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Your New Skipper



It is a pleasure to introduce to the readers of *The Nova Scotia Medical Bulletin* your new editor, Dr. B. J. S. Grogono who is a graduate of St. Mary's Hospital in London. He assisted his father and twin brother in rural practise in England and later served in post-war R.A.M.C. in Palestine and Cyrenia, getting to know Bedouin Arabs and Arabian Medicine. Like his predecessor, he did a major portion of his orthopaedic training at The Royal National Orthopaedic Hospital in London and at The Radcliffe Infirmary and Nuffield Orthopaedic Centre in Oxford but has the additional distinction of spending some time in Cambridge. He practised his specialty in Manitoba for ten years in clinic and private practise as well as working at The Shriners' Hospital and being involved in the rehabilitation challenges of spinal injuries. He also participated in projects such as the Science Fair and Wheelchair Sports and contributed to the Manitoba Medical Journal. He is Chief of Orthopaedics at The Halifax Infirmary. His spare time interests include iceboating, old cars, music and old books. He is enjoying a growing family.

Dr. Grogono who has contributed to *The Bulletin* at various times believes that our provincial publication "has played and will continue to play a great role in entertaining doctors and keeping us up to date." I trust that you will all give him the same generous support in the way of encouragement and contributions which I have had over the past four years, because, after all, it is your *Bulletin*. □

A.J.B.

Four Years Before the Mast

Editing is a rather lonely experience mainly because the ultimate responsibility for the finished product rests squarely on the editor's shoulders alone. This is particularly true in the field of association journals. After all, these magazines are published as a service to a select and discriminating readership. For the most part they convey information on expertise to those who can claim to be experts in the precise or related fields the publications cover. This alone places the editor in a uniquely responsible position. The editorial desk must become the laboratory in which scientific acumen (and accuracy) are blended with topicality and reader interest to produce an alloy of both intellectual and practical value.

For the past four years *The Bulletin* has been fortunate in having an editor of stature and dedication behind that desk. In Dr. A. J. Buhr, the *Bulletin's* editorial board, contributors, Society staff and our printers discovered an editor whose commitment to excellence and to the *Bulletin's* readers has set a standard which demands recognition.

Dr. Buhr will no doubt disclaim any credit for the advances made by your Society's Journal over the past several years. Those who worked closely with him during his stewardship of printed fact and opinion know that he was always fulsome in his praise of others while reticent in assessing his own editorial achievements.

Still, the fact remains that his initiative, leadership and drive made the *Bulletin* work. And Dr. Buhr brought something else to the editor's desk — a kind of intelligent curiosity which sought the opinions of others in fields beyond the clinical setting but which were and still are very much in the broad arena of medical interest and responsibility. All this coupled with an enduring sense of good humour and the type of productive sympathy which ignited a warm but never scorching fire under the tardiest of contributors resulted in a product we can all be proud of — your *Bulletin*.

If in this small tribute to your contribution to the Society we have in any way embarrassed you Al, we apologize. But we cannot apologize for facts; and even though, from time to time, they speak for themselves, it never really hurts to assist in their presentation. □

Editorial Enthusiasm

"He that has a house to putt's head in has a good headpiece."

— Shakespear (King Lear)

We are fortunate that the *Bulletin* survives in such a virile form. Thanks to a series of excellent Editors it has flourished while some other provincial journals have expired. Many a Nova Scotian Practitioner chooses the cheerful pages of our journal for a concise article. He or she likes the chuckle at the Willow tree or wander with the Doctor in his leisure.

Alvin Buhr, with painstaking precision, has created a reputation impossible to copy.

I am fortunate to acquire a nucleus of excellent talent with which to continue the story. I need your co-operation, enthusiasm and ideas. The changes occurring in medicine are stupendous; one person can only be familiar with a small segment of this revolution.

We must communicate some of these by various methods. Themes for individual journals will include: * Sports Medicine, Preventive Medicine, Oncology, Disabilities, Emergency Medicine, Cancer Detection, Computer Medicine, and others. What's going on in our teaching programs in Dalhousie University. A good lecturer must not leave with his song unpublished.

Whether you are a practitioner or specialist, university lecturer or a student, we need your contribution, to keep this a lively, entertaining and responsible *Bulletin*.

B.J.S.G.

Hon. Allen E. Sullivan

Talks to The Bulletin



"Candid" is perhaps the most popular adjective used in conjunction with Allan Sullivan's name — and, as Nova Scotia's new Minister of Health, a deserved reputation for frank and open dealings will probably stand him in good stead.

Contrary to some opinions, the Cabinet shift which saw Allan E. Sullivan, Q.C., move from the Attorney General's office to the Health portfolio is anything but a lessening of political and administrative responsibilities for the New Glasgow native and Cape Breton lawyer; particularly when his retention of ministerial responsibilities for the Civil Service Act is considered. Today Allan Sullivan is in direct decision-making charge of the largest single public service budget in the province; one replete with complex and contentious issues and, possibly, as subject to priority shifts as the emergency department of any hospital.

Last month the Bulletin talked with the new minister about some of his personal views on the province's health care system. He lived up to his reputation for sincerity.

Looking ahead, he said: "Even under the current policy of fiscal restraint we obviously can't downgrade current services and we certainly can't stop moving ahead in the area of improvements. I've got to admit, though, it's a bit of a conundrum."

Can the problem be solved — or even handled?

The minister leaned back in his chair. His desk — right then, at any rate — had the orderly, almost Spartan look which tends to belie the volume of work crossing it daily. "Look, while we have to save money, the interests, the comfort and the health of the individual patient must come first. I don't think we'll have to take the kind of drastic steps we've seen in Ontario, but we do have to increase efficiencies and do everything in our power to cut back on the duplication of services where they can be seen to exist."

"I happen to think the fields of preventive medicine and health education are pretty important when it comes to long-term savings; and I don't think health education is something you limit to just a few years of the average Nova Scotian's school experience. It has to be an on-going thing, something that continues through the entire education process. Let's face it, people who know how to take care of their own health are going to cost the system less money."

Won't a concerted program of continuing health education cost more money?

"That's part of the conundrum, isn't it? But in any aspect of health care — and I'm not limiting this to the field of public health education — you have to spend to make things more efficient — both in the delivery and economic sense — you're simply putting off the day when you can effectively de-escalate costs."

But isn't the government spending large sums now, particularly in the field of hospital and related facilities?

"Sure we are. We've got a pretty big program of capital investment underway in areas where the need was evident — Windsor, Lunenburg, Yarmouth, Musquodoboit Harbour, Middle Musquodoboit, Sheet Harbour Canso, Inverness, Dartmouth . . . Yes, we're spending money where the communities involved and government agreed there was a need which had to be met."

What about the federal government's new perspectives on health care? What about the possibility of cost-shared programs based on individual provincial assessments of need? Things like nursing care for the elderly and extended home care programs?

"Of course I'm in favor of this sort of thing. A good home care program is pretty damn important. The individual and the family are happier in the home environment and, given adequate care and suitable treatment, the patient's health is bound to respond in a positive atmosphere. It's a lot less costly, too. After all, what's the per diem cost of a bed in the Victoria General Hospital now . . . \$152? Something like that. The per patient cost in an efficient, effective home care program would be a lot less than that. A lot less.

"Still, we're going to have to see what kind of arrangements can be made and how this sort of thing can be covered in a way that will effect savings. I think, too, that people have to realize that Nova Scotia has quite a few health programs which are not cost shared with the federal government. Things like optometry, pharmacare, denticare and some aspects of preventive medicine. We've got to keep these programs in mind when we talk about cost-sharing in general or the initiation of new programs. Personally, I'd like to see more people in the preventive end of medicine. I think that's where we stand to gain the most in the long run.

What about para-medics? That is, qualified physician-assistants who can handle some of the jobs which might tend to tie a doctor down — in or out of the clinic? Nurses, for instance.

"Well, I think our project in Digby has shown that a lot of routine matters can be handled pretty effectively by nurses, whether they're in the clinic or on home care visits. There are some problems involved of course, but a nurse should be able to handle a lot of things on her own provided there's a doctor within reach or on call when the nurse really needs him. That doesn't mean the para-medical approach is the answer to health care delivery problems, but it's at least a useful approach."

As an organization of professionals, the Medical Society has been a strong proponent of stricter, more effective motor vehicle legislation — particularly in light of the cost of treating those highway crash victims who could be classified as "self-inflicted injury" cases, either through careless driving, the refusal to wear seatbelts, or through alcohol abuse. As the former Attorney General, do you have any hard evidence that the increased use of mobile breathalyzer units has cut down the incidence of alcohol-involved highway crashes?

"I don't have any facts and figures with me right now but I don't think there can be any doubt that the breathalyzer units have cut down on the number of drivers with any alcohol in their system. I don't think there's any question about it. In fact, I think Nova Scotians are becoming more aware of the need to avoid alcohol if they're going to drive. Take the case of Sydney — last New Year's, I think — where a bunch of youngsters organized drives home for party-goers who thought they might have had too much. One youngster would drive the car-owner home in his own car while another followed along in a car donated by one of the rent-a-car companies. I think the project was put together by one of the RCMP Staff Sergeants in the area. Those youngsters and the rent-a-car company deserve a lot of credit. So do the RCMP. But getting back to the breathalyzer units . . . I think there are obvious health care savings involved in their use."

Of course, alcohol isn't the only drug that's being abused. Some physicians feel that many drug offenders and those convicted in drug offense-related cases are getting off too easily. Again, as a former Attorney General, do you have any thoughts on this?

"Sentences . . . that's something you can't generalize about. Each case has to be treated individually, on its own merits. I'm more interested in treatment and rehabilitation where drug abuse is concerned. Alcohol is our greatest drug abuse problem, of course, but I understand that cocaine is on the upswing now and, of course, marijuana and hashish are pretty prevalent in the drug abuse field."

A lot of those who are . . . what? More "liberally" minded contend that using marijuana and hashish is nothing more than committing a "victimless" crime, although the police certainly take a different view.

"Yes. Well, the police feel that 'grass and hash' are just a part of the whole drug abuse scene and that their use is so closely related to the use of 'harder' stuff that the community, society as a whole, can't afford to differentiate. And I understand there's some evidence — some new evidence, I should say — that indicates that marijuana and hashish are

far from being as harmless as a lot of people would like to think. But I'd like to stress right now that, as Minister of Health, my emphasis is on treatment and rehabilitation."

Hopefully within the foreseeable future, the Legislature will be studying the proposed Children's Services Act. Although not explicitly mentioned in the Act, the question of the age of consent for medical care is a matter of some interest to physicians. Some feel it should be lowered to sixteen years, others that it should hold at the voting age. What's your opinion on this.

"Provincially, the law as it currently stands does not clearly prevent a minor from giving valid consent for a medical procedure in a doctor's office. We've considered this and several of my advisors have recommended that we don't try to change things, that we don't tamper with the law in case we make things worse, or more confusing than they already are. That's the way things stand right now, at any rate."

If we can get back to the administration of health care for a moment; some opinions have been expressed — by physicians and others — that the Health Services and Insurance Commission is, for one reason or another, not quite as it might be, that it may be working under constraints that don't really allow it to do its job.

"I don't know where that idea came from. That certainly hasn't been my experience. Sure, their function is advisory, but they've provided me with a lot of very valuable information; the kind of information I need to make reasonable, useful decisions.

"You know, there's a lot of expertise around, a lot of good professional opinion available. When I was in Social Services — it was Welfare then — I set up what I called 'think tanks' in various parts of the province. There were all sorts of people involved in these think tanks, and the idea was that they would sit down and discuss welfare problems with me and members of the department so we'd get a pretty clear picture of what the real regional problems were. I think they worked pretty well."

Do you plan to do the same thing in Health?

"Oh, yes, sure. There's an awful lot of knowledge in the health field that hasn't been tapped yet. What I hope to do is to get as broad a range of opinions as I possibly can. That's pretty important. You've got to know what's really going on before you can start making decisions that effect people's lives, particularly in Health."

Have you had a chance to meet with representatives of all the health professionals and associated organizations yet?

"No, I haven't. I hope to soon, though. Right now I've got a great deal of research work ahead just to familiarize myself with the basics of the portfolio. Of course I've had a lot of meetings with a lot of people. I always seem to be in meetings. With the Legislature sitting, with a new portfolio to handle and as House Leader I haven't got that much time at the moment. On top of that, I'm responsible for the civil service. But that doesn't mean I won't meet with organizations and associations in the health care field. I will . . . and soon." □

Electrical Hazards in the Operating Room

J. George Thomson,*M.B.,F.R.C.P.(C),

Halifax, N.S.

INTRODUCTION

The hazards inherent in the use of electrical apparatus in the operating room have been well known for a number of years. Apart from the obvious risks of explosions, burns, and electrocution, difficulties may also arise from interference obscuring the EKG trace on a monitoring oscilloscope, thus creating an indirect hazard to the patient.

Although the design of electrical equipment and systems is an important part of the specialty of biomedical engineering, it is virtually impossible to produce a system that could be guaranteed to be safe in all possible circumstances. It is not surprising, therefore, that a clinically accomplished but non-electrically minded anaesthetist, can sometimes feel at a disadvantage when confronted with such common situations as: a) having to ensure safety for his patient and himself in the presence of the diathermy; b) having to track down and eliminate the interference that is depriving him of a useful EKG tracing; and c) having to interpret the immediate significance of a warning given by the ground fault detector on the isolated circuit.

The following three electrical principles must be borne in mind:

1. Current flows when two points of different potential are joined by a conductor to form a circuit, the amount of current varying inversely with the resistance offered by the conductor.

2. Given a choice of pathways, more current will flow through the pathway of less resistance. (This is the basis for many accidental burns during the use of the diathermy.)

3. Varying or alternating current is capable of *inducing* a corresponding current on a nearby loop of conductor. (*Intentional* induction is the working principle of the transformer, which is the basis of the isolated circuit; *unintentional* induction is the basis of much of the interference encountered on the oscilloscope.)

THE DIATHERMY

The diathermy circuit begins with the machine itself, which produces a high frequency alternating current. This is conducted to the patient and applied to him by the active electrode. From here, it passes through the patient's tissues to the plate electrode, from which it is returned to the machine via the plate lead to complete the circuit. The same amount of current flows out through the plate electrode as flows in through the active electrode, but the diathermy effect occurs only at the active electrode because it is here that the current is most concentrated.

*Assistant Professor, Department of Anaesthesia, Dalhousie University, Halifax, N.S.

Hazards of diathermy include the following:

- a) **Explosion** of certain volatile anaesthetics (ether, cyclopropane) which are therefore contraindicated with diathermy is in use.

- b) **Ignition** of inflammable skin preparations. Aqueous solutions are of course safe in this respect.

- c) **Accidental Burns by the Active Electrode.** These can occur if the active electrode is left lying around on the patient, and the foot-switch is accidentally trodden on.

- d) **Accidental Burns at the Plate Electrode.** These can occur if the plate is not well applied over a reasonably large area of the skin. If skin contact is poor over part of the plate, then the current becomes concentrated where conductivity is good, and may then reach sufficient intensity to cause a burn.

- e) **Accidental Burns elsewhere.** If the intentional ground return through the plate electrode is inadequate, either because it has not been properly applied or because the plate itself or its connections are faulty, then the current will attempt to reach ground by any other available path. Such a path becomes available if the patient is in contact with a metallic part of the operating table, and particularly if contact is made through a metallic object such as a wedding ring. Although it is usual practice to tape a wedding ring, such tape does not always effectually insulate it, and even if it does, the high frequency diathermy current is still capable of passing across from the ring to the metallic table by *induction* without direct contact, if the gap is small enough.

The anaesthetist himself may afford an alternative path to ground, especially if he is wearing conductive overshoes; and should he feel a tingling sensation on touching the patient while the diathermy is in use, he may suspect that the diathermy plate is not functioning adequately.

Some machines are fitted with a plate lead test button. In this case, the lead is duplicated, and the small test current is passed along one lead and back through the other. If either is defective, the test current cannot pass. However, even if the test button indicates that the leads are intact, this is no guarantee that the plate is adequately grounding the patient.

Diathermy and the Electrocardioscope

The passage of the diathermy current to ground through the oscilloscope is normally prevented by "chokes" at the EKG lead inputs, which are resistant to the high frequency of the diathermy while permitting the passage of the low frequency cardiac impulses. Although these chokes are highly effective, it has been known for burns to occur beneath the site of the EKG ground electrode. It is safer to operate the oscilloscope from batteries while the diathermy is in use.

Diathermy and Pacemakers

Although diathermy has been used without incident in the presence of an implanted pacemaker, there is always the possibility of ectopic beats or even fibrillation being induced, and it is safer not to use the diathermy in these circumstances. If the diathermy is essential in a patient with a pacemaker, it is at least arguable that the electrocardioscope is better omitted, as apart from the fact that it gives no useful information while the diathermy is actually in use, and at other times merely shows a predictable pacemaker pattern, it also introduces additional hazards of its own.

INTERFERENCE ON THE ELECTROCARDIOSCOPE

This may conveniently be classified as-

- a) 60 Hz A.C. (ultimately from the mains supply)
- b) All other types.

60 Hz Interference

This may evidence itself from fuzziness of the baseline (if a fast sweep speed is used, the individual sine waves may be seen), to complete loss of the signal in a wildly oscillating trace. Most such interference is due to *induction*, from the proximity of other circuits carrying A.C. The following checklist is suggested for detecting and eliminating possible causes, with a brief rationale in each case.

1. Disconnection of an Electrode

The amplifier is so designed that it is capable of *discriminating* between the EKG signal (which is a *difference* in potential between the electrodes in use), and the induced A.C. interference, (which acts *equally* on all the electrodes).

This property of "in-phase rejection" is obviously lost if one of the electrodes is detached, because the induced interference is now no longer acting equally on all the electrodes.

2. Inadequate Electrode Contact

This can cause appearance of A.C. interference for similar reasons. Common causes of inadequate contact include partial mechanical displacement, drying out of the conductive paste, and the use of needle electrodes (which in addition may cause spurious changes in the EKG pattern). Inadvertent use of disposable needles with plastic hubs will of course make matters worse.

3. Looping of Electrode Leads

The leads from the machine to the patient should be kept as close together as possible until they finally diverge to the individual electrodes. If they are widely separated, they form loops in which A.C. may be more readily induced.

4. Proximity of Cables

If other electrical apparatus is in use, and the cable from the wall outlet to the apparatus passes near the patient, then A.C. interference may be produced even though the apparatus is switched off, as the cable is still carrying and

alternating voltage, being in fact an extension of the wall outlet.

Such interference can be eliminated by simply unplugging the apparatus from the wall.

5. Ground Loops with the Diathermy

If the diathermy is plugged into a different wall outlet from the EKG apparatus, then it is possible that the ground connections in each case may not be exactly the same true zero potential. In this case, a giant loop is formed from the patient through the EKG ground, through the wall to the diathermy ground, and thence back to the patient. Disconnecting the EKG ground may help to reduce interference in such a case, by breaking the loop. (So will disconnecting the diathermy ground, but this then exposes the patient to the other hazards mentioned above).

Other Interference (i.e. non-60 Hz) is usually more easy to trace and deal with. Examples include:

Muscle Movement (hopefully not to any extent in an anaesthetised patient)

Movement of Instruments on the patient, which may produce spurious QRS type complexes.

Diathermy which obscures the EKG pattern while in use.

ISOLATED CIRCUITS AND WARNING DEVICES

Current safety precautions in operating rooms frequently involve wiring with so-called "isolated" (i.e. ungrounded) circuits, with associated fault-detectors to ensure their integrity. The meaning of the term "isolated", and the significance of a warning given by a fault detector, are not always well understood.

Conventional Circuits

Basically, the high voltage supply current is "stepped down" to the voltage of the room circuits by a transformer, in which the high voltage in the primary coil *induces* a lower voltage in the secondary coil. The primary and secondary coils are insulated from each other, otherwise the high voltage would be directly *conducted* from the primary to the secondary coil. In addition, one side of the room circuit is *grounded* (Figure 1). The reason for this is that should the

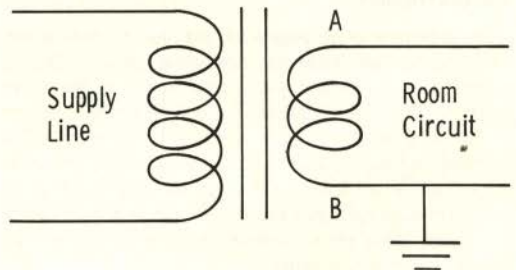


Figure 1

The Conventional (Grounded) Room Circuit.

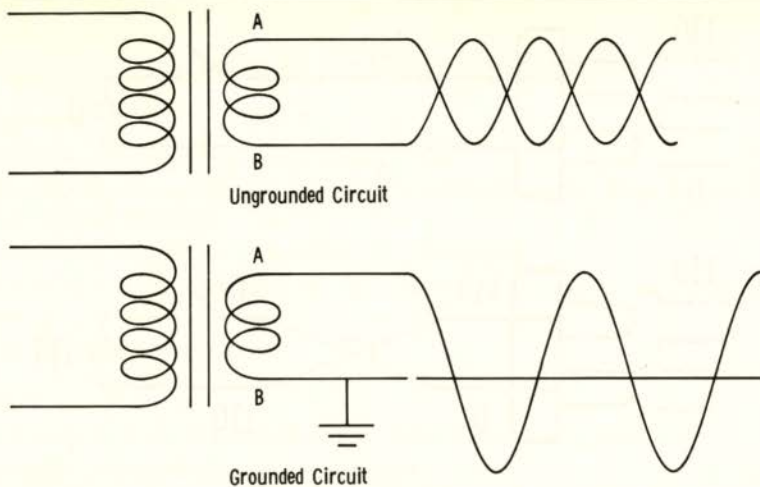


Figure 2

The Effect of Grounding on the Two Sides of the Room Circuit.

(The third pin class is ground referred to in the text is identical for grounded and ungrounded circuits, and is omitted here for the sake of clarity).

high voltage supply line be inadvertently subjected to an excessively high voltage for any reason (e.g. from the power lines being struck by lightning), the insulation in the transformer could break down under the strain, in which case high voltage would be conducted directly into the room circuits, causing fires, electrocutions, and other catastrophes. When the room circuits are grounded, this high voltage is safely leaked away to earth. At first sight, it might seem that this would prevent the circuits from operating in any circumstances, and that the electricity they are supposed to carry would simply leak away to earth through the ground connection. This in fact does not happen in normal operation, because the sole function of the transformer is to produce an alternating *difference* in potential between the two ends of the secondary coil, regardless of what the actual absolute potentials are.

Therefore, if one side of the circuit (B in Figure 1) is fixed at zero potential by the ground connection, this does not stop the transformer from functioning — it merely causes the other side to oscillate round the grounded side, while the potential difference between them is unchanged (Figure 2). (This of course does not happen if the transformer insulation has failed in circumstances indicated above, as in that case it ceases to act as a transformer at all, and simply becomes a conductor.)

Side A of the circuit, which carries the oscillating voltage, is the "hot wire", while side B, which is at zero potential, is "cold". In normal circumstances, people are (more or less) at ground potential, and can therefore touch the cold side of the circuit with impunity. If a grounded person touches and exposed hot wire, however, current at full line voltage will be conducted through him to ground, and he will be electrocuted. For this reason, fixed electrical installations (e.g. ceiling lights) have the switch on the hot side of the circuit, so that the light socket is at zero potential when the light is

switched off. In the case of portable lamps, which side is the hot side depends on which way round the plug is in the wall outlet. If the plug is reversed, the bulb socket will be at full line voltage even though the lamp is switched off and no current is flowing (Figure 3).

Similar considerations apply to portable radios and other two-pin appliances, in which worn insulation in the internal wiring may allow the whole casing to reach line potential if the plug is the wrong way round. The only reason that electrocution is relatively uncommon with such equipment is that, apart from the control knobs being relatively unconductive, the individual using the appliance is usually insulated to some extent, most notably by his dry skin — the dangers of using electrical equipment in wet surroundings are well known. Such two-pin appliances are usually banned from Intensive Care Units and other high risk environments.

An improvement in safety is obtained by connecting the casing to a third wire to form a separate ground lead (as opposed to the cold wire of the power circuit), using a three-point plug. However, this is still not regarded as adequate for operating room suites — hence the introduction of the isolated circuit.

The Isolated Circuit

To construct such a circuit, an additional transformer is inserted between the normal grounded room circuits and the circuit to be isolated, and both sides of the latter are left ungrounded (Figure 4).

It might seem that this would merely introduce two hot wires where formerly there was only one, thus doubling the hazard. Happily, this is not the case — an individual may now come into contact with *either* wire (separately) with impunity, and all that happens is that that wire now goes to ground potential while the other wire carries the alternating voltage. In other words, the circuit has now become grounded, with

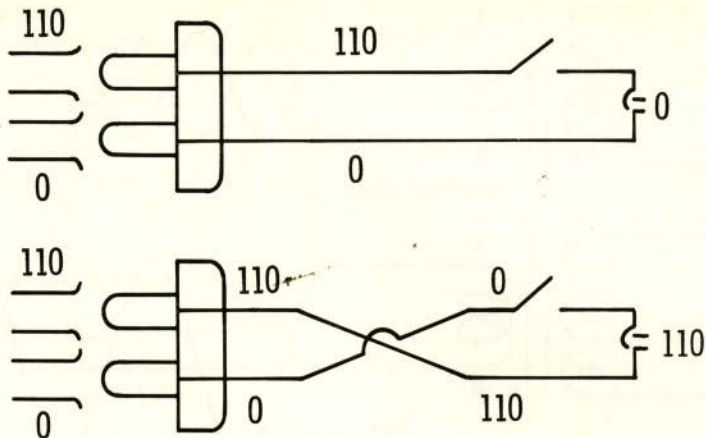


Figure 3

The Effect of Reversing the Plug in Portable Electrical Apparatus.

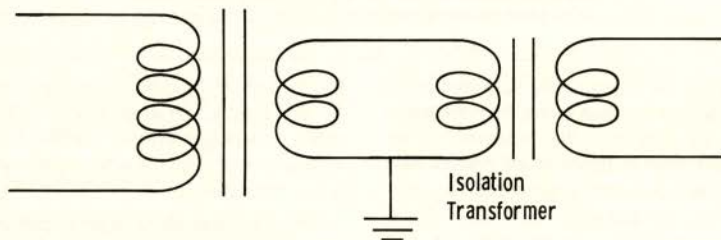


Figure 4

The Effect of the Isolation Transformer on the Two Sides of the Room Circuit.

the individual in contact with the wire taking the place of the usual ground connection.

It is sometimes a little difficult to understand how this can happen without the person being electrocuted, until it is remembered that for electrocution to occur, current must pass through him, and there is no reason for the transformer to pass such a current. Its only function is to produce a *difference* in potential between the two sides, which it can still do even when one side is fixed at zero potential.

It is true that electrocution can still occur if both sides of the circuit are contacted simultaneously, although in normal circumstances to accomplish this would require an almost demented persistence (e.g. breaking into the back of a plugged-in apparatus).

However, should the insulation on one side of the circuit fail, the situation now becomes the same as in a normal grounded circuit. Although not immediately hazardous, a further failure on the other side of the circuit could now produce an extremely dangerous situation. To give warning of this is the function of the fault-detector.

The Fault Detector

As indicated above, a person may contact either side of an isolated circuit alternately without being electrocuted,

whereas in the case of a grounded circuit, electrocution will occur as soon as the hot line is contacted.

The fault detector carries out this test humanely by sampling each side of the circuit in rapid alternation. If the circuit is truly isolated, no current will flow through the detector to ground at any time, whereas if one side of the circuit has become grounded (usually by plugging in a defective apparatus), current will now pass through the detector as soon as it tests the *other* side of the circuit, and hence the alarm signal will be given.

SUMMARY

The use of a multiplicity of electrical apparatus in the operating room entails the risk of producing a number of annoying or dangerous side-effects, ranging from interference with the EKG signal to the possibility of burns, explosions, and electrocution.

A brief review is given of the more common of these hazards, with special reference to the dangers associated with the use of diathermy; the identification and elimination of sources of interference with the EKG signal; and the implications of a warning signal given by the ground fault detector on the isolated circuit. □

References on page 47.

RULES FOR THE OPERATING ROOM

Using Diathermy

- 1) Ensure adequate contact between ground plate and patient.
- 2) Check ground plate again if unusually high setting of diathermy is required to produce effect (especially if "blend" current is being used).
- 3) Ensure patient is not touching any metal part of the operating table.
- 4) Watch out for positions of electrode and foot switches when not actually in use to prevent accidental burns.
- 5) Caution in patients with pacemakers.

Using E.K.G.

- 6) Ensure adequate contact between patient and electrodes (preferably avoid needles).
- 7) Keep leads to electrodes close together.
- 8) Unplug other electrical apparatus from wall outlet, when not in use.
- 9) Run E.K.G. from batteries if diathermy is in use.

GUIDELINES FOR AUTHORS

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

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

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

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

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

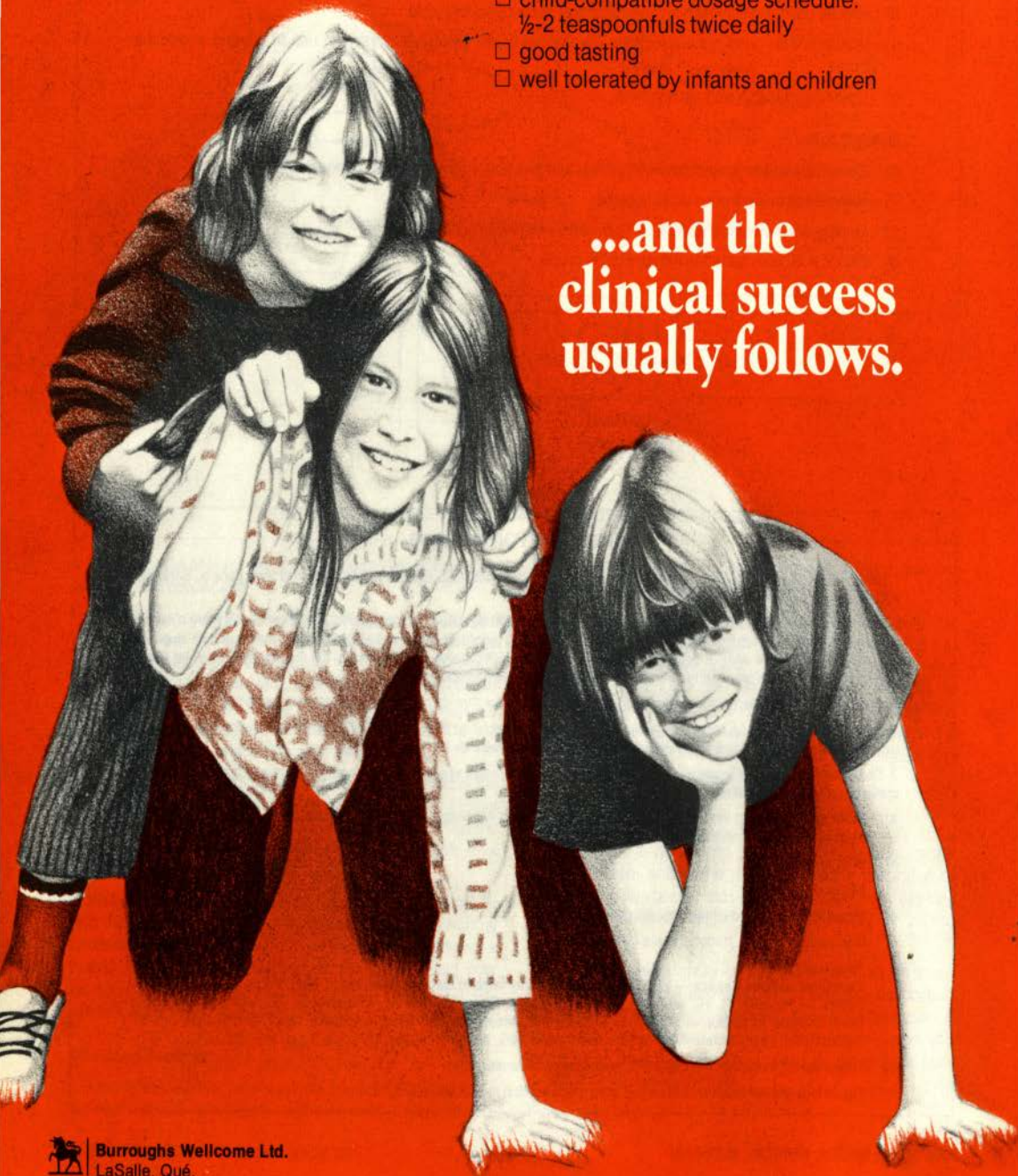
- a) Front page, showing title, author(s) and degrees, whether the author is in family practice or the institution where the work was done, and address for correspondence.
- b) Brief summary.
- c) Introduction.
- d) Materials and methods, then Results; or Case report.
- e) Discussion.
- f) References.
Examples: **Journal papers** — EBBERT, A., Jr. Two-way radio in medical education. *J. Med. Educ.* 38: 319-28, 1963.
Books — MAJOR, R. H., and OELP, M. H. *Physical Diagnosis*, 6th ed. Philadelphia, Saunders, 1962, p. 51.
Contributions in books — Voheer, H. Disorders of uterine function during pregnancy, labor, and puerperium. In: *Pathophysiology of Gestation*, ed. by N.S. Assali. New York, Academic Press, 1972, vol. 1, pp. 145-268.
- g) Tables (each, including heading and footnotes, on a separate page).
- h) Figure legends (all listed on one page); state magnification of photomicrographs.

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SEPTRA^{*}

Clinical update in pediatric infections

In a recent multiclinic study conducted in Montreal, Lethbridge, and Moncton, Septra proved equal to ampicillin in clinical efficacy, and caused notably few undesirable side effects.¹

Therapeutic outcome after one week of therapy in 79 children with acute otitis media¹

	Septra (74 ears)	Ampicillin (77 ears)
Maximum improvement†	59%	57%
Minimum improvement‡	36%	34%
No change	4%	9%

†complete clearing of localized signs; no subjective complaints
‡partial improvement of drum inflammation; no systemic signs, but usually some residual hearing loss

SEPTRA ^R₂ Summary
(Trimethoprim + Sulfamethoxazole)

INDICATIONS AND CLINICAL USES: Indicated for the following infections when caused by susceptible organisms.

URINARY TRACT INFECTIONS — acute, recurrent and chronic.

GENITAL TRACT INFECTIONS — uncomplicated gonococcal urethritis.

UPPER AND LOWER RESPIRATORY TRACT INFECTIONS — particularly chronic bronchitis and acute and chronic otitis media.

GASTROINTESTINAL TRACT INFECTIONS.

SKIN AND SOFT TISSUE INFECTIONS.

SEPTRA is not indicated in infections caused by *Pseudomonas*, *Mycoplasma* or viruses. This drug has not yet been fully evaluated in streptococcal infections.

CONTRAINDICATIONS: Patients with evidence of marked liver parenchymal damage, blood dyscrasias, known hypersensitivity to trimethoprim or sulfonamides, marked renal impairment where repeated serum assays cannot be carried out; premature or newborn babies during the first few weeks of life. For the time being SEPTRA is contraindicated during pregnancy. If pregnancy cannot be excluded, the possible risks should be balanced against the expected therapeutic effect.

PRECAUTIONS: As with other sulfonamide preparations, critical appraisal of benefit versus risk should be made in patients with liver damage, renal damage, urinary obstruction, blood dyscrasias, allergies or bronchial asthma. The possibility of a superinfection with a non-sensitive organism should be borne in mind.

DOSAGE AND ADMINISTRATION: Adults and children over 12 years
Standard dosage: Two tablets twice daily (morning and evening).
Minimum dosage and dosage for long-term treatment: One tablet twice daily.

Maximum dosage:

Overwhelming infections: Three tablets twice daily.

Uncomplicated gonorrhea: Two tablets four times daily for two days.

Children 12 years and under†

Young children should receive a dose according to biological age:

Children under 2 years: 2.5 ml pediatric suspension twice daily.

Children 2 to 5 years: One to two pediatric tablets or 2.5 to 5 ml pediatric suspension twice daily.

Children 6 to 12 years: Two to four pediatric tablets or 5 to 10 ml pediatric suspension or one adult tablet twice daily.

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

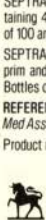
DOSAGE FORMS: SEPTRA TABLETS, each containing 80 mg trimethoprim and 400 mg sulfamethoxazole, and coded WELLCOME Y2B. Bottles of 100 and 500, and unit dose packs of 100.

SEPTRA PEDIATRIC SUSPENSION, each teaspoonful (5 ml) containing 40 mg trimethoprim and 200 mg sulfamethoxazole. Bottles of 100 and 400 ml.

SEPTRA PEDIATRIC TABLETS, each containing 20 mg trimethoprim and 100 mg sulfamethoxazole, and coded WELLCOME H4B. Bottles of 100.

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

Product monograph available on request.

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VISITING PROFESSORSHIP IN PHEUMONOLOGY — DALHOUSIE UNIVERSITY

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This is a Lectureship to extend over a three to five month period on a yearly basis, to upgrade and promote the understanding and management of chest conditions in Nova Scotia, through the Faculty of Medicine at Dalhousie University. We would solicit suggestions from interested members of The Medical Society of Nova Scotia regarding names of authorities in Pneumology they feel should be approached to fill such a position.

All suggestions to be referred to:

Dr. B. C. Trask,
P.O. Box 1026,
Sydney, N.S.

Dr. Lawrence K. Harris will be giving up the practice of Cardiology and moving from Nova Scotia as of June 15, 1976.

Patient records A through N will be turned over to Dr. Ronald Gregor, 215 VG Pavilion, and patient records O through Z will be turned over to Dr. John Stewart, 5991 Spring Garden Road, Halifax, N.S.

CLINICO-PATHOLOGICAL CONFERENCE ON

DRUG THERAPY FOR RHEUMATOID ARTHRITIS

Doctor E. C. Huskisson, B.Sc., M.S., M.R.C.P., Senior Lecturer, Saint Bartholomew's Hospital, London, England will be attending Medical Grand Rounds at the Victoria General Hospital, Halifax, Room V4287 at 8:30 a.m., April 22, 1976 (Thursday).

All Practitioners are Invited.

Dr. Huskisson has participated in extensive trials of Drug Treatments for Rheumatoid Arthritis.

Surgery for Myocardial Infarction*

D. A. Murphy,**M.D., C.E. Kinley,***M.D., and J. Z. Scott,† M.D.,

Halifax, N.S.

Myocardial infarction is the commonest cause of death in North America. It is estimated that between 800,000 and 1,000,000 people on this continent will die annually from this disease. One in three persons will have a myocardial infarction sometime in their lifetime.

Ten years ago, the in-hospital mortality from myocardial infarction was 30 to 35% (1). It has now been reduced to 10 to 15% (2). This has largely been due to the development of acute coronary care units and the management of the attendant arrhythmias. Among the advances that have also helped to reduce this mortality is the integral role surgery has assumed in the preventive, immediate and late care of patients with myocardial infarction. The purpose of this communication is to review just how surgery has become a member of the treatment team for ischemic heart disease.

PREVENTIVE SURGERY

The treatment of ischemic heart disease is aimed at preventing the death of myocardial tissue. The harbinger of such an event is frequently angina. The control of this symptom is usually well managed with pharmacological agents, but despite this form of therapy, the five-year survival rate for angina patients remains in the range of 65 to 80%; that is, an annual death rate of 4 to 7%^{3,4}.

For 50 years surgeons have applied techniques which have attempted to improve on the natural history of angina. First it was the cervical sympathectomy, then the Beck era (1935-1945) with the rasp turning the pericardium to a bleeding pulp, and in 1946 the Vineberg era with the freely-bleeding internal mammary artery pulled through a myocardial tunnel. In the 1950's and 1960's it was the direct surgical approach on the arteriosclerotic coronary arteries with its prohibitive mortality of 28 to 58% (5).

The current excitement now is for aorta-coronary vein bypass which was introduced in 1967 at the Cleveland Clinic. Dr. Rene Favaloro described an operation which consisted of the removal of a segment of saphenous vein, reversing its orientation, sewing one end to the side of the ascending aorta with the other to the blocked distal coronary artery (Figure 1). This operation is now the commonest open-heart procedure performed. In 1971 over 20,000 aorta-coronary grafts were performed and this figure has probably doubled at the present time.

*From Division Cardiovascular Surgery, Victoria General Hospital and the Department of Surgery, Dalhousie University, Halifax, N.S. Presented at Surgical Grand Rounds, November 13, 1974, Victoria General Hospital, Halifax, N.S.

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*** Associate Professor, Department of Surgery, Victoria General Hospital, Halifax, N.S.

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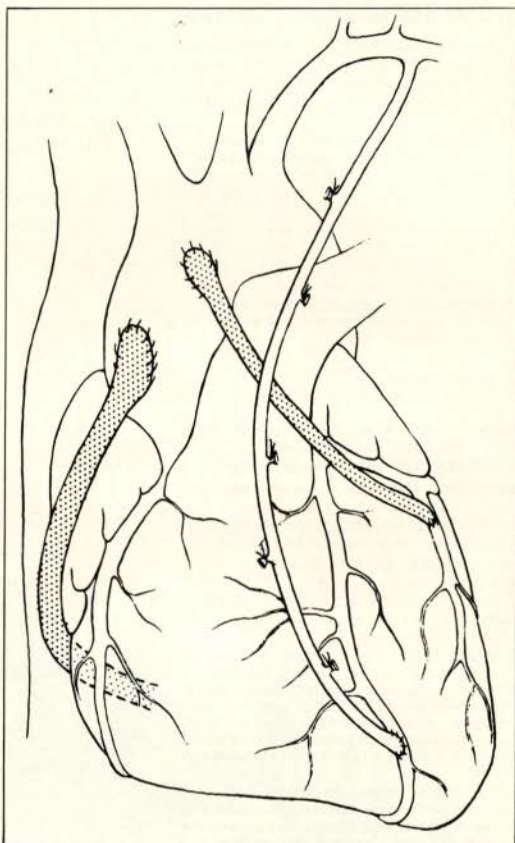


Figure 1

Diagram demonstrating two-vein by-pass grafts to the right coronary artery and the left obtuse marginal branch of the circumflex. A direct internal mammary artery anastomosis to the anterior descending coronary artery is also seen.

The indications for aorta-coronary bypass are now becoming more defined. It is assumed that most angina will have had a suitable trial of nitroglycerine, propranolol, weight reduction and smoking abstinence and can then be classified as stable or unstable angina. Although aorta-coronary bypass is advised for certain types of stable angina, it is the unstable, acute coronary insufficiency or preinfarction syndrome, with discrete obstructions of the coronary vessels, as demonstrated by coronary angiography, that are the most urgent candidates for aorta-coronary bypass surgery. In this group, the angina is curable in 85% of the cases, and there is some evidence that long-term protection against subsequent infarction is obtained. Although the operative mortality is low, varying from 2 to 8 %, there remains a 15% incidence of immediate post-operative EKG or enzyme evidence of

myocardial infarction. The significance of these observations is controversial since the mortality from these clinical observations is extremely low.

IMMEDIATE SURGERY

The role for immediate surgery following myocardial infarction is still unclear. There is certainly good experimental evidence in animals, that if an area of early infarction is either revascularized or if the myocardial oxygen demands are reduced, that the size of the ischemic zone surrounding the actual infarct can be reduced⁶. The implications of this observation are that perhaps the morbidity from the long-term effects of myocardial infarction, such as cardiac failure and aneurysm formation, will be reduced, if immediate aorta-coronary bypass could be performed on the blocked vessels^{7, 8}. At present, though, it is usually extremely difficult to perform revascularization surgery within the three-hour limit unless the infarct occurs in hospital or during an angiographic procedure, in which case the operating room is often on standby alert to proceed with such surgery.

The early excision of myocardial infarcts remains experimental and is fraught with difficulties in discerning at the operating table as to what is viable and what is not viable tissue. Surface EKG mapping has been used, but the amount of tissue to excise is often difficult to estimate.

Cardiogenic shock occurs in approximately 10% of patients suffering from acute myocardial infarction⁹. The treatment here is directed at increasing the effectiveness of the cardiac pump while at the same time attempting to reduce the myocardial energy requirements by decreasing its work load. The former is done, obviously, with volume replacement, inotropic and chronotropic agents such as norepinephrine, inotropic and chronotropic agents such as norepinephrine, isoprotorenal or dopamine. Similarly, attempts are made to reduce the afterload of the heart by decreasing peripheral resistance against which the heart must pump. This can be done to some extent with agents such as nitroprusside.

Another way of achieving the above effects is with the use of the intraaortic counterpulsating balloon. This device, pioneered by the work of Adrian Kantrowitz, a cardiovascular surgeon, is illustrated in Figures 2 and 3. The balloon, measuring about six inches in length is threaded up through a Dacron graft sewn to the side of the femoral artery and into the thoracic aortic lumen. It is timed to inflate with Helium just at the beginning of diastole and deflate just prior to systole. The effects are obvious. Essentially, the diastolic filling pressures of the precarious coronary artery situation are enhanced by the balloon inflation and the resistance against which the next heartbeat must push is reduced, since the balloon has dissipated the intraaortic volume into its multiple side branches. This useful instrument also has application in the preinfarction angina group not responding to medication; but even more frequently is used in that group of patients who, after successful completion of intra-cardiac surgery, do not come off the heart/lung machine well and require temporary assistance. This balloon can be left in place for 10-12 days functioning as a circulatory-assist device.

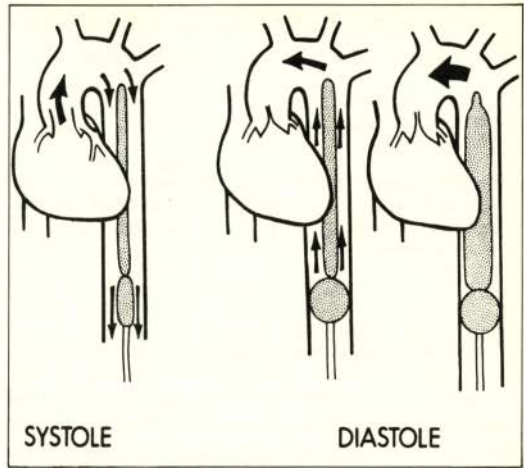


Figure 2

This demonstrates the action of the intra-aortic balloon during systole (when it is deflated) and during diastole (when the balloon rapidly inflates).



Figure 3

This picture demonstrates the intra-aortic balloon console in use at the bedside of a patient in the Cardiovascular Intensive Care Unit of the Victoria General Hospital.

LATE SURGERY

The late complications of myocardial infarction are listed in Table I.

Table 1

Complication	Incidence
Permanent heart block	— 9%
Ventricular aneurysm	— 3 - 12%
Ventricular septal defect	— Less than 1%
Ventricular rupture	— Less than 1%
Mitral insufficiency	— Less than 1%
Pulmonary embolus	— Less than 1%
Arterial embolus (Mural thrombus)	— Less than 1%

Ventricular aneurysms develop in 3 to 12%² of patients with acute myocardial infarction. Though not a fatal complication, the mortality with an aneurysm is two to three times that of a patient with a myocardial infarction without an aneurysm. The complications of aneurysms result from the attendant arrhythmias, congestive heart failure and emboli from the mural thrombi that often lie in the aneurysm. The surgical treatment consists of localized resection of the fibrous sac and removal of the mural thrombus (Figure 4). The operative mortality has been reduced to approximately 5%¹⁰.

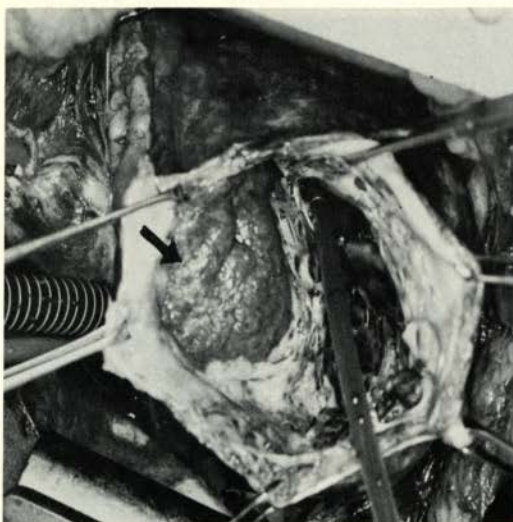


Figure 4

The thin-walled left ventricular aneurysm has been opened (clamps). A large mural thrombus is seen (arrow) adherent to the ventricular septum. This patient recovered uneventfully from his left ventricular aneurysmectomy and clot removal.

Severe mitral insufficiency is a serious complication of acute myocardial infarction and may be due to dilation of the mitral ring secondary to acute left ventricular enlargement, papillary muscle rupture or dysfunction. Rupture of the papillary muscle, commonly the posterior one, results in severe regurgitation and is usually fatal unless repaired. The surgical results are much improved if surgery can be delayed

for up to three weeks following infarct, though severe cardiac decompensation often precludes such a delay. Treatment consists of mitral valve replacement, which can be performed via the left atrium or, on occasion, if the patient has a concomitant aneurysm, the valve can be replaced through the aneurysmectomy resection site (Figure 5). The operative mortality for this condition is approximately 25%.

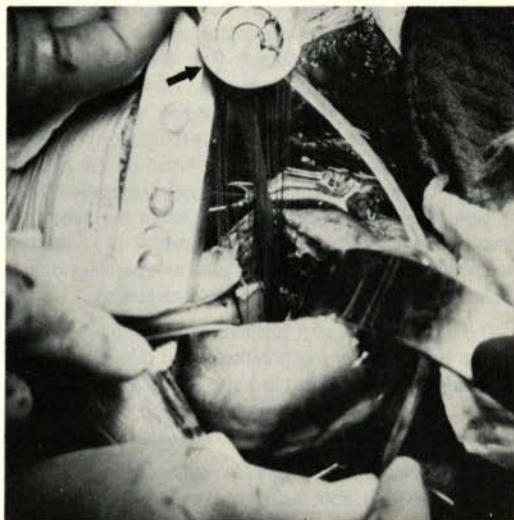


Figure 5

The left ventricle has been opened through the aneurysm and the new mitral valve (arrow) is about to be lowered into place. This 45-year old lady recovered uneventfully.

Rupture of the interventricular septum secondary to myocardial infarction occurs in approximately 1.3% of patients dying of this disease. In 50% of cases it is associated with a left ventricular aneurysm. It carries a high mortality, 80% of patients dying within three weeks of onset. Surgery consists of the insertion of a sandwich Dacron patch on either side of the necrotic defect. If done after three months of infarct, it carries a low mortality. If it is done because the patient's condition is critical due to severe failure, it generally carries a mortality of approximately 50%.

PERMANENT PACEMAKER INSERTION

Patients who develop complete heart block following myocardial infarction are usually paced by temporary percutaneous transvenous pacemakers. If the heart block remains permanent and complete, a permanent form of pacemaking is required. This is usually done under light analgesia and local anesthesia with the pacemaker being placed in a subcutaneous pocket in the infraclavicular area and the electrode being threaded into the cephalic vein at the clavipectoral muscular junction. This procedure is usually well tolerated by the patients and complications are few.

As can be seen from the review, surgery seems to have a place in the management of the biochemical disease. It is

obvious that our interests really should be directed at preventing the causes and the consequences of atherosclerosis, though at present epidemiological observations seem to be our only tool in this direction. □

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ELECTRICAL HAZARDS IN THE OPERATING ROOM

Continued from page 40.

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TREATMENT OF TRIGEMINAL NEURALGIA: THE ROLE OF PERCUTANEOUS ELECTROCOAGULATION OF THE GASSERIAN GANGLION

Continued from page 49.

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Physician Self-Assessment

Lea C. Steeves, M.D.,

Halifax, N.S.

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.

19. The immunoglobulin of man known as IgA is
- (a) predominant in the normal secretions of the respiratory and gastrointestinal tract
 - (b) present in the normal secretions of the respiratory and gastrointestinal tract in lesser concentrations than IgG
 - (c) increased in the secretions of individuals with normal secretions of ataxia telangiectasia
 - (d) increased in the serum of patients felt to have intestinal allergy
 - (e) often increased in the serum of patients with ataxia telangiectasia □

(Please turn to page 61 for answers)

Treatment of Trigeminal Neuralgia: The Role of Percutaneous Electrocoagulation of the Gasserian Ganglion

R. O. Holness,* BSc, M.B.B.S. and W. J. Howes,** M.D., F.R.C.S.(C).,

Halifax, N.S.

BACKGROUND TO THE PROBLEM

The introduction of the drug Carbamezapine (Tegretol) in 1962 led to a considerable fall in the frequency of surgical intervention in this disorder. Other drugs (Dilantin in particular) have also been useful. However, in 30 to 50% of cases, a surgical approach becomes indicated for reason of resistance to the drug, side effects or allergy. Prior to five years ago, it had been customary first to try alcohol blocks or avulsion of peripheral branches of the trigeminal nerve, and relief is often obtained for nine to 12 months. The next step in further recurrences of tic pain has been root section via a middle fossa approach to the gasserian ganglion. Pain recurs in 15% of operated cases. A posterior fossa craniotomy is usually reserved for cases where pathology in the cerebellopontine angle is suspected. Both these procedures have the disadvantage of greater operative risk and the requirement for general anesthesia. This latter factor leads to another drawback i.e. with the patient asleep there is greater likelihood of complications due to uncontrolled destruction of sensory pathways (e.g. corneal ulceration due to damage of the first division).

A percutaneous approach to the gasserian ganglion, for introduction of alcohol or electrocoagulation, has been popular in Europe for many years. Acceptance of these latter methods in North America has been delayed because of high reported morbidity rates. However, since the introduction of percutaneous cordotomy, by Mullan in 1963, technical refinements in radio frequency generators, insulated electrodes and temperature monitoring devices have been made. This ushered in large scale application of the method to trigeminal neuralgia. There have been several large series now published from Europe, the U.S.A. and Canada which document its effectiveness and safety. We use essentially the method described by Sweet and Wepsic.

TECHNIQUE

The essence of this method is its simplicity. Complicated stereotactic apparatus is not required. The procedure is done in the X-Ray Department, with an anesthetist in attendance. Light pre-operative sedation only is given for full patient cooperation is a pre-requisite. The skin one inch lateral to the angle of the mouth is anesthetized and penetrated with a #18 spinal needle which is aimed just medial to the pupil.

Guided by a gloved finger in the patient's mouth and with the help of AP and Lateral skull films, the needle is passed eventually through the foramen ovale (a few drops of C.S.F. result). A Teflon insulated electrode (with 3mm's bare at the tip) is passed through the lumen of the needle and stimulation performed. This identifies placement in the appropriate division of the gasserian ganglion. The anesthetist then gives 50-75 mgs. of Brevital (a short acting barbiturate, Methahexital) and a lesion is made with the needle tip at 60°C for one minute. During this time, the patient is carefully observed and the generator can be immediately disengaged if indicated. After three to five minutes, the patient is alert and careful sensory and motor testing is done. If necessary, a second or third lesion can be made. The ideal end point is the relief of pain with diminution of pin prick but not touch sensation in the involved division of the fifth nerve. Post-operatively, the patient is observed for 24 hrs. prior to discharge.

The table opposite summarizes our experience with the technique over the past nine months in seven patients with trigeminal neuralgia. All patients had become resistant to Tegretol and most experienced side effects (particular dizziness and drowsiness) of the drug.

Comments A few points are worthy of note:—

- (1) Technical problems in two patients (*) led to failure on the first try but both patients had excellent results on second attempts.
- (2) Complications were negligible. One patient had persistent post-operative headache for two days while another developed mild masseter weakness. No patients developed corneal anesthesia.
- (3) In one patient (†), the ideal end result eluded us but his pain relief has been good.
- (4) The average age of our patients was 60 years. The last column in the Table illustrates the high incidence of co-existing disease in this age group with resultant high risks for major surgery.
- (d) There have been no relapses to date.
- (6) The patient whose trigeminal neuralgia was secondary to multiple sclerosis had an interesting result. For two weeks post-operatively, he experienced severe pain which suddenly ceased and he has remained pain free, off medication since that time. This is probably related to the fact that the genesis of the pain in such patients is central (i.e. pontine) in origin.

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**Attending Staff Neurosurgeon, Victoria General Hospital, Halifax, N.S.

Age & Sex	Division of Nerve Involvement	Length of History, Previous Surgery	Result With E/C	P.H.
*54 F	R IIIrd.	5 yrs. No Previous surgery	Excellent	H/O Pul. Embolus
†68 M	R IIrd.	2 yrs. Alcohol infection 1 yr. before	Good	None
63 F	R IIrd.	12 yrs. Nerve avulsions 1968 1972	Excellent	None
55 M	R IIrd.	10 yrs. Nerve avulsions 1968 1974	Excellent	Coronary and V.B. Insufficiency
59 F	R IIrd.	2 yrs. Alcohol block 1974	Excellent	Diabetic, IHD, CHF
*57 M	R IIrd. (Previously in R IIIrd. also.)	In 1963 — Middle fossa approach — Relapse 2 yrs. ago	Excellent	None
65 M	L IIIrd.	Several years previous alcohol block	Good (Had increased pain immed. post-op.)	Multiple Sclerosis

DISCUSSION AND CONCLUSIONS

Accumulated experience with the method is several centres yield a more than 90% initial success rate. Recurrences are reported in about 20% of cases but the great majority have long-term relief after a second procedure. Complications are uncommon; these include inadvertent carotid artery puncture and transient paresis of masticator muscles. More rarely corneal ulceration and dysesthesias are encountered. Our initial experiences with the technique have been most favourable in this regard.

It now appears that peripheral branch injection or avulsion and craniotomy have to take a back seat in the surgical management of tic douloureux with reservation for special instances. In addition, prolonged medical trials in partially resistant cases are being abandoned in favour of electrocoagulation. Patients who are still young and vigorous as well as high risk surgical candidates benefit particularly from this procedure. □

AUTHOR'S NOTE

Since submission of this article a further ten procedures have been carried out with equally good results.

Pain has recurred in one patient (the one with multiple sclerosis) and has responded satisfactory to a repeat of the procedure.

Acknowledgements

We would like to express our gratitude to Dr. W. S. Huestis and Dr. R. A. Langille whose patients are also included in this survey.

References on page 47.

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Metabolic Acidosis Differential Diagnosis, Clinical Manifestations and Treatment.

Jose C. Missri,*M.D.,
Halifax, N.S.

ABSTRACT

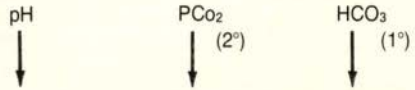
The clinician often manages patients with metabolic acidosis. A systematic approach to the interpretation of this disturbance with the routine calculation of the anion gap, will aid the physician in arriving at a correct diagnosis and instituting appropriate therapy.

The understanding of acid-base homeostasis remains a perplexing problem for the busy clinician. An accurate diagnosis of the acid-base disturbance is essential to appropriately care for the patient with these disturbances. This review will concern itself with one aspect of acid-base abnormalities: metabolic acidosis. The discussion will focus on a systematic approach to the interpretation and differential diagnosis of metabolic acidosis, its clinical manifestations and principles of treatment. Emphasis will be placed on the significance of the anion gap and its application in clinical practice.

addition, renal compensatory mechanisms may develop, and bicarbonate may be retained.

As a result of these compensatory changes, namely, the pulmonary elimination of CO₂ and the renal retention of bicarbonate, the $\frac{\text{HCO}_3}{\text{H}_2\text{CO}_3}$ ratio and the pH rise toward normal.

These changes can be expressed in the following way:



DEFINITION AND PARAMETERS

Metabolic acidosis may result from an excess of inorganic or organic acids which are not freely excreted by the kidneys, or from a loss of base from the body. As a result, the ratio of $\frac{\text{HCO}_3}{\text{H}_2\text{CO}_3}$ decreases, thereby lowering the pH. The decreased pH stimulates the respiratory centre, and an increase in rate and depth of respiration occur in an attempt to reestablish the normal $\frac{\text{HCO}_3}{\text{H}_2\text{CO}_3}$ ratio and restore the pH to its normal value. In

CAUSES OF METABOLIC ACIDOSIS

The causes of metabolic acidosis, as delineated in Table I, are divided into two groups: (1) those characterized by a normal anion gap (hyperchloremic acidosis) usually resulting from a loss of bicarbonate from the body, and (2) those characterized by an elevated anion gap (an increase in undetermined anions) resulting from excessive ingestion or endogenous production of organic acid to the body. The

Table I
CAUSES OF METABOLIC ACIDOSIS

Normal Anion Gap (Hyperchloremic Acidosis)	Increased Anion-Gap
Diarrhoea	Uremia
Infrapyloric Drainage	Ketoacidosis: diabetic, alcoholic
Renal Tubular Acidosis	Lactic Acidosis
Early diffuse renal disease (pyelonephritis)	Poisons: salicylates, methyl alcohol, ethylene glycol.
Acetazolamide and Ammonium chloride, etc.	
Mineralocorticoid deficiency	

Table II

Calculation of the Anion Gap

$$\begin{aligned} \text{Anion Gap: } A &= \text{Na} - (\text{Cl} + \text{HCO}_3) \\ \text{Normal} &= 8-12 \text{ mEq/l.} \end{aligned}$$

calculation of the anion gap is shown in Table II.

The value of calculating the anion gap in making a differential diagnosis is quite evident; almost 50% of disturbances that produce metabolic acidosis can be confirmed or eliminated¹ and the clinician may then concentrate on making an accurate diagnosis from the history, clinical findings, and appropriate laboratory tests, including measurement of blood sugar, plasma ketones, lactate, blood urea nitrogen, creatinine and electrolytes.

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METABOLIC ACIDOSIS WITH NORMAL ANION GAP

It is convenient to consider this group of disorders as being associated with loss of bicarbonate from the body. This can occur with loss of intestinal secretions due to severe diarrhea and small bowel fistulas. Using diarrhea as a prototype, the profuse loss of bicarbonate-rich intestinal fluid, with its attendant cations (mainly potassium ion), depresses the extracellular fluid bicarbonate concentration and results in metabolic acidosis. In this group of disorders, no unmeasured anions are added to the extracellular fluid. In addition, enhanced renal tubular chloride reabsorption results in an increment in serum chloride concentration approximately equal to the decrement in bicarbonate concentration. The result is a normal anion gap and hyperchloremic acidosis.

The specific causes of metabolic acidosis with normal anion gap are listed in Table I.

METABOLIC ACIDOSIS WITH INCREASED ANION GAP

These disorders are characterized by an addition of an organic acid to extracellular fluid². The hydrogen ion titrates and therefore decreases the serum bicarbonate concentration and the attendant anion (lactate, B-hydroxybutyrate, etc) circulates freely, thereby increasing the undertermined anions or anion gap. Since one mEq of organic acid dissociates into 1 mEq of hydrogen ion and 1 mEq of anion, the decrement in HCO₃ usually equals the increment in the anion gap. The different causes of metabolic acidosis with increased anion gap are listed in Table I.

Uremia. Impairment of renal function gives rise to diminished renal tubular hydrogen-ion exchange as well as net acid excretion with resultant metabolic acidosis. In addition, phosphate and sulphate retention occurs, thereby augmenting the anion gap.

Diabetic Ketoacidosis. The inability of the diabetic patient to utilize glucose because of an absolute or relative deficiency of insulin, augments fatty acid catabolism and production of B-hydroxybutyric acid and acetoacetic acid. These acids titrate and reduce bicarbonate concentration and can cause a life threatening metabolic acidosis.

Lactic Acidosis³. This syndrome has been reported in association with hypovolemia, myocardial infarction, gram-negative septicemia, after the ingestion of alcohol, in patients taking phenphormin (DBI), and as an idopathic entity. In these conditions, an excessive amount of lactic acid accumulates without a corresponding accumulation of pyruvic acid, which would ordinarily rise during physical activity. The determination of lactic acid level is best done in arterial blood; venous determination following tourniquet application raises the lactic and level due to muscle contraction.

Poisons. The ingestion of toxic drugs gives rise to a metabolic acidosis with accumulation of organic acids: methanol poisoning to the formation of formic acid, ethylene glycol to oxalic acid which crystallizes in the kidney, and

salicylate poisoning which causes liver glycogen depletion and subsequent production of ketones, lactic and pyruvic acids.

CLINICAL MANIFESTATIONS OF METABOLIC ACIDOSIS

The symptoms and signs of metabolic acidosis usually appear when the bicarbonate falls to 18mEq/l or less⁴ (Table II). The most characteristic clinical finding of metabolic acidosis is Kussmaul breathing or hyperventilation. Other findings include flushing of the skin because of capillary dilation secondary to CO₂ accumulation in the tissues, restlessness, lethargy, and coma⁵.

Table III

Clinical Manifestations of Metabolic Acidosis
Hyperventilation
Flushing of the Skin
Restlessness, lethargy and coma
Dehydration Plasma HCO ₃ ↓
Hyperkalemia
Manifestations vary according to specific causes

The clinical picture also depends on the specific cause of the metabolic acidosis. Diabetic patients tend to be dehydrated, with findings of hyperglycemia, glycosuria, ketonuria, and acetone odor to the breath; uremic patients may have a fruity odor, muscle twitching and convulsions; and patients with congestive heart failure may present with edema as well as metabolic acidosis.

PRINCIPLES OF TREATMENT

Therapy should be directed toward the specific cause, and particularly reversible abnormalities, such as ketoacidosis, poisoning or shock. A blood pH of less than 7.10 is life threatening and requires prompt correction¹. In the presence of normal pulmonary function, the pH should be increased to 7.20 by increasing the serum bicarbonate concentration to 10-12 mEq/L⁶. renal (with normal renal function) and pulmonary compensatory mechanisms can be relied upon to reestablish the pH to a normal level. When pulmonary function is compromised, the desired increase in serum bicarbonate should be to 15-16 mEq/l in order to raise the pH to 7.20¹.

Sodium bicarbonate is the treatment of choice for metabolic acidosis. The clinician may calculate the required amount of alkali by assuming that the volume of distribution of bicarbonate is 50% of the body weight. Therefore, calculation of required alkali can be stated as follows:

$$\text{mEq HCO}_3 \text{ required} = \frac{\text{Desired Increment in HCO}_3 \times \text{Body Wt (Kg)}}{2}$$

The amount of sodium bicarbonate administered should be sufficient to initially raise the bicarbonate concentration to 10-15 mEq/l. Additional bicarbonate should be given as indicated, while attempting to correct the underlying disorder. Also, careful monitoring of cardiac status and serum and serum electrolytes must be frequently reevaluated.

CONCLUSION

The differential diagnosis of metabolic acidosis is facilitated by calculating the unmeasured anions gap. This will differentiate the causes of metabolic acidosis into two major groups: (1) those disturbances with normal anion gap, and (2) disturbances with an elevated anion gap. Using this approach, the clinician will have a practical and useful tool in dealing with patients with acid-base abnormalities. □

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NEW MEMBERS

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

Dr. Barbara A. Bulleid	Halifax, N.S.
Dr. A. John Mac. Clark	Halifax, N.S.
Dr. Stewart H. Holland	Dartmouth, N.S.
Dr. Harlow R. Hollis	Halifax, N.S.
Dr. Babubhai N. Hudani	Lower Sackville, N.S.
Dr. Arshad Khan	Amherst, N.S.
Dr. Harlan D. Lavers	Truro, N.S.
Dr. James V. O'Brien	Halifax, N.S.
Dr. Paul A. Rebolo	Glace Bay, N.S.
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Parenteral Nutrition

J. T. Hindmarsh,* M.D.,M.R.C.Path.,

Halifax, N.S.

Credit for the first intravenous injection of a mixed food can probably be given to a Dr. E. Hodder of Toronto who, in 1873, infused milk with surprisingly good results in treating patients with cholera¹. Despite much work in the early part of this century² it is only recently that safe fat emulsions and amino-acid solutions for intravenous administration have been prepared. Long-term total parenteral nutrition of patients is now a feasible, although not a simple, exercise^{3,4}.

Several years ago a salesman told me that in some European hospitals, every patient who had a herniorrhaphy went to the operating room receiving an infusion of amino acids and fat emulsion. This caused me some concern: as Francis Moore has said⁵, "There is no evidence that the everyday surgical patient is any better off for the conservation of 10 to 50 g of muscle nitrogen (300-1500 g of muscle) or 1 kg of body fat." This, combined with the fact that the normal metabolic response to surgery causes much of any nitrogen administered in the first few days after surgery to be burned as a source of energy⁶, makes parenteral nutrition after routine surgery a futile and expensive exercise. If nutrition cannot be established by one week after surgery, that is the time to consider artificial feeding and, because of the inherent problems before adopting the intravenous route, one should first rule out all possibility of using the gastrointestinal tract; intraduodenal infusion is sometimes a superior alternative⁷. If the intragastric route is chosen elemental diets may be used.

INDICATIONS FOR PARENTERAL FEEDING

Unable to completely
feed patient by any
means other than I.V.
for one week.

There are occasions when the intravenous route is the only one possible and when this is so the following guidelines should be observed:

NITROGEN INTAKE

Amino-acid solutions for intravenous infusion may be protein hydrolysates (protein is hydrolyzed by acids, alkali or enzymatically and in some preparations, large polypeptides are removed by dialysis), or mixtures of synthetic amino acids.

The newer protein hydrolysates are remarkably reaction free despite their high peptide content. One must bear in mind that the effective nitrogen content is that present as free alpha-amino nitrogen which, even after dialysis, may only represent about 50 per cent of the total nitrogen⁸. The remaining nitrogen is largely present in small peptides which are probably excreted unchanged in the urine.

Mixtures of synthetic amino acids may be DL mixtures and when using these, one should be aware that only D-methionine is as effective as its L-isomer in maintaining nitrogen equilibrium in man⁹ (also D-phenylalanine can replace 0.5 g of the 1.1 g minimum daily intake of L-phenylalanine¹⁰). However, human liver and kidney contain stereospecific D-amino acid oxidase so that even if the D-isomers are of limited value as essential amino acids, they can be of use as a non-specific source of nitrogen although lacking an active reabsorption mechanism, urinary losses of these are usually high. Balanced mixtures of the L-isomers only, are also available but are expensive to prepare. Both types of mixture have the advantage that they are less likely to produce hypersensitivity reactions than protein hydrolysates.

CARE OF INFUSION SITE²⁰

Insert catheter with full aseptic precautions.

Apply neosporin ointment to skin surrounding infusion site.

Change giving sets daily.

Optimal Nitrogen Intake: This must take into account the high urinary loss of peptide-bound alpha-amino nitrogen encountered with protein hydrolysate (24 per cent of total alpha-amino nitrogen infused in some studies,¹¹ Provided the infusion is given slowly, urinary losses of free amino acids are usually less than five per cent of those infused both as protein hydrolysates and as synthetic L-amino-acid mixtures so these can be ignored¹² Davidson, Passmore, and Brock¹³ [We should all take a long sea voyage and read this book] state that one gram of protein per kilogram of body weight per day is a useful guide when designing diets (11.2 g of nitrogen per 70 kg per day). Such an intake is well in excess of the minimum recommended by the FAO/WHO¹³ and would compensate for excess urinary losses.

Amino-Acid Pattern: When choosing an amino-acid preparation one should ascertain that it provides the minimum daily requirement of a balanced mixture of the essential amino acids; and for optimum anabolism the so

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called 'nonspecific nitrogen requirement' should be provided as an equal mixture of all the common non-essential amino acids¹⁴.

ENERGY REQUIREMENTS

One factor that caused the food shortage in Germany during the 1914-18 war was that Rubner mistakenly believed that a high protein intake produced strong muscular men — on his advice large tracts of farm land were used for rearing herds of cattle and sheep despite the fact that cereals yield up to six times more dietary energy per acre than cattle. When food became short in Central Europe in 1917, it was too late to increase cereal production. For protein to be properly assimilated, its intake must be 'covered' by sufficient calories; the usual recommendation is a total Calorie:nitrogen ration of in excess of 180 : 1¹⁵.

Several authors have shown^{16,17} that the energy requirement of sedentary hospital patients before and after surgery of medium severity is approximately 2000 kilocalories per day. An energy intake of 2,200 kilocalories per day would adequately cover a nitrogen intake of 12 g and be sufficient to provide the energy needs of such a patient. This should be considered the minimum advisable and should be increased if possible, particularly if the patient is debilitated. Nutrients are better utilized if they are infused simultaneously¹⁸ or when a carbohydrate infusion precedes the protein infusion¹⁹.

whereas the latter are more likely to produce thrombophlebitis. Although the energy intake can be almost entirely supplied as carbohydrate or fat, one should perhaps simulate a normal diet as far as possible; this derives its energy from the following sources: 56 per cent from carbohydrate, 30 per cent from fat and 14 per cent from protein.

In conclusion, parenteral nutrition is a life-saving procedure in the right circumstances; it should not be overutilized. □

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DAILY INFUSION REGIME FOR 70 kg ADULT

10% Amino-Acid Solution — 1000 ml
(+ 20 mequiv K Cl per 500 ml amino-acid solution)

10% Fat Emulsion — 1000 ml
(+ 500 u heparin per 500 ml of emulsion)

followed by

50% Glucose solution — 500 ml

0.9%(Normal) saline — 500 ml
(+ 20 mequiv K Cl)

together

together

DAILY INTAKES

Total energy	2230 Kilocalories
Fat energy	900 kilocalories
Carbohydrate energy	1000 kilocalories
Amino-Acid energy	330 kilocalories

Calorie: Nitrogen ratio 186: 1

Na 77 mequiv	These can be adjusted to suit needs.
K 60 mequiv	Check electrolyte content of amino-acid solution
fluid 3000 ml	

This regimen would require a caval catheter.

Composition of the Energy Intake: This can be provided by fat emulsions or by concentrated carbohydrate solutions or both; the former are more likely to produce toxic reactions

“Unhappy Hooker”

J. S. Goomar,* M.D., F.R.C.S.(C).,
Halifax, N.S.

This twenty-three year old very healthy young American fisherman was working on a fishing trawler about one hundred and twenty miles from the coast of Nova Scotia. The trawler had been swordfish fishing all day, and while he was removing a leader from the trawl line the brake on the wrench failed and as he stepped back the leader with a seven inch sword fish hook, wrapped around his neck. The hook embedded into the soft tissue of the upper half of the neck, the entry point being in line with the carotid artery on the right side at the level of the upper border of thyroid cartilage.

His father, who was his companion at the time, decided to cut the shank off of the hook. He was then taken to the Coast Guard Cutter *Alert* and was transported by HS-50 Sea King helicopter to the Victoria General Hospital.

The examination of the patient in the emergency department revealed the patient's vital signs were in good condition. There was some rapid arterial oozing from the point of entry of the hook, it appeared, however that the hook was not going through the wall or through the lumen of the carotid vessel. It was difficult to be certain of the particular situation and attempts to move the hook were considered extremely dangerous, even for the purpose of examination.

A brief radiological investigation with two soft tissue plates revealed that the barb end of the hook was about three-quarters of an inch long and embedded in the muscles of the floor of the mouth, there was a very vague palpation of the large end of this rather massive fish hook. The patient was noticed to have extreme edema of the base of the tongue extending down to the epiglottis and rather large swelling of the arytenoids.

It was decided to carry out a supra-hyoid dissection. The muscles were incised from the upper border of the hyoid bone and retracted, the shaft of the hook followed and found to be embedded into the main muscle mass of the base of the tongue in the posterior region that is the hyoglossus. It was also quite clear that the shaft was medial to the carotid sheath.

The barb end of the hook was removed from the muscle with some tearing of the muscle fibres in spite of good vision, and this released the entire hook. In view of the extensive edema of the larynx a tracheostomy was carried out. Also, due to hematoma and some evidence of air leakage in the retropharyngeal space, a Levin tube was inserted for the first forty-eight hours.

The patient was decannulated in one week and left the hospital three days following. He was anxious to carry on his swordfish fishing back home in Rhode Island in a town called



Picture of the patient with fish hook in his right hand and Levin tube and tracheostomy tube in position.

Middletown and he carried with him many good memories of Nova Scotia, including a copy of the newspaper with his picture on the front page. I think this is more than enough to encourage the sport of fishing! □



PETER R. ARNOLD, C.L.U.
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APPRECIATIONS

*"For their work continueth, and their work continueth,
Broad and deep continueth, greater than their knowing."*

Rudyard Kipling

J. Douglas Wallace, M.D.



An unfortunate trait in many national organizations is a membership's tendency to relate a name to a formal function rather than to recognize that the name itself is emblematic of the vital human qualities which go into the performance of that function. In this respect, then, the name J.D. Wallace, M.D., must be regarded as a synonym for leadership, executive ability, and the expression of a very human and sympathetic perceptivity.

Tragically, death has now denied the CMA and its member divisions of Doug Wallace's often unique and always compassionate views on medicine and the overall human condition. To Ruth Wallace, to Robert, Harry and Diane, The Medical Society of Nova Scotia extends the heartfelt condolences of all those who knew Doug — if only by name and reputation — while at the same time recognizing the inadequacy of words alone in the face of his loss.

Doug Wallace did not, of course, suddenly and magically appear on the scene as CMA General Secretary. Not at all. Rather, he brought to organized medicine and Canada the full weight of that kind of experience only obtainable through the diligent application of a variety of skills to the highest standards of a very distinguished career indeed.

Although a native Saskatchewan by birth, Dr. Wallace was a University of Alberta medical graduate who for over twenty years applied himself to the delivery and administration of

health care at Alberta's local and provincial levels. Although that province was denied his services from 1940 to 1945 (he was one of the first RCAF medical officers to go to Britain), he more than made up for his absence in the eleven years following World War II.

Completing his residency at Edmonton's University Hospital in 1947, Doug became the senior member in a Wainwright group practice. In 1959 he assumed the directorship of Alberta's hospital plan and then in 1961 took on the post of executive director of his residential alma mater, University Hospital — where he became the prime mover in planning the University of Alberta's Health Science Centre.

In 1966 he became executive director of the Toronto General Hospital, bringing with him to Ontario the western drive which was instrumental in creating the administrative council of University of Toronto Teaching Hospitals from which sprang the comparable body for all teaching hospitals in Ontario. As an added fillip, he was also the prime instigator in creating the Association of Canadian Teaching Hospitals.

His managerial flair also came to the fore, particularly with his introduction to the Toronto General of the "management by objective" concept along with his introduction of management consultants to health care delivery and the management educational programs.

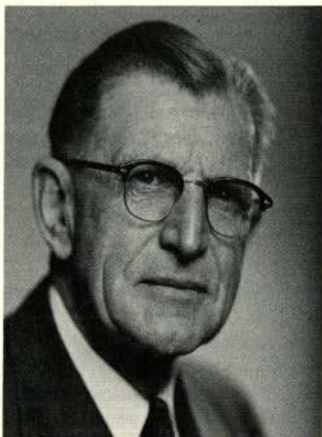
Of course Doug's service to Canadians was not limited to the field of health alone. It is also necessary to point to his work as commanding officer of the RCAF Rehabilitation Hospital in Vancouver as yet further evidence of his professional dedication. All societies, all communities need day-to-day leadership and Doug provided it on home ground in Wainwright. From 1948 to 1953 he served as alderman on the town council and followed this up with six years of service in the Mayor's office which he combined with a similar term as a member of the executive of the Alberta Mayors and Municipalities Association. In fact, so distinguished a record of public service did he establish that the 1969 University of Alberta Medical Alumni Outstanding Achievement Award could hardly have gone to any one else — and it didn't.

Still, in the final analysis, the simple recitation of a man's career does little more than provide us with an indeterminate guide to the essence of character and personality which make up the total human being. Perhaps the best indicator to these essential qualities was Doug Wallace himself in his regular CMAJ column, "The Way I See It."

His humanity and his compassionate appreciation of his own foibles and others' always stood out. For instance, in the March 6, 1976 (Vol. 114, No. 5) issue of the CMAJ he commented on his attendance at the annual meeting of the Irish Medical Association. To those physicians who might have reservations about visiting the troubled isle he said, "The only danger we observed was the bountiful hospitality of the Irish people in general and Irish doctors in particular."

That, at any rate, is the way he saw it . . . and Doug Wallace was usually right. Perhaps if more of us could learn to see things through his eyes his legacy to medicine and to Canada would be assured.

Charles L. Gass, M.D.



We came to Dalhousie together in 1907, he in Arts and I in Medicine. We married girls in the same class who roomed together in the old Ladies College on Pleasant Street, and enjoyed a friendship — fruitful to me — over the ensuing years. I felt that he represented all that was best in our traditions. If there was another who possessed in greater measure those qualities that made for the ideal general practitioner, I never met him.

At Dalhousie, Charlie was into practically all phases of student activity. If he wasn't president of every society, he was on it's executive. He made a deeper impression on the general life of the university than any other student of our time, demonstrating early that wide concern with affairs that characterized his whole life. He was not only concerned but enthusiastic and had the gift of infecting others with his urge to make the best of his circumstances. Tall, sandy-haired and smiling he strode among us like a young prince.

After graduating in Medicine he began to practise in his home town of Tatamagouche, but it wasn't long before the First World War dragged him, like so many of our generation, into its maw. With that over he came back to Sackville, New Brunswick where he made his greatest contribution as a practitioner and a citizen. There, as at college, he entered into every phase of the town's activities.

He took a particular interest in Mount Allison, where he began to teach the pre-medical students. Since many of these came to Dalhousie we were able to glimpse his effect on their way of thinking. They spoke with gratitude of what he had done for them and it was clear that in their minds he had become an outstanding example. There is little doubt that what he did for them was in many ways more precious than anything they learned subsequently.

He was a dedicated and indefatigable physician in his care of patients. He kept up to date, he studied the latest trends and he did not spare his purse in the purchase of any equipment that could be useful in bringing the best in modern medical care to his community. His influence was felt by his

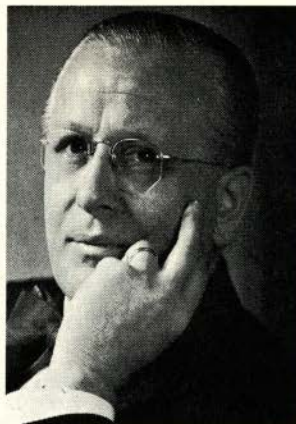
fellow-practitioners who came to look at him as *primus inter pares* because of the high type of practice he conducted. It was no accident that he was one of the prime movers in establishing the College of General Practice, of which he was the first president and to which he contributed greatly.

When, full of years and accomplishment, he retired to Tatamagouche he soon became a sparkplug in its life, as he had been in Sackville. He took a great interest in their summer festival — an undertaking that contributed much to the life of the neighborhood. More than anyone else he brought about the rejuvenation of the old grist mill at Balmoral. Both Dalhousie and Mount Allison recognized his great achievements at this time by conferring honorary degrees on him; and so he continued until the ravages of time dragged him down.

To few of us can it be said as it could be to him: Well done, thou good and faithful servant.

H.B.A.

Thaddeus M. Sieniewicz, M.D.



"Ted", was born in Pennsylvania, in 1895, and passed away on September 20, 1975, at the age of 80.

He moved to Halifax, with his parents in 1900; and received his Education, in the Public Schools of the City, entered Dalhousie University in 1911, and graduated in Medicine, from Dalhousie Medical School, in 1917, as Gold Medalist, of his Class.

He enjoyed a long and distinguished career, in Medicine, and for many years, was a practising Physician, Specializing in Diseases of the Chest and Allergy.

He was a Fellow of the American College of Chest Physicians; Fellow of the American Academy of Allergy; Fellow of the Royal College of Physicians and Surgeons of Canada; Past President of the Canadian Academy of Allergy; Member of the Halifax Medical Society since 1921 and a Senior Member of The Medical Society of Nova Scotia.

During his early medical years, he served as Assistant Medical Superintendent at the Nova Scotia Sanatorium, Kentville; Medical Superintendent of the City of Halifax Tuberculosis Hospital and Executive Officer, Massachusetts; Halifax Health Commission, which had been set up following the Halifax Explosion, of December 6th, 1917.

Later, he was Associate Professor of Medicine at Dalhousie, served as Consultant in Diseases of the Chest and allergy, at the Victoria General Hospital; The Children's Hospital and the Department of Veteran Affairs Hospital, Halifax, — Camp Hill.

"Ted" served in World War 1, from 1917-1919, as a Medical Officer, with the rank of Captain. The non-permanent active Militia, from 1928-1938, as Regimental Medical Officer, of the Princess Lousie Fusiliers, and overseas, in World War 2, with No 7 Canadian General Hospital, from 1941 - 1945, as Lt. Colonel, in charge of Medicine.

Aside, from Medicine and the Military, Ted's interests were many and varied.

He was a Perfectionist in everything that he undertook.

A keen marksman, he represented Canada, in rifle shooting at Bisley, England, in 1937 and 1939, and again at West Point U.S.A., in revolver shooting.

A good photographer and an excellent gardener.

An ardent fisherman, — we made an annual trip to Newfoundland and the Labrador, for the past 25 years. His knowledge of, and ability, in fighting the elusive salmon, was a joy and a pleasure to behold.

He held high office, in Scottish Rite Freemasonry and was an Active Member of Supreme Council; and a past Deputy for Nova Scotia, Prince Edward Island, and Newfoundland.

Ted's first wife, Elizabeth Dobson died in 1938; and his two children Barbara (Mrs. Cyril Kincaide) and Dr. James Sieniewicz, both live in Toronto. He remarried in 1945, and is survived by his widow, Marjorie.

We were class-mates, room-mates, fishing pals, and life long friends, and I will miss him very much. There is only one other member of the Class of 1917 — Dr. Solomon Turel — retired and now living in Florida.

It has been a great pleasure for me, to pay Tribute to this outstanding Member of our Profession, who has contributed so much to the Welfare of his Patients, the instruction of Students, various Community activities, and the Defense of his Country.

J. P. McG.



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Letters to the Editor

To the Editor:

With reference of Dr. Maxwell's recent article "Dysplastic Lesions of the Uterine Cervix" in *The Bulletin*, I would like to ask if there is no place for colposcopy as an adjuvant and complimentary procedure to the pap smear prior to the stage of conization. This latter procedure has a fairly high morbidity rate particularly in a young female in the reproductive age who wishes to have a family or expand one.

Yours sincerely,

G. K. Kini, M.D.,
Pathologist,
Yarmouth Regional Hospital,
Yarmouth, N.S.

To the Editor:

I agree with Dr. Kini that colposcopy can be extremely valuable in the right hands but unfortunately there are only a relatively small number of skilled colposcopists in Nova Scotia at present. You can not, of course, replace microscopy but in good hands it can often enable selective punch biopsy which, as Dr. Kini points out, is a much less traumatic procedure than is adequate conization and of course there is no place for inadequate conization, though this is all too frequently seen.

Yours sincerely,

Ian Maxwell, M.D.
Halifax, N.S.

To the Editor:

Dr. G.K. Kini and my colleague Ian Maxwell are both correct, the crucial word is "skilled colposcopist". Within the last six months the University Department of Obstetrics and Gynecology has established a Colposcopy Clinic which is attended by Dr. R. C. Fraser and myself. We are still in the process of doing a controlled study with colposcopy directed biopsy of the cervix followed by conization for definitive diagnosis. We are closely approaching the stage where we feel confident in the accuracy of this procedure. This work will be an ongoing study. With the exception of this clinic where referred patients with abnormal cytology are studied, the current teaching and the role of conization as outlined by Dr. Maxwell in his article "Dysplastic Lesions in the Uterine Cervix" is the most prudent procedure to follow.

Yours sincerely,

M.G. Tompkins, M.D.
Halifax, N.S.

□



LUST AMONG THE TURNIPS

The house call which inspired this tale took place on a Sunday afternoon in the Fall. The patient lived with her two retarded daughters in an upstairs flat. She was a two pack a day bronchitic, asthmatic, emphysematous, seventyish looking 56 year old. Nicotine-stained fingernails two to three centimeters long, an anemic complexion and myxedematous hair complete the picture of a most unfortunate and unattractive lady. But, unattractive is a personal opinion. And the fact that "Beauty is in the eye of the beholder" furnished me with this tale to tell.

But back to the house call. The reason for the call was, as usual, severe coughing spells, chest pain and difficulty breathing. The patient was examined, an injection given and the usual litany of "no smoking and take your medications as ordered."

As I left the house by a rear outside stairway I chanced upon one of the patient's daughters digging up turnips in the garden. When I remarked as to the excellence of the vegetables she informed me that they belonged to the landlord. The latter had told my patient to help herself when the vegetables were ready for harvesting. How very kind, I thought. The poor widow with two retarded daughters was certainly fortunate in having such a considerate and kindly landlord. The thought warmed the cockles of my heart. Landlords have a reputation for being callous, mean, and grasping. They don't allow pets or children and do nasty things like raising the rent. There are exceptions to every rule and here was an obvious one, a kind man who invited his tenants to help themselves from his cornucopia of nature's bounty.

This heart-warming thought was to come to a devastating end. The very next night I received an hysterical cry for help from my tobacco stained asthmatic. "A terrible thing" had happened and she had had to call the police. I was needed at once, she cried, and I went.

The scene that greeted me was straight out of Kafka. Pure hysteria reigned supreme with all three ladies screaming and crying and trying to tell us what had happened. Two of the

city's finest were doing their best to calm them down. Finally they did and we were able to get the story of what had transpired.

It seems that the landlord had come upstairs to his tenant's flat to receive payment for his turnips. He had told the widow to help herself but he had neglected to tell her that she would have to pay for them. In all innocence I asked her how much money had he asked for the vegetables. This brought forth another flood of tears and screams. When she had again settled down so that she could speak, the widow informed me that he didn't want money. No, he wanted S-E-X!

"Was he drunk?" I asked. "Very drunk" she replied, but also very determined to receive his payment on demand. She became terrified but managed to get to a telephone and called the police. The latter gentlemen were quite familiar with the would-be lover. He had been in the local pokey a number of times over the past ten years, charged with wife-beating, disturbing the peace, and being a common drunk.

With the help of 10 mgs. of Valium intramuscularly and a lot of reassurance, we were finally able to leave. I thought about this episode the next day and realized that there was a very important moral to be learned here. Without being overly cynical, we should all realize, and most of us do, the hard lesson learned by the widow. And the lesson? There are no free turnips. □

M.E.B.

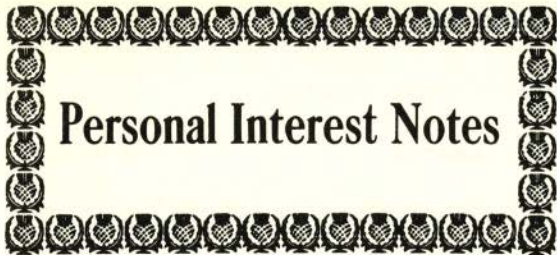
ARSENIC HAZARDS IN NOVA SCOTIA

Several cases, some severe, of chronic arsenical poisoning have been detected in the Waverley area. The source has been traced to contamination of deep and shallow wells by naturally occurring arsenical compounds related to gold bearing rocks. A Provincial Task Force from the Departments of Environment and Public Health is at present spot checking wells in gold bearing areas of the Province to which we expect the problem to be confined.

Doctors in gold mining areas should be aware of the features of chronic arsenic intoxication which are: malaise, loss of appetite and weight, paraesthesia, numbness and burning sensations in hands and feet, muscular weakness, hyperkeratosis of palms of hands and soles of feet, thin poor-quality hair, hoarse voice, spooning and separation of nails, pigmentation of chest and back — particularly nipples and anterior axillary folds, chronic anemia.

All municipal water systems in the Province have been checked for arsenic and have satisfactory levels. Further information can be obtained by contacting:

Dr. J. T. Hindmarsh,
Department of Pathology,
Pathology Institute,
5788 University Ave, Halifax.
Phone 424-2614 □



Personal Interest Notes

Dr. Earle L. Reid has been appointed Head of the Department of Medicine at the Halifax Infirmary.

Dr. Reid graduated from Dalhousie University in 1959 receiving his M.D., C.M. degrees. He completed his rotating internship at Sydney City Hospital, the Halifax Infirmary, Children's Hospital, and the Victoria General Hospital. After several years in general practice, Dr. Reid completed residency training in Internal Medicine at the Victoria General Hospital, Dalhousie University, and the Toronto General. He held a teaching position at the University of Toronto. He returned to Nova Scotia and later received his Fellowship in the Royal College of Physicians (Canada).

Dr. Reid is a member of the Courtesy Medical Staff at Camp Hill Hospital and the Victoria General Hospital, and a member of the Active Medical Staff at the Halifax Infirmary.

The Halifax Infirmary has announced the appointment of **Dr. J.L. Sapp** as Medical Director of the Physical Therapy Service.

Dr. Sapp completed his M.D. at Dalhousie University, doing his rotating internship in the Dalhousie Intergrated System. Following completion of his internship, then completed specialty training in Internal Medicine, Orthopedics, and Physical Medicine, at the University of Alberta. Following the training, he then completed two years of training in Physical Medicine at the Nova Scotia Rehabilitation Centre, Camp Hill Hospital, and the Halifax Infirmary. In 1974 he was awarded a Fellowship from the Royal College of Physicians (Canada).

He holds teaching appointments at Dalhousie University Faculty of Medicine and the School of Physiotherapy.

OBITUARIES

Dr. Charles L. Gass (87) formerly of Tatamagouche, N.S. died in Sackville, N.B. on March 14, 1976. He was a graduate in 1914 of Dalhousie University School of Medicine. Sincere sympathy is offered to his wife and family.

Dr. Earle W. Spencer (69) of Digby, N.S. died in Halifax March 11, 1976. He graduated from the University of Manitoba with a degree of M.D. in 1931. We extend sincere sympathy to his family. □

READERS WRITERS?

Why not? Letters and comments are most welcome. *The Bulletin* is your official voice. It can also be your personal voice. Your opinions are valued. Please take advantage of our **Letters to the Editor** column, or better still — perhaps you are a budding author. Submission of articles of interest to Nova Scotia physicians is encouraged.

The Editor.

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Physician Self-Assessment

Question No. 19 Correct Answer A

ADVERTISERS' INDEX

Bank of Montreal	52
Burroughs Wellcome Ltd.	42, 43
Manufacturers Life Insurance Company, The	55
Maritime Telegraph and Telephone Co. Ltd.	IFC
Medical Estate Planning Services	52
Isnor Motors Limited	58
Robins, A. H. Company of Canada Ltd.	OBC
Royal Trust	49
Upjohn Company of Canada, The	IBC
Sandoz Canada Limited	Insert, 59
Classified	42, 61

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Internal Medicine	H. Hollis	J. Clark
Obstetrics and Gynaecology	C. Maley	R. H. Lea
Ophthalmology and Otolaryngology	E. V. Rafuse	G. J. Whiston
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Radiology	D. R. Campbell	B. D. Byrne
Surgery	S. M. A. Naqvi	C. Bugden
Urology	F. G. Mack	W. A. Ernst

GENERAL INDEX

VOLUME 54, 1975

ABBREVIATIONS

Ed. — Editorial; DL — The doctor and his leisure; BN — Brief Note; AWT — Around the Willow Tree; 1000 — Thousand Word Series; C — Correspondence.

Aorto-Coronary Bypass Surgery — Brief Review (Marble) (Kinley), 92

Appreciations: Dr. M. G. Tompkins, Sr., 25
Dr. Jean (Macdonald) Lawson, 25
Dr. C. J. W. Beckwith, 69
Dr. Florence J. Murray, 101
Dr. James W. Reid, 140
Dr. Garnett W. Turner, 140

Aquino, J. A.: CMA Activities (BN), 42

Archibald, Bertha O.:

Our Family Physician, 43
First V.G.H. Lab Behind Elevator, 100
Smallpox in Nova Scotia, 142

Arnold, P.C.: Nova Scotia Medical Services Physician Profiles (C), 62

Around the Willow Tree:

Suppositories (Burnstein), 27
The Lesson, (Burnstein), 145

Back Injuries, Psychosocial Aspects of (Weil), 125

Back Pain, The Problem of Low (Murray) (1000), 130

Benjamin, J.: Location and Type of Practice of Dalhousie Medical Graduates 1950 - 1970 (Stewart) (Ralston), 71

Brief Note: Surgical Treatment of Alcoholism (Flynn), 19
CMA Activities (Aquino), 42
Prenatal Diagnosis of Myelomeningocele

(Welch), 46

Bronchopulmonary Sequestration, Intralobular, (Fawcett) (Casey), 152

Burnstein, M.E.: Suppositories (AWT), 27
The Lesson (AWT), 145

Canadian Cancer Society — Nova Scotia Division — Drug Policy, 167

Cancer Society and the Doctor, 34

Casey, M.T.: Intralobular Bronchopulmonary Sequestration, (Fawcett), 152

Clarke, J.T.R.: Phenylketonuria: A Preventable Tragedy (DeWolfe), 87

Correspondence: (Muir, 61
(Haldane), 61
(van Rooyen), 61
(Masson), 61
(Arnold), 62

Devereux, Harold J.: Appreciation — Dr. M. G. Tompkins, Sr., 25

DeWolfe, M.S.: Phenylketonuria — A Preventable Tragedy (Clarke), 87

Diet Manuel — Nova Scotia Department of Public Health, 151

Diphenylhydantoin (Dilantin) Blood Levels, The Clinical Use of, (Murray) (Ellenberger), 15

Doctor and his leisure, The.:

Bagpiping as a Hobby (Fraser), 23
The Cool Joys of Ice Yachting (Grogono), 56
Elective in Columbia (Pearce), 99
Gardening as a Hobby (Vibert), 143
The Royal Flying Doctor Service (Murray),

Doppler Flowmeter in Evaluation of Occlusive Arterial and Venous Disease, Application of, (Williams) (Simms), 163

Drugs: The Clinical Use of Diphenylhydantoin (Dilantin) Blood Levels (Murray) (Ellenberger), 15
Pharmaculture '75? (Writer), 45
Street Drug Analysis in the Maritime Provinces of Canada (Segal) (Ellenberger) (Susnik), 51
New Drug Evaluations -Naproxen (Parker, 54
Canadian Cancer Society — Nova Scotia Division — Drug Policy, 167

Editorials: Patterns of Surgical Practice (Vibert), 1
Doctors and Their Critics (Townsend), 33
On the Road to the River (Reid), 105
Young Endeavour, (Irwin), 149

Ellenberger, H.A.: The Clinical Use of Diphenylhydantoin (Dilantin) Blood Levels (Murray), 15

Street Drug Analysis in the Maritime Provinces of Canada (Segal) (Susnik), 51

Embil, J.A.: Prevalence of *Enterobius vermicularis* in a Population Admitted to the Izaak Walton Killam Hospital for Children, Halifax, N.S. (Evans), 159

Enterobius vermicularis in a Population Admitted to the Izaak Walton Killam Hospital for Children, Prevalence of, Halifax, N.S. (Evans) (Embil), 159

Environment's The Same, The — Inside your Outside, 44

Evans, J.A.R.: Prevalence of *Enterobius vermicularis* in a Population Admitted to the Izaak Walton Killam Hospital for Children, Halifax, N.S. (Embil), 159

Family Physician: Dr. H. Ian MacGregor Talks to The Bulletin, 38
Our Family Physician (Archibald), 43

Fawcett, H.D.: Intralobular Bronchopulmonary Sequestration (Casey), 152

Flynn P.: Surgical Treatment of Alcoholism (BN), 19

Fraser, Maj. G. A.: Bagpiping as a Hobby (DL), 23

Geriatrics: On the Road to the River (Reid) (Ed), 105
Planning for the Aged (MacKinnon), 108
Health Services for the Aged — or — Keep the Old Folks at Home (Gordon), 111

Geriatric Medicine — A Specialty with a Future (Hall), 114

Proposed Institute on Gerontology (Mooney),

118

Run for Your Life (Vibert), 122
Nova Scotia Senior Citizen's Commission (MacKenzie), 123

Gordon, P.C.: Trends in the Frequency of Selected Surgical Procedures in Nova Scotia 1967 - 1972 (Weldon) (MacLean), 3

Health Services for the Aged — or — Keep the Old Folks at Home, 111

Grantymyre, E. B.: Ultrasound and X-Ray in Clinical Obstetrics, 18

Grogono, B. J. S.: The Cool Joys of Ice Yachting (DL), 56

Haldane, E. V.: Clindamycin — Lincomycin (van Rooyen) (C) 61

Hall, H. K.: Appreciation — Dr. Jean (MacDonald) Lawson, 25

Hall, M.R.P.: Geriatric Medicine — A Specialty with a Future, 114

Hypnosis in General Practice, Obstetrics and Dentistry (Phillips), 40

Inns, Vicki.: Stuttering (Kelly) (Murray) (Rosenberg), 155

Irwin, A. C.: Young Endeavour, (Ed), 149

171

- Jones, R. O.:
 Psychiatry and its Critics, 35
 Appreciation — Dr. C.J.W. Beckwith, 69
 Appreciation — Dr. J. W. Reid, 140
- Kelly, Patrick: Stuttering (Murray) (Inns) (Rosenberg), 155
- Kinley, C. E.: Aorto-Coronary Bypass Surgery — A Brief Review (Marble), 92
- Lovely, F. W.: The Third Molar (Wisdom Tooth), 96
- Lung, Congenital: Intralobular Bronchopulmonary Sequestration, (Fawcett) (Casey), 152
- Marble, A. E.: Aorto-Coronary Bypass Surgery — A Brief Review (Kinley), 92
- Martin, Ronald S.: Yersinia Enterocolitica — Its Etiological Significance in Certain Human Acute Infectious Diseases, 85
- Masson, E. L.: Clindamycin — Lincomycin (C), 61
- Medical Graduates: Location and Type of Practice of Dalhousie Medical Graduates 1950 to 1970 (Stewart) (Ralston) (Benjamin), 71
- Dalhousie's Medical Women — A Survey of Graduates 1964-1973 (Nicholson), 138
- Medical Services at Rock Concert, Provision of (Savage), 47
- Medical Society of Nova Scotia, The:
 Dr. D. Brian O'Brien — President 1974 - 1975, 2
- New Members, 26, 50, 145, 172
- Guidelines for Authors, 27
- Page of Officers, 30, 65, 104, 148, 176
- Application for Membership, 32
- Prescription Pads Order Form, 103
- Medical Society Insurance Coverage, 151
- Some Pictorial Highlights of the 122nd Annual Meeting, 162
- Proceeding of the 11th Meeting of Council and 122nd Annual Meeting — November 20-21, 1975, 162 (I-VI)
- Presidential Valedictory Address — 1975, 162 (VII)
- Medical Women Dalhousie's, — A Survey of Graduates 1964-1973 (Nicholson), 138
- Mooney, C. M.: Proposed Institute of Gerontology, 118
- Muir, J.R.: No Smoking (C), 61
- Murray, D. D.:
 The Problem of Low Back Pain (1000), 130
 The Royal Flying Doctor Service (DL), 171
- Murray, T. J.:
 The Clinical Use of Diphenylhydantoin (Dilantin) Blood Levels (Ellenberger), 15
 Stuttering, (Kelly) (Inns) (Rosenberg), 155
- MacGregor, H. I.: Dr. H. Ian MacGregor Talks to The Bulletin, 38
- MacKenzie, G. W.: Nova Scotia Senior Citizen's Commission, 123
- MacKinnon, F. R.: Planning for the Aged, 108
- MacLean, L.: Trends in the Frequency of Selected Surgical Procedures in Nova Scotia 1967-1972, (Gordon) (Weldon), 3
- MacLeod Enid.: Appreciation — Dr. Florence J. Murray, 101
- Macmillan, C. L. Jr.: Ultrasound — A Diagnostic Tool, 90
- McQueen, M. J.: S. I. Units (Le Systeme International d'Unites), 135
- Nicholson, J. F.: Dalhousie's Medical Women — A Survey of Graduates 1964-1973, 138
- O'Brien, D. B.: Presidential Valedictory Address — 1975, 162 (VII)
- Obstetrics, Ultrasound and X-Ray in Clinical (Grantmyre), 18
- Parker, W. A.: New Drug Evaluations — Naproxen, 54
- Pearce, P.: Elective in Columbia (DL), 99
- Pediatrics: St. Joseph's Children's Centre, 89
- Periphero Vascular Disease: Application of Doppler Flowmeter in Evaluation of Occlusive Arterial and Venous Disease (Williams) (Simms), 163
- Personal Interest Notes, 31, 63, 102, 146, 174
- Phenylketonuria: A Preventa Tragedy (Clark) (DeWolfe), 87
- Phillips, H. R.: Hypnosis in General Practice, Obstetrics and Dentistry, 40
- Physician Manpower Trends: Location and Type of Practice of Dalhousie Medical Graduates, 1950 - 1970 (Stewart) (Ralston) (Benjamin), 71
- Physician Self-Assessment (Steeves), 12, 50, 98, 139, 158
- Pinworms: Prevalence of Enterobius vermicularis in a Population Admitted to the Izaak Walton Killam Hospital for Children, Halifax, Nova Scotia (Evans) (Embil), 159
- Psychiatry and its Critics (Jones), 35
- Ralston, D.: Location and Type of Practice of Dalhousie Medical Graduates 1950 - 1970 (Stewart) (Benjamin), 71
- Reid, J. W.: On the Road to the River (Ed), 105
- Roby, H.R.: Appreciation — Garnett W. Turner, 140
- Rosenberg, E. M.: Stuttering Kelly) (Murray) (Inns), 155
- Savage, J.P.: Provision of Medical Services at Rock Concert, 47
- Segal, M.: Street Drug Analysis in the Maritime Provinces of Canada, (Ellenberger) (Susnik), 51
- Simms, H. M.: Application of Doppler Flowmeter in Evaluation of Occlusive Arterial and Venous Disease (Williams), 163
- S.I. Units (Le Systeme International d'Unites (McQueen), 135
- Smallpox in Nova Scotia (Archibald), 142
- Smoking: More than Just a Smoke, 60
- Steeves, L. C.: Physician Self-Assessment, 12, 50, 98, 139, 158
- Stewart, C. B.: Location and Type of Practice of Dalhousie Medical Graduates 1950-1970 (Ralston) (Benjamin), 71
- Stuttering (Kelly) (Murray) (Inns) (Rosenburg), 155
- Surgery:
 Patterns of Surgical Practice (Vibert) (Ed), 1
 Trends in the Frequency of Selected Surgical Procedures in Nova Scotia 1967 - 1972 (Gordon) (Weldon) (MacLean), 3
- Aorto-Coronary Bypass Surgery — A Brief Review (Marble) (Kinley), 92
- Susnik, E.: Street Drug Analysis in the Maritime Provinces of Canada (Segal) (Ellenberger), 51
- Thousand (1000) Word Series: The Problem of Low Back Pain (Murray), 130
- Townsend, F. R.: Doctors and Their Critics (Ed), 33
- Ultrasound — A Diagnostic Tool (Macmillan), 90
- van Rooyen, C.L.: Clindamycin — Lincomycin (Haldane) (C), 61
- Vibert, J.C.:
 Patterns of Surgical (Ed), 1
 Run For Your Life, 122
 Gardening as a Hobby (DL), 143
- Weil, R. J.: Psychosocial Aspects of Compensable Back Injuries, 125
- Welch, J.P.: Prenatal Diagnosis of Myelomeningocele (BN), 46
- Weldon, K.L.M.: Trends in the Frequency of Selected Surgical Procedures in Nova Scotia 1967 - 1972 (Gordon) (MacLean), 3
- Williams, J. G.: Application of Doppler Flowmeter in Evaluation of Occlusive Arterial and Venous Disease (Simms), 163
- Wisdom Tooth, The Third Molar (Lovely), 96
- Writer, W. D. R.: Pharmaculture '75, 45
- Yersinia Enterocolitica — Its Etiological Significance in Certain Human Acute Infectious Diseases (Martin), 85
- Youth Clinic Goal, A Halifax — Orientation to the System, 53 □