THE NOVA SCOTIA MEDICAL BULLETIN

"Some of my Best Friends"

Recently I read an editorial, the theme of which was "some of my best friends are physicians".

The writer placed in proper perspective the feelings and attitudes of those whose training and background are in fields other than medicine, but who work closely with physicians.

In congratulating Dr. Lloyd B. MacPherson on his recent appointment as Dean of Medicine, Dalhousie University, I wish to affirm that we in the medical profession consider that some of our best friends are non-physicians.

I first knew Dr. MacPherson when we were undergraduate students at Acadia University. Ensuing years have demonstrated his ability as a student, a scientist, and administrator and a university professor in fields inseparable from the study of medicine.

The Medical Society of Nova Scotia, which now enjoys the membership of the Dalhousie Medical students has as one of it's goals "the provision of quality medical care to all of the people of Nova Scotia in an efficient and effective way". This goal cannot be successfully reached by the Medical Society alone.

The provision by Dalhousie University Medical School of an adequate number of medical graduates, trained to provide the type of care for health plans of the future can contribute to realization of this goal and assure future continuity.

The value of the close involvement and bilateral contributions of the Medical Society and Medical School has been proven. This co-operation will be even more important in the future.

On behalf of the Medical Society of Nova Scotia, may I offer support in your efforts and wish you every success.

G.W. Turner, M.D., C.M.,
President – The Medical Society of Nova Scotia

Bleomycin - A New Antitumour Agent

The patient with cancer still presents a problem to the physician except when the cancer is in a localized form. In this situation surgery or radiation may be most successful. However, in the larger group of patients who have widespread or recurrent cancer one has to consider other forms of therapy which to date can only offer palliation in a small number of cases. It is in this latter group that one considers cancer as a generalized disease. In this situation consideration is given to mass destruction of the malignant cells no matter where they may be situated in the body by an agent which recognizes their difference from the normal cells. Another direction for tumour control would be alteration of the malignant cell so that it reverts to a normal dividing cell and does not undergo destruction.

In this issue of the Bulletin – van Rooyen, Yuce and Haldane present a preliminary report of their experience in the use of a new antitumour agent, Bleomycin. This is one of several newer agents in the antibiotic group which have an antitumour action. Bleomycin is chiefly effective against squamous cell carcinomas. This report confirms the earlier experiences in other countries with this agent. Although the number of cases reported is small it is very significant. It is hoped that van Rooyen and colleagues will continue their studies in a larger number of patients. The long term results will be most important. Information concerning maintenance therapy will be required as well.

Toxicity has been a problem with all the chemotherapeutic agents to date and Bleomycin is no different. Because of this it is important that these drugs be administered under close supervision and by those who are familiar with their side effects. The development of pulmonary fibrosis is of considerable concern. The effect on the hemopoietic system doesn't seem to be as great as with many of the other chemotherapeutic agents.

The effectiveness of Bleomycin would appear to be related to the blood supply of the tumour. Where previous radiation therapy has been administered the resulting fibrosis and arteritis interfere with the drug reaching the tumour. This is well demonstrated by intra-arterial fluoresce in dye studies and has been experienced with other agents in the past.

If further studies confirm that Bleomycin is effective against squamous carcinoma it is most likely this agent will become more widely used in the future. Consideration should be given as well to using Bleomycin in the earlier stages of squamous carcinoma and in particular before any interference with tumour blood supply.

The experience of van Rooyen, Yuce and Haldane in demonstrating the effectiveness of Bleomycin is a most significant contribution to the Bulletin and will be read with great interest.

J. A. Myrden, M.D.
President-Elect – The Medical Society of Nova Scotia.

Breathalyzers

The Dean Talks To The Bulletin

Biography

Being the only Dean of Medicine in Canada who is not a physician might have caused anybody else to have serious second thoughts. But Dr. Lloyd B. Macpherson sees his new position as

"an opportunity to encourage the Dalhousie Medical School faculty to use their very real skills and expertise to the fullest; to promote maximum discussion among faculty members on arriving at policy; and for the Dean to fulfill the leadership and management role that will make it possible for agreed policies in their areas of responsibility (teaching, research, patient care) to be carried out efficiently and expeditiously."

Born in Annapolis Royal, Dr. Macpherson is a graduate of Wolfville High School and Acadia University. In 1935 he joined the Banting Institute at the University of Toronto as research fellow and assistant to Sir Frederick Banting.

After World War II, during which he participated in technical intelligence work in Europe, Dr. Macpherson worked with Dr. C. H. Best in research on the biochemistry of fats. In 1948 he obtained his Ph.D. from the University of Toronto. From 1950 to 1952 he was an assistant professor, doing nutritional research, at Toronto, and he joined Dalhousie as an assistant professor of biochemistry in 1952. He became an associate professor in 1955 and a full professor in 1963.

Dr. Macpherson was appointed assistant dean of the Faculty of Medicine in 1958 and associate dean in 1969.

In recent years, Dr. Macpherson was an organizing member of the Associate Committee on Student Affairs of the Association of Canadian Medical Colleges.

He is married to the former Elizabeth Wilson of Toronto and they have three children.

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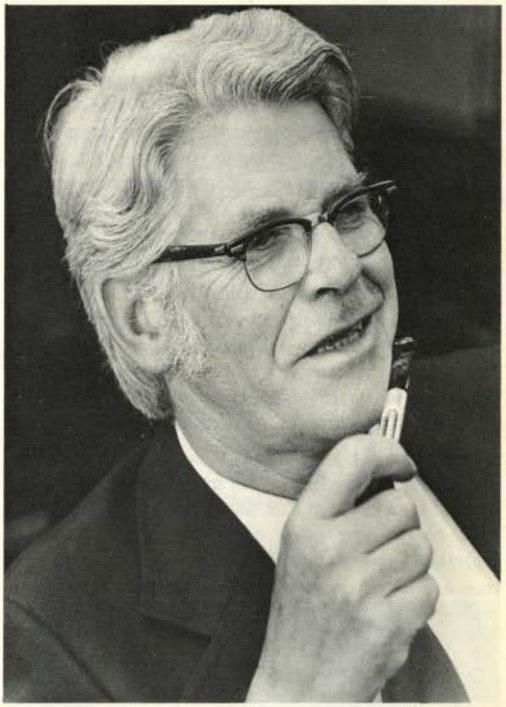
THE BULLETIN: How does it feel to be the only Dean of Medicine in Canada who is not an M.D.?

THE DEAN: I'm rather pleased to be in this category. Certainly, I've got the support of a gratifying number of colleagues in the school and if you look at it, it's to a large degree a management job. And, of course, I've had a lot of experience in this faculty. I think that by having known a great many physicians – and known them well – in the past 15 years or so I understand their problems. Possibly there's some advantage to being a non-physician in that one can more easily take a detached view in problems and discussions where that sort of approach is advantageous. However, I don't intend to be neutral in all problem situations!



"I think relations between the Faculty and the Society have been excellent and I want to see them stay that way . . . and develop even further . . ."

Sir Charles Tupper Medical Building

THE BULLETIN: As a non-physician in this senior medical education post might you not have some ideas which, while not necessarily revolutionary, could be new . . . possibly in the extreme.

THE DEAN: Of course, our medical school in particular, has a great many more tasks than the training of physicians. We have somewhere in the region of 500 medical students and something approaching 200 residents in training in hospitals. We also instruct 60 or so dental students. Altogether we have about 1,000 fulltime student equivalents in non-physician courses. That is to say, we give a lot of the instruction in Dalhousie to physiotherapists, nurses, physical education students and pharmacists. As well, the medical faculty gives medical science classes in bacteriology, biochemistry, physiology and so on, both at the undergraduate and graduate level to students in the Faculty of Arts and Science and the Faculty of Graduate Studies.

I suppose the public tends to think of a medical school as only a place where physicians are trained but in actual fact, although the school would not exist if it weren't for that, it has a lot of other tasks as well for which my background has given me some understanding.

But I haven't answered your original question about revolutionary ideas. In fact, our school was set on a stable, planned track by Dean C. B. Stewart, to whom signal credit must be given at every opportunity - for his vision, organising ability and determination that Dalhousie should have a first-rate medical school. I have been privileged to take over a "going concern" and I will be making sure that a number of promising trends that are already apparent are encouraged. Perhaps in a year or so you might inquire if I have been revolutionary or am planning to be!

THE BULLETIN: You didn't mention research in your review of the roles of the Faculty.

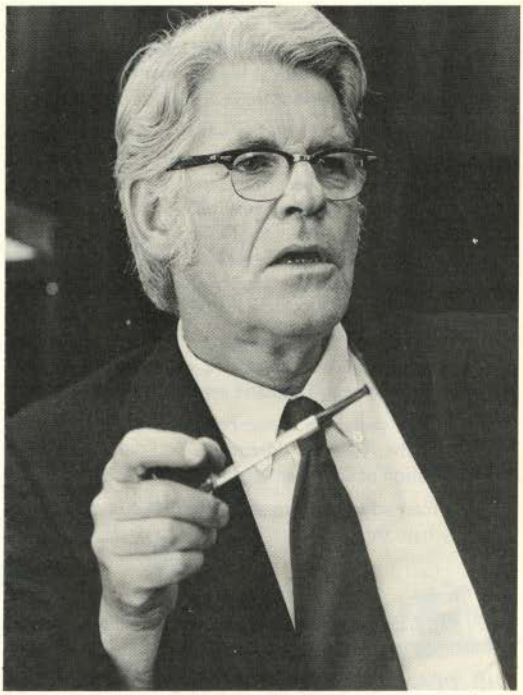
THE DEAN: Oh, yes! Received opinion at the moment has it that you can't have a viable medical school unless a certain percentage of your effort goes into research which spins off on the teaching and the thinking of all your staff. I support this view completely.

There is always the possible tendency not to stay up to date unless you are interested in at least some of the aspects of the frontiers of new knowledge. It's a prime requirement of a medical school to have an active research program . . . both curiosity-oriented and clinical research. I intend to encourage cooperative research projects.

THE BULLETIN: That brings up another question, one of relations between the clinician and the basic scientist. Perhaps you have some views on what they have – or haven't – been in the past and what they should be.

THE DEAN: Traditionally, there has been a tendency in medical schools to speak of "the two sorts of people on their faculties". Of course, here there has never been any kind of political split between the two; everybody has got along remarkably well. But I rather think we can do better than this. One of the things I want to encourage is a disappearance of the "thinking" barriers between the programs of the clinical and preclinical departments. We've done this to a considerable degree through our new curriculum introduced five years ago, which made a very serious and to a large degree successful effort to integrate the teaching of medical students, to relate their basic science instruction closely to the practical clinical aspects. I think research, too, will be a great instrument to bring the two groups closer – the clinican and the preclinical people.

There are other avenues too. The real reason for putting the fine lounge on the 15th floor of the Tupper Building was the worry that the school was getting so big that not only were clinicians not having an opportunity to talk with the preclinical scientists but all too rarely were anatomists talking to biochemists, obstetricians to internists, etc. We hope the room is overcoming this, that it's encouraging members of the Faculty to get to know each other better, to know what problems each faces and maybe to contribute to the solution of those problems. I think in this sense it is successfully serving its purpose.



"You can't have a viable medical school unless a certain percentage of your effort goes into research which spins off on the teaching and the thinking of all your staff."

THE BULLETIN: Can the medical school do much the same thing with and for the physician who does not have direct contact with the school or with Halifax? Does the medical school have a role to play in improving or building good working relations between this physician and the scientist?

THE DEAN: Of course this is tied up with our Continuing Medical Education program. As you know, we have teachers going out to hospitals and communities to conduct clinical and basic science sessions and so on. The important thing there is that the people, the physicians in a community, must want it. There must be a need recognized.

The CME program also arranges for short courses and medium length courses in the university as well as tailor-made courses for individuals. There's quite a few of those each year. We can bring a doctor in for two or three weeks and give him a rather intensive experience in the things that he wants. But I think a very important facet of a continuing medical education program is that the group or individual must want it.

There is one thing I think should be perfectly clear. The primary role of a medical school is not to provide health care. The primary role is to teach those who will do this. Naturally, the school should be very deeply involved in the study of methods on how care is or should be delivered. The medical school must be a leader in demonstrating ways of bringing service to the people and of the best ways of delivering health care, but it must not take over the care of patients as a primary responsibility. This is the role of the physician, the community and, clearly today, the government.

THE BULLETIN: One of the subjects much under discussion today is the matter of the physician assistant. Do you feel there is a need for such a person in Nova Scotia today?

THE DEAN: First, I should say I don't know much about the subject. My reaction, my gut feeling, is yes, there are roles for a physician assistant to play but I wouldn't for a minute suggest what sort of a person such a physician assistant should be. Numerous groups are studying this at the moment. I don't think Faculty has formed any majority opinion on it as yet. All I know is that there are examples in the Maritimes of physicians who themselves have trained receptive office nurses to handle up to 60 percent of the primary office first-contact work – and the patients themselves ask for the nurse – and that nurse is perceptive enough to know when the doctor should see a patient. Consequently, the doctor can do a great many more of the things that he is intensely trained to do while a lot of the routine work in the practice is carried on by the assistant. Yes, this is a personal opinion, I think there is very much a role for physicians' assistants in the family practice area and in hospital practice, too.

THE BULLETIN: Have you formed any specific opinions on the supply and distribution of physicians in Nova Scotia?

THE DEAN: Well, I doubt that you're ever going to get a physician in what might be termed a remote rural area without some degree of subsidization. Every year we have graduates who would like to practice in this type of area but there are other things that affect their eventual decision not to do so. They can't get away, they have little opportunity to talk to fellow physicians, eventually they realize they will want their children educated somewhere else . . . I suppose you could attract a few people to isolated areas through, maybe, a special mileage allowance, subsidized ambulance service for the community, the employment of a few physicians by the government to cover while the solo practitioner went away for a holiday or special courses . . .

I suspect that if the condition of the contract were properly worked out some sort of subsidization plan while the student was going through medical school, with a service-in-return requirement, would distribute a few physicians a little more equitably. This has been tried at least in Newfoundland and Ontario. I know that in Newfoundland they've had some trouble with this sort of plan. Although it is always hoped that moral obligations will ensure that the young physician will provide his promised service, there seems to be no binding, legal way to force him to do so and probably there shouldn't be. Nevertheless the new physician can easily borrow from the bank to repay the government and not fulfill his practice obligation. But it has certainly helped Newfoundland to train and keep more physicians.

"The primary role of a medical school is not to provide health care. The primary role is to teach those who will do this."

THE BULLETIN: How about the subsidization of actual clinics. That is, the community underwriting the facility – in effect, guaranteeing it – with the physicians assuming repayment.

THE DEAN: On the surface again, I think this is great . . . the arrangement of the practice in the province on a rational basis based around community health centres. There's no question in the world but that it can and should be done and done quickly. The way of course, to make it evolve is – a trite thing to say – to involve the community and to get the community to study its own needs and, hopefully, to reach for some form of practical agreement with, say, the Health Council or a workable system of regionalization based on community health centres, regional referral centres and a provincial referral centre. I think it will come. It may involve some hard feelings, some disappointments where small community hospitals are involved - facilities into which local residents have put a great deal of community effort.

Equally, physicians must realize that they are involved – which, I understand through the work of the Medical Society, is a realization they have already come to.

THE BULLETIN: This leads us into another question: What about the Medical Society? Is there one primary goal you feel it should be striving toward?

THE DEAN: First, I don't think I should be telling the Medical Society what its particular aims should be. Medicine is an enormously complex field and there are so many considerations involved that it would not be very helpful to select one priority item and recommend action on it.

I should say one thing, though. If I ever had to make a priority choice on space in the Sir Charles Tupper Medical Building, that is, if somebody had to go because expansion of the school demanded more space, I would place the Medical Society as one of the groups in the building which would have priority of tenancy. I would want to see the Society stay there. I think having the Society in the building has been enormously helpful to the school and to medicine as a whole . . . enormously helpful. I think relations between the Faculty and the Society have been excellent and I want to see them stay that way . . . and develop even further.

THE BULLETIN: Speaking of facilities and the Sir Charles Tupper Building, you had a great deal to do with its design. What were you looking for and do you think you've found it in that building?

THE DEAN: Medical education and research are constantly facing new demands. Requirements and priorities change. What I and many others wanted to have in a new building was spatial flexibility and true internal mobility.

We wanted to be able to increase or reduce space for any given function as new requirements demanded without having to tear down permanent walls and rip all the plumbing out. In many medical schools, you know, teaching and researching has had to go on to the accompaniment of jackhammers as sections are torn down to meet a new need. We wanted to avoid that as much as possible. To a certain extent building regulations at the time of construction made the plumbing and electrical services, etc., less flexible than I would have wished but, by and large, we achieved what we set out to do.

We also wanted to have some warmth and beauty around the students and faculty members. I think we've achieved that too. A little beauty is never out of place. □

Some Public-Health Aspects of Research in Mental Retardation*,**

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Summary: *Some current areas of medical research are surveyed that are relevant to the field of public health and should concern everyone. First, the importance of chromosome anomalies is discussed in terms of their overall frequency, particular frequency in certain population sub-groups, and potential effects on intellectual ability; and some factors are considered that are pertinent to termination of pregnancy for genetic reasons. Second, a study of school children is outlined which indicated that socio-economic status has an effect on growth. Third is a brief description of studies of a French-Acadian sub-group, some of whose members have a form of Niemann-Pick disease, a rare, distressing, degenerative disorder of childhood.*

Finally, a plea is made for the institution of a system of linked records of health data, to replace present out-dated, expensive methods for tracing medical information about multiple family members. This is related to the provision of informed genetic counselling, to reduce the frequency of genetic disease and its attendant family stresses.

The purpose of this presentation is two-fold: to focus on some research topics that have implications for public health, and to draw attention to certain areas that I feel should concern all who have an interest in the public health.

Chromosome Disorders

First, I shall outline some public-health aspects of chromosome anomalies – a subject in which we in the Atlantic Research Centre for Mental Retardation (ARCMR) have an abiding interest. Since most of these conditions are rather rare, it might be supposed that they are of little concern to those in public health; in aggregate, however, they are relatively common, occurring in about 1% of the newborn population[1]. In some examples of this type of disorder the children are relatively severely affected and have obvious congenital defects, but the majority of infants with chromosome anomalies are of relatively normal appearance, with few or no visible defects (Fig. 1), a fact not generally appreciated. Experience enables us to ascertain many such children in early childhood and thereby counsel the parents concerning, for example, the child's likely development and the possibility of another such child in a subsequent pregnancy. In all cases, correct diagnosis is crucial to the formulation of appropriate advice for the family, optimal management for the child, and an accurate prognosis.

FIGURE 1

Baby R.M.D. K 124. The facial appearance is normal to casual inspection; however, this baby was found to have missing genetic material on chromosome analysis (karyotype 46,XX,Bp-) and shows moderate to severe mental retardation.

*Based on an address given at the 1970 Annual Meeting of the Nova Scotia Branch of the Canadian Public Health Association.

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As our knowledge of the commoner chromosome disorders has extended we have become increasingly interested in some that are less obvious, including those that might be missed during routine physical examination – in some instances because the anomaly is only partially manifested. In such cases screening for chromosome defects in a selected population is often useful. For example, a relatively high proportion (about 20%) of girls with primary amenorrhea have only one X chromosome[2] and a further proportion have more complex chromosome changes. Similarly, chromosome analysis used as a screening technique has shown that a relatively high proportion of children with mental retardation have chromosome anomalies. In some institutions for the moderately retarded, the proportion of children with one of the commonest chromosome anomalies, Down's syndrome (mongolism), may be 15-20%; furthermore, testing of those children in the insitution who have no obvious signs of any chromosome problem reveals that about 5% of these children also have chromosome anomalies[3]. Thus, the frequency of chromosome disorders in this screened population of the mentally retarded is about five times higher than in unselected neonates.

It might be concluded from this that all children with chromosome disorders are mentally retarded, but this is not the case: chromosome anomalies have been found in persons of normal intelligence, including university students and professors. Some of these anomalies are associated with changes in intelligence that are more subtle than simple mental deficiency. Thus, males with an extra Y chromosome may appear to be mentally retarded on psychological testing, depending to some degree on the type of test used; in fact, it seems likely that they have specific disabilities in certain areas only[4].

A further advance closely relevant to the above is the ability to screen the unborn for the presence of chromosome anomalies by examination and culture of fetal cells obtained from samples of amniotic fluid. Additionally, the unborn may be similarly screened for any one of a growing number of biochemical genetic disorders. Consequent upon these technological advances, an issue that is arising with increasing frequency at the interface of research and service is the question of pregnancy termination when the unborn child is believed likely to be genetically defective. Some may feel that such a procedure is entirely justifiable, others that it is never justifiable, and yet others that it is justifiable only under conditions. This topic is too large for thorough consideration here, but there are three points I think should be clearly understood before any discussion is contemplated.

First, the tests now available for the prenatal diagnosis of several conditions, sometimes within the first few weeks of pregnancy, indicate with reasonable certainty whether the developing fetus has that specific genetic defect for which it is thought to be at risk. We are still in the early days of these techniques; the number of genetic conditions whose presence may be determined early in pregnancy will increase, as will the reliability and precision of the test methods.

Second, under the current 'liberalized' Canadian law, the presence of any kind of genetic defect in the developing fetus – or indeed of any other kind of defect – does *not*, in itself, constitute grounds for termination of pregnancy.

Third, whether a pregnancy is terminated on genetic grounds is but one aspect of the much larger question of whether, and in what circumstances, any pregnancy might be terminated. The attitudes of the community-at-large on this issue are changing at a rate many of us would not have believed possible a few years ago. By way of example, many are probably familiar with the legal situation in the State of New York, under which termination of a pregnancy of up to 24 weeks' gestation may be undertaken as a private decision of the woman and her physician. Since 1st July, 1970, the Women's Medical Group has operated out-patient facilities for this operation in New York: 2500 abortions were performed by October, 1970, the rate increasing to 60-70 per day by the end of that month[5]. This means that more pregnancies were terminated at this one centre in a single week than in the whole of New York State in a year in the early 60s. (Also, incidentally, more terminations in five days at this one centre than were carried out in the whole of Nova Scotia in 1970!)

Growth and Socio-economic Factors

Not all studies at the ARCMR are necessarily or entirely genetic. For instance, for the past two years we have been studying the growth and development of Halifax school children and the factors affecting their growth. The initial objective was to assess the current state; therefore, we measured the height and weight of all Halifax school children. (This work was done in conjuction with, and some assistance from, the School Health Service.) The information was transferred to computer tape, and analysis so far has yielded data from which we have constructed growth and development charts for children in the Halifax area[6]. In searching for factors affecting growth and development, we investigated the association with socio-economic status (determined, in this instance, by an estimate of the parents' level of formal education and occupation) and found a very significant association between high socio-economic status and tall children and, conversely, between low socio-economic status and short children[6]. Findings of this kind are not new – similar findings have been reported for other communities in past years – but there is a present tendency to regard the average North American community as relatively well nourished, at least insofar as nutrition adequate for good growth is concerned. Our findings indicate that this view is unduly complacent and that there is much room for improvement if optimal growth of all children is to be achieved.

Population Studies and Record Linkage

Another type of population study in which we are currently engaged concerns the French-Acadian population

of the Yarmouth area, several of whose members have a variant of Niemann-Pick disease, a particularly distressing genetic disorder that causes severe and progressive mental and physical deterioration in middle childhood. So far as is known, this condition is exceedingly uncommon in other parts of the world. One aspect that we have investigated is the genetic relationship between children known to have this disorder. We have succeeded in establishing a family connection between all of the Yarmouth-area children definitely known to us as having the condition, and some similarly afflicted children, described by other investigators, who live in the U.S.A.

The accumulation of this information has not been easy. Much time has been spent in talking with the families involved, their parents, grandparents, and other relatives. Hospital records, in both Halifax and Yarmouth, have been scrutinized. We have traced and inspected church records, birth and baptism records, family bibles and marriage certificates. Historical documents from the public archives, local libraries, and certain private archives, some requiring translation from the Old French, have been examined, and name-changes through the generations have been traced. In this connection I am especially grateful for the superb help we have received from the Rev. Father C. J. d'Entremont of Fairhaven, Massachusetts.

What are the possible uses of this information? There are several, but here I shall confine my comments to some of the outstanding practical advantages. In regard to the Niemann-Pick variant, for example, once we know the relationship of any individual to affected members in this large kindred, we can estimate that person's likelihood of being a carrier of the disease; and, if similar information is available for the spouse, we can determine the probability of this distressing condition in their future children. We are trying to formulate histologic and biochemical tests to determine more precisely the likelihood of carrier status in persons at risk, so that we may give more-informed genetic counselling. Requests for information and guidance from prospective parents in this community are neither hypothetical nor futuristic: they have already arisen in the course of our work in this area.

I have stressed the difficulty we have experienced in obtaining genetic information in this situation, a difficulty that is not, of course, unusual in this type of research. Paradoxically, much of the information existed prior to our research and was not directly generated by us. Thus, the medical findings on these children *are* available in hospital records; dates of birth *are* on birth certificates, together with the parents' names; and information concerning the cause of death *is* recorded on death certificates. The essential problem is retrieval of this information. The method of recording these health data has changed little in the last hundred years. Items of information are obtained for specific purposes and, in general, remain completely unlinked to other information, recorded elsewhere, about the same individual.

If health data were linked[7] researchers would not have to spend many hours sifting and searching to obtain needed information. With all the data relating to a specific individual (including likely predisposition to certain diseases and the relationship, if any, to known genetic disorders) readily available, it would be a simple matter to determine whether that person and his spouse should be tested further. Results of such investigations would provide useful, practical information for measuring the risk that a child of these parents would have the condition under study, be it phenylketonuria, muscular dystrophy, hemophilia, or a host of other disorders. Genetic counselling based on the fruits of record-linkage could lead to a substantial reduction in the frequency of many distressing disorders, and therefore, in the number of families with a heavy burden of psychological and financial stresses engendered by genetic disorders in their children.

It may be questioned whether the complexity and enormity of data storage necessary to produce these desirable results render such a task impossible. In fact, with the advent of computers such a task has become eminently feasible, and advances in computer technology are constantly increasing the potential usefulness of record linkage. Two pilot studies, in England[8] and in British Columbia[9], have produced much useful data applicable in the public-health field. For example, one study showed that illegimate children have a 70-80% increase in the risk of death within the first five years of life, and about 20% greater risk of having a handicapping condition, both effects being statistically highly significant[9].

If record linkage is so useful, why is it not being used? There are two main reasons: first, a good deal of organization – and, of course, money – would be necessary to initiate it, even on a relatively small scale; second, the 'pay-off' would be long-term, short-term returns in all likelihood being scanty.

For these reasons, record linkage has not been popular with either research workers or those concerned with medical service. However, many – including myself – consider that the potential long-term usefulness of these data in the delivery of health care is so great, and the need so urgent, that those involved in the administration and provision of medical services should urge the adoption of some method of record linkage of health data. □

References

1. **Court Brown, W.M.:** *Human Population Cytogenetics:* North-Holland Publ. Company, Amsterdam, 1967. North-Holland Research Monographs: Frontiers of Biology, ed. by A. Neuberger and E.L. Tatum, vol. 5, 1967.
2. **Turner, J.H., Charles, D., and Rankin, J.S.:** Karyotypic aberrations in chromatin positive individuals with primary ovarian failure. *J. Obstet. Gynaec. Brit. Comm.*, 1970, **77**: 536.

(References continued on page 142.)

Whither Rh Disease?

J. McD. Corston, M.D., F.R.C.O.G.*

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Since Liley of New Zealand in 1963 published an account of the technique of Intrauterine Blood Transfusion in Severe Rh disease, the Halifax group, under the auspices of the Rh Committee, have administered a total of 156 I.U.T.'s to 81 patients. Approximately one half of these babies have survived and have grown into healthy normal children.

Patients Who Had Intrauterine Transfusions:

1968 – 20 patients had 44 I.U.T's
1969 – 12 patients had 21 I.U.T's
1970 – 11 patients had 22 I.U.T's
1971 – 9 patients had 18 I.U.T's
1972 – 4 patients had 11 I.U.T's (Jan. 1 to June 30)

In 1968, Rh Immune Serum Globulin became available by extracting the globulin from the plasma of the blood of those women who had developed extremely high Rh antibody titres.

The first injections of the Rh Immune Serum Globulin in Nova Scotia were given officially in June 1968, although for six months previous to that we were linked with four other centres in Canada to test the efficacy of the injections on a clinical basis.

Nova Scotia has approximately 15,000 births per year and about 1500 of these would be Rh negative patients. If one adds all the abortions and ectopic pregnancies in Rh negative women, the total number of patients in Nova Scotia per year who should have the injection would be in the vicinity of 1800.

The following is a break-down of the injections administered throughout the province since June 1968:

Rh Immune Serum Globulin Injections

June 4, 1968 – June 30, 1969 = 781
July 1, 1969 – June 30, 1970 = 1300
July 1, 1970 – June 30, 1971 = 1391
July 1, 1971 – June 30, 1972 = 1379

At the same time the number of patients referred per year to the Rh Committee for an opinion is as follows:

6 months, 1968 = 39 (67 for complete year 1968)
(July 1 - Dec. 31)
1969 = 60
1970 = 49
1971 = 35
(Jan. 1 - June 30) 1972 = 22

Of course in the severely affected cases the mothers, for the most part, asked for and were encouraged to have tubal ligations as a means of deliverance from a nerve-wracking repeat pregnancy. This undoubtedly contributes to the gradual diminution in numbers in the obstetrical population of women who have been grossly sensitized to Rh disease.

A glance at these tables will show us at once that the number of pregnant Rh sensitized *new cases* has diminished by approximately 50% since 1968 with the introduction of Rh Immune Serum Globulin Injections. The number of cases requiring intrauterine blood transfusions dropped from 20 in 1968 to 9 in 1971.

For the year ending June 30, 1972 there were 1379 injections of Rh Immune Serum Globulin given in the province. This would appear to be only a fair coverage and it means that we, the Medical Profession, missed about 400 women who qualified for the injection.

In answer then to the question "Whither Rh Disease"? let us individually maintain the vigil so that we may eradicate this disease entirely. This can be accomplished only by continuous education of the public by the Medical and Nursing Professions and by adopting a more aggressive attitude, so that the patients who need the Rh Immune Serum Globulin will get it. We must live up to our responsibilities in this preventative medicine matter if we are to be worth our salt! □

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(References – continued from page 139.)

Some Public-Health Aspects of Research in Mental Retardation

3. **Summitt, R.L.:** Cytogenetics in mentally defective children with anomalies: *a controlled study. J. Pediat.*, 1969, **74:** 58.
4. **Welch, J.P.:** The XYY syndrome – a genetic determinant of behaviour. *In*: First Conference on The Clinical Delineation of Birth Defects. *Birth Def., Orig. Art. Serv.*, 1969, **5**(5): 10.
5. **Round the World** – U. S. A.: *Lancet*, 1970, **2:** 767.
6. **Welch, J.P., Winsor, E.J., and MacKintosh, S.M.:** The distribution of height and weight, and the influence of socio-economic factors, in a sample of Eastern Canadian urban school children. *Can. J. Publ. Hlth.*, 1971, **62:** 373.
7. **Newcombe, H.B.:** Population genetics and the medical-record linkage. *In: Medicine in the University and Community of the Future*, ed. by I.E. Purkis and U.F. Matthews, Faculty of Medicine, Dalhousie University, Halifax, N.S., 1969, pp148-150.
8. **Acheson, E.D.:** *Medical Record Linkage.* Oxford Univ. Press, London, 1967.
9. **Newcombe, H. B.:** Products from the early states in the development of a system of linked records. *In: Record Linkage in Medicine*, ed. by E. D. Acheson. Livingstone, Edinburgh, London, 1968, pp 7-34.

Effect of Bleomycin on Squamous Cell Carcinoma

Preliminary Observations

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and E. V. Haldane, B. Sc., M. B., Ch. B.

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1972

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Preliminary Observations

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The search for antitumour substances has now extended into the field of antibiotics, together with other products of microbial fermentation. At the Seventh International Congress of Chemotherapy, held at Prague, Czechoslovakia, in August, 1971, a number of papers were read describing substances exhibiting antitumour activity, including bleomycin, sibromycin, rubomycin and bruneomycin, WRI42, variamycin and frequentin.[1]

From studies in Italy, it is claimed that daunorubicin and adriamycin are active against lymphomas, acute and chronic leukaemias, neuroblastomas, breast and lung carcinomas, and soft tissue sarcomas.[2,3] Of special interest has been the reported activity of streptozotocin against insulinomas or tumours arising from the pancreatic islands of Langerhans.[4,5,6] Other antibiotics in course of antitumour study are kundrymycin[7,8] and kidamycin.[9] These substances have reached various stages of readiness for commercial production, following *in vitro* tissue culture and animal tests for toxicity. Among the most advanced in development, having attained the stage of clinical trials, has been bleomycin, followed by adriamycin and streptozotocin.

Bleomycin, a high molecular weight antitumour antibiotic, was discovered by Umezawa, *et al.* in 1965, and is produced by a strain of *Streptomyces verticillus,* originally recovered from soil at a coal mine at Fukuoka prefecture in Japan.[10] It is a white or yellowish-white powder, and is composed of a group of readily water-soluble, basic sugar peptides, which can be fractionated by paper chromatography. These peptides can be divided into two groups, A(A_1-A_6) and A_2, and B(B_1-B_6). It is very stable, and can be kept at room temperature for two years without loss of potency.[11,12] In addition to its antitumour action, bleomycin exhibits broad spectrum antibiotic activity, and suppresses the growth of *Staphylococcus aureus, Escherichia coli* and other organisms.[11,13]

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Mode of Action

Bleomycin reduces the melting temperature of DNA at 10-15°C, thereby inhibiting the incorporation of thymidine into DNA. Thus the DNA is rendered labile and readily broken down into lower molecular DNA, which is eventually destroyed by the action of DNAse. Bleomycin A_2 has been demonstrated to combine with DNA and to uncoil the double helix. In lower concentration, the drug arrests cell division.[11,16-21]

On cultured HeLa carcinoma cells, bleomycin inhibits DNA synthesis by blocking the incorporation of thymidine into DNA, attaining a rate of 89.8% at a concentration of 100 ug/ml of bleomycin. It exerts a striking change in the distribution pattern of the nuclear DNA content of the VX-2 carcinoma cell of the rabbit, as determined by microspectrometric methods, and has been shown to prolong the life of animals with experimentally induced tumours.[14] It is active against the Rous sarcoma, and the virus induced mouse ascites sarcoma in F_1 strain hybrid mice. No action could be demonstrated against the virus producing Friend ascites tumour and the mouse ascites plasmacytoma.[15]

Toxicity

Bleomycin possesses the great advantage of freedom from undesirable effects inherent in certain other chemotherapeutic and anti-cancer agents, such as antagonism against the immune and haemopoietic systems in man.

Occasionally, it may cause toxic effects. Immediate adverse reactions consist of headache, dizziness, chills, fever, nausea, vomiting, pain at the site of the tumour or the site of injection. These effects tend to be transient and may subside spontaneously after a period of hours. Anaphylactoid reactions have also occurred.[11,12] Delayed complications may consist of pneumonia, pulmonary fibrosis, alopecia, pigmentation, thickening of skin, rash, pruritus, vesiculation, ulceration, hyperkeratosis and nail changes. Pulmonary fibrosis has been reported in approximately 3% of cases. This may become manifest immediately or several weeks after cessation of therapy.[11,19,21]

Administration

Bleomycin can be given by the subcutaneous, intramuscular, intravenous, intraperitoneal or intratumour routes, and is absorbed readily. Renal excretion occurs and some 40% of the dose is recovered from the urine over 24 hours. Excretion may continue for several hours longer, but after 72 hours, bleomycin cannot be detected in the urine. For this reason, injections should be made at intervals of 72 hours.[11] Animal experiments have demonstrated that the maximum concentration of bleomycin occurs in the skin, followed by lesser amounts in the kidneys and lungs. The action of bleomycin on the squamous cell carcinoma may therefore be explicable on the grounds of its predilection for skin and lung tissue.

MATERIALS AND METHODS

The patients were all selected, at the request of their doctors, from the different wards of the Victoria General Hospital, Camp Hill Hospital and Halifax Infirmary.

Bleomycin was supplied by Bristol Laboratories in ampoules of 15 mg powder form and was reconstituted in 15 ml of 5 percent glucose or normal saline solution before administration. It was given intravenously, and, in the case of solid tumours affecting the skin, was also injected directly into the tumour. In one case continuous intra-arterial perfusion was used. The usual dose given was 15 mg intravenously, twice weekly, for 10 weeks, plus 15 mg into the tumour weekly for 10 weeks. The total dosage varied from 300-450 mg.

Pulmonary function studies, chest x-rays, haemograms and serum electrolyte assays were performed in all cases before, during, and after therapy. Biopsy sections for histology and for electron microscopy were obtained before, during, and after treatment.

CLINICAL DATA

CASE I. (Patient of Dr. R. C. Fraser), a 47 year old white female, presented with a squamous cell carcinoma of the cervix, stage 2B, in May 1970. She received two courses of radiotherapy with a total dose of 8,960 rads, between which she received CO_{60} therapy with a total tumour dose of 3000 rads, but without success. Before starting bleomycin therapy, a palpable pelvic mass was present, which extended to the right pelvic wall at the bifurcation of the common iliac artery obliterating the right ureter. The patient received 30 mg bleomycin intravenously weekly for 13 weeks with a total dose of 390 mg. Side effects observed consisted of mild fever after the first two injections, and slight alopecia. Treatment failed.

CASE II. (Patient of Dr. R. C. Fraser). This 47 year old white female, who presented with a squamous cell carcinoma of the cervix, diagnosed at stage 2A in Feb. 1971, was treated with radiotherapy, 9,135 rads, and $Cobalt_{60}$ therapy, 3000 rads. Therapy failed. Prior to bleomycin, vaginal slough was present at the apex, and she had bilateral pulmonary metastases which increased rapidly. She received 30-60 mg of bleomycin intravenously weekly, and a total dose of 390 mg over 10 weeks, but without success. Side effects observed consisted of fever after injections. Autopsy revealed extensive bilateral pulmonary metastases.

CASE III. (Patient of Dr. R. C. Fraser), a white female, aged 44 years, presented with an advanced squamous cell carcinoma of the cervix, involving both ureters and parametrium. She had received radiotherapy, 2400 rads in 1955 for the primary lesion, with good results. A recurrent carcinoma in 1970 was treated with $Cobalt_{60}$, 3200 rads, but without response. Subsequently, 150 mg bleomycin was given by intrailiac arterial perfusion over one week on two occasions, but without benefit.

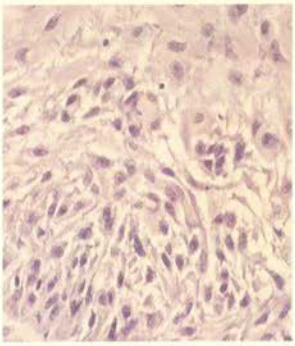
CASE IV. (Patient of Dr. C. H. Graham). This 44 year old white male presented with an ulcerated mass, diagnosed as a squamous cell carcinoma of the floor of the mouth, in March 1971. He received 3 courses of radiotherapy with a total dose of 6,200 rads, but without response. Prior to beginning of treatment with bleomycin, a fungating mass, measuring 16 X 9 cms, with a haemorrhagic surface, occupied the left submandibular region of the face.

Therapy consisted of 15 mg of bleomycin twice weekly intravenously, and 15 mg once weekly into the tumour commencing at the third week. The total dose given was 405 mgs over 10 weeks. Subsequently, the patient received a maintenance dose of 15 mg intravenously every 2 weeks. No adverse reactions were observed. Therapy resulted in collapse and necrosis of the tumour mass with histological evidence of regression. Two months after cessation of therapy, the patient developed pulmonary oedema and died. Autopsy revealed a lung abscess but secondaries were absent.

CASE V. (Patient of Dr. E. F. Ross). This 84 year old white male, a diabetic and lower limb amputee, presented in January 1971, with a squamous cell carcinoma of the skin of the right wrist with axillary metastases. Treatment consisted of local resection of the tumour plus radiotherapy of 7,700 rads, but without effect.

Prior to bleomycin therapy, the tumour appeared as an elevated fungating mass occupying the right wrist, measuring 4 X 6 cms with superficial ulceration. Axillary lymphadenomegaly was also present with gross oedema of the arm. Bleomycin therapy consisted of 15 mg bi-weekly, intravenously, plus 15 mg weekly into the tumour. A total dose of 450 mg was given over 10 weeks. No side effects were observed. Therapy resulted in collapse and regression of the tumour, with histological signs of degeneration.

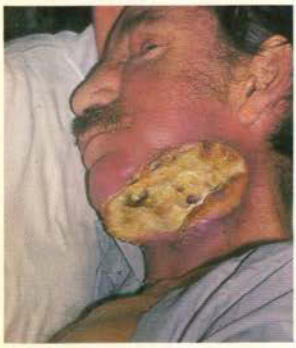
Case IV. Squamous cell carcinoma of neck and mandible before bleomycin therapy.



Case V. Showing histology of tumour.

Case IV. After receiving 150 mg of Bleomycin.

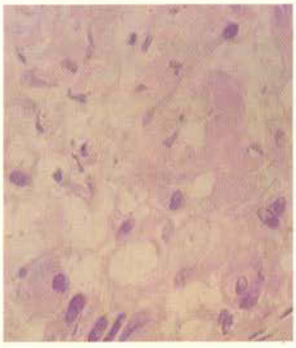
Case V. Showing regression after 450 mg. of bleomycin.



Case IV. Showing collapse of tumour after receiving 405 mg bleomycin.

Case V. Biopsy specimen of skin showing hyperkeratosis after bleomycin therapy.

*Case V. Squamous cell carcinoma of right hand – **before** bleomycin therapy.*



Case V. Showing degeneration of tumour tissue.

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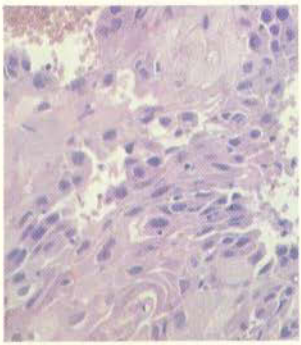
Case VII. Squamous cell carcinoma of neck, in a man age 92.

Case VIII. Showing skin rash after receiving 75 mg of bleomycin.

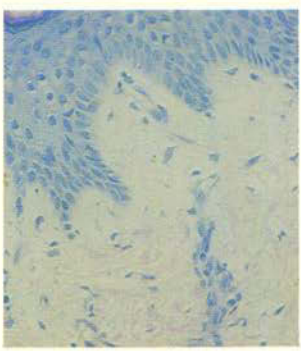


Case VII. Showing histological appearance of tumour before treatment.

Case VIII. Showing skin rash after receiving 75 mg of bleomycin.

Case VII. Showing regression of swelling after receiving 225 mg of bleomycin over 5 weeks.

Case IX. Showing squamous cell carcinoma affecting lips, tongue and mandible before bleomycin therapy.

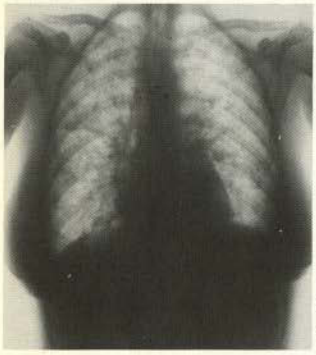


Case VII. Skin biopsy after treatment – note absence of tumour cells.

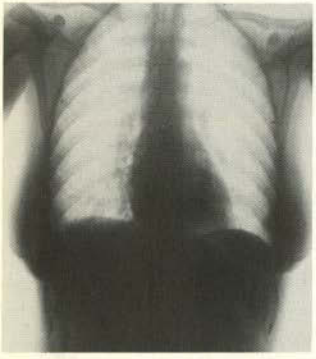
Case IX. Showing squamous cell carcinoma affecting lips, tongue and mandible after bleomycin therapy.

'o.igh courtesy of the patients represented.
r. L. B. Macpherson, Dean of the Faculty of Medicine, Dalhousie University.

CASE VI. (Patient of Dr. R. C. Fraser), a white female, age 50, had a well differentiated, actively invasive squamous cell carcinoma of the cervix at stage 2B in April 1971. She received $Cobalt_{60}$ radiotherapy, to a total dose 3000 rads, but this treatment failed. Before starting bleomycin, the patient showed bilateral pulmonary and subcutaneous metastases. Bleomycin therapy was started with 30 mgs per week, intravenously, for a period of 10 weeks. After the fourth dose of treatment, when 120 mg of bleomycin had been given, the subcutaneous nodules were no longer palpable. The chest x-ray also showed considerable improvement. A moderate degree of alopecia developed. This woman had received concomitant chemotherapy consisting of vincristine, cytosine arabinoside, cyclophosphamide, actinomycin D, 5-fluorouracil and amethopterin. Thus it was not possible to attribute the good result to bleomycin alone. Circumstances suggest that bleomycin may be combined to advantage with chemotherapy. This patient remained well for 3 months and subsequently developed a metastatic brain lesion.



Case VI. Chest x-ray showing multiple metastases before bleomycin therapy.



Case VI. After bleomycin.

CASE VII. (Patient of Dr. J. H. Charman) presented an ideal case for bleomycin therapy since he had received no previous treatment, and the tumour, a squamous cell carcinoma of skin of left parotid region, was favourably situated anatomically for local and intravenous administration of medication. This agile and spry old gentleman of 92 years, showed excellent immediate response to bleomycin, with histological disappearance of the tumour. Three weeks after cessation of therapy, he developed interstitial pneumonia, which responded to treatment with ampicillin. Three months later, Dr. A. L. MacLeod of Liverpool, N.S., the patient's family doctor, reported that he was in good health and showed no evidence of recurrence.

CASE VIII. (Patient of Dr. J. H. Charman), white female, aged 72, on admission showed a well differentiated and infiltrating squamous cell carcinoma of the rectum, with inguinal lymphadenopathy. She had not received previous therapy and bleomycin was started immediately. After 200 mg were given intravenously, the swelling decreased in size, the patient felt more comfortable and was able to walk more freely. This patient developed a skin rash. The rash responded to topical cortisone ointment and the systemic administration of 2.5 mg prednisolone q.8.h., for 24 hours before each dose of bleomycin. Her chest x-ray showed some increase of the interstitial pattern which was present before administration of bleomycin, but no evidence of parenchymal disease. Biopsy of an inguinal node, after therapy, showed no tumour tissue.

CASE IX (Patient of Dr. B. J. Steele). This 69 year old man presented with a large fungating mass draining reddish fluid situated on the right surface of the lower lip and chin. Hard cervical adenitis was also present. On April 2nd, 1972, a biopsy revealed a squamous cell carcinoma of the lip. No previous treatment was given. On April 13th, 1972, bleomycin therapy was started. After 2 X 15 mg had been administered intramuscularly each week over a period of 10 weeks (total 300 mg), the growth of the tumour became arrested and subsequently started to regress.

CASE X. (Patient of B. K. Coady, Halifax Infirmary). This man of 59 years showed a large ulcerating tumour situated on the right posterior area of the tongue. Three months before, he had received 2 courses of x-ray therapy without success. After receiving 300 mg of bleomycin, over a period of 10 weeks, no further increase in the size of the tumour was observed and observation continues.

CASE XI. (Patient of Dr. B. J. Steele). This 76 year old female revealed a carcinoma of the tongue which showed initial response to bleomycin therapy. In 1960 she presented with a carcinoma of the tongue. Radical neck dissections were performed in 1960 and again in 1968. No other therapy was given.

CASE XII. (Patient of Dr. G. W. Bethune). This was another example of inoperable carcinoma of the mandible affecting an 80 year old man, in which initial response to bleomycin was observed. No previous therapy was given.

CASE XIII. (Patient of Dr. F. G. Mack). A large infected, fungating, inoperable, squamous cell carcinoma, was present affecting the penis, scrotum and bladder. The patient complained of severe discomfort. After 4 doses of

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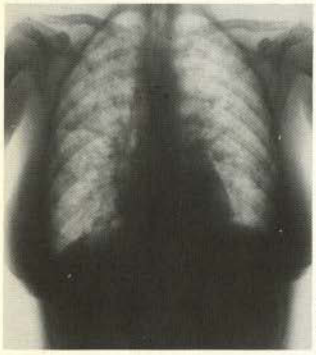
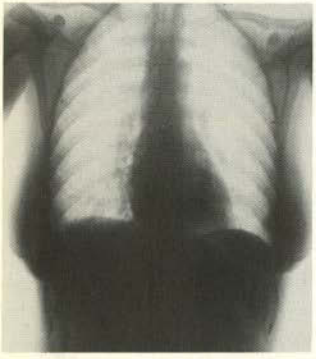


Case VI. Chest x-ray showing multiple metastases before bleomycin therapy.



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SUMMARY

Three cases of advanced carcinoma of the cervix with metastases, which had received previous radiotherapy, also failed to respond to bleomycin therapy.

Our experience with subsequent similar cases, affecting the female cervix, has proved most disappointing.

In ten other cases, although no cures are claimed, and no survival rates are possible to estimate at present, there was a favourable initial response to bleomycin.

These comprised lesions affecting the skin, tongue, oral cavity, mandible, bladder and rectum.

CONCLUSIONS

Optimal conditions for application of bleomycin would seem to be as follows:

a) The presence of an early, localized and histologically well differentiated squamous cell carcinoma, situated in skin or soft tissue, at a site preferably accessible to local instillation.

b) No previous radiotherapy.

c) Conceivably, the use of bleomycin in conjunction with other forms of chemotherapy, either concurrently or alternately.

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References

1. Seventh International Congress of Chemotherapy, organized by the Czechoslovakia Society of Chemotherapy, Prague, Aug. 23-28, 1971.
2. **Di Marco, A., Gaetani, M., Scarpinato, B.:** Adriamycin: a new antibiotic with antitumor activity. *Cancer Chemotherapy* **53:** 33, 1969.
3. **Wang, J. J., Engracio, C., Lucius, F. S., et al.:** Therapeutic effect and toxicity of adriamycin in patients with neoplastic disease. *Cancer* **28:** 837, 1971.
4. **Piroska, E., Kollin, E.:** Streptozotocin for insulinoma. *Ann. Int. Med.* **75:** 477, 1971.
5. **Vogel, T. T.:** Notes on streptozotocin in metastatic insulinoma. *J. Surg. Oncol.* **3:** 481, 1971.
6. **Murray, I. M., Lyon, J. C., Coulson, R. W., et al:** Further studies on streptozotocin therapy for a multiple hormone-producing islet cell carcinoma. *Gut* **12:** 717, 1971.
7. **Bush, J. A., Cassidy, C. S., Crook, K. E., et al:** Kundrymycin, a new tumor-inhibitory antibiotic. I. Culture, taxonomy, fermentation and production. *J. Antibiot.* **24:** 143, 1971.
8. **Bradner, W. T., Nettleton, D. E.:** Kundrymycin: a new tumor-inhibitory antibiotic. II. Isolation, chemical characterization and biological activity. *J. Antibiot.* **24:** 149, 1971.
9. **Kanda, N.:** A new antitumor antibiotic, Kidamycin. I. Isolation, purification and properties of kidamycin. *J. Antibiot.* **24:** 599, 1971.
10. **Umezawa, H.:** Bleomycin and other antitumor antibiotics of high molecular weight. *Antimicrob. Agents Chemother.*, p. 1079, 1965.
11. Antitumor Antibiotic, Bleomycin. Published by Nippon Kayaku Co., Ltd., Tokyo. Fourth Edition, Feb. 1971.
12. **Umezawa, H., Isizuka, M., Maeda, K., et al:** Studies on bleomycin. *Cancer* **20:** 891, 1967.
13. **Umezawa, H., Maeda, K., Takeuchi, T., et al:** New antibiotics: bleomycin A and B. *J. Antibiot. (Tokyo)* **A19:** 200, 1966.
14. **Nagatsu, M., Okagaki, T., Richart, R. M., et al:** Effect of bleomycin on nuclear DNA in transplantable VX-2 carcinoma of rabbit. *Cancer Research* **31:** 992, 1971.
15. **Takeuchi, M., Yamamoto, T.:** Effects of bleomycin on mouse transplantable tumors. *J. Antibiot.* **21:**631, 1968.
16. **Kunimoto, T., Hori, M., Umezawa, H.:** Modes of action of phleomycin, bleomycin and formycin on HeLa S3 cells in synchronized culture. *J. Antibiot.* **20:** 277, 1967.
17. **Suzuki, H., Nagai, K., Akutsue, E., et al:** On the mechanism of action of bleomycin. *J. Antibiot.* **23:** 473, 1970.
18. **Suzuki, H., Nagai, K., Yamaki, H., et al:** Mechanism of action of bleomycin: Studies with the growing culture of bacterial and tumor cells. *J. Antibiot.* **21:** 379, 1968.
19. **Ishizuka, M., Takayama, H., Takeuchi, T., et al:** Activity and toxicity of bleomycin. *J. Antibiot.* **20:** 15, 1967.
20. **Terasima, T., Yasukawa, M., Umezawa, H.:** Breaks and rejoining of DNA in cultured mammalian cells treated with bleomycin. *GANN* **61:** 513, 1970.
21. **Barranco, S. C., Humphrey, R. M.:** The effects of bleomycin on survival and cell progression in Chinese hamster cells *in vitro*. *Cancer Research* **31:** 1218, 1971.
22. **Shirakawa, I., Azegami, M., Ishi, S., et al:** Reaction of bleomycin with DNA: strand scission of DNA in the absence of sulfhydryl or peroxide compounds. *J. Antibiot.* **24:** 761, 1971.
23. **Yamaki, H., Suzuki, H., Nagai, K., et al:** Effects of bleomycin A_2 on deoxyribonuclease, DNA polymerase and lipase reactions. *J. Antibiot.* **24:** 178, 1971.
24. **Shastri, S., Slayton, R. E., Wolter, J., et al:** Clinical study with bleomycin Cancer **28:** 1142, 1971.
25. **Ichikawa, T., Nakano, I., Hirokawa, I.:** Bleomycin treatment of tumors of penis and scrotum. *J. Urol.* **102:** 699, 1969.
26. **Ichikawa, T.:** Bleomycin: a new antitumor antibiotic. *J. Jap. Med. Ass.* **61:** 481, 1969.
27. Clinical Screening Cooperative Group of the European Organization for Research on the Treatment of Cancer. Study of clinical efficiency of bleomycin in human cancer. *Brit. Med. J.* **2:** 643, 1970.
28. **Ohno, R., Nishiwaki, H., Kawashima, K., et al:** Lack of immunosuppressive effect of bleomycin on the primary response of mice to sheep red blood cells. *GANN* **62:** 267, 1971.
29. **Anderson, W. A. D.:** Pathology, Mosby, St. Louis, Fifth Eddition, 1966, p. 1265.

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Fetal Malnutrition – A Problem of Parental Detection

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Fetal malnutrition is present when an infant weighs 25% (2 standard deviations) below the mean weight expected for that specific gestational age. It is in this small segment of the fetal population that the incidence of stillbirth resulting from chronic intrauterine asphyxia and asphyxia neonatorum have their highest incidence. As well, these infants manifest severe metabolic problems in adaptation to extrauterine life. Therefore, if the stillbirth and the neonatal mortality rates in this entity are to be decreased and, indeed, more important the neurological potential of these infants preserved, early intrauterine diagnosis of this developing problem is essential.

In the last 2½ year period, there have been 154 such fetally malnourished infants born at the Halifax Infirmary. These infants were studied from the population of 5500 consecutive deliveries, representing an incidence of 2.8%. All of these infants were at least 2 standard deviations below the expected weight for gestation, using the Atlantic Growth Charts prepared by Doctor K. Scott. Since using weight alone would include a group of genetically small babies, the presence of significant subcutaneous wasting was also used as an additional criterion. All infants were examined by one observer.

In the vast majority of cases, the etiology of the fetal malnutrition was not obvious during the neonatal period. Six of the cases were associated with multiple gestation. Five cases had obvious cord and placental pathology. Four cases were associated with pre-existing hypertension in the mother with renal decompensation. Four cases had proven intrauterine infection – three with Rubella syndrome and one with cytomegalic inclusion disease. Toxemia did not appear to be a major factor in producing this syndrome. Excessive smoking along with a history of a previous fetally malnourished infant were frequently elicited.

The socio-economic distribution of these patients was interesting. There was no increase in the incidence of this problem in the teen-age pregnancy nor in the unwed mothers. However, there appeared to be an increased incidence among our clinic patients with several of these mothers arriving at the time of delivery without having had any previous prenatal care.

Meconium staining of the amniotic fluid appeared with an increased incidence in this group. Twelve percent of these infants, i.e. 18 out of 154, had significant meconium staining of the baby and the cord.

The incidence of asphyxia neonatorum was dramatically increased in this population group as 19% or 29 out of 154 infants had significant asphyxia neonatorum and required positive pressure resuscitation at delivery. Twenty-one of these twenty-nine asphyxiated infants required endotracheal intubation in the Case Room. The degree of the asphyxia neonatorum also appeared to be related to the extent of the fetal malnutrition. Sixteen infants were greater than 40% underweight for gestational age. Fifty percent of these infants (8) required endotracheal intubation in the delivery room – a dramatic increase in the incidence of asphyxia neonatorum, compared with that of the normal population.

The severity of the asphyxia neonatorum was reflected in the degree of the metabolic acidosis at 1 hour of age. Twenty-two of the twenty-nine asphyxiated infants had a pH of less than 7.1 done on a warmed heel prick at 1 hour of age. These infants all required intravenous glucose and additional sodium bicarbonate to correct this metabolic acidosis.

Metabolic problems in these infants included hypoglycemia, hypocalcemia and hyponatremia. Hypoglycemia usually occurred during the first 4 hours of life. All infants whose blood sugar dropped below 30 milligrams percent had intravenous glucose administered. There were no cases that failed to elevate their blood sugar on this intravenous glucose, delivered through a scalp vein by slow infusion. Eleven cases developed symptomatic hypocalcemia within the first 24 hours. All responded to slow infusion of 10% calcium gluconate. Hyponatremia below 125 milliequivalents percent was present in 6 infants. This probably reflected a degree of cerebral edema with inappropriate antidiuretic hormone secretion.

Four infants died, three with lethal anomalies and one with severe asphyctic heart failure. There was only 1 case of single umbilical artery.

(Continued on page 153)

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Treatment of Fractured or Avulsed Anterior Teeth

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One of the more emotionally traumatic injuries to children and most difficult restorative problems in dentistry is that of the fractured or pre-maturely lost anterior tooth. While a few injuries to anterior teeth may spontaneously recover, an increasing number of fractures involving the pulpal tissue, or root fragments remain undiagnosed and later treatment is complicated by the lack of early attention.

In cases where there is a history of trauma sustained by an anterior tooth but with little or no clinical evidence of damage, one must not disregard the effect of shock on the pulp of the tooth. Despite the apparently minor nature of the disturbance to the tooth, there is no means of diagnosing the pulp reactions to the shock to which it was subjected, nor can one forecast accurately the future of the pulp. If the blow has been severe, the capillary anastomoses at the periphery of the pulp are not adequate to carry on the circulation, a pathological hyperaemia results followed by death of the organ through infarction.

Where extensive crown fracture has occurred, immediate treatment is indicated in order to reduce the hyperaemia of the pulp which follows the initial shock and the protection of the pulp against further irritation.

When the foramen is large, it is imperative that the pulp be kept alive so that normal development of the root will be completed. Failure to allow for this unnecessarily complicates later endodontic therapy and may preclude successful treatment and retention of the tooth.

Fractures involving the root may complicate treatment but frequently the fractured apical portion may be surgically removed and subsequently a prefabricated implant may be used in association with standardized endodontic instruments. The implant shifts the fulcrum of transverse movements into a more apical position and the tooth becomes more stable. The prognosis for these implants seems favorable with 75% success rates or better being reported.

Completely avulsed anterior teeth are being successfully replanted in a steadily increasing number of cases. While the majority of replanted teeth demonstrate root resorption,

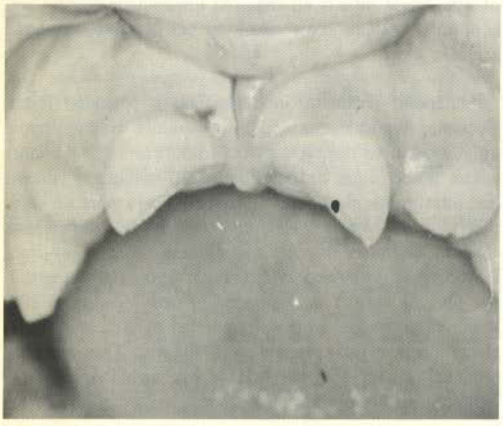

Figure 1

Fracture of permanent central incisors involving enamel, dentin and the mesial horns of the pulp tissue.

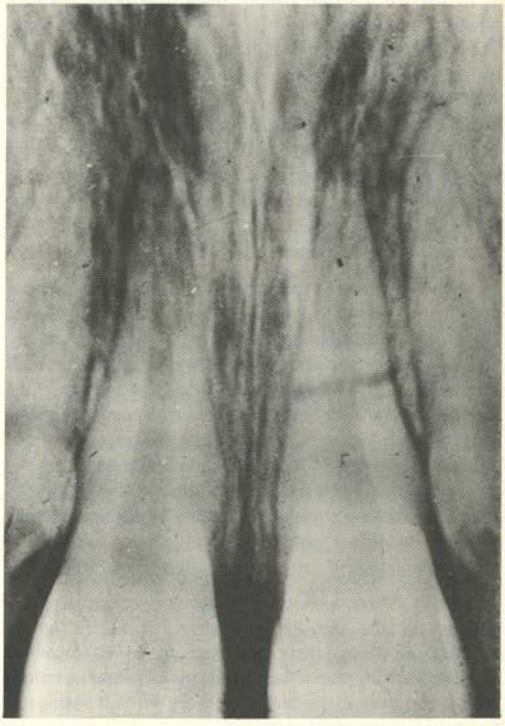

Figure 2

This intra-oral radiograph shows a complete fracture of the apical third of the root of the maxillary left central incisor.

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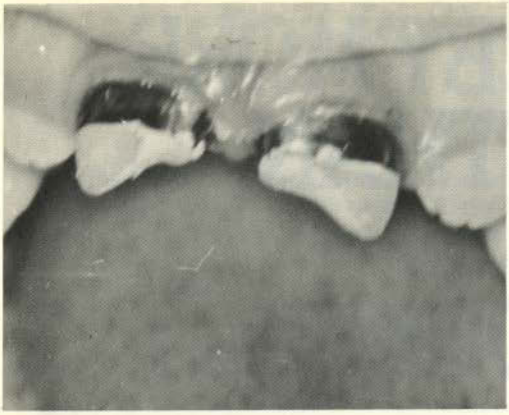

Figure 3

Immediate attention in the case illustrated in Figure 1 is indicated in order to protect and preserve the pulpal vitality, and may be carried out by means of stainless steel bands or crowns together with a calcium ion liberating agent and a sedative dressing.

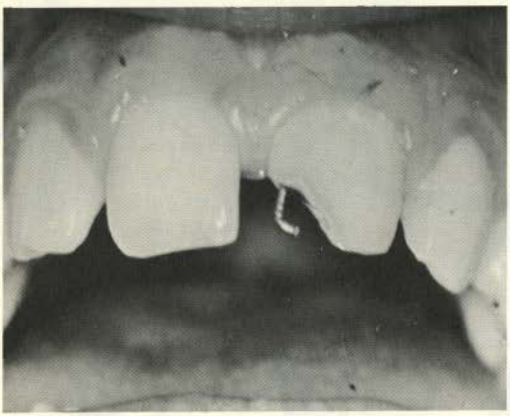

Figure 4

Subsequent esthetic repair to teeth fractured as in Figure 1 may be accomplished at an early age following pulpal recovery by a variety of means, including the use of retentive pins and composite acrylic resins as depicted here.

the length of the extraoral period seems the most critical factor in relation to root resorption; in one recently reported study only 10% of the teeth replanted within the first 30 minutes showed resorption, whle by contrast root resorption occurred in 95% of the cases when the extra-oral period exceeded two hours.

The reduction of psychological and physical trauma as a consequence of injury to the anterior teeth by early recognition and prompt attention is an obligation we must all recognize and be willing to accept. □

1000 Word Series

Fatal Malnutrition – A Problem of Parental Detection

(Continued from page 151.)

Thus, recognition of this developing problem early in the third trimester is important. An expectant mother who gives a history of having had a previous "small for dates" infant and who fails to gain an appropriate amount of weight in a subsequent pregnancy should alert the clinician to suspect fetal malnutrition. Frequent measurement of the height of the fundus from the symphysis pubis should be serially recorded. Considering the risk of asphyxia neonatorum and subsequent metabolic abnormalities, these high risk patients should ideally be delivered in a center where neonatal care is readily available. Femoral epiphyses on a flat plate of the abdomen are frequently absent in these infants even past 36 weeks, since the presence is more related to the size of the infant rather than to gestational age. Amniocentesis with measurement of the creatinine concentration and total lecithin concentration may be of considerable help in the estimation of fetal maturity. The presence of meconium in the amniotic fluid indicates severe fetal compromise and necessitates delivery of the fetus as quickly and easily as possible, frequently by Cesarean section. With this careful prenatal estimation of gestational maturity, the risk of delivering an immature baby with respiratory distress syndrome in minimized. Conversely, an infant with severe chronic intrauterine asphyxia will not be left in the hostile intrauterine environment for a prolonged period of time. If asphyxia neonatorum is present, immediate resuscitation is imperative. Screening for hypocalcemia, hypoglycemia and metabolic acidosis are essential to the neonatal management. It is only with this team approach with family physician and consulting obstretrician and neonatologist that the morbidity and mortality rates can be reduced and the neurological potential of these surviving infants improved. □

Physician Self-Assessment

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DIRECTIONS: Each of the questions or incomplete statements below is followed by five suggested answers or completions. Select the ONE that is BEST in each case.

244. Improper care and inadequate sterilization of intermittent positive pressure apparatus and their nebulizers may result in serious lung infections. Which of the following organisms is most frequently implicated?

(A) Hemophilus influenzae
(B) Pseudomonas aeruginosa
(C) Pneumococcus
(D) Staphylococcus
(E) Klebsiella pneumoniae (Friedlander's bacillus)

247. Which of the following is the most common extrathoracic manifestation of bronchogenic carcinoma?

(A) Clubbing of the fingers
(B) Migratory phlebitis
(C) Peripheral neuropathy
(D) Cyanosis
(E) Hypercalcemia

480. A 56-year-old man developed anasarca secondary to congestive heart failure. The patient was treated with sodium restriction, a mercurial diuretic (Mercuhydren) 2 cc intramuscularly q.d. and furosemide (Lasix) 40 mg t.i.d. At the end of six days, response to therapy was poor; serum sodium was 128 mEq/1, serum chloride 77 mEq/1, serum bicarbonate 34 mEq/1; blood pH was 7.53.

At this point which of the following would be most appropriate?

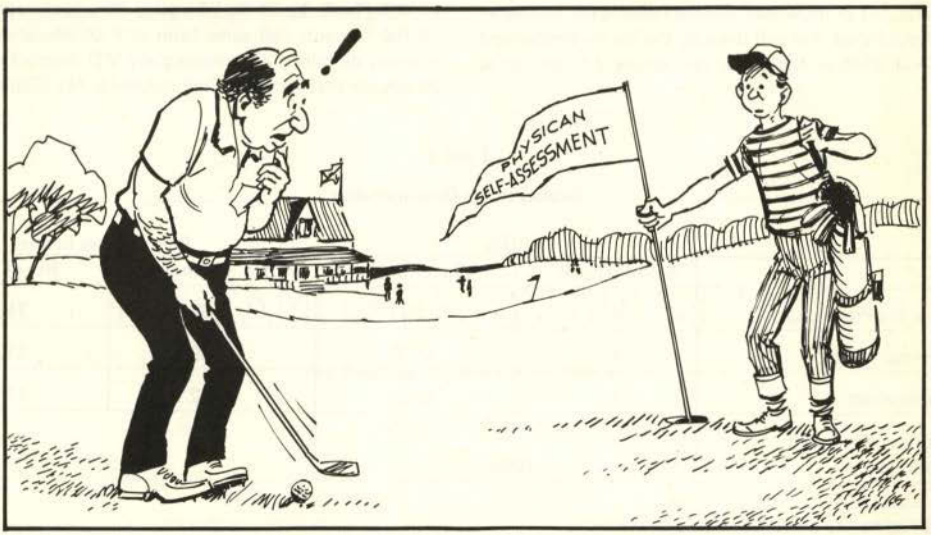
(A) Ethacrynic acid 50 mg b.i.d. (Edecrin)
(B) Chlorothiazide 500 mg b.i.d.
(C) Acetazolamide 250 mg q.d. (Diamox)
(D) Further limitation of sodium intake
(E) Hypertonic saline infusion

634. A left ventricular gallop sound (S 3) would be UNUSUAL in which of the following conditions?

(A) Tight mitral stenosis
(B) Mitral insufficiency
(C) Aortic insufficiency
(D) Myocardiopathy
(E) Coronary artery disease with heart failure

□

(Please turn to page 158 for answers.)



V. D. Education in Nova Scotia High Schools

Brian Young*
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"V.D. the Epidemic" was the headline of Newsweek, January 24, 1972. The article went on to say, "infectious diseases, syphilis and gonorrhoea are outranked in incidence only by the common cold, and V.D. is now first among the so-called reportable communicable diseases, for the number of cases each year exceeds those of strep throat, scarlet fever, measles, mumps, hepatitis and tuberculosis combined. This year, 624,000 new cases of gonorrhoea will be reported, but an estimated four cases occur for every one reported, so the real figure is more that 2 million".

Allowing for dramatic license it can be seen that V.D. is a serious problem in the United States. We here in Canada have just as serious a problem with gonorrhoea and to a lesser degree with syphilis though not on as grand a scale as our neighbour to the south.

In Canada in 1970 there were 892 reported cases of syphilis (primary and secondary) compared with 180 reported cases in 1955. The number of reported cases remained fairly constant between 1960 and 1970.

The big increase in the last 10 years has been in the number of reported cases of gonorrhoea. In 1960 in Canada there were 15,661 reported cases of gonorrhoea compared with 31,544 reported cases of gonorrhoea in 1970. So in a ten year period (1960-1970) the number of reported cases of gonorrhoea in Canada has doubled in the rate per 100,000 population has increased from 87.6 to 147.6.

What can be done about this problem?

V.D. clinics for the treatment of syphilis and gonorrhoea, and just as important, for the locating of "contacts" can be established, but will these do the job by themselves? Would education of the public concerning V.D. be just as helpful?

A survey of Nova Scotia high schools to determine what was being done as far as educating the student regarding V.D. was undertaken.

The Department of Education of the province of Nova Scotia has a "hands off" policy as far as V.D. education is concerned. An official of the Department stated that the decision as to whether a V.D. program was to be offered in the province's high schools was left entirely up to local school boards. The Department does not try to encourage nor does it try to discourage the teaching of V.D. in the province's high schools.

A questionnaire was then sent to the physical education department of each high school in the province. Questions asked were:

1. Is a Venereal Disease Education program offered at your school?
2. If so, would you list the materials used e.g. books, films, pamphlets, source material etc.
3. At what grade levels is it taught?
4. How many hours in the curriculum are devoted to this subject?
5. Comments.

In the province of Nova Scotia there are 106 high schools (Grades 10-12) representing 36,952 students. Questionnaires were sent to 93 of these schools. There were 56 replies received from schools with a total enrolment of 23,497 (Table 1). Of the 56 replies, 30 schools representing 14,756 students had some form of V.D. education. Those students definitely not receiving any V.D. instruction in the 26 schools that answered "no" totaled 8,741 (Table 2).

Table 1

Replies to the Questionnaires

	Halifax		Rest of Nova Scotia	
	No. of schools	No. of pupils	No. of schools	No. of pupils
Total for the Province	4	5931	102	31021
Questionnaires sent	4	5931	89	31021
Replies received	4	5931	52	17566
% of pupils represented by the replies	100%		56%	

*Second Year Medical Student, Dalhousie University.

Table 2

Percentage of High School Pupils Exposed to Some Sort of V.D. Education

Exposure to V.D. Education	Halifax		Rest of N.S.*	
	No.	%	No.	%
Some	5931	100	8825	51
None	0	0	8741	49

* Only schools replying to the questionnaire represented

In 1971 the Halifax City school board decided that it's high school students should receive education in V.D. – the total enrolment in the Halifax high schools is 5,931. Outside the city of Halifax there are 31,021 pupils. The replies received from the non-Halifax schools represented 17,566 of these pupils and 8,825 were exposed to some sort of V.D. education. The status of V.D. education in the schools attended by the 13,455 pupils not represented by the replies to the questionnaire is not known.

It would seem on the surface that all of the students in Halifax are exposed to V.D. education while only half of the students represented by replies from outside the city of Halifax are so exposed. However, lacking guidance from the Department of Education and the local school boards the quality of many of the programs offered would seem to be poor and their presentation highly disorganized. Only a few of the schools offering some sort of V.D. education seemed to have alloted definite time for the presentation of the program. Most of the teachers talked about V.D. if it happened to come up in discussions during health classes or if students expressed an interest. If this didn't happen and since there was no definite time set aside in the curriculum – the subject might be forgotten until next year. In the majority of schools the responsibility for presentation of V.D. material rested solely on the individual teacher – who may not have had initiative enough to prepare a program.

In most of the schools offering a V.D. education program the materials used were films such as:

1. V.D.? See Your Doctor
2. Dance Little Children
3. A Quarter Million Teenagers

Pamphlets supplied by the Department of National Health and Welfare were also supplied. That was all that was offered. Many teachers answering the questionnaire said they did not have access to resource material on V.D. and thus did not feel confident enough to discuss the topic with their students. Sixteen of the teachers answering the questionnaire requested resource material and advice on how to set up a V.D. education program and how to present it.

Briefly then, in the province of Nova Scotia many of the high school students are not exposed to any sort of V.D. education program. Because of lack of direction from the Department of Education the existing programs are presented haphazardly and their quality is highly questionnable.

Perhaps if the Department of Education were to adopt a definite policy in favour of V.D. education in the province's schools and if a comprehensive program concerning V.D. was offered then maybe we would begin to gain some ground on the rising level of syphilis and gonorrhoea. □

References

1. Newsweek, January 24, 1972
2. Venereal Disease in Canada, Annual Report 1970 Epidemiology Division, Department of National Health and Welfare

Note: This study was carried out as an Elective under the supervision of Dr. F. R. Manuel, Assistant Professor, Department of Preventive Medicine, Dalhousie University.

Physician Self-Assessment – ANSWERS

Question No.	Correct Answer
244	B
247	A
480	C
634	A

Appreciation

Vernon Douglas Schaffner
1904-1972

One of Nova Scotia's most distinguished surgeons and a Canadian pioneer in thoracic surgery, Vern Schaffner died in Port-aux-Basques, Newfoundland, June 29, 1972. Earlier in the day he and his companions had been approaching by sea his favorite salmon river. The water was rough and when an unusually large wave hit the boat he lost his balance, striking his head. He shook off the injury as trivial but within an hour he was in coma. The boat quickly returned to Port-aux-Basques where shortly afterwards he died.

Dr. Schaffner was born in Lawrencetown, Annapolis County, April 16, 1904. He received his early education in Lawrencetown, and then proceeded to Acadia University, graduating in 1925 with his Bachelor of Arts degree. He received his undergraduate medical education at McGill University, where he had a brilliant career, standing second in his graduating class. After the usual internship at the Royal Victoria Hospital, he decided that he wanted to be a surgeon and his preparation for his surgical career was unusually thorough for the time. The professor of surgery at McGill University and the chief surgeon at the Royal Victoria Hospital was the late Dr. Edward William Archibald who was particularly interested in the development of the infant specialty of thoracic surgery. Associated with him, and intensely interested in the surgical treatment of tuberculosis, was Norman Bethune, later to gain fame in other fields. Consequently, while Vern received the best available teaching in general surgery he developed particular liking for surgery of the chest, and Dr. Archibald gave him every encouragement. In his final year at the Royal Victoria Hospital from 1933 to 1934, he was Resident in Surgery.

In our contemporary surgical world with its everyday routine operations on the heart and great vessels, it is difficult to appreciate that when Vern Schaffner began his surgical career, procedures carried out successfully inside the chest were few and far between. Only in the previous year had Evarts Graham in St. Louis successfully done the first pneumonectomy for carcinoma. Archibald and his associates who included Schaffner, had carried out a pneumonectomy for carcinoma four months prior to Graham but, unfortunately, the patient survived only 10 days. For the next decade, going into the chest deliberately represented a great adventure.

With such outstanding inherent ability and after such formidable training, it was expected that Vern would accept one of the attractive offers he received to remain in Montreal. This, he chose not to do. He wanted to work in Nova Scotia. At about this time, Dr. A. F. Miller who was then Medical Superintendent of the Nova Scotia Sanatorium wrote his friend, Dr. Archibald, and expressed his concern at not having available for his tuberculous patients the benefits of surgery. Dr. Miller wanted a surgical department at the Sanatorium, in spite of the opposition he was receiving to this proposal from several influential surgeons in Halifax. Archibald suggested young Schaffner, and Vern accepted the challenge with alacrity. He arrived in Kentville in the fall of 1934, and began the active practice of general and thoracic surgery which was to last uninterruptedly for 35 years. When he arrived, there was no surgical department at the Sanatorium, and the surgical procedures he carried out on the tuberculous patients necessitated their transfer to the nearby Eastern Kings Memorial Hospital, Wolfville. Moreover, there was no general hospital in the town of Kentville and, consequently, all his surgery was carried out in Wolfville. By 1936, with a lot of ingenuity and by the expenditure of relatively little money, a portion of the third floor of the then New Infirmary at the Sanatorium was converted into an operating suite. Thus began the Department of Surgery at the Nova Scotia Sanatorium. In 1939, the Blanchard-Fraser Memorial Hospital was opened in Kentville. Dr. Schaffner became its chief surgeon and retained that position until his retirement in 1969. In those years the operating facilities at the Sanatorium were completely given over to the treatment of tuberculosis and, consequently, for the next dozen years, first the little Eastern Kings Memorial Hospital and, then, the slightly larger Blanchard-Fraser Memorial Hospital witnessed the first lung resections for nontuberculous diseases such as bronchiectasis and cancer ever carried out in the Province.

The surgical treatment of tuberculosis first consisted of collapse therapy, with thoracoplasty and plombage representing the major procedures. In 1944, the first successful lung resection for pulmonary tuberculosis in Nova Scotia was carried out at the Nova Scotia Sanatorium by Dr. Schaffner, and the ensuing years with the advent of chemotherapy saw the obsolescence of collapse therapy and the establishment of excisional surgery for pulmonary tuberculosis.

Throughout his entire surgical career, Vern was a general surgeon of the first rank and an extremely busy one, but his first love was and remained thoracic surgery. For 40 years he was a part in the tremendous advances in surgery of the chest. He was a perpetual student and, no matter where it was held, he always managed to attend the annual meeting of the American Association for Thoracic Surgeons. He was elected an Associate Member of this select body in 1937, and a full Active Member in 1944. In 1965, he became a Senior Member. In 1937, he received his Fellowship in the American College of Surgeons and rarely missed the annual meeting. He served a term as Governor for the American College, representing the Eastern Provinces of Canada. In 1944, he received his certification in surgery from the Royal College of Physicians and Surgeons of Canada. In 1949, he was a founder member of the American Board of Thoracic Surgery. For some years he was an examiner in surgery for the Medical Council of Canada. It might be said that Vern's travels took him to Newfoundland every year for a short period of recreation, but otherwise were confined to trips all over the American Continent to gather in what was new in surgery and, in particular, thoracic surgery. At the same time, he was able to contribute greatly from his own experience and was the author of numerous papers on surgical topics, both general and thoracic.

In 1969, the sudden onset of difficulties with his vision forced him to forego active participation in surgery, but right up until the time of his death he remained a consultant to both the Sanatorium and the Blanchard-Fraser Memorial Hospital. In these past three years, certainly, he could not do things himself, but on many occasions we were fortunate to have him around to suggest what was wrong and what was to be done about it. In truth, Vern Schaffner was a master of his craft.

He was a very active citizen. An avid sportsman, he was one of Nova Scotia's best known salmon fishermen and, in the fall, an enthusiastic pursuer of small game. He was instrumental in introducing the famous Weimeraner breed of dogs into Nova Scotia. In his early days in Kentville, he played golf and did some curling. He soon had to give up these simple pleasures due to the pressure of work. Fortunately, he continued to have his annual fishing excursion to Newfoundland and his few days of hunting in the fall. Also, for many years, he had a hobby. He became an expert at woodwork and it was doubly sad that the end of his operating room career also spelled finis as far as the use of his power tools was concerned.

Vern Schaffner was a great surgeon and superb teacher. He had a happy and fulfilling life. When one of the cruelest of life's disabilities became his in 1969, he accepted it stoically. He refused to complain about the fates, but considered rather that life had been good to him. Most certainly, he reciprocated, to the best of his ability.

J. J. Q. □

The doctor and his leisure

Writing as a Hobby

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Now that the Western world thinks it can be both leisurely and affluent at the same time, some of this unaccustomed leisure is bound to filter down to the family doctor sooner or later in one form or another. To help him adjust is the first requirement of the new life, then lead gently to the idea that in spite of the ease and precision with which it flows in to fill the nooks and crannies of the leisure hour, there are other things beside rum to do the job. Not with the same immediate verve perhaps but certainly with a more beneficial effect over the years.

Dr. Garth Vaughan in a recent interesting article in this journal discussed painting as a hobby for doctors, telling how to begin, how to proceed and how to develop. If you were to find that you were possessed of a talent such as his you would have made a very great discovery indeed. An artist paints for his own delight, interest and satisfaction. He needs no viewers, no public approbation to spur him on. He is his own most exacting critic and the beauty of the picture he has created is his reward. In other words he paints for himself and the fact that it gives joy to others is an extra unsought and unexpected dividend.

Writing as a means of using leisure hours is not in the same class. One does not write for oneself but for an audience. One might write a verse for instance and think it rather good, but it is certainly not beautiful and you couldn't frame it and hang it on the wall and think it charming. It is of significance only when it is found interesting, or amusing by others. The reason for this lies in the instantaneous nature of visual perception and the speed of visual judgments. The written word must first be read, considered and related to other words and ideas and compared with past reading and experience before a valid judgment is made – a slow process.

In fact, then, whenever you pick up your pen to write it is for the purpose of communicating with someone and the best place to begin is a correspondence with those friends you haven't troubled to write to for years. This has the advantage, for a time, of getting letters in return full of events and activities in the lives of others in far places. The disadvantage is that the distant friend may dislike writing so much that he cuts you off without a word.

You can write letters to the editors of newspapers. These are unsatisfactory except as safety-valves for the purpose of venting annoyance, frustration or spleen. If by any chance they are learned expositions of local or national issues they are largely unread or fall before disinterested or mindless eyes and are generally productive of no more good than the remark that "the old boy is losing his marbles." On the whole this is not to be recommended, particularly in newspapers which demand your full name, address, telephone number, ancestry and occupation while their editorial space is filled with unsigned material from obscure sources.

If you have an interest in some particular trade, industry or activity you might look up their trade journals, see what sort of material they use and send them something. This has the disadvantage that they might use it and send you a cheque for it and you find yourself out of leisure and in business. There are hundreds of trade journals upon which to try your skill. Many famous authors such as C. S. Forester wrote for trade journals in the early years and found it rewarding both in interest and money.

Should you find yourself getting hooked with the writing game you will subscribe to one or two writers' magazines which carry articles on current writing style (which is quite feminine in it's style changes) as well as editors and markets (they change frequently too) and give you a professional's eye view of what you started to see as a pastime. Magazine racks become your home away from home while you study the material that various editors are currently accepting. If you are prurient or senile you will avoid the girlie sections of the magazine stands, keeping in mind the recent ruling of a British judge in finding not guilty of an offence a vendor who sold pornographic material to a senior citizen, on the grounds that in the opinion of the court it is impossible to further corrupt a dirty old man. It would be unfortunate if, in the pursuit of learning, you should find yourself quite unjustly placed in that category.

If you have the ability to dig out interesting highlights in strange places and a skill in the description of scenery and people, you might get a lot of pleasure in travelogue writing. You can spend weeks or months moving about wherever you can speak the language, other weeks or months doing the geographical and historical research into the areas concerned and the remaining time (if any) writing the travelogues of the various places. If you ever get the opportunity to read the "Turner's Annuals" of the 1830's you will find them delightful reading to this day.

This began as a discussion of the possibilities of writing as a leisure time activity and has swung around to sound like mighty hard work. It should! If you get to take it seriously, it is. You can write brief essays or tart verse for a well known audience, professional or lay. This can be done

to amuse, disturb, annoy, praise, tease, titillate or inform. This is writing for fun and there is no danger of becoming involved commercially with it because Punch is the only magazine I know with sufficient humor to frequently publish that kind of material. They are very discriminating.

Still there are those ever increasing leisure hours to be used in some not too destructive way. These hours are created by unions, socialists, communists, opportunists and irresolute politicians and paid for out of the savings of thrifty and industrious past generations. May the well never go dry! In the meantime satire comes to mind as a means of record and amusement.

Today leisure is like a river in flood, overflowing it's banks and threatening to drown millions of young and old in it's insipid waters. It is the drink which has undermined and destroyed earlier civilizations. It is the reason for the present feverish activity in the realm of sport and recreation to which authority has instinctively turned over the ages in the hope of gaining time to repair the breach and ameliorate the ravages of the flood.

Who can blame government for not wanting to face the fact that this affluent society is not a sound society and that there is not now and short of devastating war may never again be jobs enough at wages high enough to raise and maintain everybody at the artificially high standard of living we have come to believe is our right. So the beautiful, costly, universal, comprehensive medical services insurance, which, it was argued, by keeping the workers fit and well would pay for itself with increased production, finds itself keeping an idle work force in top form to enjoy their welfare and recreation. So we look in on this interview in the Clinic:

Social Service Dept.

Interviewer	Good morning. Do you suffer brother?
Patient	Yeah. God how I suffer!
Interviewer	Is your medical care inadequate brother?
Patient	Yeah. I beg and I plead.
Interviewer	Are your drugs too costly brother?
Patient	Yeah. And them pills gittin smaller allatime!
Interviewer	Are you hungry brother?
Patient	Yeah. And no wine onna table.
Interviewer	Are you ill housed brother?
Patient	Yeah. For nuttin I pays rent.
Interviewer	Do you need help with your car installments brother?
Patient	Yeah. The gummint should hang them sharks.
Interviewer	Is your unemployment pay inadequate brother?
Patient	Yeah. And the questions, you'd think it was theirs.
Interviewer	Should it be doubled brother?
Patient	Yeah. Trebled more like.
Interviewer	Should it be a permanent Canadian Right brother?
Patient	Yeah. Maybe toward the Left a little.
Interviewer	Is the baby bonus too small brother?
Patient	Yeah. And the price of beer!
Interviewer	Is the old age pension too small brother?
Patient	Yeah. It don't even buy cigarettes.
Interviewer	Should it begin at age 45 brother?
Patient	Yeah, for men. Younger for boys.
Interviewer	Would you like a job of work in the meantime brother?
Patient	Naw. You crazy or somethin?

It is obvious that a good and efficient Medical Service is highly desirable to keep these citizens in the best of health to enable them to continue making their incomparable contribution to the nation's welfare.

In the midst of all our serious and solemn activity it is helpful to pause and poke a little fun at ourselves now and then and with a pinprick let out a little of the wind that overinflates us sometime. Thus we observe the stately approach of:–

The Internists

Fall to your kness, you common clay,
In reverence bare your heads,
The Lords and Masters come this way
Whom all creation dreads.
Some bald, some bearded, none bedight
With fresh or childish cheek,
Austere and sombre as the night,
They cudos only seek.
These the physician priests of old,
Healing the heart and soul,
Whose beneficences untold
Make prince and pauper whole.
No one can challenge, none compare –
Their glories reach the skies
And only bloody Medicare,
Can cut them down to size!

If you are quick and can elevate your sights high enough you may be able to catch a glimpse of the star of the medical firmament as he dashes hurriedly by, maintaining his preferred place in the constellation:–

The Surgeon

Clean as a whistle,
Scrubbed and capped and gowned
Prickly as a thistle
His conceits abound.
Tricky as a fakir
Golden hours pass
Watching for the snaker
Hidden in the grass.
Always in a hurry,
Rushed to death they say
But you must'nt worry
If he sails today.
Leads a hard and happy life,
Though his years are fraught
With worry lest some quicker knife
Buys a faster yacht.
Loud and lusty talker,
Time gets in his way.
In spite of Johnny Walker
He may save your life some day.

If your subscribers are still on reading terms with you there may be just time and space enough for one more flight of fancy, as wading thru the still waters come:–

The Urologists

"Thou shalt not piss" the Prostate said,
"Have mercy!" cried the bladder.
The old man writhed upon his bed,
More toxic grew and sadder.
Then spake the Lord High Cystoscope,
"The trouble is" quoth he
"So small a channel cannot cope
With this corporeal sea".
He called the Royal Engineers,
Frogmen and sappers too
But all expressed their dismal fears
That his demise was due.
Then high above the threnody
A voice rang clear and true,
"I am your God Urology
I'll Do what I can do".
Then with his magic wand sublime,
The fleshy dam he levels,
And ever since that olden time,
Men are his meat, poor devils.

Pass the rum please. □

The Annapolis Valley stretches from Windsor to Digby. In the olden days it took almost a day to drive the distance of 120 miles; today, on the 101, this can be done in a few hours. Highways have brought small towns closer and are likely to play a greater role in the future. This is bound to affect the practice of medicine as well. The government is taking a closer look at our medical services to prevent the escalation of costs which indirectly affects the tax payer. The word 'regionalization' was regarded as a sword of Damocles by many groups of Doctors in the Valley; it was misunderstood and the whole concept was condemned in private and public discussions. Politicians became interested in the question and took their stand which was a calculated move to satisfy the emotions of their constituent rather than to contribute to a rational discussion of the recommendation.

Closing down of smaller hospitals, phasing out of older institutions, breaking of promises to build new hospitals and changing the role of others became the burning issues in the minds of the Valley physicians. The spark had been lighted when the report of the Beds and Facility was published in January 1972. Now, six months later, after several meetings in which representatives of various sections of the community involved in the health delivery system have taken an active part, the atmosphere has cleared and there is a sense of mutual trust and friendliness among the doctors.

It is strongly felt that centralization of certain services at the regional hospital will contribute towards improvement of the quality of medical care and hopefully prevent the rapid increase of cost. I have been amazed to see how people have changed since the report was first published, but the change is welcome and is an indication of the willingness to co-operate and work for the benefit of the community. This action deserves commendation. It is encouraging that the Valley doctors have provided the leadership; however ill defined 'regionalization' may be, the geographical situation with a widely dispersed population will continue to be an important factor in the implementation of the project. In the meantime the trend continues towards more 'get together' and 'corridor consultations' as 101 extends further west of Coldbrook. □

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