

An Apology

The BULLETIN offers its humblest apologies to Sir James Learmonth in that in the January issue the address "Inflammation—Then and Now" was placed second instead of first, as there was every intention that it should be. Our journal is neither prominent nor of a large circulation and it may be only a small honour to be the author of its leading article. But small as the honour may be, it is our pleasure and privilege to bestow it where honour is due. On this occasion all would agree, and most of all the gentleman whose paper did occupy first place, that this honour should have gone to Sir James. That it did not was due to negligence where it might least have been expected. We cannot "lure the moving finger back to cancel half a line, nor all our tears wash out one word of it" but we can at least convey to Sir James and to our readers, who must have been, to say the least, surprised, our humiliation and shame at the event.

What do We Mean by Rehabilitation—Why is it Important?

A. WILLIAM REGGIO, M.D.

Medical Director, United States Public Health Service (Retired)**

THE 21st edition of Dorland's American Illustrated Medical Dictionary defines Rehabilitation as: "The restoration to useful activity of individuals who have been wounded so as to suffer from physical or emotional disability, such restoration including treatment of the disability and training to fit the individual for occupation in industry."

Another commonly used definition is: "Rehabilitation is the restoration of the handicapped to the fullest physical, mental, social, vocational and economic usefulness of which they are capable."

This is not the only topic we want to discuss to-day, but also what is the physician's responsibility to his patient and how is he going to fulfill that obligation. It is our very strong conviction that when a physician accepts a patient, whether in private practice or in hospital practice, his obligation to the patient is not ended until that patient is again functioning under his own steam as an economic asset in the community insofar as it is humanly possible to accomplish this.

Of course this is not always easy and there is no use in trying to fool ourselves into thinking that it is, for it is quite certain that we cannot fool the patient into thinking so when both are well aware to the contrary.

We have all seen, for example, the sad plight of the patient who came in with, let us say, a relatively simple colles fracture and whose X-ray on discharge showed a perfect anatomical result—BUT—his hand was stiff and his shoulder was practically frozen. The excellent reduction, as shown on the film, is no consolation to the patient who is unable to use his hand and shoulder. Restoration of function is what we all strive for, of course, and usually the better the anatomical restoration the better the function—*provided* deconditioning is not allowed to take place during treatment.

Deconditioning is not confined to the injured part alone but may very easily affect the whole individual both physically and mentally. When it is allowed to take place, its progress is rapid and the damage done may take a long time to undo and sometimes even may never be undone.

I say "when it is *allowed* to occur" advisedly because it *can* be avoided or greatly reduced in most cases and its occurrence is definitely a reflection on the quality of restorative treatment given (or not given!) to the patient.

Not infrequently we hear a patient, convalescing from a fracture of the *left* femur for example, say that his *right* leg is the one that is giving him trouble. The reason is obvious! More work is being thrown on the good leg which is not in condition to take it because it was *allowed* to *decondition* instead of being kept in proper *condition* ready for the day when it would have to carry the extra burden unable to be taken on just yet by the injured leg.

Enough, however, of making rude comments as we now must become constructive in our thinking and find ways and means to give the patient

*Delivered at the Dalhousie University, Faculty of Medicine, Refresher Course, Halifax, N. S., October 26, 1949.

**School St., Medfield, Mass., U. S. A.

all the services necessary to speed his return to economic usefulness. First let us consider Rehabilitation purely in the light of physical restoration.

The immediate and definitive, expert treatment of the injury or illness are the first and second essential steps in the "Trilogy of Treatment" which is: Immediate—Definitive—Convalescence. This third step, or Third Phase of Medicine (physical medicine if you wish) must commence with the convalescent phase or even sooner if medically permissible.

The term "Physical Medicine" may sound to some rather formidable but really it is not as applied in our every day handling of patients. We may have a mental picture of a laboratory full of elaborate apparatus with intricate experiments going on and without further analysis conclude that physical medicine is not for us and too complicated. In every day practice, however, we have physical medicine to thank for telling us the whys, wherefors and hows in the use of all the modalities or media employed in physical and occupational therapy.

Why is massage used? Why are whirlpool baths used? Why is the paraffin bath beneficial? What does exercise do for the muscles and joints? What can be accomplished to benefit the patient and speed recovery by the use of all the various electrical appliances and how do they produce their desired effects? Why do muscles decondition through disuse and how can this be avoided? Why do they have a patient weave on a loom or do leather work or carpentry? and numerous other questions to which Physical Medicine has given us the answers.

Empiricism has no place in modern medicine when it is possible to explain why something is done and how the doing of it accomplishes the desired result. Much research is going on constantly so that those of us who are not especially trained to do this work may be informed authoritatively of the rationale in the treatment we give or prescribe.

If, before giving or prescribing any treatment, we say to ourselves "Why am I going to do this" but cannot answer that question honestly, it is wiser to find out first rather than going ahead on an empirical basis. I am quite sure we all agree as of course it is nothing new but just plain, common sense.

Physical Medicine is nothing new as it probably is older than actual medicine itself, only those who employed it did it purely empirically without knowing the real reason for its use. It made them feel better and so why not keep it up? Let's skip around in history for a minute and see if we can back up this idea.

A few years ago in the Paleolithic age, around 10-15,000 B.C. (or maybe I've left off some zeros!) man probably found that heliotherapy and hydrotherapy made him feel better when he was a bit off color. Of course to him it was just sunlight and a bath, but nowadays of course such simple nomenclature would not be professional. He undoubtedly used these modalities empirically—but—they worked! So what?

Later on, around the time of the Egyptians, heliotherapy was all the rage, so much so that the Sun God Ra was imbued with healing powers and he was pretty much tops during the various dynasties in those times.

The Greeks and Romans too were all for heliotherapy, (sunshine) hydrotherapy (hot and cold), mechanotherapy (massage and exercise).

In about 450 B.C. Hippocrates was a great booster of sunshine and massage—excuse me, it was helio and mechanotherapy!

Then around 25 A.D., electrotherapy got quite good advertisement when someone discovered that contact with a species of electric fish (Tor-

pedo fish or Electric Ray, I believe) did wonders for gout and by 50 A.D. headaches and neuralgia were added to the list of troubles amenable to electrotherapy. Still rather empirical, I suppose, but it was said to give good results. Of course, there was no published follow up of cases as there is now and complete proof of such claims is not readily available.

By about 450 A.D. Galen turned out to be rather a good physiatrist as by then there were quite a few modalities at his disposal such as heliotherapy, thermotherapy, hydrotherapy (hot and cold—don't know about whirlpools), mechanotherapy (massage and exercise). Maybe the electric fish had gone out of style by then or Galen may still have been using them which would add electrotherapy to his armamentarium.

From then on, bit by bit, observant pioneers in medicine added one thing after another as physicians and physcists made important discoveries as to the healing properties of light, heat, water, electricity and exercise in their application to human ills. All these modalities are now used and being studied still more thoroughly to find out to the last detail how they may be used to the best advantage of just one thing—the patient.

I am not trying to be facetious—far from it. I am only trying to bring out the point that if these gentlemen of revered name used the various modalities at their hand without knowing exactly why, but because they found them beneficial (empirically if you wish) then how can we, who have all the advantages of knowing how and why they work and when to employ them, fail to do so whenever their use is clearly indicated!

A large and diverse amount of equipment is not at all essential to the successful administration of rehabilitative measures. To be sure it helps a lot to have it but the most essential thing is a thorough understanding and use of the modalities *available*, however limited they may be.

Wonders can be accomplished with very meager physical equipment when used with good supra-orbital equipment and, conversely, no amount of the latest, most up-to-date and out of this world "gadgetry" can compensate for a lack of knowledge as to the basic principles of treatment. "The poor workman complains of his tools"—this is a very old aphorism, but it still holds true.

In rehabilitation, physical medicine is manifest in physical and occupational therapy which must function in liaison, side by side, and not separately. Actually much of the occupational therapy treatment is a continuation of physical therapy only the patient does not realize it as it is given in a somewhat different way. A patient would become rather bored squeezing a rubber sponge for an hour or two but he will happily splice rope, mold clay, use tools with built up handles, kick a potter's wheel, pedal a theracycle, or what not as part of his treatment. Exercise with the shoulder wheel can be duplicated by painting a wall; doing carpentry on a raised bench; weaving with the loom elevated or the seat lowered; sawing, etc. Hip, knee and ankle motion gets monotonous on a stationary bicycle but will be done willingly and pleasantly on a theracycle—jig saw or treadle lathe or potter's wheel. And so on in numerous other ways.

Only too frequently the patient progresses but slowly although he may come for treatment every other day or even daily, for perhaps an hour, and then very carefully and thoroughly give complete rest to the affected part until the next treatment. This is, of course, an excellent way to prolong convalescence almost indefinitely as the patient loses most of the good done by a treatment before the next one is due. This is the retrograde type pre-

ferred by some patients rather than the progressive type preferred by his physician. In most instances, the patient will get out of his therapy just as much as he puts into it *between treatments* and some 85% of effort on his part is necessary to speed up convalescence. The importance of this must be explained to him at the first session and repeated at each visit. Very probably he will soon get so tired of having it thrown at him each time, that in self defense he will cooperate even if only to avoid being pestered further with the same advice. That's all right so long as the purpose is accomplished.

Home chores are excellent physical medicine! Dishwashing simulates whirlpools, wrist roll, shoulder ladder, finger ladder, even a Kanavel table! One occasion I will never forget as it taught me the necessity of being very explicit and fundamental in giving directions to a patient. She had a colles fracture and when the time came she was advised to do her own laundry work. After two weeks, improvement had been very slow but—oh yes—she had been doing her laundry—but—in a *blooming machine*!! Of course, I had in mind the good old tubs and rifled wash board! My error—but a good lesson.

Similarly raking grass or leaves; sawing wood; washing windows; open and close doors with the affected hand or arm for supination and pronation; walk up and down stairs instead of exercising the elevator; and any number of other things to do as may be indicated. We merely have to think them up and then hound the patient into doing them. They are all a part of rehabilitation procedure.

Moral support is also of great importance. This may be somewhat more difficult and must be carefully done. It is very dangerous to underestimate the time it will take for recovery or overestimate the degree of recovery to be expected. Much better to overestimate the time and underestimate the final functional result. Not enough to discourage the patient, of course but if it is known beforehand about how long it will take and what to expect, the sailing will usually be smoother.

An extremely important point in any physical restoration or rehabilitation undertaking for a person is to have him understand from the outset that success or failure will depend largely on his own efforts and co-operation. Discouragement will surely develop unless he understands that what his physician is trying to do is to help him to make the best use of *what he has left* when it is perfectly obvious that 100% restoration is impossible. Once this is accepted—and often it is mighty hard to accept—astonishingly good results can be obtained.

The one, big, often serious complication to the progress of convalescence is our old enemy "compensitis." Unfortunately, all of us are only too familiar with its insidious effects. The solution of *that* problem and its prophylaxis is as far off as it ever was. When we encounter the attitude "Let's see you get me well before I'm ready" the job is pretty difficult if not impossible. However, it is quite surprising sometimes if we remember that the difference between the possible and the impossible *is*, that the impossible merely takes longer to accomplish!

Frequently we have to handle the "traumatic neuroses" with which we are all familiar, only we must not call them that any more. It is now the "psycho-somatic factor," but it is the same problem no matter what it is called!

So far we have skipped around quite a bit, but our thinking has been heading steadily towards the important part that rehabilitation—as exemplified by physical medicine and its components P.T. and O.T.—plays in the

physical restoration of a patient. We cannot stop after the first two components of our "Trilogy of Treatment" (Immediate, Definitive and Convalescence) as it is definitely incomplete without that Third Phase of Physical Medicine.

The restoration of an individual after injury or illness to economic usefulness in the shortest time possible and to as nearly normal as possible or at least to the optimal condition which he is able to attain, is and *must* be our aim in every instance. It cannot be done without the aid of physical medicine or whatever anyone cares to call it.

Injury or illness are enemy number 1 and deconditioning is enemy number 2. Much has been done to lessen the serious consequences of enemy number 1 (the injury) and it certainly would be most inconsistent with the practice of good medicine to let enemy number 2 (deconditioning) nullify the excellent medicine being practiced in the defeat of number 1.

I am sure that the medical profession in general is really well aware of this but may not have a completely accurate understanding of how to go about furnishing this service to the patient. It may seem complicated and too difficult. The words physical medicine—rehabilitation—physical and occupational therapy may perhaps confuse. *

The publicity given to the slowly but steadily increasing number of rehabilitation clinics and programs—both governmental and civilian—should be a stimulus to everyone dealing with the sick or injured. It must not engender discouragement because extensive facilities are not locally available and the community could not possibly furnish the funds deemed necessary to establish a centre let alone secure the trained personnel to staff it.

To be sure such facilities *are* necessary to do the complete job for the more serious and difficult cases. It is safe to say though that fortunately the larger proportion of patients in need of restorative therapy fall in the less serious group and can be returned to their job without undue loss of time if the physician is rehabilitation conscious. He can do much with but little equipment.

Once it is regarded as just simply part and parcel of good medical treatment merely requiring knowledge of the whys and wherefors, rather than a lot of expensive equipment the whole thing becomes really very simple. To be sure, it will take a bit more time and effort but that is what the medical profession is brought up on after all.

In the 1948 edition of the American Hospital Directory (which includes the Dominion of Canada) we find that of 6,173 hospitals reporting their facilities, 36% have Physical Therapy Departments; 24% have Occupational Therapy Departments and 40% report having neither. There is no indication as to space, equipment or personnel but it shows that in all probability at least some form of physical medicine "consciousness" exists and that means that some degree of rehabilitation or physical restoration could be available in that third phase of our trilogy.

The important point is, however, to what extent are these presumably available facilities appreciated and made use of by the visiting staff? At this point I do not want to be too pessimistic but it would be well worth ascertaining what use is made of these services and how adequate they are to the needs of the patients. I purposely say "patients" because *they* are the ones who will be the losers by reason of unnecessarily, prolonged convalescence due to withholding from them those rehabilitative or restorative measures

to which they are rightfully entitled. The measures mostly are simple in themselves, requiring a minimum of physical equipment.

This point is well brought out by the following partial quote from a letter to me a short while ago written by a physician whose name is well known in the field of orthopedics. It said "Of course when these services (a.P.T. and O.T. Clinic) are available, then one should make use of them, but the mere fact that they are not organized in the hospital does not mean that the surgeon himself is absolved from the responsibility of doing what he personally can do to prevent the deconditioning and to work for restoration. After all it is more a matter of thinking than anything else and if the surgeon can inspire his residents and interns with the same thought, and everybody looks at the patient from the standpoint of how much he can be permitted to do with safety, then they will find that a great deal can be done to get the man in good condition in spite of the lack of occupational or physical therapy services."

We are not pointing a finger at anybody but we *are* most sincere in pointing out the value and importance of understanding the meaning of rehabilitation, reconditioning, physical restoration, physical medicine, avoidance of deconditioning or whatever similar term anyone wishes to apply to the procedure. It is quite immaterial really what it is *called* so long as it is *done!*

We ask ourselves, "Why is it not universally done more?" There are a number of reasons—all good ones though some of them are unfortunate.

First of all—as I see it—there should be the teaching of the basic principles of physical medicine in all the medical schools. Not so much as a *separate* subject but brought in with the teaching in surgery, orthopedics, internal medicine, etc., as an important part of the treatment in the various diseases just as much as the necessary drugs or operative procedures are included in the teaching. Of course, it is necessary that the person doing the teaching is able to teach the students through his own experience in the employment of this type of adjunct therapy so as to emphasize the value of this third phase in the trilogy of treatment in medical practice. If he does not do so, either because he is unable or does not believe in it himself, then of course the student cannot be expected to react any other way than to ignore it also.

It is not advocated that the subject of physical medicine is to be added to an already crowded curriculum as a separate study. One reason is that we believe in the necessity of a thorough basic medical training before the study of actual physical medicine is taken up in postgraduate work if the individual wishes to qualify as a physiatrist. But we *do* feel that during the medical school curriculum, exposure to the basic principles and importance of physical medicine in the general conduct of a case is absolutely essential if we are ever going to make the profession "Third Phase Conscious."

Next, during internship and carrying on through the residency, it would be desirable at least to again expose the young physician to the needs for and the workings of physical medicine. In all hospitals where there are well functioning P.T. and/or O.T. Departments this would be simple, but again would depend for its success on the interest taken in it by the visiting staff and the extent of the use made of these adjunct services.

Both the above *are* being done in a number of medical schools and hospitals but as yet in only a relatively few to any really effective extent. The idea is spreading, however, and the future—not too distant at that either—is distinctly brighter than it was a few years ago.

Noticeably also the subject is appearing more often on the programs of

national, state and local medical society meetings. This, too, is an auspicious sign of contagion due to exposure, with every indication of a spreading rash which it is anticipated, will not result in immunity to further mere endemice spread but rather to an epidemic necessity in *all* communities.

The setting up of large or small rehabilitation centres all over the country is not the complete answer by any means. In fact, there is some danger in their establishment *before* the medical profession as a whole has become physical medicine conscious. The timing should be carefully planned so as to have the profession demand the establishment of centres which can carry on to a successful restoration what has been begun in the hospital or in the office.

Such centres must not be dumping grounds for cases which have become seriously handicapped through neglect and the failure to give them "that third phase" early.

The time lag between accident or illness and the commencement of rehabilitative measures (P.T. if you wish) must be reduced. Altogether too often that time-lag is in terms of months during which procrastinating period irreparable damage can take place. This is not idle talk—we all know it is a fact. We all have seen it—unfortunately!

When the patient comes to the clinic or centre too late to remedy the damage *allowed* to occur through failure to give him the necessary therapy, the therapists, clinic or centre are blamed for failure to clean up a mess of someone else's making! The implications here may be more obvious than complimentary, but unfortunately they are mighty close to the truth!

In a *complete* Rehabilitation Program, as I see it, ten factors are involved—

1. *Mental hygiene or psychological preparation.*
2. *Social service.*
3. *Morale building and maintenance.*
4. *Physical therapy—with early use to avoid deconditioning.*
5. *Occupational therapy—in close liaison with P.T.*
6. *Recreation and entertainment.*
7. *Education.*
8. *Vocational counsel and aptitude testing.*
9. *Rehabilitation—physical restoration—vocational rehabilitation.*
10. Development of "*The will to get well.*"

But with all this the *individual effort* is 85% of the battle. If the individual *wants* to succeed, he *will* succeed but if he is antagonistic, lazy, indifferent or non-cooperative the most up-to-the-minute program with the best trained *team* will most probably fail to succeed.

The use of the word *team* here is to emphasize the necessity of teamwork. The whole program must be balanced, dovetailed or integrated into a smooth running machine. Individual stars are of no help if they tend to throw the *team* out of balance by over-emphasis on any of the factors to the underemphasis of the others.

A physician thoroughly familiar with all the phases of the program should head up the *team* and be responsible for its smooth functioning. Much depends on his understanding and direction of the whole process.

So, let us end up on a cheerful note. We all understand what we mean by Rehabilitation and why we all feel it is important. All we have to do now is to get the other 200,000 odd physicians in the North American Continent to see it in the same light so that the annual contribution of some 6,500 young physicians from our medical schools will see it also—and—our problem is solved!

Simple—isn't it?

Cardiac Emergencies Occurring During Anaesthesia*

CYRIL M. KINCAIDE, M.D.

SUDDEN deaths occurring during anaesthesia, are obviously either cardiac, respiratory, or cerebral. It is equally obvious that cardiac failure may be due to the direct effect of the anaesthetic agent on the myocardium, to neurogenic stimuli, to coronary occlusion, to relative coronary insufficiency, to cerebral failure or to respiratory failure, and several of these may be due to pre-existing disease, to the effects of the surgical procedure, or any combination of these.¹

Sudden cardiac arrest is a potentiality attending any and all anaesthetic procedures. When one reviews the literature, it is striking to note the great variety of surgical procedures which have ended tragically in cardiac arrest; from herniorrhaphies in healthy robust young men, to myringotomies in young children, and gastric resections and thoracic procedures in poor risk cases. All of the techniques employed in anaesthesia, and all the anaesthetic agents, have been in use at one time or another in these cases. Gillespie estimated that sudden death under anaesthesia will occur once in every one thousand anaesthetics given.²

When one realizes that even under more or less ideal conditions, in those places where the possibility of sudden cardiac arrest is fully appreciated, where the operating theatre is properly equipped with all the accepted necessities for the treatment of these emergencies, and where the operating team of surgeon, anaesthetist and nurse is trained to work with rapidity and precision to institute proper therapy, the average recovery rate is only ten per cent. Then it can readily be appreciated that the results are even more discouraging under less desirable conditions.

Bailey of England reported a rather large series of forty cases of cardiac arrest, in which thirteen hearts were revived, and of these, four patients fully recovered.³ Ruzicka and Nicholson of Boston reported a series of nine cases, in which all the hearts were revived, and three cases recovered completely. The recovery rate in this last group was thirty per cent.⁴ There are, undoubtedly, many cases which occur each year that are never reported, and one wonders about the adequacy of the steps taken to combat the emergencies in some of the cases.

The premise accepted in all other branches of medicine, that it is much better to prevent an accident or disease, than to try to correct it once it has occurred, is certainly applicable in anaesthesia, and particularly with respect to cardiac emergencies. If we begin by reviewing briefly the commonly employed anaesthetic agents, from a physiological and pharmacological point of view, especially as they effect the cardio-vascular system; and by dwelling a little on the choice of agents and techniques in cases of cardiac pathology, we may better appreciate how we may do something to prevent the occurrence of cardiac catastrophies. Then we can present some plan for specific therapy to correct a cardiac arrest once it has occurred.

The choice of anaesthetic agent and method, to suit the individual case,

* Read at the Ninety-Sixth Annual Meeting of The Medical Society of Nova Scotia, White Point Beech, N. S., September 7th, 1949.

is a problem which should receive considerable thought, and if these are properly selected, we may at least start our procedure with some measure of assurance as to its safety.

Nitrous Oxide is used widely. Nitrous Oxide of itself has no deleterious effects on the heart; the cardiac muscle, cardiac nerves and coronaries being unaffected by it. The heart rate and output are normal, and the blood pressure is unchanged. There are two main dangers accompanying the use of this agent. First, since it is a weak agent, induction is prolonged and the stage of excitement may be marked. This can result in an outpouring of adrenalin into the circulating blood, and ventricular fibrillation may occur. Second, there is the danger of anoxia. To be effective, nitrous oxide must be used in eighty-five to ninety per cent concentrations in order to carry the anaesthetic to the middle of the first plane of the third stage of anaesthesia, and in a patient with poor cardiac reserve, hypoxia, and its deleterious effects on the heart muscle are a very real possibility. It should be remembered that the air we breathe contains 20.9 volumes per cent oxygen.

Ethylene differs from nitrous oxide, only in that it can give anaesthesia to the depth of the lower border of the first plane of the third stage, with concentration of eighty to ninety per cent ethylene. This slight advantage is more than counter-balanced by its high explosibility. Nitrous oxide does not ignite, but it can support combustion of anaesthetic mixtures even with low oxygen concentrations.

In some respects, ether is one of the safest anaesthetic agents we use. Being a very powerful agent, it may be given with very high concentrations of oxygen. Ether does not effect the heart muscle. The rate is normal and the cardiac output is increased. Varied arrhythmias may occur with ether, but they are not usually of a serious nature.

Cyclopropane, though it is recognized as a most valuable agent, still has a bad reputation because of its ability to produce arrhythmias. A slowing of the heart rate is usual, and the output of the heart is increased. Displaced pacemaker, vagus escape, A-V block, and ventricular tachycardia, may occur at any time, but are more prone to appear in deep anaesthesia. The use of curare allows for the maintenance of lighter planes of anaesthesia with cyclopropane, the relaxation required being supplied by the curare. Ether, when added to cyclopropane-oxygen mixtures, has a marked stabilizing effect on the heart. Many arrhythmias which appear when cyclopropane is used, can be made to disappear by adding ether in small quantities, and many advocate the use of small quantities of ether along with cyclopropane, particularly in long cases.

It should be mentioned here, that since ether itself has a curarizing effect, the use of curare in its presence should be governed by this fact. The dose of curare to be given in such an instance should be reduced to one-half or one-third the dose that would be given were ether not present.

Ethyl Chloride is an agent used widely, particularly in the induction of anaesthesia in children. It should be kept in mind that this agent directly depresses the myocardium, and that it is second only to cyclopropane in its ability to produce ventricular fibrillation, and its arrhythmias are enhanced by the presence of epinephrine. The blood pressure is lowered due to peripheral dilatation resulting from depression of the vaso-motor centre.

Vinethene, (Divinyl Ether), is a safer anaesthetic than ethyl chloride.

It is rapid in action, and its pharmacological properties are essentially those of ethyl ether. It has a wider margin of safety than has ethyl chloride. Vine-thene should be used not longer than one-half hour and finds its greatest value as an induction agent and in short minor operative procedures.

Chloroform has been given up by nearly all anaesthetists in this country. In some places, however, its use has been revived in order to re-study it in the light of present day knowledge. Some of those now using it are beginning to believe it may not be as dangerous an agent as its reputation suggests.

Pentothal has become "the agent of choice," by the patient as well as by the anaesthetist. It is a most valuable agent, allowing for smooth induction and a reduction or abolition of the excitement stage. For minor procedures, and in combination with nitrous oxide-oxygen mixtures, as a supplement to spinal or regional anaesthesia, it has a rightful place. There are, however, limitations to the use of pentothal. It directly depresses the myocardium in large doses, and the blood pressure may fall sharply with large doses due to its action on the vasomotor centre, and the heart. Barbiturates exhibit a parasympathetic effect, and in light anaesthesia there is the danger of laryngospasm through vagal action. Some of the most serious cases of laryngospasm occur under pentothal anaesthesia.

In spinal anaesthesia, a bradycardia is sometimes very prominent. The cardio-accelerator nerves are depressed. The cardiac output is decreased ten per cent or more, and the stroke volume is decreased. The systolic blood pressure is decreased more than the diastolic, which may be well maintained due to decreased cardiac output and stroke volume, and failure of venous circulation. Renal and splanchnic arterioles under autonomous control do not dilate. There is a more pronounced blood pressure drop in high spinal anaesthesia, and in cases with hyper or hypotension.

The patient who knows that he has a bad heart, and is known to have coronary artery disease, must be handled with care from the very beginning. Reassurance and proper pre-medication is the first step in the prevention of trouble. Best and Taylor have proven that excitement causes an outpouring of epinephrine into the circulation, which will sensitize the heart.⁵ Each case should be individually assessed so as to supply adequate pre-medication. The giving of routine doses of pre-medication, without individual consideration, should be discouraged, as by that method too many cases will come to surgery improperly pre-medicated. It is the responsibility of the anaesthetist to choose the pre-medication with the same care as he chooses the anaesthetic agent and method for his case.

In patients with coronary disease coming to surgery, anoxia must be avoided by prevention of a fall in diastolic blood pressure, since it is upon the diastolic pressure that the coronaries depend for their blood supply. A high concentration of oxygen must be guaranteed, which means using those agents which allow for the simultaneous administration of adequate oxygen, together with a concentration of anaesthetic agent adequate for the necessary work. Rapid acting agents should be chosen, in order to pass quickly through the second stage of anaesthesia and to prevent excitement and its consequent strain on the myocardium, which may precipitate coronary spasm. Intravenous fluids should be carefully watched so as to not overload an already weakened heart, and lead to failure.⁶

The effects of spinal anaesthetics on the circulation as noted above,

generally contra-indicate their use in these cases. Some anaesthetists consider coronary disease as an absolute contra-indication to the use of spinal. However, the judicious use of vasopressor drugs will allow for adequate maintenance of blood pressure, and the administration of oxygen will maintain cardiac oxygenation. Regarding the use of vaso-pressor drugs, its choice is as important as the choice of anaesthetic agent. That epinephrine will sensitize the heart is well known, but that ephedrine, especially in the presence of cyclopropane, has a like action is not always appreciated. Pitressin is particularly dangerous, because besides causing a rise in the blood pressure, one of its main actions is to produce a constriction of the coronary arteries. Neo-synephrine is probably the pressor agent of choice. It produces a bradycardia, increases stroke output and has no effect on the central nervous system. It does not sensitize the heart.

Low spinal anaesthesia may be used for work on the extremities and for extra-peritoneal work, provided oxygen be given and adequate steps be taken to prevent a fall in the blood pressure. For intra-abdominal work, the safest technique is to use cyclopropane, either with or without the addition of ether, plus curare. In long procedures, particularly when the surgery is high up in the abdomen, an endotracheal tube will guarantee a patent airway, allow for easier exchange of gases, and give a much smoother anaesthetic and better operating conditions for the surgeon.

The use of local and regional anaesthesia has a definite place in this group of patients, and should be considered in serious cases where the risk of a general anaesthetic may be too great. Patients who receive regional field blocks should always receive some form of barbiturate before, as this will give some measure of protection against any toxic effects of the anaesthetic.

The previous comments on nitrous oxide and ethylene are particularly applicable here. Anoxia must be prevented at all costs. The use of pentothal with one hundred per cent oxygen, or with fifty per cent nitrous oxide and oxygen, is possible with relative safety in minor cases.

In 1944, Sarnoff and Farr published a paper dealing with the use of spinal anaesthesia in the therapy of pulmonary oedema.⁷ Spinal anaesthesia was used for the treatment of patients presenting severe cardiac failure with pulmonary oedema as the predominant symptom. They assumed that spinal anaesthesia would cause peripheral dilatation and muscular relaxation in the caudal portions of the body, thus reducing the circulating blood volume and the load on the heart. The reduced return flow to the right heart would help correct the imbalance between the right and left sides of the heart, and aid in the return of the fluid in the lungs to the general circulation, relieving the pulmonary congestion. They did not use this as the sole method of treatment, but in conjunction with the accepted medical means. It relieved the acute symptoms of pulmonary oedema, with its impairment of respiratory function and anoxia, which signalled impending disaster, and allowed the drugs administered to exert their full effect.

It seems logical that in this type of patient spinal anaesthesia should be the technique to use if the operative site is to be below the diaphragm, either the single dose or continuous technique. It may be necessary to put the patient to sleep because of emotional instability or nausea from traction. Here pentothal is valuable. A continuous intravenous drip of one-half per cent solution may be all that is necessary, or it may be used in combination

with fifty per cent nitrous oxide and oxygen. This will give a physiological sleep without undue depression, and a high concentration of oxygen is guaranteed. Even in cases where it is not necessary to put the patient to sleep, as soon as the spinal is given, one hundred per cent oxygen should be given by mask throughout the operative procedure. It is good practice to continue oxygen by nasal catheter or B.L.B. mask for twelve to twenty-four hours post-operatively. Intravenous fluids should always be started so that an immediately available route for the administration of drugs may be at hand, but the amount of fluid given should be carefully supervised.

An attempt to produce good surgical anaesthesia with adequate relaxation by inhalation anaesthesia has many times produced a severe form of cardiac failure with pulmonary oedema. It has been pointed out that although the heart failure may not be evident during or immediately following surgery, it may begin to show and progress during the first and second post-operative days. In these cases the anaesthetic can certainly be considered a contributing factor.⁶

The hypertensive patients may be divided into two groups, those with an elevation of only the systolic blood pressure, and those with elevation of both the systolic and diastolic blood pressures. The diastolic pressure is the more important, because it is upon this that the coronaries depend for their blood supply. When the coronaries have been accustomed to a rapid flow of blood under high pressure, to supply an enlarged heart doing a greater amount of work, a sudden severe fall in blood pressure may so embarrass the heart muscle through anoxia, that it may be unable to carry on its work.

The agent of choice again seems to be cyclopropane-oxygen. It produces less systemic change than any of the other inhalation agents, and it maintains the blood pressure fairly well with no precipitous drops. Ether, as mentioned, added to the cyclopropane, gives some increased protection against arrhythmias.

Spinal anaesthesia and 100% oxygen may be used when the surgery is confined to the saddle area. In the hypertensive patient with severe kidney disease spinal is probably best. If inhalation anaesthesia must be given, cyclopropane is again the agent of choice as it is less toxic to the kidneys than any of the other agents.

If the hypertension is accompanied by arteriosclerotic heart disease, the prevention of a fall in blood pressure is even more important. The sclerotic coronaries are unable to compensate for this fall and heart failure is apt to develop in a short time.

Cardiac arrhythmias occur under general anaesthesia more often than is generally supposed. Kurtz, Bennett and Shapiro found a surprisingly high incidence by electrocardiographic studies.⁸ They found that all six patients receiving chloroform showed some form of cardiac disturbance. Only two out of twenty cases receiving ether escaped the development of arrhythmias, most of which were downward displacement of the pacemaker. Of forty-one patients receiving cyclopropane, thirty-three developed arrhythmias, the most frequent abnormality here being extra systoles. With vinyl ether, five out of seven developed irregularities. Eight out of ten, and eight out of eleven showed electrocardiographic changes with nitrous oxide and ethylene respectively. It is significant that in these cases, the clinical anaesthetist was frequently unable to detect any irregularities in the peripheral pulse, while

the electrocardiogram showed them to be present. Furthermore, in cases in which the irregularities were noted, the recorded pulse rate was from 30 to 100 points lower than the actual heart rate.

Ventricular fibrillation occurs as the terminal arrhythmia in about fifty per cent of patients. If the fibrillation passes off before the reserve oxygen in the heart tissue is depleted, the heart may regain its normal rhythm. If fibrillation holds on till the reserve oxygen is consumed, then anoxic depression prevents the re-establishment of normal cardiac activity, and the heart will not contract again.

Experimental investigation has shown that procaine and p-amino benzoic acid, (one of its breakdown products), are effective in the treatment of cardiac arrhythmias as produced by small doses of epinephrine, injected into dogs anaesthetized with cyclopropane. It was found that either procaine or p-amino benzoic acid given intravenously, would protect against the development of the characteristic arrhythmias when the test dose of epinephrine was given. For the actual treatment of the irregularities, p-amino benzoic acid was ineffective, but procaine given intravenously would revert a displaced pacemaker to normal sinus rhythm.⁹

In subsequent clinical applications, it was found that acute arrhythmias during general anaesthesia could be improved by the intravenous injection of procaine. The initial dose of procaine now recommended is 100 mg. in a one per cent solution (10 c.c.). Burnstein claims this to be only 1/10th the tolerance dose, based on two reported cases where 1,000 mg. were inadvertently given. In both these cases, the patients exhibited some transient muscular twitchings. It is wise to have some pentothal on hand when using procaine, in case the central stimulation may be great enough to produce convulsions.

It follows that intravenous procaine may be used as a prophylactic measure to diminish the incidence and severity of cardiac arrhythmias, which, as shown, so frequently develop. Continuous intravenous drips of 0.1 to 0.2 per cent procaine during chest procedures is now being used routinely in many places, and the anaesthetist has additional procaine immediately available. In cases where the development of arrhythmias is felt to be especially liable to happen procaine may give some added protection. The use of continuously recording electrocardiographs would be of great value in helping to recognize dangerous developments earlier than may be clinically possible.

The problem of the emergency treatment of a case of cardiac arrest has been the subject of much debate. The diagnosis of the accident, unless the heart is under direct vision, falls on the anaesthetist, since he is the first member of the surgical team to become aware of it, or at least he should be. From a survey of the reported cases, it is noted that it usually occurs during the first half hour of an operation or near the end of a long surgical procedure. If the pulse suddenly stops during induction, the cause is probably ventricular fibrillation or cardiac standstill. Respirations cease almost immediately. If the anaesthetist has not got a finger on the pulse, the respiratory cessation will likely be mistaken for one of the frequent respiratory pauses occurring at this stage of anaesthesia, and valuable time may be lost.

If the anaesthetist finds that the pulse has disappeared, he should immediately ask the surgeon to check the heart, aorta or carotid arteries for pulsations, depending on where he is working. The possibility of Carotid Sinus

Syndrome should be kept in mind. This usually occurs when surgery is being done in the neighbourhood of the sinus. A bradycardia develops, there may be a precipitous fall in blood pressure, and the respirations may or may not cease. The removal of all instruments and packs from the neighbourhood of the sinus, a lightening of the anaesthesia, and Trendelenburg position, will usually correct it. Then local infiltration around the sinus with one per cent procaine will block the reflex, and surgery can be continued safely in the majority of cases.

Once the diagnosis has been established treatment must be carried out at once. Weinberger and associates demonstrated that interruption of circulation to the brain for three and one-half minutes or longer results in permanent changes in psychic behaviour. Interruption for eight and three-quarters minutes is incompatible with life for more than a few hours.¹⁰ With such a short period of time available, a definite plan of action must be already prepared. It is too late to send down the corridor for some procaine or epinephrine, or to delay cardiac massage four or five minutes to see if cardiac action will return.

In 1947 Ruzicka and Nicholson reported a definite plan of action to take in the case of cardiac arrest.⁴ Their plan depends on everyone in the operating room being familiar with the procedure, and its success is due in large part to team-work. It consists of artificial respiration with 100% oxygen, cardiac massage, the use of procaine and epinephrine, intravenous fluids and Trendelenburg position.

A free airway must be maintained, and the surest way of doing this is to insert an endotracheal tube. Manual compression of the rebreathing bag containing 100% oxygen is started at once, and the bag is emptied periodically to get rid of the anaesthetic gases. Besides maintaining as high a concentration of oxygen as possible in the alveoli, it has been shown that artificial respiration does in some measure aid the circulation of blood. The anaesthetist must be prepared to continue artificial respiration for some time, as the return of respiratory activity does not necessarily coincide with the return of cardiac activity.

Though there will be some disagreement concerning the use of epinephrine and procaine, it is becoming more and more generally accepted that cardiac massage is not only necessary in these cases, but that it must be started almost at once. There are three routes available for cardiac massage, the transperitoneal - subdiaphragmatic, the transperitoneal - transdiaphragmatic, and the transthoracic. The transthoracic is the most effective method, but in the presence of an open abdomen, one of the other methods is worth trying. In the transperitoneal-subdiaphragmatic method as recommended by Bailey of England, counter pressure is made by the base of the palm of the left hand on the lower costal margin, against intermittent compression of the ventricles by the pulps of the fingers of the right hand. As an alternative, if there is no response or the costal margin is rigid, the transperitoneal-transdiaphragmatic method recommended by Nicholson of England, may be more effective. A buttonhole incision is made behind the xiphisternum between the attachments of the two sides of the diaphragm. The thumb of the right hand is placed in this opening, and the heart may then be compressed between the thumb above, and the fingers beneath the diaphragm.

The transthoracic route is to be preferred. It allows for direct vision

of the heart, massage is more efficient and less traumatizing. Warm saline may be poured over the heart to prevent dehydration of the tissue, and this warm solution may have some stimulating effect on the heart. Drugs may be readily applied into or onto the heart. A transverse incision in the left third or fourth interspace, with section of the costal cartilages above and below, allows for wide retraction of the ribs, and gives rapid access to the heart. It is suggested that the heart be compressed at a rate of about forty per minute. Gunn showed that a dye injected into the right ventricle of an arrested heart, appeared in the lungs and carotid artery after a few compressions. It is felt that forty compressions per minute is sufficient to move oxygenated blood through the vascular system while artificial respiration is being carried on.

There is much disagreement over the use of epinephrine in these cases. It has been used in the treatment of cardiac arrest for a long time. We have talked about the ability of epinephrine to produce arrhythmias. Bailey, whose experience is about the largest, stated that he had never seen epinephrine start a heart which had already been arrested, but that it will increase the force of contractions in marked enfeeblement of the heart. Beecher reported a case where epinephrine twice restored a heart which would not respond to any other stimuli.¹¹ Some feel that if it is definitely known that the heart be fibrillating, that epinephrine be omitted and procaine alone be used, and that if the heart be in standstill, both epinephrine and procaine be used.

In the plan of treatment discussed here, it is recommended that 5 c.c. of a solution containing 9.5 c.c. of one per cent procaine, and 0.5 c.c. of epinephrine, 1 to 1,000, be injected into the cavity of the left ventricle. This may be done before opening the chest, as it sometimes restores cardiac activity.

A heart in standstill once revived is in danger of going into ventricular fibrillation. The topical application of five per cent procaine to the surface of the fibrillating heart may correct it; the injection of another 10 c.c. of a one per cent procaine solution into the cavity of the right heart is an alternative suggestion. Cardiac massage is still the best treatment, and should be carried out all the while.

An ingenious method has been devised for the treatment of ventricular fibrillation by electrical counter-shock.¹² Two padded silver electrodes 25 sq. cm. in size, moistened with sterile sodium chloride, are applied to the anterior and posterior surfaces of the heart. An electrical current of 1 to 1.5 amperes through a sixty cycle alternating current, is applied for 0.1 to 0.5 seconds. The heart is contracted and brought to a standstill. Then a normal rhythm may be resumed. If this failed Beck recommended that 1 c.c. of 1; 1,000 epinephrine, or 5 c.c. of calcium chloride be injected into the muscle of the right ventricle to increase its tone and elasticity. Then the shock is repeated.

Another method recommended for the treatment of cardiac arrest is based on the thought that after an arrested heart is compressed, as it is in ordinary cardiac massage, it does not tend to fill when pressure is removed. With that in mind, two suction cups were designed so that one would fit on either side of the heart, and by their action would give a better circulation of the blood. These last two techniques require facilities which are not generally available.

Those cases of cardiac arrest which are revived within three minutes have a good chance for complete recovery, although they will almost invariably have a complete loss of memory for events in the twenty-four hour period immediately preceding the operation. Those others revived after longer periods, may live for some time, but there will be evidence of cerebral damage from severe hypoxia, and there may be decerebrate rigidity. Where the cerebral anoxia is overwhelming, and death results fairly rapidly, within a matter of a few hours, there may be no discernible structural changes on post-mortem examination. If death occurs after twenty-four hours or longer, various changes may be found. Degeneration of the cerebral and basal ganglia, disappearance of pyramidal cells of the cerebral cortex, and proliferation of the astrocytes and microglia, may be found.

It is hoped that this discussion may help to make us more aware of the ever present danger of the development of cardiac emergencies, and to better appreciate some of the causes of such emergencies. If so, we may have fewer of them. It is also hoped that we may realize the futility of haphazard attempts at cardiac resuscitation, and that we must have some plan already prepared in order that we can adequately treat the emergency once it does arise. If so, then we may begin to improve our recovery rate.

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Intramuscular Bismuth for Warts

K. A. BAIRD, M.D., F.A.C.A.

Saint John, N. B.

THE author can find very little literature concerning treatment of warts (*verruca vulgaris*) by intramuscular bismuth. Lurie¹ described it in 1932 as "a new method of treatment for plantar and palmar warts . . .", having treated a total of forty-nine patients. Thirty-four were observed for varied periods following treatment and in all of these the warts completely disappeared.

Lunsford² and others reported in 1933 on a total of sixty-one cases, in fourteen of which treatment could not be continued. Of thirty-nine cases in adults eleven were cured, and twenty-eight were not. Of eight children four were cured and in four there was failure. Inasmuch as they apparently included a number of venereal warts it is possible that their percentage would have been much better had they limited the treatment to *verruca vulgaris* only.

Cameron³ in reporting a case of multiple warts on two fingers treated by a drop of bismuth sodium tartrate injected into the base of each wart, and followed in two days by a very severe reaction, states that during the past fourteen years the treatment with local bismuth has come into some favour. However, he does not mention intramuscular bismuth. Niedelman⁴ states the cause of all warts is now conceded to be a filterable virus. He says that none of the various drugs recommended for internal administration are reliable or efficient. He mentions magnesium sulfate, arsenic trioxide, yellow mercurous iodide but not bismuth. He advises against injecting into the base of warts of various things including 1.5% of bismuth sodium tartrate but he does not mention intramuscular bismuth.

Not long ago the present author sought an opinion in the Departments of Dermatology of two prominent medical schools. In one he was told that intramuscular bismuth is useful in the treatment of warts and was used there on some occasions. In the other he was assured that it was absolutely no good!

In his own small series of cases the author has found a very high percentage of cures, and based on this experience considers the treatment should be more generally known and used. It seems to be particularly useful in cases where surgical removal (including the use of electrically generated heating) would result in deformity or temporary incapacity of the patient, and in cases of multiple warts. In these and all other cases it seems to prevent the occurrence of new warts through treating the cause, whereas local treatments merely remove the existing verrucae.

The preparation of bismuth used in most of these cases was Sodium Bismuth Thio-Glycollate, .2 gms. in 2 c.c. sterile distilled water. The initial dose was usually one-half this lest the patient prove to be overly sensitive to the preparation. It seems worthy of note that the only patients whom the author has observed who have felt sick after an intramuscular dose of bismuth were two or three of the cases herewith described. In times past

patients who received the same preparation in the course of treatment of lues never seemed to have unpleasant reactions. Whether or not this has anything to do with the fact that present treatment was for warts the author has no way of knowing. In two of the cases a bismuth preparation in oil was used with apparently equally good results, and case R.T. when no improvement was evident after three weekly doses of the water soluble preparation he was given bismuth salicylate in oil and showed prompt improvement within one week, and complete disappearance of his warts after two more doses. The chart is an attempt to analyze results. This is difficult because of irregularity of attendance on the part of the patients. In some cases the doses were very far apart and in others although the warts were gone very shortly after the last dose the patient was not seen until some time later. These two facts make the time between first treatment and disappearance of the warts as recorded rather longer than was actually the case.

In three cases of single warts two or three minims of the solution was injected at the base of the wart, which disappeared one or two months later. The author does not particularly favour this method as the action is probably only local.

Clinical notes on a number of typical cases are given as examples.

Summary and Conclusions

Although literature on the subject is scanty intramuscular bismuth seems to have a specific curative action in verruca vulgaris.

Seventeen cases are briefly reported.

Case Reports

Mrs. C. N. Large wart extending under thumb nail and smaller wart on the opposing index finger. Duration over one year. One ampoule Sodium Bismuth Thio-Glycollate given March 11, April 15, 30, 1935. Had considerable general reaction and felt sick after each dose. One month after last dose both warts had entirely disappeared.

A. G. Female. Age 17. Plantar warts. Had been given local treatment for several months by a chiropodist who referred the case. May 4, 1948, $\frac{1}{2}$ ampoule Sodium Bismuth Thio-Glycollate. May 10, $\frac{3}{4}$ ampoule Sodium Bismuth Thio-Glycollate. May 27, warts disappeared for a time but some new ones have appeared, one ampoule Sodium Bismuth Thio-Glycollate. June 11, one ampoule Sodium Bismuth Thio-Glycollate. June 14, all warts gone.

H. T. Male. Age 23. July 26, 1948. Several pedicled warts on right cheek and lips, developing for one month. $\frac{1}{2}$ ampoule Sodium Bismuth Thio-Glycollate. July 30, one ampoule Sodium Bismuth Thio-Glycollate. August 3, some warts gone and the rest "shrinking." Given one ampoule Sodium Bismuth Thio-Glycollate. August 12, only two warts left and they are disappearing, one ampoule Sodium Bismuth Thio-Glycollate. August 17, one ampoule Sodium Bismuth Thio-Glycollate. A little later all warts entirely disappeared.

R. T. Male. Age 13. Plantar warts for several months. Given three doses Sodium Bismuth Thio-Glycollate on February 3, 10, 17, 1949. Feb-

ruary 24, no obvious improvement so given Bismuth Salicylate in Oil, one ampoule. March 3, one ampoule Bismuth Salicylate in Oil, all three warts looked black and dead. March 10, two smaller warts had dropped out and the remaining looked about ready to do so. Given third dose of Bismuth Salicylate in Oil.

A. S. Female. 13 years. August 9, 1945. Warts right hand and arm nearly one year. Had a few and developed a crop in scar of a burn. $\frac{1}{8}$ ampoule Sodium Bismuth Thio-Glycollate. August 23, $\frac{1}{2}$ ampoule Sodium Bismuth Thio-Glycollate. Notes warts are turning pale. August 30, felt sick after last dose, $\frac{1}{2}$ ampoule Sodium Bismuth Thio-Glycollate. September 6, still gets reaction, $\frac{1}{2}$ ampoule. September 13, .6 ampoule. September 20, .7 ampoule. September 27, warts tend to *fall off* now, .7 ampoule. October 11, warts gradually disappearing, .7 ampoule Sodium Bismuth Thio-Glycollate. November 1, disappearing. November 22, level with skin, practically gone.

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	Sex	Age	Location	Duration	Number Treat- ments	Treat- ment Period	Time between 1st ttt and im- provement	Time between 1st ttt and disappearance
Mrs. C. N.	F	Adult	Thumb and index finger	1 yr. plus	3	50 days		81 days
A. G.	F	17	Plantar	Many months	4	38 days	6 days	41 days
L. T.	M	28	Chin		2	32 days		48 days
D. B.	M	22		1 year plus	1			30 days
D. F.	M	Young adult	Neck and under chin	3 years	1			30 days
F. L. T.	M	Adult	Along side fingernail		3	21 days	21 days	32 days
H. B.	M	Teenage	Fingers		1			3 days
R. T.	M	13	Plantar	Several months	6	35 days	28 days	
W. F.	M	37	Cheek and chin	2 years	6	35 days		
H. T.	M	23	Cheek and lips	1 month	5	22 days	8 days	
S. T.	M	18	Chin and hands	6 months	8	80 days	46 days	9 months
N. McL.	F	Adult	Fingers	Several months	1			3 days
H. K.	M	In 30's	Mouth		7	47 days	9 days	
R. B.	M	19	Hands and face	9 months	7	58 days	54 days	8 months
A. S.	F	13	Hand and arm	1 year	8	63 days	14 days	105 days
S. T.	M	Adult	Chin	9 months	6	46 days	15 days	46 days
Mrs. R. M.	F	Adult	Toe	4 months	4	12 days	7 days	

Personal Interest Notes

A NNOUNCEMENT was made in December of the appointment of Doctor F. Gordon Mack of Halifax, as Assistant Urologist on the staff of the Victoria General Hospital, Halifax. A son of Doctor and Mrs. Frank G. Mack he graduated from Dalhousie Medical School in 1944, interned at the Victoria General Hospital and served in the Royal Canadian Navy. Following discharge from the Navy he took post-graduate training in Urology at the Royal Victoria Hospital, Montreal. Recently he became a Fellow of the Royal College of Physicians and Surgeons of Canada.

Doctor Denis R. S. Howell, a native of England, and now a resident of Halifax, has been appointed Assistant Dermatologist on the staff of the hospital. Doctor Howell is a graduate of London University and served in the Royal Navy in the Second World War. Following service he did post-graduate training at the Toronto General Hospital. This year he also received his certification in Dermatology from the Royal College of Physicians and Surgeons of Canada.

Doctor Richard C. Fraser, Dal. 1948, who has been on the staff of the Victoria General Hospital as anaesthetist has accepted a position in Jackson, Miss., as a public health officer.

Doctor C. M. Jones of Halifax attended the five-day sessions of the Society of Radiologists of North America held at Cleveland, Ohio, early in December. Doctor Jones is the only councillor from Nova Scotia in this Society.

A symposium on "Alcoholism" was the programme feature of the meeting of the Nova Scotia Society of Mental Hygiene, held January 11th, in the faculty rooms of the University of Kings College. A panel discussion on preventive and rehabilitative aspects of the subject was opened by the speaker, Doctor F. A. Dunsworth of the Department of Psychiatry Dalhousie University.

The Bulletin extends congratulations to Doctor and Mrs. W. E. Hirtle (Francis Stevens, R.N.) of Amherst on the birth of a daughter, Sharon Elizabeth, on November 26th; to Doctor and Mrs. W. J. Dyer of Halifax on the birth of a daughter, Shirley Frances, on December 13th; to Doctor and Mrs. C. H. Reardon of Halifax on the birth of a son on December 27th; to Doctor and Mrs. P. G. Loder (Joan Cooley) of Kentville on the birth of a son, David Charles, on January 6th; and to Doctor and Mrs. W. I. Morse, on the birth of a son, John William, on January 12th at the Montreal General Hospital.

We are very glad to hear from Doctor Douglas Murray, formerly of Liverpool, that he is now taking a four year course in diseases of the eye, ear, nose and throat at Johns Hopkins, Baltimore, Maryland.

Obituaries

THE death occurred at the Nova Scotia Sanatorium, Kentville, on December 21st after an illness of twenty months of Doctor Charles Alpin Donkin of Bridgewater. Doctor Donkin was born in Amherst, September 1st, 1890, son of the late Mr. and Mrs. W. F. Donkin. He received his education in the Amherst public schools, and his B.A. from Mount Allison in 1911. He graduated in medicine from Dalhousie in 1920, and continued his education at McGill University. He first practised in the Musquodoboit Valley, and then moved to Bridgewater in 1934, where he worked until taken seriously ill in April, 1948. From 1931 to 1935 he was a member of the Town Council and since 1933 was a member of the Board of School Commissioners holding the office of chairman at the time of his illness. was past president of the Board of Trade and was secretary of the Lunenburg-Queens Medical Society for several years. In 1946 he was made a member of the Royal College of Physicians and Surgeons. Doctor Donkin was always interested in sport and held the office of president in the Golf Club and the Curling Club. He was president of the Bridgewater Tuberculosis Council for ten years.

Doctor Donkin is survived by his widow, the former Miss Florence Bartheaux of Advocate, and two daughters, Louise (Mrs. M. Bowers) of Liverpool and Marion, medical technician with the Red Cross Blood Transfusion Service, Halifax, and one son, Charles, H.M.C.S. Stadacona, and one grand-daughter.

Doctor Donkin was a member of the Bridgewater United Church and of the Board of Stewards of the church. The funeral service was held on the 23rd. at the United Church, with interment at the Brookside cemetery in Bridgewater

Doctor Daniel Robert MacDonald, who was in charge of a Morris Street emergency hospital after the Halifax Explosion in 1917, died on January 2nd at his home in Shediac, N. B.

Doctor MacDonald was born in Salt Springs, Pictou County, in 1871. He attended Pictou Academy, and Dalhousie Medical School, receiving his M.D., C.M. in 1905, and took post-graduate studies in St. George's Hospital, London, England, and Rotunda Hospital, Dublin, Ireland. He practised in Cape Breton while with the Oxford Paper Company, and went to Shediac in 1930.

Doctor MacDonald is survived by one son, Donald, with the R.C.A.S.C. in Greenwood, N. S., and one daughter, Mrs. H. Power in Halifax.

Announcement

The BULLETIN has been asked by the Housing Sub-Committee of the Committee on Arrangements for the Canadian Medical Association to publish the following announcement:

The accommodation allotted to the medical profession at the time of the June meeting, in the two first class hotels of Halifax, will be largely taken up by members of the C.M.A. executive, the C.M.A. council, speakers, special guests, and others directly concerned in the events of the convention. Since we, the medical profession of Nova Scotia, are acting as hosts on this occasion, it would seem only right and proper that any rooms left over in those hotels after the needs of the above-mentioned persons have been met, should be made available to doctors from provinces other than our own. Hospitality, indeed, demands this gesture.

While it is true that this first class hotel accommodation will be very limited even to our visitors, the Committee feels confident that quarters can be found for all who come, whether from near or far, and that all will be cared for in a comfortable fashion. Experience has shown, however, that the very best efforts in this direction are bound to meet with dissatisfaction in some quarters. Let us resolve to reduce this to a minimum by co-operation along the following lines:

1. Not asking for rooms in the Nova Scotian or the Lord Nelson. They will not be available.
2. Accepting the accommodation assigned with a good grace. No efforts will be spared to see that it is the best procurable in the circumstances.
3. If arrangements can possibly be made to stay with friends or relatives, it will release much-needed space for others not so happily situated. If such private arrangements are made, however, it is still important to register with the Housing Committee, giving an address which will allow postal or telephone contact to be made.

Honorary Membership Conferred Upon Two World Famous Physicians

At the meeting of the Executive held at White Point Beach, September 6, 1949, Honorary Membership in the Society was conferred upon Sir Lionel Whitby, Regius Professor of Medicine of Cambridge, England, and also upon Sir James Learmonth, Professor of Surgery and Regius Professor of Clinical Surgery, University of Edinburgh. After the meeting at White Point it was decided by President E. F. Ross and several members of the executive that we should present each of our distinguished visitors with an illuminated scroll to this effect. The scrolls were prepared by Mr. H. P. Bernasconi of Halifax and are beautiful works of art. In each one the flag of Nova Scotia appears with a border of mayflowers or trailing arbutus. The lettering is Old English. Sir James Learmonth received his scroll upon the occasion of the first John Stewart Memorial Lecture which he delivered at Camp Hill Hospital on the evening of October 27th. He was greatly pleased and displayed it the following evening at a reception given for him by Doctor Murray Fraser. The illuminated address to Sir Lionel Whitby has only recently been finished and will be mailed to him in the near future.