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THE NOVA SCOTIA MEDICAL BULLETIN

"Give A Kidney - Save A Life!"

In this issue of the Bulletin, four years experience with kidney transplanation at the Victoria General Hospital is reviewed. Of the thirty-eight patients who had transplants, approximately 70% are leading normal, productive lives with good renal function. Were it not for transplantation, the majority of these patients with renal failure would be dead because of inadequate chronic dialysis facilities or inability to tolerate chronic dialysis.

There are two sources of kidneys for transplantation: 1) a living, related donor, 2) cadaver donor. Living, related donors are limited to members of the immediate family, either a parent or sibling. The high success rate of over 80% justifies the minimal risk to the donor, and worldwide experience had confirmed this. In terms of ethical considerations, moral leaders the world over favor such donations as expressions of the highest humanitarian ideals.

In many cases of chronic renal failure, either relatives are not available, or those available are unsuitable due to illness or results of tissue typing, and the patient awaiting transplantation has to rely on the availability of a cadaver kidney. In this instance, the relatives of a patient who is dying have to make a decision regarding permission to remove the kidneys after death for purposes of transplantation. In the cadaver situation as well, the informed consent of a living person is required.

A problem presently exists in that the demand for transplant kidneys far exceeds the supply. Recently, the Canadian Kidney Foundation has initiated a publicity program directed at the general public to seek their cooperation. However, individuals in a position to influence such a donation, as in the case of cadaver kidneys, will most frequently consult their family physician, and their eventual decision will be influenced for the greater part by his advice. Consequently, a transplant program can only succeed with the active cooperation of the whole Medical Profession. The data presented in the review article will provide the Practitioner with much of the information required in advising his patients, and we hope will make it apparent that *to donate a kidney is to give life.* □

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Kidney Transplantation in Nova Scotia

A FOUR YEAR REVIEW

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The dramatic and well-publicized events surrounding the first cardiac transplant in December, 1967, and the subsequent eighteen months of initial enthusiasm, followed by profound pessimism almost completely obscured the less spectacular but steady improvement in the results of kidney transplantation. The ACS/NIH organ transplant registry reports that up to November, 1972, there had been 199 heart grafts performed in 61 different centers with 28 survivors alive six months to four years after grafting.[1] By the same data, there had been 11,214 kidney transplants in 10,346 recipients approximately half alive with functioning grafts, the longest being 14 years after transplantation. By 1970, the recipient of a kidney from a living related donor had a 75% chance of being alive three years later and cadaver recipients a 60% chance, a 20% improvement in a 10 year period in the former and 30% in the latter.[2] Although there has been very little change in survival figures since 1970, there has been steady improvement in the management of these patients, such that rejection episodes are more easily managed and side effects are fewer. As a consequence of the intense interest in transplantation, a great deal of knowledge about the immune system has been gained applicable to many other fields as well.

In the past four years, 40 kidney transplant operations were performed in 38 recipients at the Victoria General Hospital in Halifax. The indications, problems encountered and results are reported.

Method

This report covers the four year period from April 15, 1969, the date of the first renal transplant in Halifax, to April 15, 1973. There were three transplants in 1969, ten in 1970, 14 in 1971, seven in 1972, and six in the first four months of 1973. Only the 32 patients having a minimum follow up period of six months are included in this analysis. All 32 patients were in chronic renal failure and all but three patients were on the chronic hemodialysis program at the Victoria General Hospital. The three exceptions were children managed by peritoneal dialysis. ABO matching and donor-recipient crossmatching for cytotoxic antibodies was done prior to every transplant and in all living related donors and most cadaver donors tissue matching was also performed. Initially only cadaver kidneys with less than two mismatches with an appropriate ABO matched recipient were used but latterly tissue matching has been ignored. A close tissue match is still, however, a prerequisite for living related donor grafts. Eleven recipients, aged 16 to 51 (five female and six male), received living related donor transplants with a sibling providing the kidney in seven instances and a parent in four. The remaining 21 patients received cadaver kidneys, two of the patients receiving a second transplant after the first had failed. There were nine females and 12 males aged from five to 72 years. Sixteen cadaver donors aged from 18 months to 58 years provided the 23 kidneys. In seven cadavers both kidneys were used. Living related donors were thoroughly evaluated prior to donation including extensive renal and cardiac investigation and psychiatric evaluation. In all operations, a single donor kidney was placed in the iliac fossa of the recipient utilizing end to side renal vein to external iliac vein and either end to end renal artery to internal iliac or end to side renal to external iliac artery vascular anastomoses. The donor ureter was implanted into the bladder.

Azathioprine therapy was begun the day of operation in a dose of 2 mg/kg and increased one day after grafting to 3 mg/kg with subsequent dosage dependent on the white blood cell count. Prednisone or methyl prednisolone was begun four days after transplantation in a dose of 1.5 mg/kg maintained for four days then gradually reduced by 10 mg increments every second day until a daily dose of 50 mg. was reached. It was further reduced by 5 mg. increments as long as renal function remained stable to 1.5 mg. per day by the end of three months after transplant. All cadaver grafts were irradiated on three alternate days after grafting to a total dose of 600 rads. Rejection episodes were treated by increasing the steroid dosage to 400 mg/day for 2 days, then halving the preceding day's dose until a level of 100 mg. was reached. Decrease was then more gradual at a rate of 10 mg. every second day as long as function was improving or stabilized. Three of the cadaver recipients also received antilymphocyte globulin distributed by the Medical Research Council as part of a nation-wide trial. Antihypertensives, diuretics, antibiotics, antifungal agents, anti-viral agents and diabetic drugs were used where needed.

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In late 1970 the antirejection therapy was changed to intravenous methyl prednisolone 1 gram daily for 2 days, halving the dose each day until it was discontinued. The daily oral steroid was continued unchanged. In mid 1972, cyclophosphamide 400 mg/day intravenously for 2 days was added to the above in some patients and later reduced to a single bolus of 400 mg.

Post-operatively renal function was monitored by daily or more frequent determinations of serum and urine creatinine, electrolytes and blood urea nitrogen. I^{131} hippuran renograms and Technicium scintiscans were done at least once and more often if function deteriorated. Retrograde renal pyelograms and selective arteriograms were done if there was any doubt as to the cause of lack of or deterioration in renal function. Bone marrow reponse to immunosuppressive drugs was followed closely by serial hemoglobins of white blood cell and platelet counts. Patients were discharged from hospital if complications were absent as soon as renal function had stabilized and wounds were healed. Patients attended clinic 3 days each week for the first month, twice weekly for a further two months and then once weekly thereafter. Renal and bone marrow functions were tested at each clinic visit and at regular intervals intravenous pyelograms, chest and bone x-rays and eye examinations were performed to pick up development of uretero-pelvic strictures and steroid complications such as reactivation of tuberculosis, fungal infection of lung, aseptic necrosis or osteoporosis of bones or cataracts of the eyes. Regular urinalysis and urine cultures were also done.

Living related donors were seen at regular intervals in the first year and yearly thereafter.

Results

Living Related Donor Transplants

Two of the 11 recipients of living related donor grafts are dead. One died of a cardiac arrest during the operation and the second died one year later of mumps pancreatitis despite good renal function (Fig. 1). The remaining nine are alive with functioning kidneys from 18 months to three years after grafting. Tissue typing was performed in all recipients and their volunteer donors and where possible the most closely matched relative was used. Antisera capable of identifying only 24 of the approximately 33 known antigens was available so in only four cases was identification in both donor and recipient complete (i.e. four antigens in each). The clinical course has, in general, correlated well with the closeness of the tissue matching. The results after one year are summarized in Table I. The clincal grade is considered to be A if the serum creatinine is 1.5 mgs% or less and no major complications are present, B if serum creatinine is between 1.5 – 2.0 mgs%, C if between 2.0 – 2.5 without complication or less than 2.0 mgs% a major complication and D if the creatinine is greater than 2.5 mgs%.

All three "full house" matches (four antigens in both donor and recipient identical), patients D.B., A.B., and T.B., had excellent function at one year and two were off steroid therapy, neither having any evidence of rejection. The other patient had two very mild rejection episodes at two and nine months but none in the second year. Patient D.B., was restarted on methylprednisolone after nine months without it at the time of a slight elevation in serum creatinine in association with a streptococcal throat infection. The steroids have been gradually reduced over an eight month period and have been again stopped.

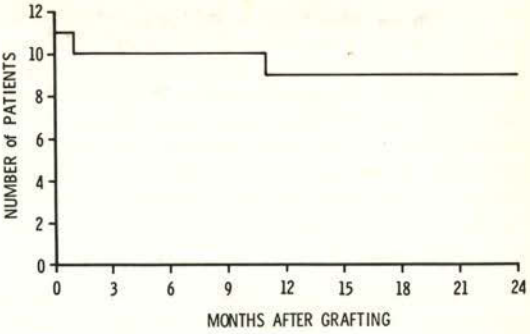

FIGURE 1

Survival of patients with living related donor kidneys followed for 24 months.

TABLE I

HLA – Typing in Living Related Donor Grafts

Patients	Mismatches	No. of Antigens Identified Donor	Recipient	Relationship	Clinical Grade At One Year
J.J.	0	2	2	Parent	A
J.C.	0	3	3	Sib	*
D.S.	1	2	3	Parent	B
B.M.	0	2	3	Sib	B
D.B.	0	4	4	Sib	A
A.B.	0	4	4	Sib	A
W.P.	1	4	4	Parent	B
G.N.	1	3	3	Sib	B
T.B.	0	4	4	Sib	A
C.O.	2	5	4	Sib	B
E.S.	2	4	4	Parent	B

*Cardiac Arrest

Mismatches are considered to occur when antigens present in the donor are absent in the recipient but not vice versa. In two other patients, no mismatches were present but one, J.J., was tissue typed in early days, and subsequent retyping has revealed that donor and recipient were mismatched for two antigens – the expected situation in parent to child transplants. In the second non-mismatched patient, only two antigens were identified in the donor and it is most likely that at least one of the two unidentified antigens would differ from the recipient's. For this reason, both of these patients should be considered with the remaining five mismatched patients. Of these seven, only three were clinical grade A at one year and both these and the three B-grade patients have remained so at two years.

The one C-grade patient died at one year from complications brought on by the high dose of steroids necessary to maintain good function. It is tragic that this man died of mumps pancreatitis despite having a history of recovery from mumps as a child. Our longest surviving patient, J.J., had excellent renal function for two years, being off steroids for over a year but has had gradually deteriorating function for the past six months despite renewed high steroid therapy. His serum creatinine is now 4.0 mgs%.

Cadaver Transplants

The experience with the cadaver graft recipients has not been as good (Fig. 2). Eleven of the 23 transplants ended in failure which in five instances was due to death of the patient secondary to complications despite adequate renal function. Two of these failures involve one 47-year-old patient who lost his first transplant at two months because of ureteral obstruction and infection, and then died suddenly of a stroke 13 months after his second graft despite excellent function and in the absence of hypertension. A second patient died of a stroke at three months but had marked hypertension though with otherwise good renal function. Our first cadaver graft recipient developed a uretero-cutaneous fistula and died four months after transplantation of aspiration pneumonia and myocardial infarction immediately following an operation to repair the fistula. Another patient, a 72-year-old lady, died 12 months after grafting of congestive heart failure but with good kidney function. She had severe coronary artery and myocardial disease. A fifth patient died at nine months of cryptococcal meningitis. The remaining six patients returned to dialysis, four having lost their kidneys as a result of irreversible rejection alone, one in whom the kidney never functioned and one, considered above, from ureteral obstruction and infection. Of these six, two were successfully retransplanted, three died while on dialysis, one from infection and gastrointestinal haemorrhage complicating the steroid therapy given in an attempt to prolong the graft, and one is still on dialysis 18 months later. Ten recipients are surviving at least one year after grafting with functioning kidneys, two dying subsequently as described above, the others alive with good function 12 to 25 months after transplant. Four patients grafted between six and 12 months ago have good function and all five recently grafted patients are doing well. Tissue typing was done in all recipients while on dialysis, and initially it was also performed on potential cadaver donors and only those having recipients with less than two mismatches were used but, as illustrated in Table II, there was no correlation between clinical grade and number of mismatches in the 11 instances in which typing was complete. Since this finding was in accord with that reported from other centers, tissue type as a prerequisite was discontinued and only the ABO blood group and the recipient serum lymphocytotoxic antibody titre against donor lymphocytes (tissue crossmatch) were used to choose the most appropriate recipient. Only completely negative crossmatches were acceptable. As a result of this latter policy, there were no hyperacute rejections.

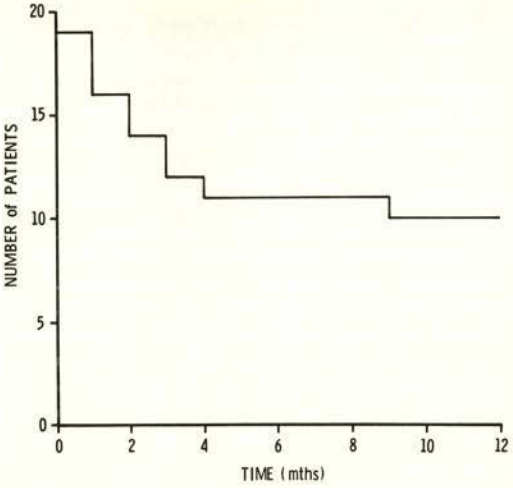

FIGURE 2

Survival of patients with cadaver kidney grafts followed for 12 months.

TABLE II

HLA – Typing in 11 Cadaver Grafts at Risk for One Year

Clinical Grade At One Year	No. of Patients	Number of Mismatches
A	4	2 had 1 mismatch, 1 each 1 and 3 mismatches
B	2	1 had 2 mismatches, 1 had 4
C	1	4 mismatches
Failed	4	All had 0 or 1 mismatch

Of the 12 patients who experienced major complications (Table III), 10 were cadaver graft recipients. This correlates well with the finding that as a group they had more rejection episodes, were treated with higher immunosuppressive drug dosages and had more bone marrow suppression than the living related donor group. Of particular interest is that only four of the 23 kidneys underwent acute tubular necrosis in the post-graft period no doubt related to our policy of using respirator maintained cadaver donors. Three of these four eventually recovered full function. The two patients who were given a second transplant were both functioning well one year later. While the one year survival in recipients of related donor grafts was 91%, in the cadaver kidney recipients it was only 61%. There was very little fall off in either group between the first and second years. In fact, 70% of all kidneys lost failed in the first four months. (Fig. 3).

TABLE III

Major Complications

Total patients	12
Total complications	34
Sepsis total	9
bacterial	5
fungal	4
viral	2
multiple	2
Urinary fistula	1
obstruction	1
Gastrointestinal haemorrhage	1
pancreatitis	1
Cardiac arrest	1
infarction	1
failure	1
Died as a result of complications	4

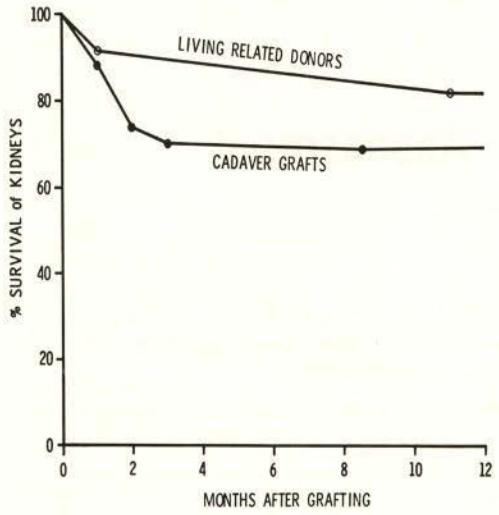

FIGURE 3

Comparison of % of total kidneys grafted still functioning at one year in living related donor versus cadaver donor recipients.

Discussion

Organ transplantation in the human is a complex, sometimes difficult, always worrisome but always fascinating clinical endeavour. The factors responsible for rejection are incompletely understood but the uniform success observed in grafts between identical twins indicated that most, if not all, these factors are genetically controlled. The important ones which have been identified include the ABO blood group antigens which are also present on tissue cell surfaces, a second similar system of cell membrane antigens termed the human leucocyte antigen system (HLA) and a third system of antigens responsible for stimulation of lymphocytes in tissue culture (MLC locus). Current evidence would suggest that at least one or more unidentified systems is also involved. Fortunately, most of these antigenic systems seem to be inherited through closely linked genes on a single chromosome and are subject to Mendelian behaviour within families such that the chances of any two children in a given family being identical for these genes is about one in four. As would be expected, the majority of children inherit two antigens from the mother and two from the father and, unless in the unusual situation where both parents share one or more antigens, children will differ from either parent by two antigens. Therefore, in intrafamilial kidney transplants, it would be predicted that parent-to-child grafts would not do as well as HLA identical sibling grafts and this has been borne out in practice. The situation is further complicated by the discovery that given the same level of antigenic disparity between a parent and several of his children, the level of responsiveness of one child may differ from the others. The "responsiveness" is also genetically controlled and so in some instances even poorly matched grafts may do extremely well because the recipient is a "non-responder".

Given the possibilities of disparity in familial grafts, it is not hard to see why the situation in an outbred population would be even more complex. Even in the unlikely instance where HLA identity is found between a donor and potential unrelated recipient (the probability less than 1:2000), it is most unlikely that the ABO, MLC, "rejection" or responder loci will be identical. Fortunately some genotypes occur more frequently than others in a given population. HLA identity is associated with a slightly greater survival rate but there is, however, no convincing evidence that four mismatches are any worse than one mismatch in cadaver grafting. It is not surprising to find that if a kidney from a living related donor functions well for one year it is likely to do so indefinitely (the longest is 14 years), whereas cadaver graft function tends to deteriorate even after one or two years of function. Nevertheless, cadaver graft kidneys are being reported as surviving for periods now approaching 10 years.

It is encouraging that our results are somewhat better than those reported by the NIH/ACS Transplant registry for all centers[1] and are continuing to improve. In fact only one of the last 10 cadaver kidney recipients followed for at least six months is without good function, which is as good as figures reported from the most experienced clinics. However, a plateau of success worldwide appears to have been reached using the present immunosuppressive therapy and the best results show slight improvement in the past four years. While the use of antilymphocyte serum appears to lessen the frequency of early rejection episodes the numbers of surviving kidneys at one and two years is only marginally better. Clinical trials of new immunosuppressive agents, or with tests which may more accurately monitor day to day effectiveness of the presently used drugs should be expected to give further improvement. But the problems inherent in the use of such toxic agents are inescapable and

many investigators are vigorously pursuing the search for a more specific means of inducing graft acceptance not dependent on suppressant drugs. Success has been obtained in rodents but not as yet in an outbred species such as the dog, or in humans.

Our efforts in Halifax have been severely restricted by the lack of cadaver donors. Despite transplanting about 10 patients each year the number of new patients requiring dialysis has swollen the haemodialysis program to the bursting point. There are now four times as many patients awaiting transplantation as there were when we started. Efforts are now being made to organize a donor program at other Maritime centers in an attempt to alleviate the shortage of cadaver kidneys.

Summary and Conclusions

Forty renal transplants have been reported. The two year survival in recipients of living related donor kidneys is 90% and in cadaver recipients is 60%. The survival figures in the latter group are continuing to improve and for the group done in 1971-72 is 80%. Most patients who would formerly have died from end stage renal disease can now be returned to active, productive life by a combination of chronic haemodialysis and kidney transplantation. □

Acknowledgments

The authors wish to express their gratitude to the many house staff and nurses who looked after these patients and to the several consultants whose help was inestimable in times of doubt or trial. We thank Professors R. N. Anderson, G. W. Bethune and C. L. Gosse and Dr. M. R. Macdonald for making the establishment of the unit possible and for their continued support. The Camp Hill Tissue Typing laboratory and the Institute of Pathology provided the technical skill essential to the transplant program.

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Physician Self-Assessment

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The following questions have been submitted by the Division of Continuing Medical Education, Dalhousie University, and are reprinted from the American College of Physicians **Medical Knowledge Self-Assessment Test No. 1** with the permission of Dr. E. C. Rosenow, Executive Vice-President.

It is our hope that stimulated by these small samplings of self-assessment presented you will wish to purchase a full programme.

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.

257. A 60-year-old engineer was admitted to the hospital because of fever, cough, and pleuritic chest pain. His temperature was 40.0C (104.0F); physical examination and roentgenogram of the chest indicated lower lobe lobar pneumonia. Sputum smear and culture demonstrated pneumococci.

The patient had a history of allergy to penicillin, and therefore tetracycline thereapy was instituted. After several days, fever and leukocytosis decreased and roentgenogram of the chest showed some clearing of infiltrate.

On the seventh hospital day, his fever spiked to 39.4 C (102.9 F). There was an increase in cough and dyspnea. Roentgenogram of the chest showed an increase in pulmonary infiltrate.

Which of the following is the most likely explanation of this clinical picture?

(A) Normally resolving pneumococcal pneumonia
(B) Laboratory contamination of culture
(C) Suprainfection
(D) Drug fever
(E) Pulmonary thromboembolism □

(Please turn to page 174 for answers)

Anteriovenous Shunts and Fistulae for Haemodialysis

A ONE YEAR REVIEW

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The function of a surgeon associated with a haemodialysis unit for the treatment of chronic renal failure, is to create a mechanism from which the nurses operating the unit can easily obtain a blood flow of 200-300 c.c. of blood per minute. This volume of blood is passed through a cellophane membrane in the haemodialysis machine and back into the patient every minute.

In our series of shunts and fistulae for the treatment of chronic renal failure, there were 24 patients.

Age of Patients:

Oldest	– 70 years
Youngest	– 20 years
Average Age	– 44.7 years

Sex of Patients:

Male	– 14
Female	– 10

Diabetes:

Diabetics	– 3 (two expired)
Non-Diabetics	– 22 (one expired)

Etiology of Chronic Renal Failure

Pyelonephritis	– 6
Pyelonephritis with Malignant Hypertension	– 2
Glomerulonephritis	– 6
Polycystic Disease	– 5
Previous Bilateral Nephrectomy and Renal Transplant	– 1
Radiation Nephritis	– 1
Hypoplasia of Kidneys	– 1
Transitional Cell Ca of Kidneys and Bladder	– 1
Fabry's Disease	– 1

Repeated haemodialysis for chronic renal failure became a reality in 1960 when Scribner, a nephrologist, Dillard, a surgeon and Quinton, an engineer together devised an arteriovenous shunt made of teflon vessel tips, silicone rubber tubing (silastic) and connectors. By this method an artery and vein are cannulated and the tubing with the connector is partially exteriorized. The connector is removed to allow access to both the arterial and venous circulations.

Complications in this type of shunt are frequent:

1. Thrombosis
2. Infection
3. Erosion of skin overlying the shunt
4. Thrombophlebitis

Two external shunts were performed as a primary procedure in this series of twenty-four patients.

1. M.S. – The first was done on 19 October 1972, in a patient with chronic renal failure as a result of chronic pyelonephritis. This patient had two periods of cardiac arrest and all veins in her forearms were thrombosed as a result of intravenous medications. Following recannulation of the veins in the forearm a radial artery to cephalic vein fistula was performed and has functioned well.

2. W.M. – The second was a patient with transitional cell carcinoma of both kidneys and urinary bladder. Following thrombosis of the external shunt a Thomas shunt was applied from the right femoral artery to the right femoral vein.

In an attempt to overcome the problems related to the use of the external arteriovenous shunt, Brescia and his co-workers in 1966 described the internal arteriovenous fistula.

The technique of this fistula is that the radial artery and a branch of the superficial cephalic vein in the lower third of the forearm are mobilized and a side to side anastomosis or fistula is formed. The size of the anastomosis is from five to ten mm. and made with 6–0 or 7–0 nonabsorbable suture.

In our series of twenty-four patients a radial artery to cephalic vein (R.C.A.V.) was performed as a primary procedure in twenty-one patients. They were completely successful in nineteen patients and have continued to be used as their means of dialysis up to the present time, or until the time of renal transplant in three patients or until death in three patients. One patient (N.K. – Diabetic) died as a result of bronchopneumonia; a second patient (J. DeC.) died following subtotal gastrectomy for massive gastric haemorrhage; the third patient (J.S. – Diabetic) died of cardiac arrest.

The complications of R.C.A.V. fistulae are:

1. Oedema of the Hand and Arm
2. Local Infection
3. Septicaemia
4. Aneurysm Formation
5. Early Thrombosis
6. Late Thrombosis

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The only complication that has occurred in our twenty-one patients is late thrombosis in two fistulae, both at three months and both in females.

Analysis of two Late Thromboses

1. J.S. – Female – severe diabetes with marked calcification of radial artery

   R.C.A.V. – thrombosed at three months

   R.C.A.V. – opposite arm, cardiac arrest 12 hours post-op – expired.

2. B.H. – Female

   R.C.A.V. – Thrombosed at three months

   R.C.A.V. – Upper end of radial artery to cephalic vein in same arm. Functioning well but has pain during dialysis.

Incidence of Thrombosis in Patients with R.C.A.V. Fistulae

	Patients	Early Thrombosis	Late Thrombosis	Total
V.G. Hospital	21	0 (0%)	2 (9.5%)	9.5%
Cleveland Clinic[1]	60	4 (6.6%)	4 (7.1%)	13.7%
Univ. California[2]	32	3 (9.3%)	4 (14.3%)	23.6%
Univ. Brussels[3]	73	7 (9.4%)	4 (6.0%)	15.4%
Northwestern Univ.[4]	18	5 (26.0%)	1 (7.7%)	33.7%
Albert Einstein[5]	59	14 (23.7%)	4 (8.8%)	32.5%
Univ. Arkansas[6]	54	9 (16.6%)	3 (6.6%)	23.2%
Univ. of Utah[7]				27.0%

Saphenous Vein Fistula (S.A.V.)

In patients with very small veins in the forearm or with extensive thrombophlebitis of the veins in the forearm an alternate method of forming a fistula is by the use of a reversed autogenous saphenous vein graft. Approximately 20 to 25 cms. of the saphenous vein is removed from the thigh and is anastomosed end to side to the radial or ulnar artery at the wrist; the vein is tunnelled subcutaneously to the proximal forearm for anastomosis to the side of a vein in the antecubital space.

In our series of twenty-four patients one saphenous vein fistula was performed. This was in a female patient (I.B.) with very small forearm veins. It has functioned very well with no complications and at the present time has had twenty-nine dialyses by means of this fistula.

Thomas Shunt from Right Femoral Artery

One Thomas shunt was performed in our series of twenty-four patients. This is a form of external shunt devised by Thomas, which is anastomosed to the femoral artery and to the femoral vein at the saphenofemoral junction.

This shunt was in a sixty-five year old male who had a left nephrectomy, removal of urinary bladder and a right heminephrectomy for transitional cell carcinoma. He had very small forearm and arm veins and both saphenous veins were thrombosed. He has since had the remainder of his right kidney excised, is now anephric and is maintained satisfactorily by haemodialysis.

Number of Dialyses

960 – 24 patients with shunts or fistulae in 1972

2602 – Total number of dialyses in unit

Interesting Patients

1. J.D. – 1967 – Tumour of mandible (Reticulum Cell Sarcoma) Radiotherapy 6000 rads

   1969 – Retroperitoneal Mass causing anaemia and Jaundice
   Pregnant
   Aborted

   4000 rads to abdomen

   Prednisone – Vincristin, Chlorambucil

   1971 – BUN – 150 – Radiation nephritis

   March 17, 1972 – R.C.A.V. Fistula

2. M.W. – This patient had a left R.C.A.V. on 8 August 1972 for chronic renal failure and malignant hypertension. Following intensive antihypertensive therapy and dialysis three times weekly his B.P. remained at 280/180, and a bilateral nephrectomy was done. He is therefore anephric and being quite well maintained on twice weekly six hour dialysis.

3. P.P. – This is a patient with Fabry's disease or Angiokeratoma Corporis Diffusum. Fabry's disease is a rare, X-linked inborn error of glycosphingolipid metabolism.

It is a very slowly progressive disease with characteristic blue to purple skin lesions symmetrically distributed on the trunk and genital areas of male patients.

The pathophysiology of Fabry's disease is a deficiency of ceramide trihexosidase enzyme, which results in the accumulation of galactosylgalactosylglucosylceramide principally in the walls of blood vessels, leading eventually to death as a result of renal failure.

The disease is thought to be amenable to treatment by renal transplantation which would lead to enzyme replacement by the transplanted kidney. (This patient has received a transplant in April 1973).

Human Interest

Two patients leave Sydney, Nova Scotia at 7:45 in the morning by plane, are dialyzed and fly home in the afternoon.

One patient leaves Summerside, P.E.I. on the last ferry, arrives at the Victoria General Hospital at four in the morning, sleeps in the kidney unit and returns home that afternoon.

Two patients from Louisdale, Cape Breton leave home by car at five in the morning and return home the same afternoon.

One patient from Canning gets up at 5:30 in the morning to be in time for dialysis at nine in the morning.

Summary

Twenty-four patients were treated from 1 January 1972 to 1 January 1973.

1. Expired – 3
2. Renal Transplantation – 3
3. Anephric-Haemodialysis – 2
4. Well-Continued Haemodialysis –16

□

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Brief Note

INFECTION IN HEROIN ADDICTS WITH SPECIAL REFERENCE TO OSTEOMYELITIS, ENDOCARDITIS AND PSEUDOMONAS AERUGINOSA

Attention has been drawn to this subject in an Editorial in the J.A.M.A. of Feb. 26, 1973, Vol. 223, No. 9, p. 1036. Two groups of infection have been recognized as being of importance since the patient may consult subspecialties unfamiliar with the full range of complications in addicts.

The J.A.M.A. Editorial states "Minimal systemic and local symptons have been found to be associated with osteomyelitis in the spine. Five patients with Pseudomonas lumbar osteomyelitis had little more than low back pain, with low-grade systemic toxic reaction, minimal fever, normal blood cell counts, and no changes on initial x-ray films. Confirmation followed aspiration and culture of the increasingly tender areas, and the response to vigorous antimicrobial therapy was good. A number of centers are seeing this disease now as confirmed in the recent infectious disease meeting in Atlantic City."

A further reference to the occurrence of endocarditis in addicts reads as follows – "Endocarditis is an old problem on which new light is shining. Long the most feared disease in addicts, its poor prognosis had been noted, but it is encouraging that in the latest study in endocarditis, a large prospective study at Chicago's Cook County Hospital, there have been good results. Over an 18-month period, 23 patients were seen, 16 of these with staphylococcal endocarditis. One had gram-negative infection along, with Pseudomonas aeruginosa, and he was the only person to need valve surgery. The tricuspid valve was most commonly involved: 11 patients had tricuspid involvement alone, all of which were staphylococcal."

The article concludes with the sentence, "Back pain in an addict may herald osteomyelitis and must always be taken seriously." □

C. E. van Rooyen, M.D.

What the Non-Ophthalmologist Physician Should Know About the Eye

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I recently had the opportunity of lecturing to some final year Dalhousie medical students. An attempt was made to put on a practical understandable level some of the important principles which I feel the non-ophthalmologist physician should know about the eye. It was felt by the listeners that some of these points deserve wider circulation among the medical profession.

In a short article it is possible only to state these principles fairly dogmatically and merely hint at some of the fairly solid pieces of scientific knowledge backing up each one.

1. The first principle is that strabismus should be treated early. Besides the well-known reason of amblyopia ex anopsia, which must be treated by the age of six years (preferably by age four), there are two other reasons for early treatment: the eyes must be aligned within a year of onset of the strabismus if there is to be good chance of fusion, i.e. using the eyes together to obtain stereopsis. Finally, the strabismus might be secondary to a blinding lesion such as a retinoblastoma, where early treatment may make the difference between life and death. From these three reasons, the following rules of thumb evolve: (a) Any case of strabismus should receive immediate elective referral to an ophthalmologist when first observed, even at the age of three or six months. (b) All children with apparently normal eyes should ideally have their first eye examination by an Ophthalmologist at age three, not by a school nurse at age six. This is because amblyopia (as well as other eye diseases) can occur without strabismus being readily apparent. (c) Modern strabismus surgery is often performed before an infant's first birthday, and with solid basis in scientific fact. (d) Strabismus surgery after the age of six years is cosmetic only. This is a perfectly sound indication, but unfortunately a large number of strabismus cases still do not receive their surgery earlier, when benefit can be visual as well as cosmetic.

2. Everyone should undergo an eye examination including measurement of intraocular pressure at least once every five years over the age of forty.

Chronic primary open angle glaucoma is as common in people over forty as is late-onset diabetes, affecting at least 2% of the population. Because there are no symptoms such as soreness or redness of the eyes, and in most cases no subjective awareness of vision loss until the eye is almost damaged beyond recall, this condition must be diagnosed by objective examination. Fortunately, the years of heightening glaucoma incidence coincide with the years of increasing presbyopia, when each of us, whether he wears glasses previously or not, needs glasses to read. Gradually increasing presbyopia brings many people to an ophthalmologist every few years after the age of forty, and pressure measurement as well as inspection of the optic discs for glaucomatous cupping, are automatically performed with the rest of the eye examination. However, many people do not reach the ophthalmologist during these years, many making the innocent but unfortunate selection of a relatively untrained optometrist instead. Therefore, every physician performing routine general physical examinations on people over forty, whether he be family physician, internist, public health officer, or an examiner for life insurance, industry or the armed forces, should include in every such examination both intraocular pressure measurement by the simple Schiotz method, and inspection of the optic discs for cupping. It is unfortunate that life insurance medicals require search for every major chronic disease except glaucoma, which while not directly life-threatening, needlessly robs thousands of people of their sight every year. The whole problem lies in finding cases soon enough, because nowadays complete control of the disease by relatively simple therapy is the rule in the vast majority of cases once diagnosed.

In contrast to open angle glaucoma, which is both extremely common and insidious, acute angle closure glaucoma is both rare and clinically dramatic, and for both of these reaons is not anywhere near the threat to the vision of the population at large that open angle glaucoma is.

3. Diabetes is one of the commonest causes of blindness in Canada today. Therefore every diabetic patient, young or old, should be followed by an ophthalmologist. This is because certain of the retinal vascular changes can now be treated by photocoagulation, and the rare case may be evaluated and approved for hypophesectomy, to avert blindness. Also, there are other purely ocular diabetes phenomena in diabetes which must be evaluated and managed by the ophthalmologist, such as variability in refractive error, increased incidence of both cataract and chronic open angle glaucoma, and a severe form of secondary glaucoma known as rubeosis iridis. Furthermore, there is not a good correlation in diabetes between systemic and ocular changes, such as there is in, for example, hypertension, and so the ophthalmologist must be called upon to give visual prognosis, even in the recently diagnosed late-onset diabetic.

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4. With extremely rare exceptions, no one but an ophthalmologist should ever prescribe a topical steroid for the eye. A red eye suspected by the non-ophthalmologist physician as being a bacterial conjunctivitis may be treated by an antibiotic mixture or sulphonamide, such as Neosporin or Sulamyd, preferably drops through the day and the same medication as ointment at bed time, but under no circumstances should a steroid or antibiotic-steroid combination be used. This is because a fungus or virus disease such as herpes simplex can devastate an eye if aided by steroids, and furthermore, topical steroids maintained for a month or longer will cause a chronic open angle glaucoma in thirty percent of people. The rule concerning the sore red eye for the non-ophthalmologist physician should be: if it looks like a bacterial conjunctivitis, treat with antibiotic only, and refer if not cured within five days. If it does not look like a bacterial conjunctivitis, and especially if there is any opacity or cloudiness in the cornea or anterior chamber, refer to an ophthalmologist at once. Under no circumstances treat the sore red eye with steroids, and never wait three weeks before referral; five days should be absolute maximum. If these rules are not followed, a short term illness can be converted into a year or more of pain, constant medications, inconvenience, and finally vision impairment or loss.

5. What do glasses do and what don't they do? Glasses correct for abnormal size and shape of the eye, and with one exception, (accommodative esotropia) do not treat or alter any eye disease. If an eye is larger than normal it is myopic, if it is smaller than normal, it is far sighted, and if it is not perfectly spherical it has astigmatism. As the eye's ability to accommodate (focus on near objects) diminishes with age (presbyopia), glasses are called upon to replace more and more of this loss power. Hence the increased strength of reading glasses or lower bifocal segments from the age of 45 to 65.

6. The non-ophthalmologist physician should never hesitate to use drops to dilate the pupil in order to examine the fundus. One can often look at the disc and the vessels radiating immediately from it fairly well without dilating the pupil, but in most cases attempts to look elsewhere, particularly at the macular area (for example the area just temporal to the macula where early diabetic changes almost always begin), are made practically impossible by the constricting pupil. Therefore, eye drops to dilate pupils should flow like water on internal medicine wards, and should be used without hesitation by general practitioners, internists, pediatricians, neurologists, and even, quite often, by neurosurgeons when the need arises. The drops used are Neosynephrine 10%, which is sympathomimetic and hence does not paralyze accommodation and blur vision, and the fast-acting and more powerful iris - sphincter - paralyzers from the atropine or anticholinergic group of drugs, which do blur near vision, namely Mydriacyl 1% (fastest), and cyclogyl 1 or 2% (most powerful).

The hestitancy and apprehension about using pupil-dilating drops by the medical profession at large has to do with the spectre of glaucoma lurking in the background. This apprehension is both old-fashioned and not based on scientific fact. The common kind of glaucoma (open angle glaucoma) is not affected in any way by dilation of the pupil. Nor can a patient be adversely affected who has had angle-closure glaucoma diagnosed, because his eye will have been treated by surgery which prevents further attacks. The only susceptible individuals who can be in any way harmed by dilating the pupils are those who have as yet undiagnosed narrow angles which are capable of being thrown into acute angle closure glaucoma attacks. These people number only about 1 in every 700 people over the age of 50, so they are extremely rare. If such an attack is induced in one of these susceptible individuals, it can be easily controlled in almost all instances by modern medical therapy, and the corrective surgery performed the next day, or if the patient's non-ocular condition does not permit, surgery can be delayed up to several weeks or even months if need be. Furthermore, the induction of an acute angle closure glaucoma attack by dilating the pupil with drops is looked upon by most ophthalmologists as doing the patient a favour. This is because statistics have shown that 90% of such patients would have a spontaneous attack anyway within seven years and this attack could well occur when the patient is not near competent medical attention, such as on a vacation trip or at home in a small village.

In conclusion, drops should be used without hesitation to dilate the pupil for examination purposes, the only reservation being that 1 in 700 people thus treated over the age of 50 will develop acute angle closure glaucoma. Previous history of any type of glaucoma is an indication that dilating the pupil is without risk, not the opposite.

7. The chief area wherein the average M.D. should have some *detailed* knowledge about the eye is the fundus. Much confusion can be avoided in learning and applying the detail if the basic principle is realized that the three common vascular diseases which affect the fundus, affect different anatomical parts of the fundus. Thus, in a hypertensive atherosclerotic diabetic patient, each specific change ob served in the fundus can be blamed fairly accurately on just one of the three diseases. Atherosclerosis affects *Arteries*, therefore choroid, macula and disc, but not the visible retinal vessels except for the first branches leaving the disc (as in ischaemic optic neuropathy). Hypertension affects *arterioles,* therefore creating the fairly well known far flung changes in and around the arterioles on the retinal surface. Diabetes affects *capillaries and veins,* producing microaneurysms and neovascularisation of the former, and irregularity of the latter, along with hemorrhages and exudates in the middle layers of the retina. Thus one can usually be quite specific about which of these etiologies lies behind any one particular change in the fundus.

8. Any sudden painless loss of vision should be referred at once to an ophthalmologist. While any sore red eye may be treated for five days before referral if it appears to be a bacterial conjunctivitis, but must be referred immediately if the cornea is involved or the pressure is high, sudden loss of

vision without pain indicates serious disease in the posterior half of the eye, and referral must be immediate in every case. This is because in several of the conditions in the differential diagnosis, immediate specific therapy can make the difference between sight and permanent vision loss. These conditions include central retinal artery or central retinal vein occlusion, retinal detachment, acute chorioretinitis of various kinds, retrobulbar neuritis, and temporal arteritis, all of which are ocular emergencies which can be devastating to vision unless quickly treated.

Summary

In summary, I feel the following principles cannot be repeated often enough:

1. Strabismus should be treated early.

2. Everyone should receive a glaucoma screening eye exam at least once every five years after the age of 40. Therefore, ideally, *every* general physical exam done by *any* physician should include intraocular pressure by the Schiotz method plus *inspection of the optic discs for cupping.*

3. The importance of diabetes as a common cause of blindness in Canada today cannot be overstated. *Every* diabetic patient should be followed by an ophthalmologist.

4. With rare exception, no one but an ophthalmologist should ever prescribe a topical steroid for the eye. With only one exception, the sore red eye should always be referred at once to an ophthalmologist. The only exception is an eye suspected of having bacterial conjunctivitis (purulent discharge, cornea clear) which may be treated, with antibiotics only, for a maximum of five days before referral.

5. Glasses correct merely for abnormal size and shape of the eye. It is the best corrected visual acuity which gives a measure of the visual impairment caused by an eye disease.

6. No physician should hesitate to use drops to dilate the pupils to get a good look at the fundus. He need merely remember in the back of his mind that one patient in 700, and he will be one without previous history of glaucoma, will be thrown into an acute angle closure glaucoma attack, and that patient will have been done a favour.

7. The three common vascular diseases affect primarily different anatomical parts of the fundus, and therefore their changes as viewed by the ophthalmoscope can be quite specifically delineated one from the other with very little overlap.

8. Sudden vision loss without pain should be referred at once to an ophthalmologist.

It is hoped that the statement of these principles here will reach as wide an audience as possible among those physicians, and future physicians, who deal directly with patients, no matter what their area of specialty, so that their patients' eyes will benefit. □

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1000 Word Series

Tracheal Stenosis

WARNING! DANGER!

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The advent of modern techniques of ventilatory support, i.e. intubation and/or tracheotomy with the use of positive pressure ventilation has led to an increased incidence of a dangerous clinical problem: Tracheal Stenosis. Practitioners can expect to be presented with this problem in any patient who has undergone such treatment. They must be acutely aware of the recognition of the hazardous disorder, and be prepared to properly manage such unfortunate individuals.

Recognition

Following prolonged intubation with the use of cuffed tubes, the effects of pressure on the tracheal wall cause atrophic changes in the supporting tissues with subsequent stenosis and obstruction. Patients may present with airway obstruction at any stage from days to several months following intubation.

The principal symptoms are:

1) Change in the quality of voice
2) Inability to speak with great volume
3) Stridor on inspiration and expiration
4) Dyspnea
5) Inability to cough

The signs are:

1) Audible stridor as above
2) Indrawing in the neck on inspiration and bulging on expiration
3) Inability to clear secretions from the tracheobronchial tree

Vitally Important

When the above symptoms or signs occur the stenotic segment is already very small and the situation is emergent. Any further swelling, impaction of mucus plugs or aspiration of foreign material may kill the patient!

Some further diagnostic tools are:

1) Tracheal tomograms which will demonstrate the stenotic segment
2) If a bronchoscopist is available, laryngo-tracheobronchoscopy will be diagnostic.

Management

This disorder constitutes an emergency. The practitioner should undertake initial management until the patient can be referred to a center where the experienced aid of an otolaryngologist, a thoracic surgeon and a ventilatory support team is available.

The following measures should be taken:

1) The stenotic segment may be pliable enough to permit the passage of an endotracheal tube. Do not force the measure! If you fail, the trauma may cause fatal swelling.
2) If the stenosis is at the site of a former tracheotomy, re-opening the tracheotomy with placement of a tracheotomy tube will be of benefit.
3) Treat any inflammatory aspect with the use of nebulized vasoconstrictor agents. Cortico steroids are also indicated.
4) Keep tracheal secretions liquid with usual measures of tracheobronchial toilet.
5) Placing the patient on Helium 80% – Oxygen 20% mixture is theoretically beneficial.
6) Do not temporize. Transport the patient promptly to a center where definitive care is available.

The ultimate management of these patients is individualized. Several reconstructive procedures are now practised with a good rate of success. □

Febrile Convulsions in Children

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Introduction

It has been recognized for many centuries that children are liable to convulsions with a fever and that this does not necessarily imply the later development of Epilepsy. One of the earliest descriptions of this is to be found in the aphorisms of Hippocrates: "Now in children, convulsions occur if there has been acute fever." "Convulsions occur most readily from just after birth up to the seventh year. But older children and men are no longer liable to convulsions in fevers unless some complication with violent and very great symptoms has arisen."

Contemporary evidence adds the weight of statistics to this opinion: febrile convulsions occur in approximately five percent of children, whereas, epilepsy is only seen in 0.5% of the population, emphasizing that it is the exception rather than the rule for the child with febrile convulsions to become an epileptic.

Aetiology

The aetiology of febrile convulsions is probably due to multiple factors of which the following are important.

(1) Genetics. – Studies on children with febrile convulsions and their families indicate that this condition is probably inherited as a dominant condition with incomplete penetrance.

(2) Innate differences between the mature and the immature brain. – From the standpoint of oxygen consumption the brain of the young child is a much more important organ than that of the adult. It accounts for approximately one tenth of the body weight of the young child, compared with one fortieth, or less, of the body weight of an adult. In addition to being relatively larger the brain of the young child has a higher metabolic rate and oxygen consumption, with about two thirds of the cardiac output going to the brain in a three year old child. These differences suggest that the adequate supply of oxygen to the brain of the young child is more easily compromised than in an adult; if one adds to this the fact that there is an increase of at least ten percent in the metabolic rate for each one degree centigrade rise in body temperature the role of fever in producing convulsions can be appreciated.

(3) Type of infection involved. – It is likely that in addition to the role of hyperthermia, the type of infection plays a part in the causation of convulsions. Viral infections are very much more commonly associated with febrile seizures than bacterial infections and it is a common observation that the first indication of a fever that the parent has is the development of the so-called febrile convulsion.

The Problem as it Confronts the Physicians

The young child with a high fever who is convulsing may have one of the following conditions.

(1) Significant underlying infection. – The most important of these is infection of the Central Nervous System, such as bacterial menigitis, or encephalitis. It is for this reason that a lumbar puncture is indicated in a first febrile convulsion in an infant or young child. Occasionally other infections outside the central nervous system, such as, an acute nephritis may present with seizures and also gastroenteritis due to Salmonella infection may also present in this way before the appearance of bowel symptoms.

(2) Atypical Febrile Convulsions. – In these there is a pre-existing abnormality of the central nervous system with the child being likely to develop non-febrile seizures, or epilepsy at a subsequent date.

(3) Benign or Simple Febrile Seizures. – By far the commonest cause. These can usually be recognized on clinical grounds without difficulty if the patient fulfils the following criteria. (a) The patient is older than six months and under five years of age. (b) The seizure is brief – usually only a few minutes in duration, but certainly less than twenty minutes. (c) The seizure is generalized with no focal components. (d) There are no post-ictal sequelae, such as transient hemiparesis. (e) The child is neurologically intact – there is no retardation, underlying cerebral palsy, or other neurological deficit. (f) There is no family history of epilepsy.

If the above criteria for benign febrile convulsions are observed, less than 3% of these children will subsequently develop epilepsy. By contrast, if the child with a convulsion and a fever does not conform to those criteria but has, by definition, "atypical febrile convulsions" the majority will ultimately go on to develop non fibrile seizures.

The role of the E.E.G. – An abnormal E.E.G., preferably taken more than one week after the seizure and when the fever has resolved, predisposes to the subsequent development of non-febrile seizures.

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Management

The management of the acute episode is a medical emergency and should be treated as vigorously as seizures from any other cause. Maintenance of an airway, avoidance of the child injuring himself with convulsive movements and lowering the body temperature with tepid sponging and/or the use of salicylates constitute advice that can be given over the phone. The drug of choice in the acute seizure is probably Intravenous Valium in a dose of up to 0.25 mgs. per kilo, which can be repeated 20 to 30 minutes later if necessary.

Interim Treatment

Recent evidence has shown that Phenobarbital in a dose of 5mgs. per kilo per day with a blood level of 1.5 mgs.% will provide approximately eighty percent protection against subsequent febrile seizures. On the other hand it is unlikely that a parent will continue to administer regular Phenobarbital to a child who has had only one febrile seizure until either three years have elapsed, or the child is five years of age – which is the conventional advice often given.

The reasons for giving interim treatment, since benign febrile convulsions are only rarely succeeded by epilepsy, are to prevent the very rare serious sequelae of febrile convulsions including acute hemiplegia of childhood and also to prevent the development of temporal lobe, or focal seizures since a percentage of these have their origin in childhood seizures with fever. The often used recommendation to adminster Phenobarbital at the first sign of a fever is probably treating the doctor and the parent rather than the patient since it is usually unsuccessful as the first sign of a fever is often when the child has a convulsion.

My own practice is to recommend continuous Phenobarbital medication up to the age of five years in a dose of approximately 5 mgs. per kilo per day (monitored by Serum Phenobarbital Levels where feasible) *only* when the child has had more than three or four febrile convulsions; since this applies to only 10% of children with febrile seizures it is obvious that I only prescribe this for the minority of the children that I see with this convulsion.

Children with "atypical febrile seizures" are, by definition, likely to develop non-febrile seizures, or epilepsy and they should therefore be treated with regular anticonvulsant medication on the same basis as a patient with recurrent non-febrile seizures. □

W. K. Kellogg Health Sciences Library

MEDLINE

In February 1973, the W. K. Kellogg Health Sciences Library broadened the subject searching service available to Maritime physicians by using a computer terminal located in the library. The terminal uses a long distance telephone line to provide access to a portion of the MEDLARS (Medical Literature Analysis and Retrieval System) data base, from which Index Medicus is compiled. This computerized literature searching service called MEDLINE (MEDLARS on-line) covers approximately half of the titles indexed in Index Medicus from January 1970 to date. Core biomedical journals such as Lancet, British Medical Journal, Canadian Medical Association Journal, and the New England Journal of Medicine are among the 1200 Medline titles.

By using the controlled vocabulary (Medical Subject Headings or MeSH), certain types of searches may be done quickly and efficiently. Comparative studies on the efficacy of various penicillins, dopa in the treatment of psoriasis and calcitonin therapy for otitis media are examples of some of the recent topics searched by computer. Although 25 to 30 references may be printed immediately in the Kellogg Library, lists of up to 300 citations may be produced with a turn around time of about one week. Using this author/title printout, photocopies of the most relevant original articles can be requested.

Until August 1, the service will be completely funded by the U. S. National Library of Medicine, the National Science Library of Canada and the Kellogg Library. Beginning August 1, a $5 fee will be charged for each successful literature search to defray part of the cost (long-distance telephone charges, terminal rental, computer use charges, royalty fees, cost of printing off-line searches, etc.). If you want more information about how this service may help you in your practice or forms for submitting a Medline search request, please contact:

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Transfusion Reactions

THEIR RECOGNITION AND MANAGEMENT

Ian Maxwell*, M.B., Ch.B., F.R.C.P.(C)

Halifax, N.S.

In spite of meticulous care and every precaution a small number of untoward reactions to transfusions may occur. Usually these are relatively mild and non-incapacitating but on rare occasions a potentially lethal condition may develop requiring not only rapid, accurate diagnosis, but also prompt treatment.

It is with these thoughts in mind that the following review has been prepared. It is in tabular form in order that it may possibly serve as a ready reference for emergency occasions. Such a format, however, imposes restrictions with respect to the nuances of symptomatology and therapy actually pertaining in individual cases.

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In the event of a suspected transfusion reaction those caring for the patient should STOP THE TRANSFUSION IMMEDIATELY, leaving the needle in the vein with a slow saline drip to facilitate intravenous therapy, and should obtain a specimen of FRESHLY PASSED URINE and a CLOTTED SPECIMEN OF THE PATIENT'S BLOOD. These two specimens, together with THE UNUSED PORTION OF THE BLOOD UNIT, should be taken to the hospital blood bank by a ward messenger WHO SHOULD WAIT FOR AN INTERIM REPORT.

The laboratory should, in the next five minutes, carry out the following four studies:

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(c) Perform a direct Coombs test on the post-transfusion specimen

(d) Search for stainable bacteria in the blood unit

and it should issue an immediate interim report concerning these matters for return to the ward by the messenger so that any necessary treatment may be instituted at once. Full confirmatory tests should be carried out subsequently and a definitive report submitted later in the regular manner. □

*Assistant Professor of Pathology, Dalhousie University. Director of Blood Bank, Halifax Infirmary, Halifax, Nova Scotia.

TYPE OF REACTION	CAUSE	SIGNS AND SYMPTOMS	TREATMENT
A. **Serious** 1. HEMOLYTIC (1:10,000 transfusions)	(a) incompatible transfusion (b) improper warming or chilling of blood	**Clinical:** Chills, rigors, loin pain, headache, nausea, hematuria, hemoglobinuria, anuria. (May be accompanied or followed by D.I.C., wound oozing, purpura etc.) **Laboratory:** Elevated plasma hemoglobin, positive direct Coombs test, hemoglobinuria, elevated fibrin degradation product., reduced fibrinogen level, thrombocytopenia.	If history or clinical findings suggest that this accident has probably occurred, **mannitol infusion should be started at once** without waiting for laboratory confirmation. (a) Maintain blood pressure with vasopressors (b) Maintain urine flow over 100 ml/hr. by oral and/or intravenous fluids. (e.g. Mannitol 20% in 50 ml. ampules. Infuse 2 ampules immediately within a 15 minute period and repeat this dose if the urine flow drops below 200 ml. in any subsequent 2 hour period. (c) DISSEMINATED INTRAVASCULAR COAGULATION (D.I.C., consumption coagulopathy) usually calls for heparin therapy whereas PRIMARY FIBRINOLYSIS may require epsilon aminocaproic acid (E.A.C.A.) These two conditions may be difficult to differentiate from one another. Points in favor of D.I.C. are THROMBOCYTOPENIA, SCHISTOCYTOSIS AND ACANTHOCYTOSIS in addition to the fibrinopenia and presence of fibrin degradation products which characterize both conditions. (d) Replace any specific deficits as indicated (e.g. fresh frozen plasma, platelet concentrate, packed red cells etc.).
2. SEPTIC (1:20,000 transfusions)	Bacterial contamination of blood usually psychrophilic (cold growing) gram negative organisms, often free living pseudomonads.	**Clinical:** Tachycardia, precipitate hypotension, shock, chills, rigors, collapse, coma, convulsions, consumption coagulopathy as above. **Laboratory:** Stainable bacteria in blood unit, positive blood culture.	(a) These organisms are usually sensitive to combination therapy with ampicillin and gentamycin (b) Maintain blood pressure with vasopressors (c) Hydrocortisone as indicated (d) Treatment for D.I.C. as above. (e) Antibiotics and hydrocortisone for septic shock.
3. ANAPHYLACTIC (1:200,000 transfusions)	Protein isoprecipitins; atopic state of recipient	**Clinical:** Angioneurotic edema, wheezing, dyspnea, gasping respiration, congestion or collapse. **Laboratory:** Usually none, sometimes eosinophilia or lymphopenia.	True anaphylaxis fortunately is extremely rare. Treatment must be prompt without waiting for the laboratory report-which, of course, will be negative. (a) Adrenalin (epinephrine) 1:1,000; administer 0.3 to 0.5 ml. every 5 min. during the period of shock. (b) Levophed 4 ml. in 1,000 ml. 5% glucose in water, administered at the rate of 1-4 ml. per min. to control hypotension. (c) Benadryl 50 mgm. as indicated (continuing antihistaminic). (d) Hydrocortisone as indicated.
4. AIR EMBOLISM	Poor administration technique (Virtually impossible with plastic bags)	**Clinical:** Precipitate shock and dyspnea, faint or abnormal heart sounds, "bubbling" sensation in the limb receiving the transfusion and possibly in the chest as well.	First aid treatment suggested is prompt positioning on the left side, head down with the foot of the bed raised as high as possible in an attempt to protect the brain. The condition is self-limiting.
B. **Mild** (2% transfusions) 5. FEBRILE	Antibodies to leucocytes and/or platelets, etc.	**Clinical:** Flushing and tachycardia sometimes followed by symptom-free latent period then headache, pyrexia of 38° C or more and chills. **Laboratory:** Nil.	Symptomatic
6. ALLERGIC	Hypersensitivity Use of fresh non-autologous plasma	**Clinical:** Rash, pruritus, urticaria, angioneurotic edema and swelling of joints. **Laboratory:** Nil or eosinophilia.	Benadryl 50 mgm. or Phenergan 25 mgm. If severe, Prednisone 20-40 mgm. daily.
7. CIRCULATORY	Overload of circulation in debilitated patients	**Clinical:** Orthopnea and pulmonary congestion. **Laboratory:** Nil.	Individualized treatment for congestive heart failure.
8. IONIC TOXICITY	(a) Citrate overload (b) Mg. deficiency (c) Hyperkalemia	**Clinical:** Cardiac depression, muscular irritability, confusion, convulsions, Chvostek's sign, cardiac arrhythmias. **Laboratory:** Depending on cause.	(a) 2.5 ml. 10% calcium gluconate for each unit transfused. (b) 2.5 ml. 50% magnesium sulphate (20 mEq) I.M.I., repeated hourly if necessary. (c) Sodium bicarbonate infusion, 1 ampoule (44 mEq) repeated if necessary. Regular insulin, 10-30 u. in 10% dextrose, Cation exchange resin 20 – 80 gm.

References

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Transfusion Reactions

THEIR RECOGNITION AND MANAGEMENT

Ian Maxwell*, M.B., Ch.B., F.R.C.P.(C)

Halifax, N.S.

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Short Shafts on Wheezy Kids

DIET CONTROL - FACT OR FANCY?

Robert S. Grant,* M.D.

Halifax, N.S.

Most doctors and nurses, very early in their careers, are presented with clear cut evidence of severe reactions to foods. It is not a difficult thing then to see that foods can and do cause severe reactions of one type or another in given individuals. It is more difficult to establish the fact that foods can and do contribute to the problem of recurrent episodes of wheeziness in some children. The most difficult aspect of this problem is to demonstrate to your own satisfaction that the ingestion of a certain food is followed by an exaggeration of the respiratory symptoms. The following is a procedure for simplifying such a determination.

If a child with persistent episodes of wheezing of varying degrees of severity does not respond to the treatment programs established, one must wonder whether some food being eaten is contributing to the problem. In an effort to demonstrate this conclusively, the following recommendations are made:

a. The identification of a list of suspect foods.

b. The removal of those foods from the diet.

c. The reintroduction of the foods following the period of removal.

In the first instance, the elaboration of the list of suspect foods is done primarily by way of the history. The items in the history that are of particular relevance are:

a. A history of colic, vomiting, regurgitation of formula, requirement for frequent formula changes, the presence of recurrent diarrhea in early infancy, or the presence of failure to thrive. Any combination of these symptoms or signs in early infancy in an individual who later demonstrates clinical allergies causes milk to be suspect.

b. Any food which the mother found was rejected by the baby in early infancy, or any food which was observed to cause a rash, a redness on touching the skin, crampy colicky pains, or any other symptoms consistently observed on attempts at introducing the specific food, cause that food to be suspect.

c. Any food which the child has a particular aversion to.

d. Any food which for some unexplainable reason the child has a particular craving for.

These four groups of foods constitute a suspect list and to these may be added those foods that give marked reactions on skin testing. You are now in the position of having a suspect list of foods and may move on to the second phase which is the removal of the foods from the diet. If the list is small, this is not a complicated job. If the list is long, it is generally advisable to do it piece-meal and to have the help of a dietitian. In any event it is mandatory to remove those suspect foods from the diet for a period of three to four weeks. I must emphasize that completeness is required, so that if you are removing milk from the diet, for example, it is not good enough just to keep the child from drinking milk but all items such as cheese, ice cream, butter and foods made primarily with milk must also be excluded and excluded completely. If after three to four weeks of complete removal from the diet there is no clear cut improvement in the clinical condition of the individual then these foods cannot be incriminated. If, however, there is clear cut improvement in the individual concerned, you are then in a position to move on to phase three, which is the reintroduction of the foods.

In this regard there must be a word of caution. If the history suggests that the individual ever had a moderate or severe reaction to a given food, do not under any circumstances undertake the clinical challenge, as it is possible to have severe and even fatal reactions as a result of a food challenge. If, however, there is no clear cut evidence of an exquisite sensitivity to the food, you may then proceed with the reintroduction of the foods, in which case you should reintroduce the foods one at a time, a week apart, and watch for some clinical manifestation of sensitivity to the food which will be either an exacerbation of the symptoms complained of or some reflection of allergy such as hives, angioneurotic edema, migraine headache, nausea and vomiting or some clear cut response to the food; this will take place within 12 to 24 hours if it does not occur immediately after the reintroduction of the food.

One by one, then, the foods can be tried and those that are observed to give definite clinical evidence of reactions can be removed from the diet on a more-or-less permanent basis, until the original symptoms have been modified to the satisfaction of your patient.

Although this consumes time and effort there are no short cuts. There is no other way to demonstrate clinical food allergy other than by removal of the food following which one observes improvement in symptoms, followed by reintroduction of the food and the observation of recurrence of symptoms.

The proof of the pudding is in the eating; give it a try and good luck. □

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International Medical Student Organization On Population

H. Haakonson, M.D.
Victoria, B.C.

Introduction

The recent growing concern about population, environment and resources is providing household discussion amongst a large proportion of the literates of the world. Whether Indian businessman, African teacher or Canadian physician, the alert and perceptive are awake to the crisis that imperils our Earth. More than any other single group, perhaps, the youth of the world declare themselves ready to accept the obvious challenge – DO SOMETHING!

Explanation

In March of 1972 I had the privilege of attending a unique seminar. New Delhi, India was the meeting place for 80 medical students from 30 different countries. The topic of discussion was "Population Overgrowth – A Challenge to Young Physicians". For four days the discussion proceeded with an enthusiasm that I had never before experienced. The purpose of the discussion was to consider the population problem and what we, as individuals and future doctors, could do about it. Many resolutions were passed at the meeting but all present were very anxious that the meeting not end, as so many meetings do, with a list of resolutions and no specific plan of action. Thus was born the International Medical Student Organization on Population (IMSOP) to ensure a follow-up to the action which was to be planned.

There was unanimous agreement amongst the delegates that lack of training among physicians constituted one of the greatest obstacles to successful attack on the population problem. To correct the deficiency the delegates agreed that the most effective way for us, as students, to proceed was by returning to our own medical schools to reassess the present teaching programs and, where appropriate, offer suggestions for change from a student base. The speakers at the meeting fully backed this idea, acclaiming the seminar as one of the most effective meetings on population and family planning ever held.

The meeting concluded that revision of present programs should include relevant material on social problems relating to the delivery of health and family planning care. In particular, attention should be focused on population dynamics in relation to national social and economic development. The new student organization (IMSOP) aims at:

1. an international exchange of ideas between students on population dynamics and family planning in medical education;
2. encouraging the production and world-wide availability of teaching aids to assist in the education of the medical undergraduate;
3. encouraging and possibly assisting national and local student bodies to conduct seminars and studies;
4. organizing a further international seminar at a time and in a place to be decided.

(International Planned Parenthood News, No. 218, June 1972)

Getting Into Action

I returned to Canada with deep motivation to become better informed of the state of family planning and population dynamics in our country. The motivation was supported by the enthusiasm that had been engendered at the conference. The obvious question was: "What is the most effective way for me, as a senior medical student, to make a useful contribution?" Activity at the community level was not feasible at a time when I would shortly be changing communities. It would be impossible to make any useful contribution in my own medical school in these last three months as a student. It seemed that the only way I could proceed was by working at a broader scope over a longer period of time. With this realization, and the cooperation of Dr. Stanley Greenhill of the University of Alberta Department of Community Medicine, a successful application for $15,721.00 was submitted to the Department of National Health and Welfare. The project which the grant supports was planned as a three phase exercise. Phase I was to be the onsite visits to all 16 Canadian Medical Schools; Phase II a National Conference of Medical Students; and Phase III the publication of conference proceedings.

Phase I

Phase I had to be preceded by written communication with the Medical Student Associations in each of the 16 medical scholls to establish a contact through whom arrangements could be made. The contacts were all volunteers who expressed an interest in the nature of the project. They will ultimately be the delegates to the conference in Phase II. Their participation at this stage, however, consisted of making the arrangements necessary for the onsite visit at their school. The plan was to meet four separate groups at each school:

1. the student body at large – to whom I delivered a 45 minute presentation outlining some of the problems of population and family planning at international, national and individual levels;
2. a representative group of students who will be working intimately with the delegate in preparation for the conference;
3. a representative group of faculty who are interested and involved in the teaching of family planning at the medical school;
4. a group of local citizens who are involved in the delivery of family planning services and/or information in the community.

The purpose of the onsite visits was threefold. First, it gave me a chance to meet the delegates as well as giving them a chance to meet and question me. This clarified many problems and made the whole project more real for everybody. Secondly, it was hoped that the visit would instill some interest in the students at each school so that they would work to send a prepared delegate to the conference and then be prepared to follow-up the conference resolutions. Thirdly, it provided me with an opportunity to learn, first hand, what each medical school is now doing in terms of teaching population dynamics and family planning.

Report of Onsite Visits (Phase I)

The impressions which I have set out below are all generalizations of what I interpreted in the course of the onsite visits. Obviously the generalizations do not all apply to any one school and neither does any one generalization apply to all schools. On the whole, however, I think this is a fair assessment of the state of Family Planning teaching in the Canadian Medical School of 1973.

1. Basic science teaching of anatomy, physiology, biochemistry, and pharmacology of reproduction is covered completely in all medical schools. Only the teaching methods vary.
2. Psycho-social aspects of Family Planning such as dynamics of interpersonal relationships, human sexuality, individual problems arising from unplanned and unwanted pregnancy, effects on society from inadequate family planning, population dynamics, ecology, and regional, national and international problems of population, environment and resource usage all tend to be downplayed in importance. The most encouraging advance in this regard is the introduction of intensive programs in human sexuality. These are being, or have been, introduced at Dalhousie, Laval, Sherbrooke, Queen's and Manitoba.
3. Practical experience in prescription of birth control devices, insertion of Intra-Uterine Devices and fitting of diaphragms is left almost entirely to the initiative of the student. In most cases the opportunities are not readily available and even when they are, there is no assurance that the student will receive the required experience. In fact, it is most likely that still today, in 1973, the student will graduate without having experienced this very vital practical education.
4. Practical experience in observing counselling is limited to films and video tapes in most cases though some schools do have patient centered counselling demonstrations. Opportunities to practice counselling are virtually non-existent.
5. Even in those schools where the faculty has organized very good programs (Calgary is a good example) the students still view the psycho-social aspects of medicine as less important than the "pure" sciences. Their feelings are reinforced by the fact that this part of their education is not tested by examination. Attendance at these 'credit courses' varies inversely with the length of time the students have been in medical school.
6. The only school to have extensive common 'core' teaching with allied health professionals (nurses, social workers, rehabilitation medicine, physiotherapy) is Laval. The University of British Columbia does this on a smaller scale with the nurses.
7. Without exception, those members of faculty with whom I spoke were very anxious to hear the recommendations of our June conference. I believe that the medical faculties are fully aware of the need for curriculum revision in terms of Family Planning but at the moment curriculum planners are uncertain of how to proceed.
8. Our suggestions are coming at an opportune time. If they are practical, they will receive a good hearing.

Phase II

Phase II is the National Conference of Medical Students to be held in Victoria, B.C. between May 31, 1973 and June 3, 1973. The active participants in the conference will be one delegate from each medical school (16) plus my assistant and myself. Three expert resource persons will be in constant attendance to provide advice and information when it is asked for by the delegates. These resource persons will all be actively involved in family planning and will be drawn from three separate groups: the medical profession, another professional who is not a physician, and a layman. Several other experts will be invited to deliver papers at the conference. The presentation of the papers will be open to attendance by anyone who is interested. These interested individuals will also be invited to attend the seminar sessions as observers. The title of the conference will be "Family Planning in the Medical School Curriculum". During the discussion the delegates will address themselves to providing a consensus of student opinion as to the role of the physician in family planning

continued on page 179.

Senior Citizen

Grow old along with me, the rest much worse may be.

J.W. Reid, M.D.

Halifax, N.S.

If, as has been said, we begin to die the moment we are born then old age can conceivably be the most wretched and miserable time of death. A time of waiting hopefully for a not too horrible and painful exit from a state of being which has become a meaningless exercise in biological function in a milieu increasingly foreign and a substratum so changed as to scarcely afford a medium in which to move with a sense of familiarity.

One reads of the beautiful progression into golden senescence to be achieved by right thinking, by continued activity in clubs, groups, games, church, travel, learning and doing creative things, all written by starry eyed youngsters who are graduates in courses of social service, kindhearted kids anxious to be of help to these poor old things they see tottering about the park or mall on warm and sunny days. These are vital and admirable young people in the most vibrant period of their lives, anxious to apply the spiritual concepts of Christian teaching to daily life in their own community or, it may be, to justify the secular, humanitarian, non-christian urgings of those neophiles who have wormed their way into teaching positions imbued with the modern idea that man is sufficient unto himself and God a figment of the imagination on which he leaned for support before he got smart.

These are indeed the delightfully naive young people of a generation who have not lived long enough to find out that mature man, having no parents living to nurture and protect him and no government stable enough to sustain and support him, accepted and came to know God because he so truly needed Him. There is no gap so wide and no period of time so long that this or any other generation, if they retain their human sensibilities and intellect, will not, once again feel the need of God and cry out to Him.

Why are these apparently reasonable, interesting and easy steps into happy senescence not eagerly taken by the aging? Some do and are either a joy to behold or a nauseous and insufferable nuisance. Most do not because they cannot and therein lies the difference between senescence and senility. Senescence is a natural aging process like a pear which grows, matures into a sweet succulent ripeness and makes it's ordained contribution to life or unharvested falls to earth in the fullness of time and renews it's cycle. In senility the gnarled and twisted fingers of sclerosis play blindly over the arterial keyboard of the brain in ugly dissonance and discord.

Who has lived to become old in medicine and not noticed in wonder the various ways in which the body, that marvellous vehicle of life, wears out. Any one of it's organ systems may be the first to go and indeed one system may terminate life before others begin to show appreciable or dangerous wear. On the contrary life may be quite prolonged in those individuals in whom a number of body systems begin to deteriorate in early life and demand such care and protection that the vehicle is scarcely used enough to wear it out and they seem in danger of living forever.

Doctors have always been aware of the organ weaknesses of certain families in their care. The bad stomachs here, the weak lungs there, the weak hearts in one family and the inclination to strokes in another. The tendency for one family to live long and another to die young. Indeed over the years interesting forecasts and projections have been made relative to these things.

At the turn of the century tuberculosis was such a scourge in Nova Scotia, killing so many young people each year that it was predicted that in fifty years time most of the tuberculosis susceptables would have died in early youth, leaving mostly resistant individuals to procreate resistant children. It is an odd twist of circumstance that this projection of public health workers so many years ago should have coincided so neatly with the new drugs and surgery as to cloud the accuracy of their prediction.

Similarly, since it is known that hereditary disorders tend to anticipate themselves in each generation, the aberrant genes which may be contributing to the early obstruction of coronary arteries, carrying off susceptible individuals at younger and younger ages may eventually breed themselves out by default.

Thus it is that some glide into senility happily unaware that they are developing the tricks and traits of the dirty old man, (from whose insensitive proboscises an unnoticed pearly drip precariously hangs) perhaps because they had lived their unobservant lives so deeply immersed in the pleasures and problems of the moment that they had failed to notice the antics of the weird old characters around them and had no need to make strong resolutions to avoid them.

Others, perhaps too sympathetically aware of the eccentricities of the bent and twisted old people hobbling the sidewalks, search the image in any reflecting glass along the way for reassurance that they are still secure, as if such awareness could alter one whit the changes that time and nature have ordained for them as they tragically retrace the paths of their youth into the childhood of old age. God have mercy on us!

Who, struggling to recall the name of an old friend of whom he had spoken but a moment ago, could fail to realize the deterioration taking place in the once capable brain. Or who, attempting to maintain an active interest and presence in his work or profession can but in honesty admit that the changed names, the new terminologies, the altered procedures and attitudes demand nothing less than rebirth, re-education and reorientation as the price of contemporary participation. Designers of programs of continuing education please note!

Fortunate indeed is he who fails to notice his own lapses into reminiscence whenever a young ear can be trapped into the weary listening and doubly fortunate he whose opaque eye fails to discern the blank pall of boredom spreading over the previously bright and friendly face. He whose sensibilities are still aware and tender, shudders to place himself in positions where his own involuntary senilities embarrass and annoy his friends.

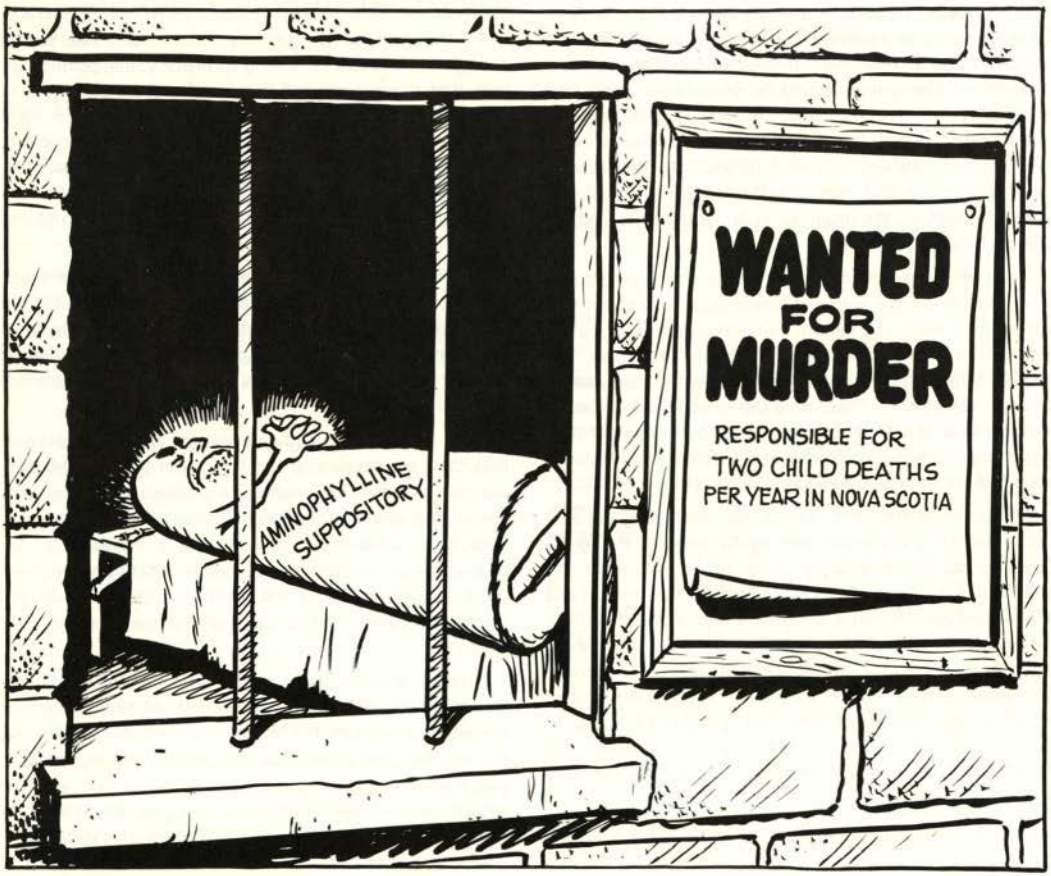
Wisely, in the presence of the young, an old man will forget the past. □

STATEMENT ON ACUPUNCTURE

Approved by The Provincial Medical Board of Nova Scotia, May 30, 1973

The Provincial Medical Board of Nova Scotia is of the opinion that acupuncture is a medical treatment which at this point in time is in the experimental stage in this country. The Board is pleased to sanction well organized clinical trials of this therapeutic modality and will assess the results when available.

During this period of assessment, the Board considers this to be an experimental procedure. Physicians therefore undertaking acupuncture should obtain fully informed written consent from the patient, which gives a written description of the procedure, the results that may be expected and the possible risks involved. Furthermore, during this period of assessment, no fees shall be charged for this service.



5th Canadian Wheelchair Games

"A TRIUMPH FOR INDIVIDUAL SKILLS"

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

Halifax, N.S.

"It's not what you can't do,
It's what you can achieve that matters."

The success of the 5th Canadian Wheelchair Games held in Vancouver June 2-8, 1973, was a result of tremendous enthusiasm and excellent organization of hundreds of people dedicated to the cause of sportsmanship, fellowship and athletic achievement for the handicapped. Some two hundred and fifty paraplegics, quadriplegics and amputees competed in events ranging from basketball, track and field, weightlifting to swimming.

Diane Crowe prepares for a great throw.

*Medical Director, Canadian Wheelchair Sports Association. President, Atlantic Wheelchair Sports Club. Chief of Orthopaedic Service, Halifax Infirmary.

Nova Scotia's Contribution – Success and disappointment

The Atlantic Wheelchair Sports Club sent a team of twenty-one members including coaches, medical staff, and athletes selected for their previous performance. Our Basketball Team is good; they practised all winter, but unfortunately two key players could not come. (Pottie's surgical wounds were too fresh and Rudderham was not available.) Being 1972 Champions, our Team anxiously survived a bye and was unseated by Saskatchewan in our first contest. Eventually we had to settle for Bronze Medals in Basketball and Volleyball, but we emerged a much more confident team and returned with laurels for individual events.

Walter Dann finishes in fine style.

Outstanding Achievements

Weight Lifting: Walter Dann achieved lifting 244 pounds; he weighs 137 pounds. This is a Power/weight ratio 1.78 and won a Gold Medal. Duckworth, competing for his first time, lifted 170 pounds; he weighs 117 pounds. Power/weight ratio – 1.59; he received a Silver Medal.

For these events the athlete lies supine and raises the weight above his chest. Try it some time.

Archery – Superb Shooting: World Standards were made by two athletes reflecting hours of practise and precision training. Brian Ward scored 690 points, 92 better than he previously scored (36 arrows at 70, 60, 50 meters). Don Curren scored 796 points in the Canadian Class, 84

points ahead of the lead (36 arrows at 90, 80 and 70 metres).

Discus – Victory for Scientific Training: Diane Crowe, a student at Dalhousie University beat her personal rival and friend, Snookey Seely of British Columbia by 4½ inches. Last winter, Dick Loiselle analysed video tapes of Diane throwing her discus and compared them with ambulant discus throwers. He found the secret lay in extreme body rotation and forearm pronation as the discus was delivered. Diane changed her style and increased her distance by ten feet.

Medical Fitness for Wheelchair Sports

Perhaps the most surprising thing is the absence of severe injuries occurring in these games. Competitors have a wide variety of disabilities ranging from Fragilitas Ossium to Spina Bifida and all types of spinal lesions from C6 down. There are also many lower limb amputees.

Most athletes have adjusted to their disability, have superb stamina and muscle power and great coordination of their non-paralysed body. Nonetheless, a carefully organized medical team, with adequate facilities and back-up is essential. Some of our earlier games lead to desperate situations from lack of personnel and lack of twenty-four hour facilities. This time we were well prepared. Our Medical Team consisted of the Medical Committee – Doctor Lush (Neurologist), Doctor Pinkerton (Physical Medicine), Doctor PapaGeorges, myself and Doctor Brian Wheelock (Intern). Mr. Gregory an orderly from the Rehabilitation Centre performed innumerable tasks with equanimity. Doctor Pinkerton organised facilities in depth including a Medical Room available twenty-four hours a day for dressings, medications, catheters and first aid. He also arranged for utilization of the facilities of the Student Health Hospital on the same campus for x-rays, suturing and nursing. Finally, arrangements were made for any serious accidents to be treated at the Vancouver General Hospital.

Prize Intern Takes Busman's Holiday

Brian Wheelock, winner of this year's Dalhousie University's Interns Award came as team doctor to the Nova Scotia athletes. He was warned he might have to work around the clock. To a young man who must have seen so many faces as cases, the impact of knowing so many handicapped as people must have been a striking experience. Brian helped in many different ways – bandaging, unblocking catheters and reassuring athletes in moments of tension. Everyone appreciated his efforts as well as the unflinching work of Gregory our orderly.

Here are some of the problems encountered: – fracture of wrist (an old fracture), assessment of athlete with incipient uraemia, urinary infection, spinal and ischial sores (old scars), sore heels from tight shoes in aircraft, loose vesicostomy, fractured femur, cut toe, catheter blockage and leakage. We shared a duty roster and this allowed time for a brief visit to Stanley Park and Grouse Mountain. You'd be surprised to see a body of wheelchairs going up the gondola to gain a view from the chalet at 3,700 feet.

Fair Competition – A Medical Conundrum

All athletes must be classified according to the level of paralysis, functional ability, or amputation site.

In one previous day – we examined 70 athletes –helped by Physiotherapists, for muscle power, sensory level and functional capacity. It took us from 9 a.m. to 10 p.m. Only a few athletes proved teasers – two with Fragilitas Ossium with small legs and muscle weakness, a Frenchman with a fractured pelvis and an old neck injury, and an athlete with a hip arthrodesis. We outlawed only one candidate – a man with scarcely detectable weakness of one leg, too good to compete with other handicapped athletes.

Future of the Games – "A Ball or a Bubble?"

Canada has accepted the 1976 Olympic Games. The big debate centred around the location of the Games and whether they should include games for all physically disabled.

After prolonged "politicking", two decisions were reached: – first, they will be held in Toronto; second, they will include amputees and the blind. This was a triumph for Doctor Bob Jackson, Retiring Chairman of C.W.S.A.

Competitors from 40 nations will include over 1000 wheelchair athletes as well as 500 other athletes with disabilities ranging from amputations to blindness. The job of organising these games is gigantic. The cost will be shared between Government, I.S.O.D. and C.W.S.A. It will bring an enormous impetus to the development of facilities for all the disabled throughout Canada. The greatest centre for spinal injuries in Canada is being rebuilt and this event will spur world wide interest in its development.

Nova Scotia's Role in the Future

Prospects are bright for our small Club; athletes have been chosen to represent Canada in Stoke-Mandeville and New Zealand. We hope to associate with Maritime wheelchair athletes in New Brunswick, Prince Edward Island and Newfoundland. Brian Ward – has been selected as Athlete of the Year in his class. He has overcome his double handicap of deafness and paralysis and is gaining world recognition.

We need support from the Medical Profession, from Physiotherapists, Occupational Therapists and from friends. We have been promised government assistance, but still need a club house and sports facilities. Our coaches have won fame – Brian Peters with basketball and Dick Loiselle who is now Athletic Director of C.W.S.A.

Summing Up

Yes, it was a great experience, those 5th Canadian Wheelchair Games! All the effort of all these people was worthwhile.

Thank you British Columbia and all Volunteers. □

The doctor and his leisure

Canoeing as A Hobby

Lea C. Steeves*
Halifax, N.S.

While it is most appropriate to consider the doctor's leisure in August, is not this late in the season to think of canoeing? Not at all. The ardent canoeist thinks canoeing all year round and can in fact be on the water from the time the ice goes out until freeze up, engaged in differing aspects of this hobby.

Previous writers in this series have not only indicated the wide-ranging nature of doctor's leisure interests, but have noted the great scope of opportunities to learn and to do within each hobby. Canoeing is no exception. While it is basically a primitive form of transportation particularly suited to the geographic features of Canada, it affords year-round opportunities for a wide variety of activities some of which can be pursued despite major limitations in one's health, while others require the best physical condition.

For example: history, marine architecture, celestial navigation, map reading, outdoor cookery, light weight camping, bird watching, wild life study, botany, geology, Indian culture, photography, art, fishing, swimming, and a variety of other activities are all a part of canoeing.

*Associate Dean, Faculty of Medicine, Dalhousie University.

Nova Scotia is particularly suitable for canoeing. A flight over the province on a clear day shows its many lakes laced together by small streams, and the entire province fringed with fascinating sheltered inlets into most of which one or more of these streams drain. The Canadian Youth Hostel Association through their Trail Shop on Quinpool Road in Halifax can sell you "Canoe Routes of Nova Scotia" which provides detailed information concerning the best times of year, camp sites, drinking water, portages, starting and ending points, time required for the trip. All trips recorded were carried out during 1966 or 1967. Two were written up by canoeist doctors. There are at least as many more trips in the province as those in this book.

You are most likely to develop a lasting interest in canoeing if introduced to it by an experienced partner using good equipment under favorable weather conditions. Canoes are superspecialized craft available in a wide variety of sizes and materials. Because of Nova Scotia's shallow, rocky lakes, and small rocky streams, stability and strength are more important than light weight, because distances over which the canoe must be carried are short. The biggest canoe one can carry comfortably for one-quarter mile is best for general purpose canoeing. The flatter the bottom

the greater the stability. A minimum size – weight is 15 feet and 55 lbs; maximum 18 feet and 90 lbs. Aluminium construction is the strongest for its weight, requires least maintenance, and is the noisiest. The classic wood and canvas construction is next lightest, most fragile, and quietest. Intermediate are: fibre glass covered classical wood construction and laid-up fibre glass construction.

Paddle shape and length give the typically individualistic doctor great scope. Stern paddlers tend to use a slightly longer paddle than a bow paddler. Most paddles fall in the range between chin height and forehead height. Canoe carrying can be minimized by "poleing" during which the canoeist while standing in the canoe, pushes it up-stream or less frequently eases it down stream.

Ministry of Transport small boat safety requirements must be met. This is an appropriate point to note that a good canoe, properly handled, is one of the safest of water craft. Canoeist's clothing is no problem. Nova Scotians have learned to be prepared at all times for wet, cold, or hot conditions, rapidly changing, and one can enjoy canoeing under all these weather conditions.

Are you frazzled from handling two practices during your signing out partner's July vacation? Paddle quietly across the sunset mirrored surface of "Frozen Ocean Lake" with ten miles of stream and a short quarter mile portage behind you and a meal cooked over an outdoor fire, good comradeship and an unbroken night's sleep ahead of you.

Do you miss the thrill of downhill skiing since May? Try running the rapids of the Medway River with an expert whitewater canoeist.

Are you looking for some new approaches to fall foliage photography? Try canoeing. □

Physician Self-Assessment – ANSWER

Question No.	Correct Answer
257	C

Correspondence

To the Editor:

RE: The article on "Cleft Lip and Palate in Nova Scotia. A Multidisciplinary Approach to Treatment" in the June 1973 issue.

I would like to point out that there is an omission of an important word pertaining to the function of the Eustachean tube. The line should read as follows:

> "Opening of the tube equalizes the middle ear pressure; failure of equalization of pressure results in, at first, a retraction of the tympanic membrane and later formation of fluid in the middle ear."

May I also point out that I am a Fellow of the Royal College of Surgeons rather than the Royal College of Physicians.

Yours Sincerely,

M. N. Wali, M.D.
Otolaryngology Consultant
Cleft Palate Clinic
The I.W.K. Hospital for Children

To the Editor:

Oops! of Course, the physician referred to in the story of Dr. Monty MacMillan's 45 years of practice in Baddeck (The Nova Scotia Medical Bulletin, June, 1973) was not Dr. Ross but was Dr. Austin MacDonald. Not even the vagaries of this electronic age (i.e. telephones and tape recorders) can excuse that slip. My apologies to physicians and patients alike who may suddenly have been thrown into confusion over just who is who.

Mea Culpa-bly,

John H. Sansom

To the Editor:

Apologies for a major mistake in Nova Scotia history. In the dissertation on Alexander Graham Bell in the June issue, I referred to Douglas McCurdy as Premier. He, of course, was Lieutenant Governor, an equally distinguished but different responsibility.

Yours Sincerely,

B. J. S. Grogono, M.D.
Halifax, Nova Scotia

THE STRANGE SOUND OF SUCCESS

R. Rogers and B. J. Grogono, M.D.

Halifax, N.S.

Mr. Rogers had been deaf for many years. He recently underwent a remarkable operation which restored the function of one of the small bones responsible for conducting sound in his ear. The operation proceeded smoothly; by a combination of extreme dexterity and care the defective hammer (stapes) lay as a useless and fixed organ in his middle ear. It was replaced by a minute plastic prosthesis, thereby completing a functioning unit once again to conduct the sound from the outer ear to his brain. After the operation was complete, the ear was packed with gauze and he returned to the ward to wait one week before this gauze could be removed. Mr. Rogers anticipated the moment when this pack would be removed with great excitement. After all, he had been deaf for many years, and although he had learned to lip read with skill, the silent world is a lonely place.

One day while he was recovering from the operation, I asked him to write about this unique experience and what it had meant to him. First he explained that he was unused to writing, but after a little persuasion, he wrote this astonishing account of his experience.

"It is now seven days after I had my left ear operated on. It has been 30 years that I have been deaf in my left ear and now thanks to the skilled hands of Dr. X I am able to hear again. It was a big moment for me when Dr. X started to remove the packing from my ear. I was thinking to myself, that in a few seconds, I would be able to hear people talking to me in a normal way instead of having them to repeat their words over and over again. As that last piece of packing was removed from my ear, I was in for a terrible let-down. Instead of my hearing being normal as I had hoped it would be, there was an awful explosion, loud voices, and noises. Dr. X is a mild-spoken man, but he seemed to be screaming at me. I thought I would go insane from the noise! I put my hands over my ears and then my pillow, but nothing would stop that awful, awful, noise. I cannot detect where the noises are coming from unless I can see the person talking to me or things that are moving to make the noise. To me, all the sounds seem to be coming from inside my head. It is as if I was in a large room, there was a microphone turned on full volume, and it was impossible to hear things clearly. Dr. X tells me that everything will be okay in a very few weeks. In closing, I would like to say many thanks to the wonderful people who were looking after me."

There are many remarkable moments in the Surgical Ward these days, and many pass unnoticed. Cataracts are removed, and sight restored; joints are replaced, and deformities corrected; lungs or bowels are resected with little comment, while the hospital moves on at its relentless pace. Nurses, doctors, and administrators carry on their tasks while these dramatic moments must pass unobtrusively by. This is why I feel that Mr. Rogers' graphic account of his experience makes such dramatic imprint. He wrote the lines while in hospital and gave it to the nurses in appreciation for the personal help that they gave him during his remarkable experience. It is hoped that others will feel inclined to describe their feelings. It reminds us that after all, a hospital is a place where people treat people and not just one big factory, where anatomical organs undergo exhaustive investigation.

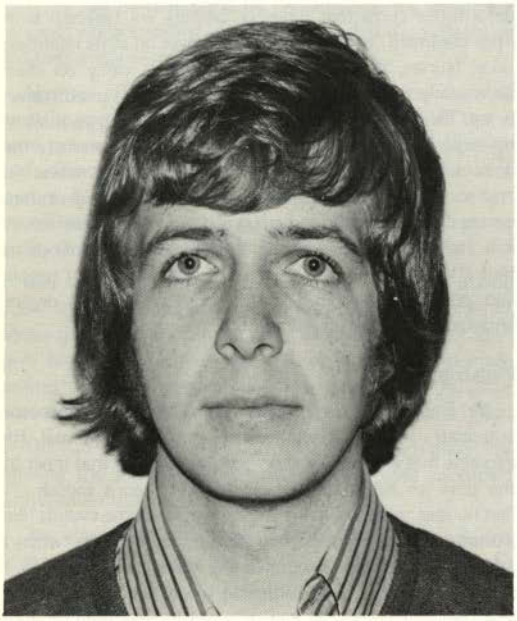
Postscript

Mr. Rogers has now gained very good hearing. His doctor anticipates that his hearing will eventually be normal. He explains that we live in a very noisy world, and that most of the time we automatically exclude extraneous sounds. "I had no idea every car made so much noise, mine sounds like a model T. Many sounds are strange; for instance, when I left hospital, the wind sounded like a hurricane. At home, I sometimes find it very confusing when people are talking and the television is on. I usually put a small plug of wool in my ear, when I go outside." There is a hubbub of sound around us. Fortunately most of us are entirely unconscious of this aural environment. □

APPRECIATIONS

As were so many others, the members of Dalhousie Medical School's 'Class of '76' were deeply shocked to learn of the sudden accidental deaths on June 22, 1973 of two of our most prominent classmates – Gregory Stonehouse, 22 and Merrill Wood, 23.

Gregory R. Stonehouse

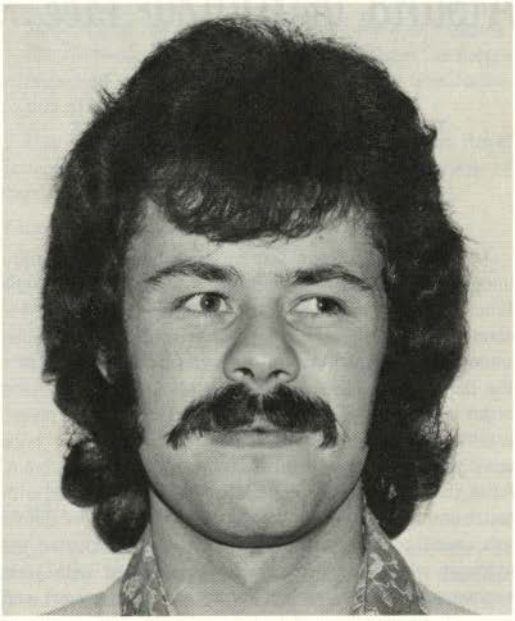


To those of us who were acquaintances of "Bucko" (or "Stony"), as Greg was affectionately known, his violent death brought close to each of us the realization that our colleagues are not simply professional acquaintances. They are often our nearest allies and our dearest friends and, unfortunately, more often than not we may tend not to show one another such feelings while they are with us.

Greg was born into a good home on October 10, 1950 at Digby, N.S. He graduated from Digby Regional High School as a top student, receiving the Staff Memorial Cup, Birk's Gold Medal and was president of the Student Council. He graduated from Acadia University with his B.Sc. and had just completed two years at Dalhousie Medical School.

At the time he died, Greg was very active; as the vice-president for internal affairs of the Dalhousie Medical Students' Society, Greg was keenly organizing the social activities for our coming year – a function he clearly enjoyed. This, as well as his Phi Rho Sigma brothership plus golf, tennis, and travel kept him full of life and vigor. The rest of us were influenced to such a high degree that, without Greg, our lives have lost that special feeling of fun which prevailed when he was around.

Merrill L. Wood



In his service for the medical school and the community, "Mert" was unfailing and without thought of self; thoughtful of others and always willing to give assistance whenever requested he was exceedingly well-liked. The blind children he worked with in Halifax enjoyed the companionship he gave to them.

Born in Ottawa on July 17, 1949, Mert received his elementary and high school education in St. Andrew's, N.B., where he excelled in school sports and was valedictorian of his graduating class. He received his B.Sc. from the University of New Brunswick and had completed two years towards his medical degree at Dalhousie University.

At the time of his death, Mert was president of our class, president of his Alpha Eta Chapter of Phi Rho Sigma, and vice-president for medical education of the Dalhousie Medical Students' Society. He truly enjoyed golf, travel, and many other activities as he believed in living life to its fullest while striving hard for his medical career. We, as his friends and classmates, were deeply touched by his spirit and appreciate what it has done for our own. Thank you, Mert, for being such a fine part of our lives. We'll always

Gregory R. Stonehouse

When the shock of his death has gone, the memories we shall cherish just from knowing him these past two years will put that feeling back into us and we thank him dearly for it.

Greg will be sorely missed and, for a time, we'll feel angry for the usurpation of a great potential career so suddenly from our midst. This feeling will pass and the part of Greg we liked will add substance to our own careers. To Greg's family and relatives, the sympathy of hundreds of his friends goes out. It was good to have known him. □

T.A.P.

Merrill L. Wood

cherish our memories of you and of what you've done. We wish that your brilliant career could only have been realized, since many would have benefited from your talents. To the family, relatives and many friends of Merrill Wood, we extend our sympathy and our appreciation of this young, dedicated man; we'll not see his like again. □

T.A.P.

THE HILL

Breathless, we flung us on the windy hill,
Laughed in the sun, and kissed the lovely grass.
You said, 'Through glory and ecstasy we pass;
Wind, sun, and earth remain, the birds sing still,
When we are old, are old. . . .' 'And when we die
All's over that is ours; and life burns on
Through other lovers, other lips,' said I,
'Heart of my heart, our heaven is now, is won!'

'We are Earth's best, that learnt her lesson here.
Life is our cry. We have kept the faith!' we said;
We shall go down with unreluctant tread
Rose-crowned into the darkness!' . . . Proud we were,
And laughed, that had such brave true things to say.
– And then you suddenly cried, and turned away.

Rupert Brooke

SEASIDE

Swiftly out from the friendly lilt of the band,
The crowd's good laughter, the loved eyes of men,
I am drawn nightward; I must turn again
Where, down beyond the low untrodden strand,
There curves and glimmers outward to the unknown
The old unquiet ocean. All the shade
Is rife with magic and movement. I stray alone
Here on the edge of silence, half afraid,

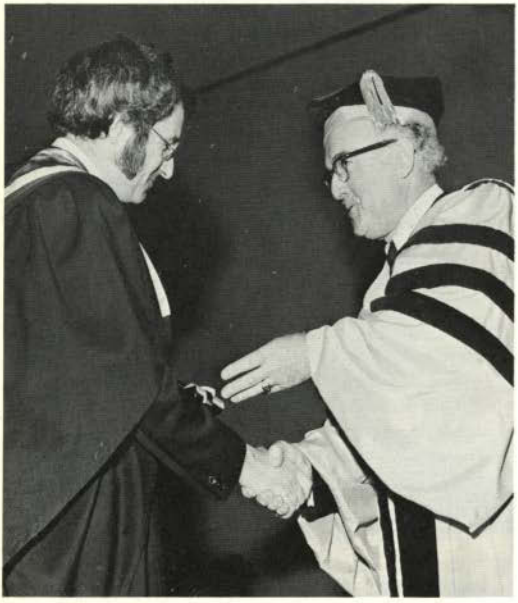
Waiting a sign. In the deep heart of me
The sullen waters swell towards the moon,
And all my tides set seaward.

From inland
Leaps a gay fragment of some mocking tune,
That tinkles and laughs and fades along the sand,
And dies between the seawall and the sea.

Rupert Brooke

Personal Interest Notes

Dalhousie University Medical School conferred medical degrees on 91 graduates during its spring convocation exercises on May 31, 1973.



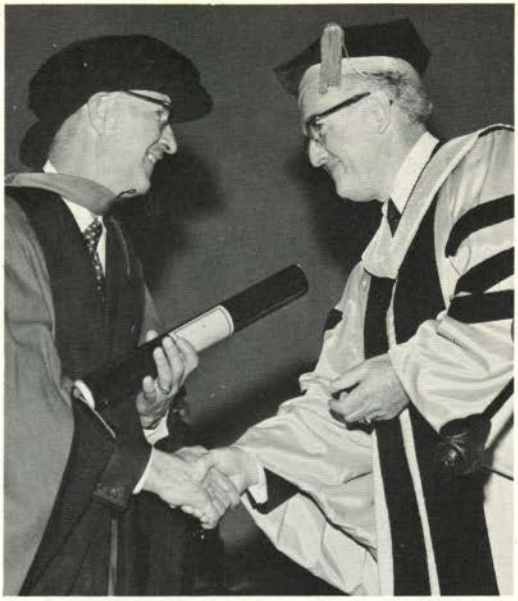
Dr. Jerome Sutherland Wilson being presented with the Dr. C. B. Stewart Gold Medal by Dr. C. B. Stewart.

Of the 91 graduates in Medicine 42 are from Nova Scotia, 19 from New Brunswick, 14 from Newfoundland, five from Prince Edward Island, one from Quebec, three from New York, five from the West Indies, one from Nigeria and one from Malaysia.

Of this group 72 are going into General Practice, eight into the Armed Forces and eleven into postgraduate training.

This year's recipient of the Dr. C. B. Stewart Gold Medal for highest class standing was **Dr. Jerome Sutherland Wilson** of Newcastle, N.B.

Pathologist **Dr. Malcolm Birt Dockerty** of the Mayo Foundation, a gold medal winner in medicine at Dalhousie in 1934, received an honorary Doctor of Laws degree at the ceremonies which took place in the Rebecca Cohn Auditorium.



Dr. Malcolm Birt Dockerty receiving his Honorary Degree.

Dr. Donald I. Rice, a former native of Bridgewater, N.S., presently Executive Director of the College of Family Physicians of Canada was honored recently by the Royal College of General Practitioners at a congress on family medicine held in London, England. His Highness the Duke of Edinburgh presided over the meeting.

Dr. W. Carlyle Phillips, Halifax, has won the Nova Scotian 1973 Upjohn postgraduate study award, which encourages family physicians to pursue medical study of their choice anywhere in Canada or the United States.

Obituaries

Gregory Russell Stonehouse, 22 of Digby died June 22, 1973 following a car accident. Born in Digby he was a son of Russell and Verna (MacLeod) Stonehouse. He graduated from Acadia University with his B.Sc., and had just completed two years at Dalhousie Medical School. Besides his parents he is survived by a brother, Grant. Sincere sympathy from the Society to his family.

St. Andrews medical student, **Merrill L. Wood** was killed June 22, 1973 in a highway collision. Born in Ottawa, he was a son of Mr. & Mrs. Donovan A. Wood of St. Andrews. He received his B.Sc., from the University of New Brunswick and had recently completed two years at Dalhousie Medical School. Besides his parents, he is survived by one brother, William and one sister, Sharon. Sincere sympathy is extended to his family. □

INTERNATIONAL MEDICAL STUDENT ORGANIZATION ON POPULATION: – Continued from page 168.

and how the medical curriculum should prepare the student for this role. An effort will also be made to provide some suggestion for curriculum alternatives that might be used in reaching the educational goal.

Phase III

Phase III will be the publication of the proceedings of the conference with distribution to all who are interested in receiving a copy plus all who we think should have a copy. Undoubtedly this distribution of the proceedings will be the key to the usefulness of the entire project. Unless the proceedings reach, and are considered by, the curriculum planners across the country, we will have worked in vain.

Conclusion

A further important task facing the delegates at the conference will be the selection of an IMSOP representative to be my replacement after the next International Conference. What will happen at, or after, the next IMSOP conference I cannot predict but I feel satisfied that Canada will be able to report to that meeting with pride in its accomplishments since the last meeting. □

The Medical Society of Nova Scotia

ANNUAL SUMMER MEETING
DIGBY PINES

September 6, 7, & 8, 1973

ADVERTISERS INDEX