

Manipulation In General Practice*

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IT is an axiom of medical practice that any and all methods which can help the patient should be used by the doctor in his fight against deformity, pain and disease.

However, there is at least one aspect of the healing art which has not received the attention it deserves from the medical profession—the use of manipulation in treatment.

This branch of surgery has been practiced from the earliest times but was allowed to fall into the hands of unqualified persons, and it achieved an undeserved stigma of quackery, which has caused our profession to shy clear of it, lest by using it, we may be stigmatized too.

The lay public is aware of the fact that the average doctor does not use manipulation therapeutically and consequently tends to patronize the osteopath, the chiropractor and the “bone-setter,” with the result that these people receive a degree of respect which is not always justified by the results they obtain.

Although the unorthodox practitioner may know little or nothing of the pathology of the joint condition which he undertakes to treat, there is no doubt that he frequently does obtain a good result from his ministrations. Because of these occasional good and sometimes even dramatic results, he will probably always have a following amongst certain types of people.

However, my contention is that, if the medical profession and particularly, the general practitioner understood the indications for manipulation, the proper selection of cases, the technique, and the results which may be expected from its use, that following would be small indeed!

What exactly are we trying to do when we manipulate a joint? I use the latter phrase advisedly, because for the purpose of this discussion I shall exclude the manual reduction of fractures, dislocations and deformities and restrict my remarks to the use of manipulation (1) for the relief of joint pain, (2) to restore movement in a joint whose range has become restricted and (3) in the case of painful subluxation of a joint, to which Professor Mennell gives the name “sized.”

Perhaps one of the reasons for the scepticism of the profession towards this method of treatment is that the pathology of many joint conditions which respond well to manipulation is obscure, and there is no doubt that this method is empirical in many instances. We try to explain the cause of the joint disability by referring, rather nebulously sometimes, to “adhesions.” But, regardless of whether the condition is due to an adhesive capsulitis or to a peri-articular fibrosis or both, anyone who has ever manipulated a “frozen” shoulder, for instance, is well aware that there is both audible and tangible evidence of the breaking or tearing of multiple adhesions, the unmusical accompaniment to the movement of the shoulder.

In recent years there have been great advances in the elucidation of joint pathology, notably the great work of Codman, who first give us a detailed explanation of the various types of lesion which contribute to shoulder disabilities. As a result of this recent work we know that “adhesions” are the fibrous bands which form as a result of an exudate produced by trauma

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or inflammation. In the early stages these pathological bands are weak and easily stretched or broken but, as they become organized, they become thicker, lose their elasticity and so limit the movement of the joint. It is well to remember too that in the new case these adhesions are vascular and their separation may lead to haemorrhage which after organization leads to bigger and better adhesions. The older the adhesions the more definite is the evidence of their giving way and the less the joint reaction. We also know that, in addition to the type of adhesion caused by these distinct fibrous bands, the adhesion of the capsular plications, the so-called adhesive capsulitis may be the cause of joint stiffness after injury. This adhesive capsulitis may result from the organization of a traumatic effusion or from disuse of the joint with continued venous stasis. This leads to oedema of the part, and as Watson-Jones so aptly put it, "Oedema is the glue of which adhesions are made."

These adhesions than, whether painful or merely restrictive, are the object of our attack when we use manipulation and we press the attack by the forcible passive movement of the joint, preferably under an anaesthetic, until the adhesions give way.

General Principles

Although there are many special points to be remembered in the technique of manipulation of individual joints, there are certain principles applicable to all manipulations.

- (1) All joints should be X-rayed to rule out active disease.
- (2) The normal range of movement should be determined by moving the unaffected joint, first by the patient and then by the doctor.
- (3) A local or general anaesthetic should be given so that you are fighting the painful or limiting adhesions only and not the spasm of protecting muscles. Under anesthesia, a greater control of the bones of the joint is possible and so unfortunate, but by no means rare, accidents are avoided.
- (4) The use of gentle controlled movement is preferable to sudden forceful "jerks" which may exceed the intended limit and result in a fracture, particularly if the bone is osteoporotic, following long disuse.
- (5) The joint should be put through its normal range of movement once only. "Pump-handling" is unnecessary.
- (6) A short lever should be used. For instance, in manipulating the shoulder joint, the arm should be grasped above the elbow especially in the movement of external rotation.
- (7) Distraction of the joint should be the first manoeuvre before the other movements are attempted. This is particularly true in the shoulder where we must guard against a dislocation. This is best done by having the assistant shove his fist against the head in the axilla, before the movement of abduction is started.

Indications for Manipulation

Pain, rather than considerable limitation of movement, is the most outstanding indication for manipulative treatment and holds the best prospect of cure. Chronic sprains of a joint, chronic strains of a ligament, old traumatic arthritis, traumatic synovitis, locking of a joint, the so-called subluxations, moderate osteo-arthritis and the contractures of old rheumatoid arthritis summarize briefly the indications for its use.

Contra-indications

As a general rule no acute cases should be manipulated but there are a few notable exceptions that come to mind. "Tennis elbow," "tennis wrist," acute subluxations of the sacro-iliac joint, and acute sprain of the medial collateral ligament of the knee joint are sometimes dramatically relieved. Some say that acute lumbago and acute tortocollis respond well to manipulation but I have found that an Ethyl Chloride spray is even more efficacious and more certain.

The elbow joint reacts badly to manipulation as do the joints of the fingers. These joints are often made decidedly worse by manipulation.

A "frozen" shoulder should never be manipulated until sufficient time has elapsed for the intra-articular adhesions to become avascular. This is rarely before 3 or 4 months.

Tuberculous arthritis at any stage and most arthritis in the acute stage are definite contra-indications.

It should always be borne in mind that manipulation after prolonged fixation in plaster may easily lead to fracture, because of the osteoporosis of disuse. Fixation of the patella following fracture of the femur is a "pons asinorum" as is also the presence of myositis ossificans.

Finally, manipulation is rarely called for in children, because of the marked tendency to spontaneous cure. One exception is in the condition of "pulled elbow," a partial subluxation of the head of the radius into the orbicular ligament. This condition responds instantly and completely to the proper manipulation.

Technique of Manipulation

This is a difficult point to discuss in a paper of this sort because the various techniques, although easily demonstrated, are difficult to describe. There are no special tricks, as our unqualified friends would have us believe there are, and suitable methods are described in many of the standard text-books of Orthopaedic Surgery but there is no denying that proficiency in the art comes only from experience and practice.

Timbrell Fisher's book, *Treatment by Manipulation in General and Consulting Practice* (H. K. Lewis and Co., Ltd., London), is well-illustrated and will provide a sound working basis.

After Treatment

In minor cases such as subluxation of the Sacro-iliac joint, adhesion of the foot after trauma or in painful flat-foot, "tennis-elbow," "tennis wrist" etc., no special after-treatment is required.

Following major procedures, such as the mobilization of a "frozen shoulder," proper after-treatment may determine the success or failure of the operation.

In these cases the manipulation should be done under Pentothal anaesthesia and, when the patient is in the recovery stage but before he is quite conscious, he will respond to suggestions such as "Raise your arm above your head. Your arm is better now. When you awake, keep raising your arm above your head." It seems that suggestion regarding continued movement, implanted at this time, results in unexpected co-operation after recovery somewhat in the nature of post-hypnotic suggestion.

In any event, whether this method be employed or not, the patient on recovery should be shown the new position of the joint and shown that he is now able to achieve this position voluntarily.

Before leaving the hospital he may be given a diathermy treatment, supplied with a few analgesic tablets, and arrangements made for physiotherapy to begin on the following day, to consist of heat and massage and supervised and assisted ACTIVE exercises. This is important because, if the limb has been immobilized for a long time, the patient may have developed a form of "mental alienation", whereby he tends to move antagonists and effectors at the same time or to call into play a multitude of muscles, some very remote from the joint involved, in his efforts to move the recently mobilized limb.

These cases, although difficult to treat, will respond to patient physiotherapy whereby they are taught to move only individual muscles and they slowly and painfully learn again to call into action single muscles, one by one, until they have regained proper control of the limb.

The physiotherapist must be warned against doing more than to assist the patient in active movements. Increasing restriction of movement after the forcible manipulation is an indication that forced passive movements are being employed.

Dangers of Manipulation

The first and foremost danger is the production of a fracture, particularly in osteoporotic bones following long disuse of the joint, and in the fixed patella following fracture of the femur.

Secondly, in badly selected cases, the re-activation of disease in a joint. I have seen at least one case of a flare-up of old tuberculous disease in a knee which was manipulated in the mistaken belief that the contracture was the result of old rheumatoid arthritis.

Thirdly, an excessive reaction to the trauma of forced movement producing an effusion and a result which is worse than the original disability. The excessive reaction of the joint is usually the reaction to excessive force or perhaps because the joint condition was still too acute. This is especially liable to happen in rheumatoid contractures.

Affections of Individual Joints which May be Expected to Respond to Manipulation

The Foot and Ankle

Cases of *acute foot strain* seen so commonly in nurses and house surgeons react well to manipulation especially if the patient is first relieved of weight-bearing until the acute symptoms have subsided somewhat.

Tarsal osteoarthritis whether post-traumatic or as the result of long-continued faulty weight-bearing usually responds well to forcible movement as do at least some cases of *hallux rigidus*.

Chronic sprain of the ankle joint with pain and swelling anterior to the external malleolus is often improved by this method but, in addition, should have an outside "flare" to the heel to help prevent the recurrent inversion of the foot which predisposes to this condition.

Chronic strain of the calf muscles such as follows the change-over from high heels to flat-heeled shoes or "loafers" can be improved by forcible dorsiflexion which stretches the contracted *Tendo Achilles* and the *Triceps Surae* muscles.

No discussion concerning manipulation of the feet is complete without mention of the Thomas wrench. It is paradoxical that the man who in the treatment of joint conditions demanded, "Rest, enforced, uninterrupted and prolonged" should have designed this wrench and put it to considerable use as we note in an account of one of his cases published in 1889. "A boy, six years of age was brought to me from the principality, hampered by an extreme equino varus of both feet, the right being the more extreme of the two. On the first day, the boy being under the influence of ether, the *tendo Achilles* was divided and the puncture dressed. The full power derived from the application of the wrench with a handle 10 inches long was used but with only very slight show of progress.

Then the feet were placed in the club-foot shoes, which had been suitably modelled, that they slightly strained the deformity in the direction of symmetry. On the third day, this practice was repeated and on the fourth. On the fifth day, without ether the wrench was applied morning and evening with the result that on the sixth day the feet appeared slightly swollen. On the seventh day, morning and evening manual power only was used, this amount of power also was used on the eighth day, the feet now very perceptibly yielding to the force employed. On the tenth day, ether was again administered and the wrench applied first to the right foot and to my delight the foot was moved rapidly and easily into normal position, but on removing the bandage enveloping the foot to protect the skin from abrasion, I found the skin on the inner aspect of the foot had ruptured. Now a little powdered boracic acid was sprinkled over the wound and a thick pad of loose medicated sawdust applied, and the foot bandaged and replaced in the club-foot shoe. Profiting by my experience on this day I was content with less progress when applying the wrench to the left foot. By the aid of the medicated dust, suppuration was avoided and progressive treatment was not intermitted, merely slowed. In this case occasionally Mr. R. Jones assisted me and at times Dr. Morgan of Liscard."

Those of us who fear this instrument should take heart from the testimony of the originator and use it where indicated.

The Knee

The "locked" knee of a displaced medial meniscus is perhaps the most important indication for the manipulation of this joint. The "locking" is usually due to the lateral half of a "bucket-handle" tear in the cartilage forming a bar to complete extension. The aim should be to so abduct the joint that replacement of the split and displaced fragment becomes possible. Probably in many of these cases complete extension is achieved by completing the tear anteriorly rather than by replacing the displaced fragment.

An acute sprain of the medial collateral ligament of the knee tends to become chronic unless adequately treated by immobilizing the joint. This may constitute a very considerable disability and usually manifests itself by pain in the tibial attachment. This type of sprain often gives gratifying results to manipulation.

The Hip

Mild osteoarthritis can sometimes be improved by forcible passive movement but the indications for manipulation of the hip, other than this, are few.

The Sacro-Iliac Joint

The so-called "subluxation" of this joint is an example of the "seized" joint of which Professor Mennell speaks. This reacts well and constantly to manipulation particularly in those cases which follow pregnancy. If I don't hear the typical sacro-iliac "click" at the time of the forced movement, I am pessimistic about the result. The procedure should always be tried even in untreated cases which have persisted for years, as the duration of the ailment does not seem to prejudice the result.

The Coccyx

In coccydynia following a definite injury manipulation should be tried. The failures are probably due to the fact that sufficient force has not been used. It should be remembered that the levator ani—the coccygeus—as well as several strong ligaments have an attachment to the coccyx.

Following the treatment an injection of Proctocaine in oil will help control the reactive pain.

The Shoulder

Acute conditions of the shoulder such as supra-spinatus tendinitis, sub-acromial bursitis and torn supra-spinatus tendon are not suitable cases for manipulation but cases of "frozen shoulder" whether secondary to immobilization for the above-named conditions or following trauma to the joint itself, do well after passive movement which tears the limiting adhesions both within the joint and in the peri-articular tissues. As emphasized previously, particular care must be taken when treating this condition first that the case is suitable in that sufficient time has elapsed so that the adhesions have become avascular. Also it may be well to aim at less than full movement at the first treatment in order to avoid an excessive joint reaction. After a period of physiotherapy the job can be completed by another manipulation.

In these cases of "frozen shoulder" with osteoporosis from long disuse it may take surprisingly little force to produce a fracture, which of course in this condition is a disaster.

The Elbow

This joint should rarely be manipulated except in "tennis elbow" which is really not an affection of the elbow joint but a painful sprain of some fibres of the common extensor origin. "Epicondylitis" is a better name. But, whatever it is called, the condition yields readily to the proper manipulation but unfortunately, if the same conditions of over-use or strain are continued the disability will probably recur.

The Wrist

The condition known popularly as "tennis wrist" is another example of the "seized" joint of Mennell. It usually responds well to forcible corrective movement.

The Fingers

The fingers, unlike the toes, respond badly to manipulation. The thickened spindle-shaped joint of a post-traumatic arthritis will usually be made definitely worse by forced movement.

The Temporo-Mandibular Joint

The "clicking" joint or the joint which is locked by a torn meniscus can be successfully treated by manipulation. As in the similar condition in the knee-joint the improvement is probably more often brought about by completing the tear in the cartilage rather than by replacing the displaced and obstructing fragment. At operation, in cases which have been "reduced" by forcible movement, it is not uncommon to see the displaced cartilage completely freed from one attachment and lying in front of the joint anterior to the condyle.

The Lumbar Spine

Chronic-lumbo-sacral strain and mild cases of osteoarthritis may be improved by manipulation of the back, but a word of caution is necessary. If there is any suspicion of a retropulsed nucleus pulposus causing the back pain, it is better to avoid forced movement as a number of cases of complete paraplegia have been reported following manipulation in such cases.

Nutrition in Relation to the Care of the Surgical Patient

by

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THE science of nutrition has not received the serious attention of the surgeon until recently. The nausea and vomiting, anorexia and derangement of digestive processes, caused by anesthesia and pain, and the physiological effects of the operation itself, are accepted factors in surgical procedures. Added to this state is the fear of the surgeon of placing food in a deranged viscus. Since the usual care requires dietetic restriction for a few days post-operatively, the surgeon has generally not regarded the nutritional status of the patient as of any importance. However since about 1937 the role of hypoproteinemia has been realized and since 1940 the extent of the loss of nitrogenous compounds in the urine. This phenomenon has been called the "toxic loss of protein," the "reaction of injury" and "disuse atrophy"—all loose terms to hide our ignorance of the cause.

The safety and feasibility of intravenous alimentation and intratubal feeding may be said to have introduced a new chapter in the nutritional aspects of surgery within the last few years. While it may be true that most surgical patients require little or no special nutritional attention, numerous conditions are now realized to require the maintenance of as good a nutriture as possible.

Recently attention has been drawn to a general phenomenon which has been accepted without question by surgeons and internists, namely the loss of weight experienced by patients during their sojourn in hospital. This has been shown to be both unnecessary and undesirable. It adds materially to the length of the period in hospital and the latter may be abbreviated by due attention to nutritional needs. *In other words hospital patients have not been fed properly in the past and this state of affairs is a definite challenge to the practitioners of the present.* The mysterious loss of muscular strength, long recognized as correlated with rest in bed, may readily be a phenomenon of the past in most hospital cases. The factors which contribute to the time of bed rest required have never been analyzed scientifically, apart from a few observations on the tensile strength of wounds. The factors which enter into the rate of the healing of wounds are only vaguely understood.

We shall consider first the loss of weight, in patients admitted to hospital. This is apparently a common occurrence. It has been recorded for civilian hospitals by Elmer (1944) and by Taylor *et al* (1943) and for military hospitals by Stevenson *et al* (1945-46). Stevenson, Schenker and Browne (1945) state "The nutritional care given the injured and ill is inadequate. The physician, preoccupied with special therapy, has neglected the patient's

nutrition and has accepted the frequent weight loss and wasting as an inevitable part of the clinical picture. Starvation for a short time is thought to do little harm. These wrong concepts have lulled most physicians into a false sense of security." This loss in weight has been shown by Stevenson and his colleagues (1946) to have occurred in more than 50 per cent of patients admitted to 30 R.C.A.M.C. hospitals in Canada. It varied from 10 to 60 pounds. In seeking a cause for this loss, they measured the actual food eaten by groups of patients convalescing from surgical procedures not involving the gastrointestinal tract on "full" diets. Losses occurred by failure to draw the full ration and wastage both in the kitchen and on the plate. The effect of education is illustrated in the following example recording the protein and energy values of the diet.

	Before		After	
	Calories	Protein gm.	Calories	Protein gm
Food eaten.....	1,856	54	2,635	101
Food left on plate.....	772	21	245	14
Food never offered.....	2,279	102	1,255	40

The average consumption of those patients whose diets were measured was 2,210 Cals. and 74 gm. of protein. In one case a high protein diet had been ordered which, by measurement, showed a content of 67 gm., quite unsuspected by the surgeon.

These authors devised a milk-shake mix as supplementary feeding which contained 72 gm. of protein and 1,100 Cals. in 16 ounces which was given in three portions at 10 a.m., 2.30 and 9 p.m., with notable improvement in weight gained.* They stress the importance of meals, properly served on time and well spaced. In another paper, Stevenson, Schenker and Browne (1945) point out the value of adequate nutrition in the period of convalescence in helping to counteract intoxications and infections and to promote the healing of wounds and recovery from trauma.

Elmer (1944) drew attention to the starvation suffered by patients post-operatively in American hospitals. He pointed out a sequence of events beginning with loss in body weight and body tissue equivalent to 1 to 3 lbs.

*Skim milk powder "milk shake" mixed in electric blender:

milk.....	250 gm.	1 cup
eggs.....	100 gm.	2
S.M.P.....	40 gm.	7 tbsps. (level)
sugar.....	20 gm.	1 tbsp.
ice cream.....	80 gm.	1 slice of 1 inch
cocoa.....	5 gm.	2 tbsps. (level)
vanilla		

Egg nogg containing 20 gm. protein and 200 Cals.

milk.....	250 gm.
sugar.....	20 gm.
eggs.....	2

daily followed by muscular asthenia, which may progress to hypoproteinemia with anasarca and decreased resistance to infection. He also recommended the use of supplementary feeding with egg-noggs and milk drinks and claimed that loss of appetite was not a necessary symptom associated with surgical procedure after a short period.

The basal requirements of a person may be calculated by the formula $\text{Wgt (kgm.)}^{\frac{1}{2}} \times 70.5$, to which should be added about one-third to provide for the activity of idleness. The protein requirement may be more simply calculated on the basis of 1 gm. per kgm. per day. For the average man weighing 70 kgm. (154 lbs.) this would mean 2,500 Calories and 70 gm. of protein. There is evidence for the statement that the basal metabolic rate may be raised under certain conditions such as following fractures to the extent of +25 and after severe burns to +50. In addition processes of repair require amino acids and other nutritional essentials over and above the normal daily allowances such that a diet of 125 to 180 gm. of protein with an energy content of 3,000 to 4,000 is to be recommended.

Thirty years ago three French medical men (Wertheimer, Fabre and Clogne, 1919) first observed the marked losses of urinary nitrogen shown by war casualties in which the nitrogen content rose from a normal of about 16 gm. to 27 gm. in 24 hours. This fact has been confirmed many times since Cuthbertson (1932) studied it in seven patients suffering from fractures. He states that the maximum loss occurred in 2 to 8 days but persisted for 1 to 2 months in some cases. There was a negative nitrogen balance of from 10 to 20 gm. daily. Other observers (Browne, Schenker and Stevenson 1944) have noted losses up to 40 gm. daily. Now 1 gm. of nitrogen is equivalent to 6 gm. of protein which is equivalent to approximately 25 gm. of muscular tissue, so that a loss of 20 gm. by negative balance would be equivalent to 500 gm. of tissue in one day. It is thus not surprising that patients lose weight in hospital.

The beneficial effects of maintaining a positive nitrogen balance have been studied by Mulholland, Co Tui and their colleagues (1943 and 1944) recently. They observed a group of 8 patients after partial gastrectomy for peptic ulcer. These they divided into two sub-groups. The first group were in negative balance and lost 7 to 14 pounds on an average hospitalization of 24 days, following routine treatment by oral feeding with supplementary infusions or transfusions as required. The second group were fed a high protein and caloric diet by the nasal Abbott-Rawson tube in the form of "nutramigen." They were in positive balance, gained 3 to 9 pounds and stayed in hospital an average of 17 days. These clinicians also have used "Amigen" for the same purpose and found it superior because of greater solubility and concentration. It was supplemented with 50 mgm. thiamine chloride, 100 mgm. ascorbic acid and 50 mgm. niacin daily.

"Amigen" is a casein hydrolysate of pH 6.5, consisting of amino acids and peptides. It contains 12 per cent of nitrogen and has a caloric value of 3.4 per gm. It is usually supplemented with dextrimaltose or glucose. Mulholland *et al* (1944) recommend feeding this preparation at a level of 1.7 gm. per pound with approximately an equal amount of carbohydrate and a supplement of vitamins. This material has also been given intravenously by Stewart, Hale and Schaer (1948) over prolonged periods (20-90 days) to prevent protein deficiency. They encountered no serious reactions. Chills

and nausea were experienced in 6.5 per cent of their cases. The carbon dioxide combining power of the blood tended to fall. They injected a solution of 5 per cent amigen and 5 per cent dextrose at a rate of about 1500 ml. in three hours.

Werner (1947) has used a mixture of 11 pure amino acids at a concentration of 8 per cent given intravenously or by hypodermoclysis. He supplements this with a buffer solution of sodium lactate. There is apt to be an appreciable reduction in the alkali reserve of the blood with values under 50. Nausea and vomiting were noted at times in a series of 73 cases. He questions the value of this procedure for unstated reasons as he also notes a slower return to normal in his control group and a longer period in hospital.

A high protein diet has been recommended by Kozoll and his assistants (1946) for surgical cases. They found it difficult to restore nitrogen equilibrium with amino acids in conditions of oesophageal and gastric obstructions. They resorted to the use of "essenamine" in those patients who could take it by mouth. The latter is a hydrolysate of lactalbumin manufactured by the use of alkali. It is described as odorless and tasteless and contains all essential amino acids and a concentration of nitrogen at 12.5 per cent. They incorporated it in fruit juices, sauces or milk-shakes. By this means they were able to augment the dietary regime by administering "essenamine" at a level of about 50 to 90 gm. in some cases and 118 to 283 gm. in others. Positive nitrogen balances were obtained, sometimes of great magnitude, representing retention of 6 to 60 per cent. Under these conditions there was a definite improvement in the level of total plasma proteins.

In an excellent study of a series of cases with chronic infected wounds in the U. S. Army, Lyons (1943) reported certain metabolic and nutritional effects. Such patients frequently presented a picture of nutritional depletion with loss of weight and strength, anorexia and anemia. Lyons was able to show by the Evans blue technique a loss of plasma volume and a marked, excessive increase in interstitial fluid, frequently not indicated by routine determinations of hemoglobin and plasma proteins. The reserves of blood proteins were definitely decreased. The condition was improved with or without the use of penicillin in from 2 to 6 weeks on a diet containing 130 gm. or more of protein with an energy value of 3000 Cals. The protein contributed 20 to 25 per cent of the total calories.

Individuals who have suffered second or third degree burns involving more than 10 per cent of the body surface present a special nutritional problem. The resulting hypoproteinemia is frequent and may attain such a degree as to result in generalized edema. The exudate which forms in 30 minutes to 1 hour may bring about a loss of plasma volume of enormous proportions in a comparatively short time (Rossiter, 1943). The exudate contains 4 per cent protein and will lower the concentration of total plasma protein by 1 to 2 gm. per cent. Taylor (1943) has studied the effects of dietary therapy in burned patients and recommends a diet of 100 to 125 gm. of protein and 3000 Cals. daily. In severe cases this must be increased and supplemented with parenteral protein hydrolysate. The loss of protein may be appreciated by the facts of one severe case described by Taylor. A negative nitrogen balance persisted for 4 weeks and by that time the loss of protein amounted to 2000 gm. This is equivalent to 16 lbs. of tissue or 40 litres of plasma. The daily loss of protein may amount to 200 gm. or more. Co Tui *et al* (1944)

Tuberculous Meningitis

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SINCE May, 1947, nine cases of tuberculous meningitis have been treated at the Victoria General Hospital, Halifax, N. S. At the time of preparation of this article (May 31, 1949) six were dead and one was still receiving treatment. Two of the cases, however, showed a good clinical response and have been restored to an active place in society. Because survival from tuberculous meningitis is still an unusual occurrence, it is considered that an excellent result was obtained with streptomycin therapy in these two patients. A summary of their case histories and a review of present views on streptomycin therapy in tuberculous meningitis are to be presented.

Case	Admitted	Miliary?	Streptomycin	Result
Mrs. G. A.....	May 13, 1947	No	I.M. & I.T.	Case Report No. 1
Mr. R. R.....	May 25, 1947	Yes	I.M.	Died June 22, 1947
Mr. M. T.....	Nov. 17, 1947	No	I.M. & I.T.	Died Feb. 16, 1948
Mr. T. W.....	March, 1948	Yes	I.M.	Died after three days
Mrs. I. M.....	May 31, 1948	No	I.M. & I.T.	Case Report No. 2
Mr. C. O.....	Sept., 1948	Yes	I.M. & I.T.	Died after three days
Mrs. I. McG.....	Oct. 10, 1948	No	I.M. & I.T.	Died March 1, 1949
Miss M. M.....	April 23, 1949	No	I.M. & I.T.	Died May 18, 1949
Mrs. LeB.....	May 12, 1949	?	I.M. & I.T.	Still receiving therapy

Fig. 1: — Cases of Tuberculous Meningitis at the V. G. Hospital May 1, 1947.

Case 1:—Mrs. G. A., a 40 year old white female was admitted to the Victoria General Hospital, on May 13, 1947, complaining of headaches of five weeks duration. Associated symptoms included slight chills and fever in the evenings, constipation and occasional attacks of nausea. Family and personal histories were non-contributory.

Physical examination revealed a moderately obese middle-aged woman clear mentally and co-operative. There was slight neck rigidity but otherwise physical examination was entirely negative.

Urinalysis was negative for sugar and albumen, and microscopic examination was negative. The red blood count was 4,760,000; the haemoglobin 14 grams % and the white blood count was 8,400, with a normal differential count. Sedimentation rate was 27 mm. (Westergren.). NPN and sugar were normal. Chest and skull X-rays were negative.

On May 14th a lumbar puncture was done. The C.S.F. pressure was 120 mm. of water and analysis of the fluid revealed the cell count to be 160 per cu. mm., with the sugar decreased and chlorides normal. A repeat lumbar tap on May 19th showed the C.S.F. pressure elevated to 225 mm. of water,

cell count 240, with both sugar and chlorides decreased. A provisional diagnosis of tuberculous meningitis was made. (Guinea pig inoculation with a sample of this C.S.F. specimen later confirmed the diagnosis.)

On May 19th the patient was started on intramuscular streptomycin 0.250 Grams every three hours and subsequently, on June 15th she also was started on intra-theal administration (50 mgms. daily). Her clinical condition had become worse after admission but because early in July she began to improve the intra-theal streptomycin dosage was discontinued on July 10th and the intramuscular dosage on July 22nd. By the end of July she was able to get out of bed and walk with assistance. On August 20th she was considered well enough to be discharged to her home with the advice that she return to hospital in the month's time. She got along very well for a time but, about three weeks after leaving the hospital, she became worse and was re-admitted in a disorientated state on Sept. 10th. There was definite nuchal rigidity and bilateral papilledema. On Sept. 12th she was started again on intramuscular and intrathecal streptomycin but, despite therapy she followed a stormy course and little hope was held for her recovery. The streptomycin was continued for three and one-half months but on Dec. 27th was discontinued in order to see what her response would be. For four weeks she continued in very poor condition but about the end of January, 1948, a remarkable improvement began. She became clear mentally and was able to sit up in a chair daily. By the middle of February she was able to walk with assistance and on Feb. 22nd she was discharged from hospital with the recommendation that she return to hospital immediately if any signs of relapse appeared.

In October, 1948, she returned to hospital for a check-up. She weighed as much as she did before her illness and was leading a moderately active life at home. She complained of ringing in her ears, unsteadiness when walking, and some deafness. General physical examination revealed normal findings but there were several abnormal neurological findings including unsteadiness of gait, diminished right ankle jerk, doubtful plantar responses, slight nystagmus on looking to the left, and moderate hearing loss in both ears. Urinalysis, blood counts, blood NPN and sugar, and chest X-rays were normal. A lumbar puncture and C.S.F. analysis were normal. (Cells=4. Sugar=normal. Protein=60. Chlorides=700. Colloidal curve 11000000).

Caloric tests showed hypoactivity of the left labyrinth with normal response on the right. Audiometer readings showed diminution of hearing in both ears, more marked on the left. Intelligence testing was carried out and revealed an average intelligence with no evidence of mental deterioration.

The patient was contacted by letter in May, 1949, and in her reply she stated that she had continued to feel well. She still had difficulty in walking and was bothered by ringing in her ears. Her general health was good, however, and she was now able to do all her household duties herself.

In brief, two years after the diagnosis of tuberculous meningitis was made, this patient is alive and leading a moderately active happy home life but she continues to have minor neurological disturbances probably due to toxic effects of streptomycin.

Case 2:—Mrs. I. M., a 34 year old white female, was admitted to the

Victoria General Hospital on May 30, 1948, complaining of headache. She suffered also from general malaise and she thought she had "the flu."

Family history was non-contributory but past history revealed the patient had been treated for pulmonary tuberculosis twelve years previously and prior to that had had a tuberculous lesion of the spine. Positive physical findings on admission included slight blurring of optic discs and slight neck rigidity. There was a low grade pyrexia.

Routine blood counts, urinalysis, NEN and sugar were normal. Kahn was negative. Sedimentation rate was 39 mm. Chest X-ray showed pressure about 200 mm. of water with 100 mononuclear cells per cu. mm. and 100 mgms. protein per cu. ml. Sugar and chlorides were normal. On June 9th a repeat lumbar puncture was done and, in addition to increased cells and protein, there were lowered chlorides and sugar. A provisional diagnosis of tuberculous meningitis was established and intra-muscular and intra-theal streptomycin were started. (Subsequently, cultures from the C.S.F. were reported positive for tubercle bacilli confirming the diagnosis.)

About two weeks after admission the patient developed a weakness of the 6th cranial nerve on the left and, for a month, her general condition was poor. Early in July, however, she began to improve and by the middle of July she felt fairly well. Her chief complaint was dizziness and because of this the intra-muscular dosage of streptomycin was reduced. On July 30th the intra-theal streptomycin was discontinued. The patient continued to improve and on Aug. 31st she was permitted to sit up in a chair for the first time. On Sept. 26th she began walking with assistance and thereafter was able to be up and about the ward daily. On Nov. 8th intramuscular streptomycin was discontinued and on Nov. 25th the patient was discharged from hospital. Her general condition was improving and she had gained 20 pounds in weight in the six weeks prior to leaving hospital. An intelligence test reported the patient to be in the average group of general intelligence with no evidence of deterioration. Her only complaints were unsteadiness when walking and slight diplopia on looking at objects across the room.

The patient was seen at intervals as an outpatient and over a period of time her gait improved and the diplopia disappeared. A re-check at the Medical Clinic of the Outpatient Department on May 19, 1949, showed her weight to be back to usual figure before her illness. Neurological examination was essentially negative and her spinal fluid analysis was normal. (Cells = 7, Protein = 38, sugar = normal, chlorides = 20, colloidal curve = 01110000).

This patient, approximately one year after the onset of tuberculous meningitis, has a normal spinal fluid and very slight residual neurological damage.

Streptomycin and Tuberculous Meningitis

Prognosis:—The prognosis of tuberculous meningitis had been a hopeless one until the advent of streptomycin. With streptomycin therapy it is found that many cases are too far advanced when therapy is begun and they fail to respond to it. Others are temporarily arrested but die after several months of therapy. A common cause of death is the development of archnoiditis with spinal block and resultant internal hydrocephalus. (Various measures have been tried in some centres to prevent this, for example, alternating cisternal and lumbar punctures, using heparin; and perfusing the spinal canal

with fibrinolysing substances in an attempt to break down adhesions.) Of those cases which do recover for a length of time longer than one year many show varying degrees of neurological residual damage either from the meningitis process or from the streptomycin therapy.

Dosage:—As yet no absolute dosage schedule can be recommended. Each case varies in response and must be carefully watched for toxic effects. In Britain a committee appointed to advise the Ministry of Health on the use of streptomycin reported: "For miliary and meningial tuberculosis a daily intramuscular dose of 20 mgms. per pound body weight up to a maximum of 2 grams is recommended. Intramuscular treatment should be maintained for at least four months, and in some cases further courses may be required. In addition, for meningitis, 50-100 mgms. of streptomycin dissolved in 5-10 mls. of saline should be injected intra-theccally daily. The optimal frequency of intra-theccal injection is not yet established, but it seems advisable in the average case to give intra-theccal injections daily for the first three weeks and then every other day for two weeks. Further courses of intra-theccal injection are probably necessary. The course of tuberculous meningitis under streptomycin treatment is very variable, and may be complicated by spinal block interfering with intra-theccal therapy. In the United States, Pfretze and Pyle in a recent review of streptomycin in tuberculosis state that most investigators have agreed that in tuberculous meningitis intra-theccal administration is necessary as well as intramuscular therapy but the amount and duration of such treatment is not uniformly agreed on. ²Solfone preparations, e.g. promin and promizole, have been used in combination with streptomycin, and some observers report an additive therapeutic effect^{3,4}.

Toxic effects:—Vestibular damage is the commonest toxic effect of streptomycin and occurs with special frequency after middle age. Nausea, anorexia and vomiting, skin eruptions and pruritis are less important toxic effects and are usually relieved by antihistamine drugs. Albuminuria and cylindruria occur but are usually transient with the present dosage schedules.

Summary

Nine cases of tuberculous meningitis received treatment with streptomycin at the Victoria General Hospital, Halifax, to June 1, 1949. Case reports on two patients of this group who apparently recovered have been presented.

REFERENCES

1. Young, Sir Robert, Chairman subcommittee: "Streptomycin in the Treatment of Tuberculosis." Brit. Med. Journal, p. 280, Feb. 12, 1949.
2. Pfretze, Karl H. and Pyle, N. M. "Streptomycin in the Treatment of Tuberculosis," J.A.M.A. 139/634 (March 5), 1949.
3. Lincoln, B. N., Kirmse, T. W. and DeVito, E. "Tuberculous Meningitis in Children:" A preliminary Report of its Treatment with Streptomycin and Promizole," J.A.M.A. 136:593-597 (Feb. 28), 1948.
4. Frontalli, G. "Miliary and Meningial Tuberculosis Treated with Streptomycin. A study of 85 Cases." Annals paidiatrici, 171:286 (Nov., Dec.), 1948.

The Annual Meeting - C. M. A. - Saskatoon

June 1949

It has become almost a tradition for the BULLETIN to carry some sort of commentary on the Annual Meetings of The Medical Society of Nova Scotia, and also, but less regularly, brief notes on the Annual Meetings of the Canadian Medical Association. The difficulty about producing notes on the latter is that the number of possible reporters is limited by the relatively small number from Nova Scotia who attend these meetings, add it does not seem suitable that the observations should be made always by the same writer. At a meeting as broad in scope as those of the Canadian Medical Association no one person can attend all the sessions or see all there is to be seen and different viewpoints should from year to year be presented.

There must have been many headaches suffered in Saskatoon in the months leading up to June. Even in a large city staging a big medical meeting requires careful planning and thoughtful preparation. For a community the size of Saskatoon the undertaking must have seemed gigantic. But whatever the advance worries may have been one hardly could have suspected them from the calm demeanour and gracious hospitality of the hosts when the days arrived. Whatever facilities may have been lacking, and it is hard to recall any that were, they were more than compensated for by the carefully planned and efficiently executed arrangements in all departments.

A special interest was lent to this particular meeting by the presence of delegates who had been attending the British Commonwealth Medical Association meeting during the previous week. Most of them remained for the meeting of the Canadian Medical Association, imparting thereby much colour, flavour and substance to the proceedings. One of the outstanding occasions was the Economics Dinner on Thursday night at which the speakers, Doctors H. Guy Dain and Charles Hill of England, O. Mercer of New Zealand and J. G. Hunter of Australia, described the relations between organized medicine and the state in their particular countries. Food for thought was there, in abundance.

A further distinction attached itself to this meeting in that it was the first at which delegates from Newfoundland were present in an official capacity. Their interest in the proceedings was obviously intense, and they must have derived great satisfaction both for themselves and for their province from the great bursts of applause that greeted them on every occasion when they made their appearance at any general gathering.

Mention should be made of the full support given by the University, in every way. Nearly all the scientific sessions were held in the University buildings, reached by regular bus service from the hotel. University dormitories were available to the Housing Committee, though it is understood they were not needed. On the last day of the meeting the University of Saskatchewan held a Special Convocation at which honorary degrees were conferred upon Doctors J. F. C. Anderson, President of the Canadian Medical Association, William Magner, Past President Canadian Medical Association, Charles Hill of England and J. A. MacFarlane of Toronto. This colourful and impressive ceremony which was followed by tea in the University Dining Hall was the final event of a busy week.

The Entertainment Committee, both general and ladies', had their assignments well covered. All the usual luncheons, receptions, dinners and dances were held and went off well. In addition, on the Thursday evening a number of local hostesses opened their homes to entertain "Western After Nine Coffee Parties." These were attended by the ladies who later, after the Economics Dinner, were joined by their husbands. These parties must have meant a good deal of extra effort in an already full week, but none of the mistresses of those charming homes have been left unaware of the appreciation of her guests.

It was a very pleasant week. The weather, while the rest of Canada sweltered, was very cool, once or twice almost too cool. There had been enough rain to keep things green and fresh and Saskatoon looked its best. Westerners marvelled at the long twilights and early dawns.

Next year faces will turn east to Nova Scotia and Halifax. And if we can believe all we heard the faces will be numerous. In retrospect it seems that everyone at Saskatoon and more besides was looking forward to 1950, Halifax—and "all the lobsters they can eat, for once in their lives." So it is up to us, to provide not only the lobsters, but all the other things that go to make a successful gathering. Again the meeting will be held in a place not well equipped to hold it, but it has been shown before that obstacles can be overcome, and that the warmth of a welcome makes up for many shortcomings.

**PROGRAMME OF NINETY-SIXTH ANNUAL MEETING OF
THE MEDICAL SOCIETY OF NOVA SCOTIA
WHITE POINT BEACH LODGE, WHITE POINT, N. S.**

SEPTEMBER 6, 7, 8, 1949

PROGRAMME

TUESDAY, SEPTEMBER 6th

2.30 to 5.30 p.m.—Executive Meeting.

7.30 p.m.—Registration.

8.00 p.m.—First Business Session.

WEDNESDAY, SEPTEMBER 7th

9.00 a.m.—Visiting of Booths.

9.30 a.m.—Dr. D. L. C. Bingham, Department of Surgery, Kingston General Hospital, Kingston, "Intervertebral Disc Lesions in the Lumbar Region."

Discussion to be opened by Dr. J. C. Acker, Halifax, N. S.

10.30 a.m.—Dr. Louis Wolff, Associate in Medicine, Harvard Medical School, Boston, "Diagnosis of Acute Myocardial Infarction."

Discussion to be opened by Dr. C. W. Holland, Halifax, N. S.

11.30 a.m.—Dr. J. F. C. Anderson, President, Canadian Medical Association, Saskatoon, "Avoidable Errors in Diagnosis."

Discussion to be opened by Dr. J. W. Reid, Halifax, N. S.

1.00 p.m.—Luncheon.

Address by Sir Lionel Whitby, President, British Medical Association and Regius Professor of Physic, Department of Medicine, University of Cambridge, England, "Nationalized Medicine."

2.30 p.m.—Dr. T. A. Lebbetter, Internal Medicine, Winnipeg Clinic, Winnipeg, "Group Medicine."

Discussion to be opened by Dr. H. A. Creighton, Lunenburg, N. S.

3.30 p.m.—Dr. C. S. Marshall, Neuro-Psychiatrist, Department of Public Health, N. S., "The Provincial Programme for Mental Health."

Discussion to be opened by Dr. R. O. Jones, Halifax, N. S.

4.30 p.m.—Dr. D. L. C. Bingham, Department of Surgery, Kingston General Hospital, Kingston, "Varicose Veins."

Discussion to be opened by Dr. E. F. Ross, Halifax, N. S.
Entertainment.

Evening.

THURSDAY, SEPTEMBER 8th

- 9.00 a.m.—Sir Lionel Whitby, President, British Medical Association and Regius Professor of Physic, Department of Medicine, University of Cambridge, England, "The Common Anaemias."
Discussion to be opened by Dr. K. A. MacKenzie, Halifax, N. S.
- 10.00 a.m.—Dr. Louis Wolff, Associate in Medicine, Harvard Medical School, Boston, "Management of Acute Myocardial Infarction."
Discussion to be opened by Dr. J. C. Wickwire, Liverpool, N. S.
- 11.00 a.m.—Paper, Representative, Canadian Anaesthetist's Association. (Title to be announced.)
- 12.00 noon—Second Business Session.
Afternoon free for entertainment, golf, etc.
- 6.30 p.m.—Reception by Presidents of The Medical Society of Nova Scotia and Lunenburg-Queens Medical Society and their wives.
- 7.30 p.m.—Annual Dinner.
Presidential Address.
Address by Doctor J. F. C. Anderson, President, Canadian Medical Association, Saskatoon.
Dancing.
- 1.00 p.m.—Luncheon.
Address by Sir Lionel Whitby, President, British Medical Association and Regius Professor of Physic, Department of Medicine, University of Cambridge, England, "National Medicine."
- 2.30 p.m.—Dr. T. A. LeDollet, Internal Medicine, Winnipeg Clinic, Winnipeg, "Group Medicine."
Discussion to be opened by Dr. H. A. Creighton, Lunenburg, N. S.
- 3.30 p.m.—Dr. C. S. Marshall, Neuro-Psychiatrist, Department of Public Health, N. S., "The Provincial Programme for Mental Health."
Discussion to be opened by Dr. R. O. Jones, Halifax, N. S.
- 4.30 p.m.—Dr. D. E. G. Bingham, Department of Surgery, Kingston General Hospital, Kingston, "Various Veins."
Discussion to be opened by Dr. K. F. Ross, Halifax, N. S.

Editorial

The editors have for a long time wished to stimulate interest in the historical side of medicine, either in general or with particular reference to the early days of medicine in Nova Scotia. Efforts have been made to secure material of this kind, largely by personal contact, and we have been able to publish an occasional article along these lines. But not nearly enough. We are well aware that part of our difficulty in securing scientific papers lies in the incurable modesty of many of our men who feel that they are not equipped to write in this way. We do not share this view, nor are we turning to historical papers because they may be easier to get. But perhaps some of the shy authors may be able to set down as a narrative some tale of long ago which would be of genuine interest to all readers.

The idea is often expressed that the modern age does not produce the "characters" of other days, those lovable, or otherwise, personalities who livened up the local scene and provided the basic elements upon which many good stories were based. Whether this be true or not, it is a remarkable fact that no one seems to grow up without having known at least a few of these odd sticks, from which we may conclude that "characters" are by no means extinct as yet.

Whether they be characters in that sense of the word, or in others, there must be many interesting and remarkable people buried in our past, about whom we would wish to hear. Other aspects of the history of medicine are not lacking in attraction and some of our members may be able to contribute articles along other lines. Also we should be glad to receive copies of old medical papers which might be suitable for reprinting. It often happens that some recent advance brings to mind some very early expression of similar ideas.

If enough material of this sort were forthcoming a special issue could be got out. But failing that let us have what we can in the hope that it will in turn encourage others to similar efforts.

M. E. B. G.

PROGRAMME

White Point Beach Lodge, White Point Beach, September 7, 1949
Nova Scotia Society of Ophthalmology and Otolaryngology

Annual Meeting

Wednesday, September 7, 1949

- 10.00 a.m. Business Meeting.
- 11.00 a.m. Paper—"Neurologic Signs and Ocular Disease."—Dr. E. F. J. Dunlop, Bridgewater, Nova Scotia.
- 2.30 p.m. Business Meeting.
- 3.00 p.m. Paper—"Fundamentals in Biomicroscopy of the Eye."—Dr. H. J. Davidson, North Sydney, Nova Scotia.
- 4.00 p.m. "Discussion of Ear, Nose and Throat Topics at the Roanoke Post-Graduate Course, 1949."—Dr. R. S. Shlossberg, New Glasgow, Nova Scotia.

NOTICE

The annual golf tournament has been revived, and will be held on the Golf Course at White Point, which is operated by the Liverpool Golf and Country Club, at 2.30 p m., Thursday afternoon, so bring along your golf clubs and join the tournament. Entries will be made with Doctor C. L. Gosse.

A meeting of the Nova Scotia Health Officers' Association will be held at White Point Beach on September 6th, at 10.00 a. m.

A programme will be presented and important matters will come up for discussion.

Personal Interest Notes

THE list of candidates who were successful in examinations held in June of the Medical Council of Canada has just been released by Doctor J. F. Argue, Registrar. The examinations were held in Halifax, Montreal, Kingston, Toronto, London, Winnipeg, Edmonton and Vancouver.

Successful candidates at Halifax were:

From New Brunswick: Gordon Haig Algie, Rosborough Gerald Clayden, Cecil Maurice Day, Douglas Willard Blake Keating, all of Moncton; Horace Harold Jacobson, Joseph Harris Lesser, Leonard James Stephen, all of Saint John; Robert Bruce Miller, Campbellton; John Edward Rigby, St. Andrews; Harold Gordon Sears, St. Stephen.

From Prince Edward Island: Robert Waldron Auld, Freetown; Mark Lorne Bonnell, James William Moreside, Charlottetown; Angus Alexander MacLeod, Lorne Valley.

From Newfoundland: Frank Kevin Hickey, Abraham Levitz, Patrick Joseph Whelan, all of St. John's; Alvin Robert Mercer, Bishop's Falls.

From Nova Scotia: James Taylor Balmanno, Joggins; Donald Sinclair Brennan, Kentville; James Gordon Chambers, North Sydney; Solomon Hirsch, and Israel Karrel, Sydney; Reginald Curren Eaton, Wolfville; Stewart Carlyle Fuller, Yarmouth; Lloyd Roy Hirtle, Helen MacKay Hunter, John Charles Theriault, all of Halifax; Donald Ross MacInnis, Shubenacadie; Liam Logue McKeough, Sydney Mines; Lorenzo Gordon Rundle, New Glasgow; Myles Gregory Tompkins, Dominion; Francis Ralph Townsend, Louisbourg; Freeman Burton Webber, Cambridge.

From Ontario: Edward Glennie Burger, St. Thomas.

From British Columbia: James Little Frazee, Vancouver.

From Quebec: David Hier, Montreal.

From Connecticut: Stanley Nelson Teale, Granby.

From Saskatchewan: Lawrence Stickney Van Blaricom, Tisdale.

Doctor R. W. Begg of Halifax, Director of Dalhousie University's Cancer Research Laboratory, addressed the annual convention of the Canadian Radiological Technicians Society at Halifax early in July.

Doctor J. J. Stanton of Canso plans to leave early in September for Toronto University where he will take a post-graduate course in Public Health.

Doctor R. D. Drysdale, Dal. 1948, who has been on the resident staff of the Victoria General Hospital for the last year, left early in July for Montreal to take post-graduate work in internal medicine at the Royal Victoria Hospital.

Doctor and Mrs. P. G. Loder (Joan Cooley) and their little son, of Kentville, visited Doctor Loder's parents, Rev. and Mrs. T. E. Loder, Corner Brook, Newfoundland, in July.

Doctor and Mrs. E. L. Thorne of Halifax enjoyed a three weeks motor trip to the United States in June.

The BULLETIN extends congratulations to Doctor and Mrs. H. D. Lavers (Adelaide MacKeen) of Truro on the birth of a daughter, Linda Adelaide, on July 15th.

Doctor N. G. Pritchett, Dal. January 5, 1943, assistant superintendent of the State Sanatorium for Tuberculosis at Norton, Kansas, has recently been made a Fellow of the American College of Chest Physicians.

The marriage took place at Windsor on July second of Miss Barbara Cecile, daughter of Mrs. Strong, and the late Gerald Strong, Halifax, and Doctor Robert Waldron Auld, son of Mr. and Mrs. Robert Auld, Freetown, P. E. I. Doctor Auld graduated from Dalhousie Medical School in May of this year and will practise in Kensington, P. E. I.

Doctor P. S. Campbell of Halifax, Deputy Minister of Health for Nova Scotia, was appointed honorary life member of the Canadian Public Health Association at their annual meeting in Halifax the end of June.

The high incidence of tuberculosis among nurses, medical students and hospital attendants was discussed at the meeting of the Commonwealth Health and Tuberculosis Conference in London, England, by Doctor George Wherrett of Toronto, on July 7th.

Doctor Wherrett, executive secretary of the Canadian Tuberculosis Association, quoted reports showing the incidence of the disease is higher among men and women tending the sick than among similar age groups otherwise employed.

This is doubly unfortunate, he added, in that the shortage of nursing personnel is particularly acute in tuberculosis services.

The first step to remedy the situation should be to adopt a rational medical and nursing technique for the protection of these unavoidably-exposed groups. He gave four examples of possible application:

1. Adequate instruction of nurses, students and attendants, as well as patients, in preventive measures.
2. Adequate washing facilities in every ward.
3. Protective coverings, including uniforms, masks and hoods, overall gowns and gloves.
4. Regular medical examination of all workers with tuberculin testing and chest X-ray at six-month intervals.

At the 37th annual meeting of the Canadian Public Health Association held in Halifax in June, Doctor A. D. Kelly, Assistant Secretary of the Canadian Medical Association told the delegates that extension of voluntary prepaid medical care programmes to cover Canada is proposed by the Canadian Medical Association. This proposal was contained in a general statement of policy issued by the General Council of the Canadian Medical Association on June 14th. The provision by the state of the health insurance premium, in whole or in part, for persons adjudged to be unable to provide these premiums for themselves, was another proposal contained in the policy statement.

Establishment of a national corporation to correlate the activities of provincial prepaid medical care plans is under consideration at the present time by the Canadian Medical Association, and an application for the incorporation of Medical Care (Canada) Incorporated is before the Secretary of State.

Prepaid medical care plans are operating in six Canadian provinces and are sponsored by the medical profession. In Nova Scotia there is the Mari-

time Medical Care Incorporated which started operations in March and has now 2,000 subscribers.

The Health Department at Ottawa announced recently that public health research grants have been awarded for five projects in the Maritimes. The largest single grant is \$7,500 for the University of New Brunswick to finance the study of the nutritional value of farm products grown in the province. The investigation will be carried out mainly in the Counties of York, Carleton and Madawaska and will concentrate upon potatoes, carrots, apples and oats. Later it is hoped to expand the study to discover the relationship between ill health and nutritional deficiencies due to soil conditions. The work will be carried out by Doctor C. W. Argue, head of the department of Biology, and Doctor W. A. Andrea, Research Fellow in Biology.

Three of the grants are for research work in Nova Scotia. Dalhousie University will investigate the effects of early ambulation in pregnancy. The study is being based on 2,000 obstetrical cases. Case histories and examinations have already been made, and under the direction of Doctor H.B. Atlee, head of the department of obstetrics and gynaecology, these cases will be followed up in an effort to find out whether or not the traditional arguments against early rising after childbirth are true.

Dalhousie will also investigate the merits of BCG vaccination for tuberculosis, duration of protection and the best method of administering it. The study, directed by Doctor C. B. Stewart, professor of epidemiology, assisted by Doctor C. J. W. Beckwith, director of tuberculosis control for Halifax, and Doctor P. A. Creelman, director of the tuberculosis division of the Prince Edward Island Health Department, will also study the practical problems involved in an extensive vaccination programme in this field.

Under direction of Doctor E. G. Young, professor of biochemistry at Dalhousie, a study will be made of the level of vitamin D in the diet of children between two and five years of age. The two-year investigation will try to determine more exactly what amounts of vitamin D considered in relation to calcium and phosphorus are necessary for normal development of the body's bone structure. The total sum granted for the Dalhousie projects is \$8,150 for the current fiscal year.

In Prince Edward Island a study will be made of the incidence and significance of paracolon bacilli in water. This project will be directed by F. W. Jelks, provincial bacteriologist, and W. K. Sharpe, director of the province's Division of Sanitary Engineering.

Doctor W. T. Morris MacKinnon, who graduated from Toronto University in 1903, and has been practising in Ottawa for the past twenty-seven years, has returned to Amherst, and will continue his work there. Doctor MacKinnon is a native of Amherst, and after serving in the Medical Corps overseas in the First Great War attaining the rank of Lieutenant-Colonel he returned to Amherst, afterwards moving to Ottawa.

Doctor W. R. Carl Tupper, Dal., Sept. 1, 1943, has received a Study Scholarship through the National Research Council and will spend the next year visiting various clinics in gynaecology and obstetrics in Canada and the United States.

Doctor and Mrs. J. W. MacIntosh and their two sons, of Halifax, left on July second, on a holiday trip of six weeks to England and Scotland.

35th Clinical Congress and 6th Inter-American Congress of Surgery

The Clinical Congress of the American College of Surgeons, always international in scope, will be exceptionally world-wide in character when it convenes in Chicago from October 17 to 23 because it will include the Sixth Inter-American Congress of Surgery, and because many delegates from the 13th Congress of the International Society of Surgery, which meets in New Orleans the previous week, are planning to attend the Chicago Congresses, according to Dr. Irvin Abell of Louisville, Chairman of the Board of Regents. Delegates and visitors to the Sixth Inter-American Congress of Surgery will attend the sessions of the Clinical Congress from October 17 to 21, and will hold their own separate sessions on October 21, 22 and 23. Through the membership of the American College of Surgeons in the Association of Inter-American Congresses of Surgery, every Fellow, Dr. Abell states, is a member of the latter group and is entitled to attend its scientific and social sessions. Headquarters for both Congresses will be at The Stevens.

Sir James R. Learmonth of Edinburgh will deliver the fourth Martin Memorial Lecture at the Presidential Meeting on Monday evening, October 17, when Dr. Dallas B. Phemister of Chicago, the outgoing president, will preside and will deliver the Presidential Address, and Dr. Frederick A. Coller of Ann Arbor, Michigan, will be installed as the new President. Lord Webb-Johnson of London, President of the Royal College of Surgeons of England, will deliver the Fellowship Address at the Convocation on Friday evening, October 21, when fellowship will be conferred upon several hundred initiates.

Television of operations in color from St. Luke's Hospital to The Stevens will be a feature of each day's program during the Clinical Congress. The other events will include scientific sessions, official meetings, hospital conferences, medical motion picture showings, technical and scientific exhibitions, and operative and non-operative clinics in 24 hospitals in the Chicago area.

Canadian Arthritis and Rheumatism Society Fellowships

Fellowships for post-graduate training in the Rheumatic diseases are immediately available for study at University Centres in Great Britain, the United States and Canada.

These Fellowships are particularly designed for those desiring further training in Internal Medicine.

The fellowships will be tenable for a period of twelve months and the amounts will vary from \$2,000 to \$4,000 per annum in accordance with the candidate's experience and qualifications.

The Society will pay the Fellows' travelling expenses from their place of residence in Canada to and from the place of training.

Certain of these Fellowships become tenable October 1, 1949 and others January 1, 1950.

Further information has been placed in the hands of Deans of Medicine or may be obtained from the Executive Director, Canadian Arthritis and Rheumatism Society, 74 Sparks St., Ottawa, Ont.

Obituary

Doctor Alexander MacLeod Fraser, Professor of Pharmacology at Dalhousie University and a veteran of the R.C.A.F. in World War Two, died July 8th, at the Victoria General Hospital following an illness of four months. He was 42 years of age.

Doctor Fraser was born at Scotsburn, Pictou County, the son of Mr. and Mrs. John W. Fraser. He was educated at Pictou Academy, where he won the Gold Medal on graduation. He received his B.Sc. from Dalhousie University, and his M.A. from Haverford College, Pennsylvania, and graduated in medicine from McGill University in 1938.

Following graduation from McGill, he joined the staff to teach and to conduct research. During that time he had several articles published in medical journals on the success of his work in purifying and isolating hormones pertaining to water metabolism in the body.

Doctor Fraser joined the R.C.A.F. Medical Branch in 1941 and, because of his extensive scientific training, was posted to the Clinical Investigation Units at Toronto and Regina during the next two years. He was a member of the research team which concentrated on problems of flight at altitudes over thirty thousand feet. He did pioneer work in training airmen in the effects of high altitude and in developing methods for their protection. His work on decompression sickness and anoxia added greatly to the fundamental and practical knowledge of these subjects, and he also contributed to several basic studies on the aetiology of air sickness. Over twenty scientific reports on aviation medicine are written by Doctor Fraser during his R.C.A.F. service. In 1943 he was posted overseas for duty with the R.A.F. research unit, and was largely responsible for the development and introduction into actual service of pressure-breathing oxygen equipment. Before the practical development of pressure-cabin aircraft, this pressure breathing equipment permitted fighter pilots to fly safely at altitudes over 40,000 feet, and made it possible for the R.A.F. to clear the skies of enemy reconnaissance aircraft which had hitherto been beyond their range. Few medical officers have had the opportunity to participate in a project of such far-reaching significance to the direct outcome of the war.

On discharge he rejoined the Faculty of McGill as Associate Professor of Pharmacology and in July, 1948, came to Dalhousie as Professor of Pharmacology.

Doctor Fraser is survived by his parents, one brother, Rev. J. Milton Fraser, rector of Bethany United Church, Armdale, three sisters, Mrs. Bert Ross and Mrs. Edgar MacLeod, Scotsburn, and Mrs. G. Roderick MacKenzie, Trenton. The funeral was held at the Scotsburn United Church on July 10th, followed by burial in the church cemetery.

The Bulletin extends sympathy to Doctor J. E. Hiltz of Kentville on the death of his father, Mr. Avery Grant Hiltz, at Kentville on July first, at the age of sixty-four.

Canadian Arthritis and Rheumatism Society.

An important step taken by the Canadian Arthritis and Rheumatism Society in the concerted attack on Arthritis has been the adoption of a programme of Fellowships for the post-graduate study of rheumatic diseases. The fellowships are designed especially for those desiring further training in internal medicine.

These Fellowships are available for study at University Centres in Great Britain, the United States and Canada. They are tenable for a period of twelve months and the amounts will vary from \$2000 to \$4000 per annum in accordance with the candidate's experience and qualifications. The fellowships in the United States will be tenable from the 1st of October, 1949, and those in Great Britain from the 1st of January, 1950, for a period of twelve months.

Further information has been placed in the hands of Deans of Medicine, or may be obtained from the Executive Director, Canadian Arthritis and Rheumatism Society, 74 Sparks Street, Ottawa, Ontario.

The National Gastroenterological Association will hold its 14th Scientific Session at the Somerset in Boston, Mass., on October 24-26, 1949.

Among the outstading speakers to present papers at the Convention are Dr. Owen H. Wangenstein, Professor of Surgery, University of Minnesota Medical School, Dr. Frank Lahey, Lahey Clinic, Boston, Mass., Dr. William B. Castle, Boston, Mass., Dr. George Crile, Jr., Cleveland, Ohio, Dr. Maxwell Finland, Boston, Mass., Dr. J. M. T. Fidney, Jr., Baltimore, Md. and Lord Alfred Webb-Johnson, President of the Royal College of Surgeons, London, England, who will be a guest of honor at the banquet to be held on Tuesday evening, October 25, 1949.

At the Annual Banquet to be held at the Somerset, the winner of the National Gastroenterological Association's 1949 Prize Award Contest for the best unpublished contribution on Gastroenterology or an allied subject, will receive the prize of \$100.00 and a Certificate of Merit.

Immediately following the Convention on October 27, 28, 29, 1949, the Association is sponsoring a course in Gastrointestinal Surgery at the Boston City Hospital.

Further information concerning the program and details of the course may be obtained by writing to the Secretary, National Gastroenterological Association, 1819 Broaffway, New York 23, N. Y.