stand on his head while the other stood on his feet.

*Chief of Orthopaedics, The Halifax Infirmary, Halifax, N.S.

Early Childhood

Walking was a little difficult at first but once they found their centre of gravity they moved with great agility and their fame brought many visitors. The medical faculty of Siam took a great interest.

Many poor prognostications and suggestions were presented. One venerable suggested suspending them across a catgut, like a pair of saddle bags, allowing the conjoint tube to be gradually eroded.

Siam was a land of great riches and extreme feudalism. Their father was Chinese and their mother was half Siamese and half Chinese. This gave them enterprise and intelligence. They performed in playhouses and were expert swimmers. They used an extraordinary back stroke with their four arms working like windmills.

They were brought up as Buddhist. They learned to read and write in Siamese and were taught the Bali tongue. (Later they became Christians and were fully conversant with English and became American citizens). Their father died when they were only eight and they earned their living by peddling goods.

Fame really began when they were fourteen and were invited to the King's palace. The pomp and ceremony surrounding the King was remarkable. He was considered to be in an advanced state of beatification, far beyond discussion. The twins were kept from general inspection until the King had examined them. They approached the palace down a vast avenue, past twelve elephants and arrived in an inner sanctum, lined by gold and vermilion and were announced by courtiers who bowed nine times in reverence. As they approached the King, the audience lay prostrate. The twins responded to all this with great poise and equanimity. Then the vast crowd examined them. They faced some seven hundred Royal Concubines with good humour, and returned to Meklong rich. Fame did not spoil their business acumen as they started a profitable duck rearing business.

Snake Charming

The illustration shows the two brothers quelling a fourteen foot boa constrictor. The python intended to make a feast of their ducks was dispatched within fifteen minutes and deposited in a box as dead. The snake, however, ultimately had the upper hand. They exported him with their baggage to America, but he escaped sometime before the ship arrived and is said to haunt the sea of Mahaunt, as a Monster.



Journeys to Cochin China

No less than fantastic were their travels to Saigon and Hué. Sailing by junk and arriving by elephant they were presented with familiar fanfare to the King of Cochin China, who was the Siamese King's brother. Their privileged position as precious Siamese specimens contrasted with the cruelty and autocracy meted out by the Royal hierarchy to ordinary citizens. If an elephant trainer failed to control his charge he was promptly beheaded. Lesser offenses were treated by flogging or being trampled to death by an elephant.

Having been widely exhibited, they returned home again after another state visit to Bangkok.

American Odyssey

In 1829, an American ship arrived in Bangkok and after much negotiation the twins were permitted to leave for America, with the clear understanding that Siam was the most favoured of all nations to produce "The World's Living Wonder of Conjoint Twins".

Chen and Ang arrived in Boston in August, 1829. They were eighteen, impressive and adaptable. A few Asian superstitions clung for awhile. For instance, it was a long time before they would accept anything but attic accommodation. This was because in Asia, you must never, never, have anyone walk over your head.

Medical Appraisal in America and Europe

The impact on the medical profession of the charming viable rare specimens of *homo sapiens* was profound. They seemed to tolerate extensive examination by medical elite with great equanimity. After demonstrations in Boston and New York, they travelled to London and were examined by members of the Royal College of Surgeons including Sir Astley Cooper. A signed document declared them to be extraordinary "*Lusus Naturae*".

They were visited by hundreds of people — a young lady, Sophia, fell in love with them but the British Medical faculty declared them to be two separate individuals so she was disappointed on pursuing her ardour.

"How happy I would be with either were the other dear charmer away".

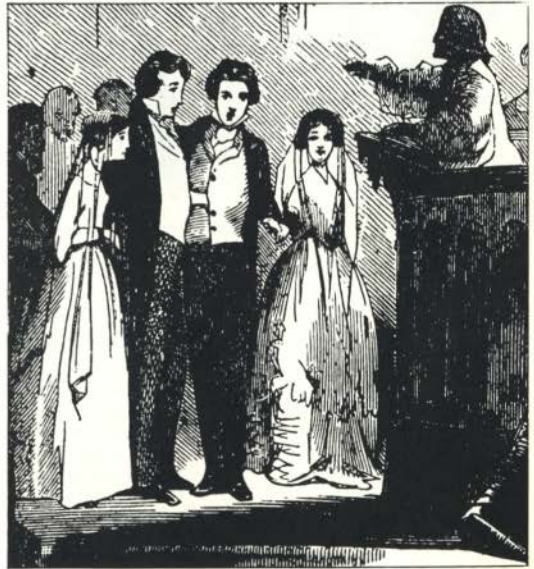
The European tour included Paris, Brussels, Antwerp, Oxford, Liverpool, Perth, Dublin and other cities.

By the time they arrived back in America they must have been the most widely travelled and publicized persons in the world. They assimilated their knowledge, experience, and favours with keen intelligence and took up residence in North Carolina.

Becoming American citizens and adopting the name, Bunker, they spent the rest of their lives in tranquillity away from the endless blaze of publicity.

Geminal Bliss

In 1943, the daughters of Mr. Daniel Yeats were united in a simple ceremony of marriage with the twins. Miss Sarah became Mrs. Ang, and Miss Adelaide — Mrs. Chen Bunker. There was just a little difference between brothers. Ang was more than an inch taller than Chen, so Chen wore higher shoes. The mutual bond seemed to have been very flexible and no impediment to conjugal bliss.



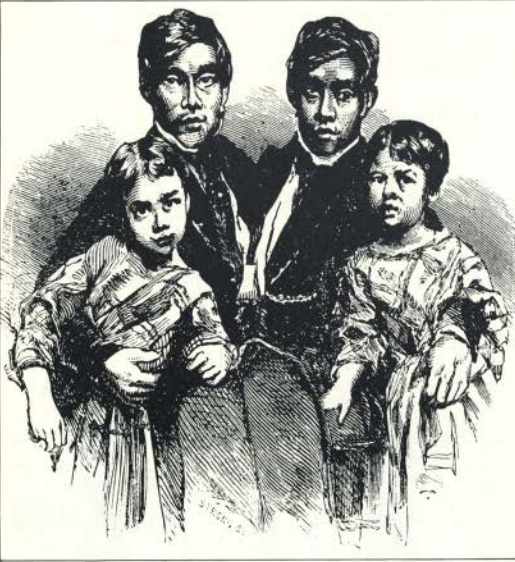
Mrs. Ang had twelve children; Mrs. Chen had ten. They formed a devoted family unit working diligently on the farm, in harmony with their neighbours. The twins physical ability was prodigious. The pair of them could achieve more than four of their servants. They were excellent hands at fashioning the corner of a log home. They generally chopped with a single axe, each double handed, and by turns, with a dexterity unsurpassed. They felled trees chopping opposite sides to bring them down in record time. They chewed tobacco

usually taking quids at the same time. They usually spoke simultaneously.

"I bought this land" each would reply, when asked about the farm. They played chess, draughts and cards but it afforded them no amusement to play against each other.

They were fantastic horsemen and on one occasion tamed an enormous black colt which no one could handle. They seemed to have a particular sympathy with nature and animals. Although they reluctantly submitted to occasional exhibition and curious visitors, they spent the remainder of their life educating and enjoying their families.

No doubt, the numerous descendants are grateful that they avoided the ever prying knife of the scientific surgeon.



True Life Never Runs Smooth

Although Chen and Ang continued to live harmoniously all their lives they had to make adjustments. When their wives quarreled, they set up two separate households. Each master of his own. Ang was in control of Mrs. Ang's establishment; Chen in Mrs. Chen's abode. They moved house every three days.

Chen tended to drink too much, which annoyed Ang considerably. When they had one of their quarrels they would summon their doctor, Hollingsworth, and demand that he separate them. He always refused, and the quarrel was over. Chen suffered from a stroke two years before they died, so Ang had to help his brother along. At the age of 62, Chen died from pneumonia and Ang died two hours later. Their bodies were on view for ten days and an autopsy at last revealed the extent of the bridge.

A small peritoneal lined tube of liver was surrounded by muscles, skin, and fibrous tissue. This bridge is described as seven and a half inches in circumference and three and a half inches across and contained a hernial sac. It closely resembles the description by Doctor Bolton, in 1823.

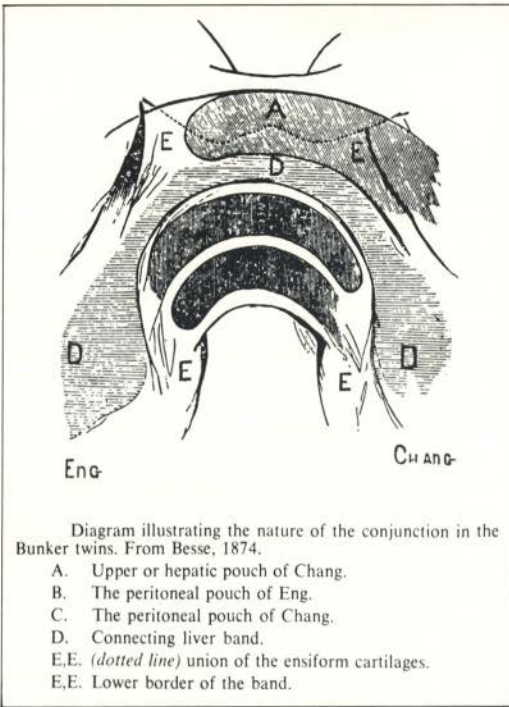
The Brothers Knot

Medical science has brought a much greater understanding of the etiology, embryology, classification and management of conjoint twins. Thus they are still a rarity, and they may be stillborn or appear as strangers under the laps of unsuspecting obstetricians. Table I is the most logical classification, and covers the whole field of twinlike fusions so far described. It is important to distinguish between the parasitic fetus and a viable twin. Since the great publicity which accompanied Ian Aird's "Conjoint twins of Kano", some remarkable cases have been described and excellent publications written.

TABLE I

CLASSIFICATION OF CONJOINED TWINS

| | | | |
|-----------------------------|--|----|--------------------------------------|
| Terata Catadidyma | double conjunction single lower double upper | or | Twins joined by lower portion. |
| Diprosopus | two faces, one head, one body. | | |
| Dicephalus | two heads, one body. | | |
| Ischiopagus | joined by coccyx and sacrum — end to end. | | |
| Pygopagus | joined by coccyx and sacrum — side to side. | | |
| Terate Anadidyma | single upper body double below | or | Twins joined by upper portion. |
| Dipygus | single head, thorax, abdomen. double pelvis, four legs, and reproductive organs. | | |
| Syncephalus | joined by face. | | |
| Craniopagus | joined by skull. | | |
| Terata Anacatadidyma | joined by mid portions, separate or double, above or below. | | |
| Thoracopagus | chest wall, chest organs and viscera. | | |
| Rachipagus | vertebral column above the sacrum. | | |
| Omphalopagus | peritoneum and liver. | | |
| Parasitic Fetus | | | |



Basically it seems that omphalagi, such as a Siamese Twins, are separable even if the liver has to be divided. The portion of shared circulation can be accurately determined beforehand. Adrenal function may have to be supplemented in one of them.

Thoracopagus twins with separate hearts need very careful assessment but have been successfully separated, even when a large defect was left in the abdominal and thoracic wall, as this was replaced by posthetic material.

Whether to separate depends on a specific knowledge of the twins anatomy and physiology. There is a wide spectrum of abnormalities from an omphalic band to complex cardiac, intestinal and other abnormalities.

Modern investigations include careful clinical, radiological, radioisotope and hepatic function tests. Electrocardiograms and exact assessment of shared circulation are vital. The correct timing of the operation is important to avoid immaturity, infection and mechanical complications. Sophisticated monitoring and anesthetic techniques have been developed as a result of experience which each operation brings. Cortisone is used to prevent adrenal failure. Emergency separation may be indicated where complications threaten. Finally an ethical question may arise where one twin may have to be sacrificed if the other is to survive.

The days have certainly changed since Simpson said of the Siamese Twins, "The operation is certainly possible and would be attended with little or indeed no difficulty, but it would be so perilous, that the twins would not in my opinion by justified in submitting to it, nor any surgeon justified in performing it." Don't you think he was wise? □

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TWINS — Some Definitions

| | |
|----------------------------|---------------------------------------|
| Monozygotic twins — | Identical — arise from the same ovum. |
| Dizygotic twins — | Fraternal — arise from different ova. |
| Conjoined twins — | Mutually attached. |

SOME FAMOUS HIGHLIGHTS IN SURGERY OF CONJOINED TWINS

- 1689 — Konig divided omphalopagus, using garrotte.
 1860 — Bohm
 1881 — Bhandar Division of omphalopagus twins.
 1902 — Doyan
 1954 — Ian Aird: "The Conjoined Twins of Kano".
 London U.K. First separation with full preoperative assessment of circulation. One lived, one died from adrenal failure.
 1967 — Allin: "The Tofield Twins".
 Edmonton, Canada Attempt at separating Thoracopagus Twins. Thwarted by constriction of thorax after suture of defect.
 1967 — Able: "The Bay Twins".
 Successful separation of Thoracopagus Twins, using prosthetic material to close defect.
 Devries: "The San Francisco Twins"
 Thoracopagus Twins with separate pericardia. Successful separation. Large anterior wall defects closed with Teflon mesh, which later gave trouble.

Acknowledgement to Halifax Infirmary Audio Visual Department for photographic work.

Some Thoughts on Referral

Referrals for consultation are common enough in the practice of medicine, yet the system seems prone to misunderstandings and confusion. Unhappily, when these two elements are allowed to intrude, it's the patient who suffers. In recognizing that problems can and often do crop up, it might be advisable to look at the referral system's basic components in order to prevent or at least to minimize the potential for negative situations.

There are three main characters in any referral "drama": the patient, the referring physician and the consultant. It is essential that each one have not only a clear understanding of his/her role but also the assurance that the others involved are aware of their areas of responsibility.

It is essential that the patient understand the reason for the referral (even if the request for consultation was patient-initiated); the specialty expertise to which he/she is being referred; the nature of the communication between the referring physician and the consultant; and just how he/she will be kept informed on the results of investigatory procedures and on subsequent treatment plans.

The referring physician should provide the consultant with as much information as possible on the condition which prompted the referral and on those ancillary conditions and considerations which are relevant to the patient's overall health picture. Not only does this save time and money by cutting down on duplication of diagnostic procedures, but it promotes obvious efficiencies and minimizes frustration and delays when the patient is unable to verbalize the reason for the referral. Ideally, a request for consultation should include the following information: a) the referred problem, b) the tentative diagnosis, c) relevant past history and investigations, d) current medications — including those for unrelated disorders, and e) known adverse drug reactions.

It is obviously essential that the consultant report back to the referring physician as soon as possible. Although a quick verbal report will help to expedite the next step in the treatment process (or allay patient and family fears — an important health care procedure in itself) a speedily delivered written report is vitally important.

If the patient has been under the consultant's care in a hospital, a quick phone call to the referring physician at the time of discharge helps to provide better follow-up care. It is also important that the patient be informed that this communication has taken place and that he/she (or the responsible family member) fully understands the personal obligation for ensuring that follow-up care occurs.

What about the "walk-in" patient? Ideally, the entire health care system — including government — should shoulder the responsibility for educating health care consumers in the appropriate and orderly use of specialists' services. Still, the walk-in patient will always be with us — particularly in these

situations which the patient may regard as emergent or semi-emergent. The consultant's first step, then, is to determine whether or not he/she is dealing with a true referral. A call to the patient's family physician may help to set things straight. If it is not a true referral, the consultant should inform the family physician of his findings and recommend to the patient that a visit to the family physician is in order. If the patient does not have a family physician, then he/she must be urged to establish this kind of health care relationship, even to the point of making several recommendations based on geography and patient convenience.

What about patient preferences? The patient has a right to take part in the selection of an appropriate consultant. A common sense approach should extend this right to the selection of the specialty to be consulted. When two or more consultants in the desired specialty are available, the patient should be allowed to state a preference — if any. If none is expressed, the attending physician then exercises his choice.

Never force a choice without considering the patient's preference. A dissatisfied patient is not only less likely to respond to treatment vigorously but can also cause administrative and personality problems through a withdrawal of communication and other expressions of a negative attitude. Remember, the inconvenience a dissatisfied patient may cause you — inconvenience you may have inadvertently brought upon yourself — tends to inhibit your ability to deliver the best possible health care — and other patients may suffer as a result.

To function properly, our referral system relies on close co-operation and understanding — **BE SURE YOU ARE NOT THE ONE THAT CREATES THE PROBLEMS.** □

T. J. McKeough, M.D.

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Out-Of-Province Billings

The summer influx of visitors to Nova Scotia guarantees an increase in the incidence of billing other provincial medical plans. While the best procedure is still to attempt to settle the account directly with the visiting patient — who will then be reimbursed by his or her own plan — physicians should be aware of the alternative. In general, other provinces require exactly the same amount and type of information required on the Nova Scotia MSI claim forms, including the patient's name, plan number, address, sex, year of birth, diagnosis and description of services provided (including dates), your MSI fee schedule code and the amount charged. In all cases, *print your name and address* as well as appending your signature. Remember, if the paying agents can't make out your signature, then they can't make out a cheque!

Payment from Other plans

- a) The Northwest Territories, Alberta, Saskatchewan, Manitoba, Newfoundland and Prince Edward Island will pay the physician directly on receipt of the properly completed MSI claim form which the physician must send to the address of the appropriate medical care plan. Referrals from P.E.I. are covered by that province's own claim forms. These will be sent directly to the physician involved for completion and payment.

Payment levels are as follows:

The Northwest Territories — 100% of the Nova Scotia fee schedule.

Saskatchewan — at 100% of the Sask. fee schedule

Manitoba — 100% of the Manitoba schedule. Any difference remains the responsibility of the patient.

P.E.I. — at the same rate currently paid by the Nova Scotia MSI plan.

- b) British Columbia prefers completion of its own claim forms but will accept the Nova Scotia MSI claim form and will pay according to the B.C. level of remuneration (99% of schedule).
- c) Quebec residents are personally responsible for payment for out-of-province medical services. Please provide the patient with either an itemized statement or a completed MSI claim form for submission to the Quebec plan — unless the account can be settled and receipted directly with the patient. If this is not the case, the Quebec plan will issue a cheque to the order of the beneficiary *and* the provider which the beneficiary must endorse and send to you. Payment is to the amount authorized under the Quebec plan (100% of schedule).

- d) New Brunswick residents were formerly responsible for payment of out-of-province medical services. *This has recently changed.* No restrictions are in effect for legitimate referrals. No restrictions are in effect for New Brunswick residents suffering out-of-province injuries or an attack of acute illness, *and* the interpretation of acute illness has been left to the patient's discretion. Established patterns of ambulatory care at the Highland View Hospital, Amherst, will not be disturbed. Out-of-province students will continue to receive benefits. Elective services commonly available in New Brunswick will *not*, however, be covered by that province's plan if performed elsewhere. However, New Brunswick Medicare's Hospital Services Division *will consider requests* from physicians on behalf of a patient for payment of in-hospital care where it can be demonstrated that such care would be therapeutically advantageous. Forms will be made available for submitting such requests. Out-of-province claims for physician services may be made on the Nova Scotia MSI claim form and submitted directly to the New Brunswick paying agency. Payment is at the New Brunswick level of remuneration (90% of schedule).

- e) The Ontario Medicare plan will accept claims for direct payment to the physician in extenuating circumstances (i.e. financial difficulties of the patient or where the patient is deceased or incapacitated.) However, in submitting the claim the physician must cite the circumstances which, in his or her opinion, require direct payment. Routine assignments of account signed by the patient will not be acceptable as authority to pay the physician directly unless the circumstances surrounding the assignment are clearly explained. In all other cases, the patient is directly responsible for physician services. Payment is made at up to 90% of the Ontario Medical Association Schedule of Fees. Extenuating circumstance claims may be made on the Nova Scotia MSI claim form.

Please Note: It is essential that all claims clearly bear the physician's name and address, and the doctor's personal MSI Physician Number. Your signature alone may not be good enough and could cost you money in delays in payment and subsequent correspondence.

Addresses for all out-of-province medical plans and paying agencies are on pages 16/1 and 16/2 of the MSI Physician's Manual. □

It's Your Business Too

Apart from approving the upcoming visit of Queen Elizabeth II and the United States' bicentennial bash, Nova Scotia's Legislative Assembly has also set itself to tackle some of the thornier at-home problems, not the least of which is the ever upward trend in power costs. The trouble is, high-profile debates on power along with legislative speculation on alternate energy sources tends to obscure many of the bills which may also have an immediate and direct effect on a variety of professions, occupations, trades and lifestyles.

What's happening down there? Well, quite a lot. For instance, the health services tax took a predictable jump from seven to eight percent.

Bill No. 35 didn't gather dust either. An amendment to the provincial finance act, it empowers the minister to enter into agreements with the federal government and/or other provinces with the approval of Cabinet alone; that is, without having to seek the consent of the House first. While no doubt intended to expedite the handling of cost-sharing and co-operative ventures, the move also has inherent negative implications. One of them is that opposition members — and the public — may only be apprised of some aspects of public spending after the fact. Because cost-sharing plays such an important role in provincial health care decisions (and the 1975 provincial treasury report showed spendings of just under \$218 million for health), planners — including many physicians — may find themselves short-circuited or operating on a no-knowledge basis.

Bill No. 42, another well-intended document, also presents physicians with a bit of a conundrum. This bill will prevent the registrar from issuing a birth certificate to or for an adopted person which bears the names of that person's natural parents. The only way the natural parents names may be revealed is through a court order or at the direction of the minister. This has some fairly obvious implications for those physicians requiring a family medical history for the appropriate treatment of a patient. While no doubt the minister will be happy to comply with any legitimate request from a physician, it looks like more paperwork and delays in treatment could result when the bill is passed.

Currently at the first reading stage, Bill No. 58 should be of some interest to just about anyone engaged in the delivery of health care. Its prime purpose is to remove dieticians from the Trades Union Act, a move which reflects this group's growing professional status.

The Children's Services Act — formulated to replace the Child Welfare Act — is still under scrutiny by legislators, social workers, lawyers and child care agencies alike. The 58-page tome covers general and protective services, adoption, child abuse, court procedures and appeals. Section 83 (sub-sections one through four) is of special significance to physicians. Bluntly put, it continues the

Editor's Note: Because of June issue deadlines, this article was written just before the House reconvened on May 4. Some of the bills mentioned may by now have been passed into law; others into oblivion. Still, their very presentation on the floor of the Legislative Assembly gives us an impression of the direction in which provincial legislators are moving.

mandatory reporting requirement, stating: "Every person having information, *whether confidential or privileged*, of the need for protection of a child shall report the information . . ." The section also confirms that no action can be brought against a person making a report unless the information is provided maliciously "or without reasonable or probable cause." Not so incidentally, failure to report a case of child abuse can result in fine of not over \$2000 or up to two years imprisonment, or both. The Children's Aid Society is specifically cited as the appropriate investigating agency and is committed to the investigation of all reports, whether provided anonymously or otherwise.

It looks, too, as though the income tax refund "business" in Nova Scotia will have had a short (and possibly happy) life if and when Bill No. 70 becomes law. The business is predicated on the provision of instant cash on the basis of a percentage of an individual's calculated tax refund. In other words, the operator "buys" tax refunds for an amount less than their total value. Bill No. 70 would make it an offence for any organization, other than certain recognized financial institutions, to get into the game.

Bill No. 83 has become popularly known as the "low beam amendment." Introduced by Medical Society President Dr. Tom McKeough, the bill would require all vehicles travelling the province's roads and highways during the day to keep their headlights on the low beam position. A visual safety measure, it is one of a flurry of Motor Vehicle Act amendments — including horn-honking in all passing situations and a maximum 50 mph speed limit on secondary roads — which have held the House's sometimes divided attention over the past month or so.

Those who are wondering what happened to the much-debated seat belt legislation of what now seems to be eons past can keep on wondering. Approved but not yet proclaimed, it currently rests in Cabinet.

While only peripherally related to medical matters — and only then in relation to some of the rarer examples of human fallibility — Bill No. 84 would outlaw leg-hold animal traps in favor of the "quick-kill" variety.

Bill No. 86 has more direct medical implications, requiring that all buildings to which the public has access also provide built-in or structurally-adapted access for paraplegics; a

sensible enough move which could facilitate both the business and the pleasure of a significant number of the province's population.

Backtracking a bit, Bill No. 3 is geared to prevent the Workmen's Compensation Board from appealing the successful appeals of compensation applicants to the W. C. Appeal Board to the Supreme Court of Nova Scotia. In other words, it would prevent the board from appealing the decisions of its own appeal board — if that makes this somewhat anomolous situation any clearer.

Bill No. 9 has yet to receive second reading but it could spell good news for hospital patients who would like to take part in the political process without the complications of proxy voting. If it gets through the Legislature, the bill would allow the establishment of polling stations in hospitals and long-term treatment institutions for patient use.

Coming up for third reading, Bill No. 14 is structured to consolidate nursing homes and similar institutions under the Social Assistance Act. A housekeeping item, its main intent is to sort out some of the fiscal confusion evident in this particular social sector.

Bill No. 21 has been passed and defines commercial property for municipal taxation purposes. Included in the definition are residences, any part of which may be used for "commercial" purposes — although tax requirements would apply only to those parts.

Bill No. 31 has been dubbed the Freedom of Information Bill. The object of this legislative exercise is to guarantee access to information held by the government or any of its agents, including Crown Corporations. Although the bill's passage is doubtful, it has obvious implications in the area of inter-government and government/corporation negotiations as well as negotiations and discussions affecting the future of a wide variety of government-funded programmes, not the least of which is health care.

Bill No. 29 is somewhat pompously titled: An Act Respecting Free Access to Public Toilets. Sometimes less reverently referred to as the Can Act, its passage could result in sighs of relief from the change-less (or money-less) who discover that nature is no respecter of geographical location. The fact remains, though, that there are men — as well as women — who, for a variety of reasons, must use stalls. Although the bill appears to have little chance of passing, it's nice to know that somebody's trying.

Bill No. 13 is aimed at putting a lot more bite into non-resident land-holding registration requirements. If passed, it would provide that, upon a conviction for not disclosing ownership of land, a non-resident would forfeit that land to the Crown. The corollary Bill No. 15 calls for an ownership-disclosure compliance certificate before non-resident owned land may be registered.

The throne speech promised more, some of which may be coming up in this session. Major amendments could be introduced to the Hospitals Act which, one source says, would see community mental health clinics incorporated into the local hospital structure. The aim is not necessarily

physical integration but administrative, which will allow the formerly reasonably autonomous clinics to take advantage of cost-sharing possibilities. In fact, the Health Services and Insurance Commission has already informed mental health workers that this will be the agency's administrative policy as of May 1.

Still with mental health, an amendment to the Human Rights Act could prevent discrimination in housing, employment, etc. against anyone receiving or who has received treatment for a mental illness.

Finally, for those politically minded at the local level, it may not matter any more who pays town or municipal taxes. Passage of an amendment to the Town's Act would result in the go-ahead for a ratepayer's spouse to hit the campaign trail if so minded.

While discussing restraint programmes in our health services, someone asked what a cost benefit analysis of legislative sittings would reveal, speculating that even the most wastefully managed clinic or hospital would look like a paragon of administrative virtue in comparison. Some astute questioning indicated that this speculation might not be far from the truth. On the other hand, a cost-benefit analysis of the last few days before prorogation would probably present a very different picture.

And that's the way things have been going. □

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Personal Interest Notes

The 1976 Convocation of Dalhousie University Medical School was held in the Rebecca Cohn Auditorium on May 18th. The graduating class numbered 90, of whom 60 were Nova Scotian, 20 from New Brunswick, three from Prince Edward Island, two from Newfoundland, three from other parts of Canada and two American students.

Dr. Mike Christie of Dartmouth, N.S., who graduated with distinction at the Convocation was the winner of the Dr. C. B. Stewart Gold Medal in Medicine and the Dr. Clara Olding prize. This latter prize, donated by the late Dr. A. M. Hebb in memory to his wife, is awarded to the student making the highest aggregate in fourth year. Dr. C. B. Stewart had the pleasure of presenting the medal that bears his name.



Dr. Michael Christie being congratulated by President Hicks on receiving the Dr. C. B. Stewart Gold Medal in Medicine.

The Dr. John F. Black prize, awarded to the student with the highest standing in Surgery, was granted to **Dr. Elwood MacMullin** from Glace Bay, N.S.

Dr. Brock Vair (son of Dr. Don Vair of Dartmouth, N.S.), was graduated with distinction and was the winner of the Andrew James Cowie Memorial Medal for highest standing in Obstetrics.

The prize in Psychiatry was won by **Dr. Rebecca Walker** of Gunningsville, N.B.

The Dr. Gordon B. Wiswell prize in Pediatrics was shared by **Dr. Roy Kimball** of St. Andrews, N.B., and **Dr. John MacLachlan** of Halifax, N.S.

Dr. Greg Butler of Halifax, N.S., who graduated with distinction was the winner of the prize in Medicine and the Dr. W. H. Hattie prize. This latter prize was initiated anonymously by the late Dr. Hattie when he was Assistant Dean and is perpetuated in his memory by Dr. Carl Perlman of California who was the recipient of the award in 1937. This prize is for the highest standing in Medicine in the fourth year.



Dr. Lloyd Macpherson receiving a gift from the graduating class, presented by its president, Dr. Dave Amirault.

When **Dr. Dave Amirault**, President of the class of 1976 furnished his very apt valedictory remarks, he paid great tribute to **Dr. L. B. Macpherson** who completes his term as Dean of Medicine this year. He gave Dr. Macpherson much credit for the good relationship between students and faculty, the great increase in student input to the curriculum and the general running of the medical school. On behalf of the class, he presented him with a copy of Tom Forrestal's "*Shaped by This Land*".



Dr. F. C. MacIntosh, native son and now Professor of Physiology at McGill University receiving his honorary LL.D.

NEW MEMBERS

The Physicians listed below have joined The Medical Society of Nova Scotia between April 1, 1976 and May 31, 1976. A most cordial welcome is extended by the society.

Dr. Thomas W. Gorman, Antigonish, received an Honorary Doctoral Degree at Convocation Ceremonies at St. Francis Xavier University recently. Dr. Gorman is Chief of Surgery at St. Martha's Hospital in Antigonish. Dr. Gorman was a member of the Medical Care Insurance Advisory Committee of Nova Scotia from 1969 through 1972. He served on the Executive Committee of The Medical Society of Nova Scotia for six years, and was elected President of the Society in 1965.

Dr. Ian Purkis, Halifax, N.S., was elected to the Board of Directors of the Acupuncture Foundation of Canada. He is Professor of Anaesthesia Dalhousie University, and is in charge of the Pain Clinic at the Victoria General Hospital. Dr. Purkis was one of a team of Canadian physicians who visited China in 1974 to observe the practice of acupuncture as an anaesthetic during surgery.

Drs. Philip Belitsky, Allan Cohen, Urologists, and **Dr. Allan MacDonald**, Immunologist, all of Halifax, N.S., gave presentations on April 28, 1976, on the war against kidney disease at the annual meeting of the Nova Scotia Branch of the Kidney Foundation of Canada. The three physicians are members of the Victoria General Hospital's Kidney Transplant team.

Dr. Louis A. Fernandez and **Dr. Roy A. Fox**, were elected to the American College of Physicians in April of 1976. These physicians have earned this membership rank through scientific accomplishments and by acceptance as leaders in their specialty as determined by fellow practitioners. The above physicians were elected at a recent meeting of the College's Board of Regents in Philadelphia.

Dr. Meng H. Tan, Halifax, N.S., a medical graduate of Dalhousie, is currently in the process of trying to solve the mechanism of Hypertriglyceridemia. Dr. Tan believes that in certain diabetics, the effect is in the removal of triglycerides by various tissues. Do diabetics lack this LPL (Lipoprotein Lipase) increase because their serum insulin do not increase physiologically? This is the hypothesis Dr. Tan is testing.

Dr. Tan trained at the Joslin Research Laboratory, Harvard Medical School and at the Cardiovascular Research Institute, University of California in San Francisco. In 1974, he was awarded a Centennial Fellowship by the Medical Research Council of Canada.

OBITUARY

Dr. Charles P. Miller, 61, died in New Waterford, N.S., May 2, 1976. Born in New Waterford, he obtained a B.Ed. from St. Francis Xavier University in 1936 and returned to his native town and taught for a number of years. He returned to St. Francis Xavier University and obtained a B.Sc. in 1941, thereupon entering Dalhousie Medical School and graduated in 1947. He practiced medicine in New Waterford from the time of his graduation until his death. The Bulletin extends sincere sympathy to his widow and family. □

| | |
|---------------------------|------------------------|
| Dr. W. Anthony M. Davis | Windsor, N.S. |
| Dr. Frank Halliday | South Brookfield, N.S. |
| Dr. Ali H. S. Ibrahim | Glace Bay, N.S. |
| Dr. Tadeusz K Krzyski | Sydney, N.S. |
| Dr. James W. Lewis | River John, N.S. |
| Dr. Robert A. W. Miller | Halifax, N.S. |
| Dr. Mary (Cameron) Mitton | Halifax, N.S. |
| Dr. Maurice A. Nanton | Halifax, N.S. |
| Dr. Hugh I. A. Nisbet | Halifax, N.S. |
| Dr. R. Wayne Putnam | Halifax, N.S. |
| Dr. Vasant C. Ruparelia | Sydney, N.S. |
| Dr. Malcolm D. Scott | Shubenacadie, N.S. |
| Dr. Ian M. Slayter | Halifax, N.S. |
| Dr. Mohammad Yousuf | Halifax, N.S. |



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