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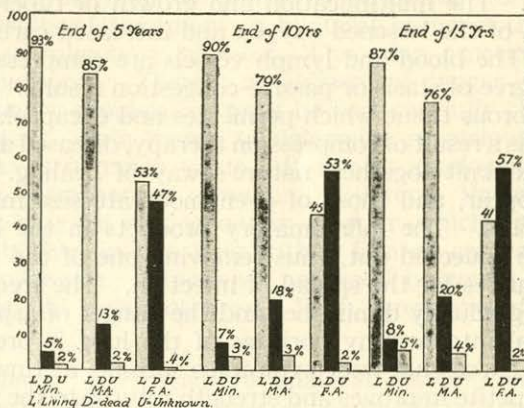
Surgical Aids in the Treatment of Pulmonary Tuberculosis

A. F. MILLER, Medical Superintendent

EVER since the days of Brehmer and Dettweiler in Germany, and Trudeau in America, rest in the open air, supervised exercise and good food have been the main fundamentals in the treatment of pulmonary tuberculosis. Unquestionably many patients through these means, have had their lives lengthened out and are restored again to health. Good as rest may be, however, there are many consumptive persons who have received little or no benefit even when bed rest has been strictly carried out over a long period of time, months and even years. The failure to bring about curative results in cases such as these, apart from those hopelessly ill, lies chiefly in the fact that it is impossible in this manner, to set the lung at rest. The lungs, as you well know, are in a constant state of distension, and expand and contract at least 25,000 times in twenty-four hours. The rate and depth of the respiratory movements are relatively little controlled even under the strictest rest in bed. In consequence, the exertion of breathing, coughing, etc., throws considerable strain upon the pulmonary tissues and prevents, to a certain degree, healing by resolution and fibrous encapsulation of the affected areas in the lung.

It is interesting to note the after or ultimate results of treatment on a group of 3907 patients, fifteen years following their discharge from the Trudeau Sanatorium, Saranac Lake, New York. Approximately five per cent of these persons had received collapse therapy, chiefly artificial pneumothorax treatment; otherwise the results obtained are from the usual rest treatment alone.

ULTIMATE RESULTS SANITORIUM TREATMENT
CONDITION OF 3907 PATIENTS DISCHARGED 1916-1930



I need not tell you that there is no specific cure for pulmonary tuberculosis. To bring about arrest of clinical disease it is essential to control the outflow of tuberculo-toxins from the lungs to the circulation. Whether or not the

* Address given to the Colchester-East Hants Medical Society, Truro, N. S., October 13, 1936, also to the Cumberland Medical Society, Amherst, N. S., November 11, 1936.

toxemia is acute or chronic it invariably disturbs the health of the patient and in time favors the spread of tuberculosis throughout the lungs. The most effective way to overcome this is to place the diseased lung at rest either by means of artificial pneumothorax, or by one of the other surgical procedures that are now so commonly employed for this purpose. It is only within the past five or ten years that collapse therapy has become widely recognized as an invaluable aid in the treatment of tuberculosis. You will hardly credit me when I tell you that up to 1932 only 5 to 15 per cent of patients in sanatoria in America were receiving operative aids of one kind or another. To-day 40 to 80 per cent of patients in our institutions are having the benefit of some form of collapse therapy, pneumothorax, phrenicectomy, intrapleural pneumolysis, thoracoplasty.

It may not be without interest for you to hear that artificial pneumothorax for the cure of tuberculosis was first proposed, in 1822, by Dr. James Carson, a Scottish physician in Liverpool, England. Carson, although he experimented with this measure on animals never actually carried it into practice on human beings. Sixty years were to pass before we hear mention of it again when Forlanini of Pavia, Italy, recommended its employment in the treatment of consumption. This was in 1882. It was not, however, until ten years later that he tried out this measure on a small number of his patients. In 1898, Dr. John B. Murphy, a noted surgeon of Chicago, was the first in America to attempt artificial pneumothorax on several of his tuberculous cases. In 1900 Professor James Third, Ontario, was the medical pioneer in Canada to make use of collapse therapy. At the Nova Scotia Sanatorium, we began the employment of pneumothorax in 1914. Since then to the present time we have given this therapeutic aid to more than 800 patients.

The Object of Artificial Pneumothorax: When air is introduced into the pleural space, it squeezes together the pulmonary tissues just as you squeeze a sponge. In consequence the affected lung is gradually set at rest, partly or completely, depending upon the degree of compression you are able to bring about. Collapse of the lung produces a favorable element for the repair of the tuberculous lesion. The multiplication and growth of tubercle bacilli is inhibited on account of the lessened oxygen and increased carbon dioxide content in the lung. The blood and lymph vessels are compressed, or even obliterated, and a degree of stasis or passive congestion results. This stimulates the formation of fibrous tissue which permeates and encapsulates tuberculous foci in the lung. As a result of compression therapy, diseased areas are brought into apposition and knit together, nature's way of healing. Small cavities may entirely disappear, and those of even moderate size may be closed or reduced to mere slits. The inflammatory products in the bronchioles and alveolar spaces are squeezed out, thus removing one of the commonest and most dangerous sources for the spread of infection. The frequency of cough and expectoration gradually diminishes and the danger of aspiration of bacillary-laden material into healthy portions of the lung is prevented. When collapse therapy is successful, toxic symptoms subside, at times in a dramatic way, fever falls, appetite improves and strength returns to the body.

At the Nova Scotia Sanatorium it is our custom, once the diagnosis of tuberculosis has been established, to consider what form of treatment, medical and surgical, is best suited to the needs of the patient. If pneumothorax has been decided upon, we usually start this procedure as soon as possible. Little is to be gained by delay except in cases of bilateral tuberculosis, where the

disease in the contralateral lung may have to be closely watched for some time before compressing the more diseased lung. The proportion of patients considered ideal for therapeutic pneumothorax is disappointingly low. This is for the reason that the disease in the lungs has advanced so far that it is impossible to give them the benefit of this life-saving measure. We find that about 20 per cent of patients admitted to the sanatorium are admirably suited for collapse therapy. Another 30 to 40 per cent may receive considerable good by even a partial collapse of the affected lung. At the present time we are making use of pneumothorax, as well as other operative aids, in 45 to 50 per cent of patients at the sanatorium. (Here followed an exhibit of many X-ray films to show the type of tuberculosis best suited for artificial pneumothorax treatment).

The indications for treatment are briefly as follows: 1. Unilateral tuberculosis. No matter how extensive the disease may be in one lung, pneumothorax should be attempted as early as possible. As a general rule compression therapy is not desirable for patients in a minimal or incipient stage of tuberculosis. The majority of these recover under rest treatment alone. However, about 10 per cent of patients in this stage, especially those who may have tubercle bacilli in their sputum, are benefitted by compression treatment. 2. Bilateral disease: That is, active disease on one side with an arrested or inactive lesion in the contralateral lung, or, a lesion in one lung with a limited amount of active trouble on the other side. One must be most careful in the selection of these cases for fear the disease in the better lung may spread. 3. Hemoptysis: In severe or recurrent hemorrhages, when it is known from which side the bleeding comes, the induction of therapeutic pneumothorax should always be considered. 4. Spontaneous pneumothorax: This unfortunate complication among the tuberculous may be, at times, greatly relieved by the withdrawal of air from the pleural cavity. 5. Pleurisy with effusion: It is considered good practice, after the acute phase has subsided, to withdraw a portion, or even the entire amount of fluid and replace it with an equal quantity of sterile air. 6. Bronchiectasis: This disease, especially the early unilateral type, may sometimes be benefitted from compression of the lung. The results of treatment in bilateral bronchiectasis have proved disappointing. 7. Pulmonary abscess: This may occasionally be helped by induced pneumothorax. There is an element of danger in the treatment, and cases of pulmonary suppuration must be very carefully chosen. 8. Diagnostic pneumothorax: As a means to determine suspicious cavitation in a lung pneumothorax is of much value. It is also employed as a diagnostic means to outline intrathoracic growths. Bilateral Pneumothorax: This form of treatment may be carried out in cases in which pneumothorax has already been established in one lung with a limited contralateral lesion or spread in the opposite one. Experience and good judgment are necessary in the matter of bilateral pneumothorax. Both lungs should not be started simultaneously.

Contraindications; 1. Extensive bilateral disease, for instance those who suffer from acute miliary, acute caseous pneumonic and bronchopneumonic forms of tuberculosis. These conditions usually prove unsuitable for collapse therapy. 2. Extensive pleural adhesions which prevent the entrance of air into the pleural space. 3. Marked tuberculous enteritis, a complication frequently found among those suffering from acute and progressive forms of

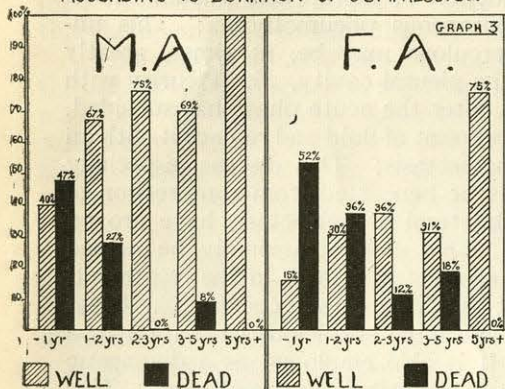
tuberculosis. 4. Severe cardio-vascular-renal disease. 5. Old fibroid forms of tuberculosis with emphysema. 6. A low vital capacity, especially when associated with dyspnoea.

Regarding the technical considerations, such as the plan of operation, the apparatus to be used, frequency of refills of air, precautions to observe, complications that may arise, as I have dealt with these in previous articles I will not mention them again at this time.

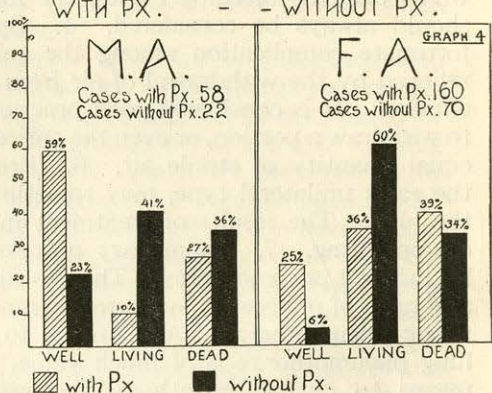
Results of Treatment: As a result of artificial pneumothorax treatment at the Nova Scotia Sanatorium, 1936, on 180 patients, 132 or 73.3 per cent are reported without tubercle bacilli in their sputum. Among the re-expansion cases—treatment ended—80 per cent have been freed from tubercle bacilli. I may further add that 40 per cent of patients who had pneumothorax started at the sanatorium, 1934-35, have been discharged to continue this special aid in the vicinity of their homes. Almost 70 per cent of this group are now without tubercle bacilli.

In a study of 450 cases treated with pneumothorax, as well as other operative aids, during the twenty years previous to 1934 at the Nova Scotia Sanatorium, we find that almost three times as many patients in the moderately advanced group are well and at work as compared with those who had rest treatment alone; in the far advanced group almost five times as many patients are alive and well as compared to those who did not receive operative aid of any kind.

PRESENT CONDITION 204 PATIENTS
ACCORDING TO DURATION OF COMPRESSION



COMPARISON OF PRESENT CONDITION OF PATIENTS
— SIMILAR TYPE AND EXTENT OF DISEASE —
WITH PX. — — WITHOUT PX.



In 1931 the National Tuberculosis Association in the United States published a report of 42,107 patients at the time of their discharge from 278 civilian sanatoria in which the average use of collapse therapy did not exceed 5 to 10 per cent. The results of treatment are as follows: arrested or apparently arrested (no sputum nor tubercle bacilli), 17 per cent; quiescent or improved, 41 per cent; unimproved or worse, 19 per cent; dead, 23 per cent.

Compare these figures with the recently collected results (1935) at the time of discharge from the Michigan State Sanatorium of 823 patients in 72 per cent of whom a wide variety of collapse therapy had been employed. The results are: arrested or apparently arrested, 47 per cent; quiescent or improved, 20 per cent; unimproved, 15 per cent; dead, 18 per cent. The percentage in the vitally important group of arrested or apparently arrested is

almost three times as great in patients for whom collapse therapy was extensively used as among those who received little or no collapse treatment.

*From these remarks you will see that pneumothorax, phrenicectomy, intrapleural pneumolysis, thoracoplasty, when given in carefully selected cases of tuberculosis, are of exceeding value in the saving of life. It will no longer do for us to sit passively by and permit the patient to follow the usual fresh air and rest regime without making it a point to find out if one or other of the operative measures I have mentioned are to be employed. While it is true that the majority of patients in the minimal stage of tuberculosis will be restored to health through rest treatment alone, we find there is a large group among the moderately advanced and far advanced cases where collapse therapy of one kind or another is urgently called for. Unfortunately there are many, many cases of severe bilateral tuberculosis for which little can be done. These are beyond medical and surgical aid, and apart from isolation and a degree of rest, there seems little else to offer.

And here it may be mentioned that tuberculosis at some stage or other is invariably found to be unilateral. Pleural adhesions between the parietal and visceral layers have not been firmly established and the lung is easily compressed. This is the time when collapse therapy can be so successfully employed even among cases where the disease has gone on to early cavitation. However, once tuberculosis has spread to the contralateral side new difficulties arise and the application of these surgical aids demands most careful consideration before they can be attempted. Even here, provided the disease is well localized and there is not too much destruction of tissue in the better lung, a combination of these procedures, for instance, bilateral pneumothorax, pneumothorax combined with a phrenic neurectomy, pneumothorax on one side and a thoracoplasty on the other, may be carried out with a good prospect to restore many of these patients to health.

As medical men we are not fully doing our duty to the tuberculous in this province unless some of the operative aids I have mentioned have been fully considered and tried out in selected cases. There should be no unnecessary delay in coming to a decision as the gravity of the prognosis increases, especially among patients with cavity in the lung or where some contralateral disease is present, the longer these supplementary procedures are withheld.

* The concluding remarks by Dr. Miller were given following the reading of Dr. Schaffner's paper—
"Phrenicectomy, intrapleural pneumolysis, thoracoplasty."

*The Surgical Treatment of Pulmonary Tuberculosis

V. D. SCHAFFNER, M.D., C.M.

BEFORE attempting to outline a few of the specific procedures used to combat tuberculous disease of the lungs, I would like to briefly preface my remarks with a few generalities in connection with the disease tuberculosis and the tuberculous patient himself.

To say that tuberculosis manifests itself differently from all other diseases is not true, but it is probably true that no other disease of a similar nature comes under the realm of surgery. Surgical procedures must therefore be applied with caution and understanding.

In the first place within the thorax is contained the organs of respiration and circulation, operating under a certain set of physiological conditions. Small alterations in these physiological conditions frequently result in serious or fatal upsets in the cardio-respiratory mechanism. Needless to say the thoracic surgeon must have a thorough knowledge of the anatomy of the chest and the physiological laws that govern the organs of respiration and circulation. Without this knowledge the vast majority of major attacks upon the chest will result in disaster. You are all aware of the result of a large open pneumothorax—death by suffocation—yet by taking certain precautions, large open pneumothorax can be deliberately created without endangering the life of the patient. I shall later show you a case where such was done and outline the safeguards. The anatomical and physiological aspect of the subject does not come within the scope of this talk so I will pass on.

What about the disease tuberculosis itself? How does it start and how does it progress? In the first place it is an allergic or anaphylactic disease and in that it differs from other surgical diseases. A healthy individual becomes infected with tubercle bacilli. This we may call the primary concentration camp. Regardless of where the primary focus may be, immunity or anaphylactic changes take place in the body with result either in killing the bacteria where they are, with healing, or sensitizing the individual with the resultant dissemination. From this dissemination again one of two things may happen. First, the immunity may be so slight, or should I say the sensitivity so great, that the disease becomes miliary and kills the patient. On the other hand partial immunity may be regained and confine the disease to certain organs—kidneys, lungs, bones, etc. These are the so-called secondary concentration camps and the fact that the disease can be confined to certain localities means that the patient has a fair degree of immunity. The immunity phases at this stage produce certain peculiarities. It may be so great that it progresses extremely slowly or regresses and heals. On the other hand it may be so slight that the lesions progress rapidly with marked local destruction

and yet there is sufficient immunity to prevent general spread. Again it may be lowered still farther and a miliary state be superimposed upon a progressing local one.

The patient with a high degree of immunity may have extensive lesions, but he reacts to them well. They do not extend locally. He is not sensitive to their toxins and so maintains his weight, feels fairly well and has little fever. He is in what we often call a positive phase. The patient with less immunity may have a very much smaller lesion, yet it is progressing. He is losing weight, has a poor appetite, rapid pulse and bouts of fever. This patient is in a negative phase, which can later change either for good or bad.

What has all this to do with the surgery of pulmonary tuberculosis? I can assure you that it has a great deal. During a negative phase further sensitivity is easily provoked and an attack upon a tuberculous focus at this time will more likely result in spread either locally or generally than it will in cure. On the other hand patients in a positive phase stand surgery extremely well and surgical attempts are usually very successful. Operate during a positive phase! If a patient slips into a negative phase during a multi-stage procedure, wait until he is well out of it before proceeding to its completion. Valuable time may be lost, but you will have a live patient.

Now to proceed with the underlying principles involved, in relaxation therapy.—And all surgical therapy is designed to relax diseased areas and allow them to heal by natural scar contraction. Nature is a great healer and will do much, but in tuberculosis of the lung, is often defeated by virtue of the very method she employs to arrest the disease. Tuberculous foci are "healed" by the formation of scar tissue and contraction. If surrounded by sufficient resilient and elastic lung, then contraction may "close" the focus. If, on the other hand, it is surrounded by very little elastic lung or adherent to a rigid chest wall, the contracting process is unable to do its work. In such event Nature must be aided, by relaxing the offending part. Large cavities also held open by surrounding rigid tissues and in order that they may "heal" this tissue must be relaxed or the walls of the cavity brought into apposition.

Relaxation:—such is our guiding principle, but the methods used to produce it vary with the circumstances of the case. The simplest method, with a free pleural space, is pneumothorax, which Dr. Miller has already discussed. It has certain indications, but unfortunately all cases do not fall within its scope.

Where this procedure is carried on in great numbers an adjunct to it becomes necessary, namely, pneumolysis.

Frequently a pneumothorax is ineffective on account of limiting adhesions. These adhesions being over the diseased area, prevent collapse of the particular part of the lung where it is most desired. The adhesions therefore have to be cut or the pneumothorax abandoned.

I cannot condemn too strongly the old method of stretching or breaking them with positive pressure pneumos. Usually such attempts are unsuccessful, but far too frequently lung is torn through diseased area resulting in spontaneous pneumothorax and empyema.

There are several methods used to sever adhesions. The open method is rarely indicated and is poorly tolerated. I shall describe only the closed method, which is the one in general use today. Before proceeding to describe the operation itself a few general remarks about adhesions themselves are in order.

Adhesions all result from superficial disease causing inflammation with organization in both pleurae. They are of various types and have to be treated differently. The first and simplest type is the string adhesion. These are usually multiple and are derived from circumscribed areas of recent pleuritis. They appear as their name implies like strings stretching from the lung to the chest wall. Except when multiple they are of little importance. The adhesions themselves are not seen by X-ray, but their presence may be suspected a tented and irregular appearance in the contour of the lung. They are avascular and of course not lung containing. They are easily severed by a single touch of the cautery and using the electro surgical unit strong rapidly cutting currents may be used as there is no danger of hemorrhage.

The second type is the cord adhesion. These have the same characteristics and origin as the string except they are longer and may show some ridging. Their attachment both to the lung and chest wall may be broadened. They are of definite importance in that a single cord may prevent a satisfactory collapse of the lung. They are seldom very vascular unless short. They may extend up for a short distance in the lung attachment and it is safer to cut them fairly close to the chest wall and in here cutting one should use a slower, more coagulating type of current to prevent possible hemorrhage.

The third type of adhesion is the band. It is derived either from recent or old pleuritis. They vary in thickness from a few m.m. to a cm. or more and their width may be up to ten cm. The lung and chest attachment are usually somewhat broadened. They may be perfectly flat and straight or may twist around in various directions giving patterns such as V's, Y's, and X's. When thin they are transparent and appear red and hyperaemic. When thick they are dull and whitish. They may contain blood vessels of considerable size, but the true band adhesion does not contain lung. Once determined it is a true band it can be cut without danger with a mild haemostatic current.

The fourth type of adhesion is the fan. This type of adhesion arises from an old pleuritis and is very often the result of tubercles lying directly under the visceral pleura. The thoracic attachment is broad and presents ridges and depressions. The lung attachment is narrow. It is not very vascular at the lung attachment, but may be quite vascular close to the chest wall. Seldom does lung extend far up into the adhesion and this type should be cut as close to the lung as deemed safe.

The fifth type is the funnel or cone adhesion. This has a narrow attachment to the chest wall and a broad attachment to the lung. This type results from an old circumscribed area of pleuritis causing firm attachments between the visceral and parietal pleura. Frequently they occur over superficial cavities and both lung and cavity may project deep into the adhesion. Usually no clear line of demarcation can be made out between adhesion and lung which makes their cutting dangerous. This form of adhesion should be cut as close to the chest wall as possible as otherwise lung or even cavity may be opened into.

The sixth type is the spool. This has a broad attachment to both chest wall and lung and presents ridges and depressions on the surface. They are usually thick, tough and fibrous and may be extremely vascular. They arise from more extensive areas of old adherent pleuritis. Lung and even cavity may be pulled well up into the adhesion and the line of demarcation is in-

distinct. They should be cut as close to the chest wall as possible and always a slow more coagulating type of current should be used.

Curtain adhesions are the seventh type. They usually present one free margin and the other attached. They may be extremely broad, thick or fibrous or very thin. Cutting may be done from the free margin in toward the attached, care being taken not to injure the lung as the adhesion narrows. Diffuse adhesions are of little interest beyond the fact that they are usually inoperable. Any of the major adhesions enumerated may contain lung right to the chest wall which of course contra indicates their severance. Again let it be warned that an adhesion, regardless of type, should not be cut if it puts undue strain on a soft inoperable lung containing adhesion. When using the electrical surgical unit, if an adhesion is found to contain lung very close to the chest wall, it is better not to attempt to cut this adhesion, but to merely coagulate its thoracic attachment and allow it to stretch.

The method of cutting adhesions in general use today was first proposed by Jacobeus. The method consists in observing the adhesions by means of a thoroscope and then severing them with a cautery. There are several types of this instrument. The single type instrument is not satisfactory. The instrument usually used is made up of two parts; one, the scope, is ordinarily of the right-angled vision type of instrument, but direct and retrograded visions are also used and are of a decided benefit when one can afford more than the one scope. The second part of the instrument consists of a long, straight or curved cautery. The scope and cautery are introduced separately into the chest through trochar canulae. The site of introduction varies with different operators, and also with the expected site of adhesions. Personally I prefer to introduce the scope through the fifth or sixth space just posterior to the post axillary line and the cautery through the 4th, 5th or 6th space in the mid axillary line. The reason for this is that the vast majority of adhesions are found posteriorly and can be better observed from the back, and are more easily accessible, as a rule by the cautery at the site named. The second reason is that the intercostal vessels are less liable to be wounded by the trochars if puncture is made posteriorly. Intercostal vessels lie well under the rib margin posteriorly and are protected. Anteriorly they assume a more central position between the ribs.

Two types of current are used to cut the adhesions. I have used both and have not decided yet which I like better. The first is the galvano or actual cautery and the second is the high-frequency or electro-surgical unit. With a galvano cautery adhesions are severed by a red hot or white hot cautery point. This has definitely certain disadvantages.

In the first place it causes considerable smoke and clouds the observation of the operator. In the second place the heat causes considerable pain when cutting is done close to the pleura. It is claimed that hemorrhage is more frequent, but I am not convinced concerning this point. It has the advantage, for the beginner at least, that the cautery point can be placed on the adhesion before cutting is begun. The second type of current, the high-frequency severs the adhesion by the establishment of an arc between the electrode and adhesion and must be established by swinging the active electrode down to the adhesion. It has the advantage in that there is no smoke and it is less painful.

If adhesions are encountered that contain lung so close to the chest wall that it renders cutting them dangerous one can switch from a cutting to a

coagulating current which allows of later stretching when they will break or can again be cut with safety.

The first essential in the performance of pneumolysis is to make an extremely careful and if necessary prolonged observation of the chest before attempting to cut any adhesions. It is absolutely necessary to have a complete and accurate picture of the type and extent of adhesions before any are cut. To get this picture it is frequently necessary to observe even a single adhesion from several angles and it may be even necessary to make a second puncture in order to get a clear vision of a certain part of it. To illustrate from one angle an adhesion may appear like an ordinary band and easy to cut. When viewed from another angle it may be seen that it has but the one free edge and the opposite edge is attached to the chest wall or mediastinum and contains lung. Again one may observe a broad band adhesion which definitely has two free margins. By shifting the scope so as to allow vision underneath this adhesion one may encounter lung containing adhesions of other types which could be injured by the cautery tip if their presence were not known previous to beginning cutting operations.

In cutting multiple adhesions one should cut first those that are taking the least tension and are of the weaker type. If one cuts through first a strong resistant adhesion, the release might be so sudden and so severe as to break the weaker ones thus exposing the patient to the danger of breaking them by a positive pressure pneumo.

A number of complications may be encountered following pneumolysis. By the unskilled operator important structures may be injured by the cautery tip, but there are certain complications which will follow operations done even by the most skilled or expert. Most important of these is infection. All adhesions are infected, otherwise they would not be present, and it is not surprising that infection follows a fair percentage of cases. **Serous exudates in various degrees follow approximately 29% of the cases. They are as a rule not serious and rapidly disappear. On the other hand more serious purulent exudation occurs in approximately 19% of the cases. Hemorrhagic exudates is next in importance and occurs in about 13% of the cases. Severe hemorrhage occurs in about 1.4% of the cases. Pulmonary fistula in 1.9%. Spontaneous pneumothorax, post-operative vomiting, shock, and gas emboli are of lesser importance and occur infrequently. Subcutaneous emphysema occurs to some extent in practically all cases, but is seldom of a sufficient degree to cause any worry. It can be reduced to a minimum by proper and tight stripping and the control of cough for a few days following operation.

The next procedure to be considered is phrenicectomy and phrenic exeresis. The operation, as you know, entails the removal of a part or the whole of the phrenic nerve on the affected side. If temporary relaxation only is required, the nerve may be simply crushed, when function will be regained in from five to nine months. The operation was first recommended by Stuertz, in 1911. He simply cut the nerve, but it was found in far too high a percentage of cases that the function returned. This led to the removal of larger sections or the whole nerve. The phrenic nerve as you know arises chiefly from the 4th cervical and also receives segments from the 3rd and 5th. It emerges normally on the lateral border of the scenus anticus at the level of the 4th cervical vertebra. It crosses obliquely downward and inward over the surface of the

** These figures were taken from another clinic. They are not those of the N. S. San. Of seventy odd pneumolysis to date we have had only one infection and two haemorrhages. The haemorrhages were of no serious consequence. Our results will be published at a later date. No other complications have occurred.

muscle, lying just under its fascia to enter the thorax by passing under the first rib and the sub clavian vessels. Just above the clavicle it crosses a triangle formed by the lateral margin of the scleus muscle, the transverse cervical artery, and the posterior belly of the omohyoid muscle. It is here that the nerve is usually located in operating upon it. There are many anomolies of the phrenic nerve, which will not be discussed in detail here. These anomolies are both of position and number. The nerve may lie practically anywhere about or under the scleus muscle. There may be anywhere from one to three separate nerves. Ordinarily the nerve passes behind the sub clavian vein, but it may pass in front. Also the main part of the nerve may go behind the vein as usual, and a branch from the 5th cervical may loop over the vein and join the main trunk below, or even the loop may completely encircle the vein and join the main trunk at a higher level. This exposes the sub clavian vein, and on the left side, both the sub clavian vein and thoracic duct to possible injury, as in removing the nerve, one is pulling on a fixed sharp loop encircling these structures which may tear and open them. The operation of phrenicectomy is, under ordinary circumstances, a simple and minor procedure, but may be extremely difficult and alarming complications may be encountered. The usual approach to the nerve is made through the lower part of the neck. The patient's head is turned to the opposite side of the lesion to put the sternomastoid muscle on the stretch, and an incision of about $1\frac{1}{2}$ to 2 inches long is made about three quarters to an inch above the clavicle and parallel to it. It is so made that it is bisected by the lateral border of the sterno-mastoid muscle. This incision is carried through the skin and platysma myodies muscle. By blunt dissection the lateral margin of the sterno-mastoid muscle is freed and retracted inward. This usually carries with it the jugular vein and carotid sheath. One can now feel, directly below the incision, the anterior surface of the scleus anticus and overlying it, there is a pad of fat. This is separated by blunt dissection with the scissors, until the fascia of the muscle is reached. The fat is retracted and the nerve is usually seen lying on the surface of the muscle and running obliquely downward from the outward to the inward side. It is recognized by pinching it lightly with the forceps. This usually causes pain at the tip of the shoulder or in the chest, and gives rise to a sudden contraction of the diaphragm, on that side of the chest. It is then injected with novacaine and elevated from the muscle. It is grasped by a special pair of winding forceps, and having been sectioned above the forceps, it is slowly wound out of its sheath by a steady rotation of the forceps and constant traction. Frequently the whole nerve can be removed, right to the diaphragm, but this is not necessary, as from 6 to 10 cm. will give the desired results. The result of course is a paralysis of the diaphragm, on that side with elevation. Ordinarily the maximum elevation is not to be attained until the end of six months to a year and a half. As the diaphragmatic muscles atrophy and the diseased area contracts, the diaphragm goes higher and higher. The result of course is a decrease in the respiratory movement on that side, allowing for the rest of the lung, and also a decrease in the size of the hemithorax, which relaxes the lung and allows natural healing contraction to take place. Let it be warned however, that under certain circumstances, paralysis of the diaphragm will lead to an increased movement of the chest, rather than a decreased one. The excursions of the costal margin are dependent upon the contour of the diaphragm, the excursion being less when the diaphragm is flat or flattened. If the diaphragm is fixed in this position by reason of

adhesions, paralysis will simply abolish its inward pull upon the costal margin. Under such conditions vital capacity is actually increased, which is the opposite condition to the one desired.

There is no doubt that phrenicectomy "per se" has many indications, but I believe that in the past, it has been too widely applied, and with too little thought to the future. It has been asked to do too much and found wanting. Certain conditions in my opinion are made decidedly worse, instead of benefited by phrenicectomy. Briefly it is indicated where a case is inoperable for pneumo and relaxation therapy is desired provided the case is obviously not one for thoracoplasty. That is, it is indicated if it is thought that the lesion will close or heal without thoracoplasty. I do not believe however, in using it as a trial method in more extensive lesions. Its application with treatment of apical cavities, in my opinion, is comparatively limited. The cavity must be centrally placed within the lung, be small, and have thin walls. It must be remembered that the important thing about a cavity is what constitutes its walls. If centrally placed and thin walled, the relaxation offered by phrenicectomy is usually sufficient to allow of its closure. On the other hand, if the cavity is peripherally placed and thick walled, it is too much to expect that its contour will be altered greatly by phrenicectomy. The operation under that condition, should not be done. The lung over a peripheral cavity is always adherent over a considerable portion of chest wall, and the cavity will be held open for that reason if none other. Cavities placed in the mid lung and lower lobe frequently respond well to phrenicectomy, provided the walls are not too thick. Phrenicectomy is also tolerated better in some of the softer and more exudative lesions than is thoracoplasty, and one recognizes the necessity of collapse therapy on the side of the chest inoperable for pneumo, in which there exists in the opposite lung, not too well healed or doubtful areas, then phrenicectomy may be done. It may be used in the control of hemorrhage originating in adherent lungs. Originally in certain clinics, phrenicectomy was done routinely prior to thoracoplasty. The reason for this was to reduce the size of hemi-thorax and so make possible the removal of less rib, also it was argued that it would test out the good lung. Such a procedure, I believe, to be bad practice. In the first place it does not test out the good lung, and in the second place, I believe basal spreads following apical thoracoplasty are more frequent in phrenicectomized individuals than those with an intact diaphragm. To argue the point further would entail a lot of discussion and it will not be pursued. A number of authors have stated, and with good evidence, that the lower lobes are more effectively cleansed by coughing with a paralyzed diaphragm than they are without. Be that as it may, it still seems to me that acute basal spreads are more frequent after first stage thoracoplasty in phrenicectomized individuals. Phrenicectomy is also indicated as an adjunct to pneumothorax, where basal adhesions are causing traction on diseased parts, provided these adhesions are of such a quality to contra indicate pneumolysis. It may be used as an adjunct to re-expansion after artificial pneumothorax. There are other special indications which arise from time to time. They need not concern us here. Before proceeding, let it be warned that phrenicectomy should never be done where a basal bronchiectasis is present. The bronchiectatic cavities will not be closed thereby but will simply be pushed close into the mediastinum and heart and remain as large inert pools of pus.

There are certain complications of phrenic which should be merely mentioned in passing. In particular the vagus nerve or cervical sympathetic

may be mistaken for the phrenic and cut. The cutting of the sympathetic results in a Horner's Syndrome. Hemorrhage may be troublesome or even fatal. The subclavian vein may be torn due to anomalies of the nerve or marked adhesions. On the left side the thoracic duct may be opened resulting in fatal fistula. Bleeding may occur from the sides of the mediastinum when the nerve is very adherent. The jugular vein may be opened which might result in sudden death from air embolus. The late complications are, tuberculous spreads in poorly selected cases. So much for operations upon the phrenic nerve.

We shall now briefly consider the more major procedure in relaxation therapy for pulmonary T. B. viz: Thoracoplasty.

I shall not attempt to go into its history or compare former and present results. I shall merely try to point out its indication and briefly outline the operative technique that I believe to be most effective.

Thoracoplasty as an operation for the relief of certain types of T. B. is now well established and, as a procedure, it is one that has come to stay. However, just what it can accomplish and where it is to be used is too little understood by the profession at large. Many cases which could be salvaged are now lying in their homes, progressing downward simply because the possibilities are not well enough understood. There are certain types of pulmonary T. B. which can be benefited by this procedure alone and these cases should be carefully and diligently picked and the procedure applied early when good results are to be hoped for. Far too often we see thoracoplasty used as a last resort. All other methods are first tried and after their failure, the patient is presented as a candidate for thoracoplasty. This in my opinion is the wrong attitude and incorrect line of procedure. If one is careful enough in his consideration of the case it can usually be determined whether or not the patient will get through without thoracoplasty or not. If it seems that he will not, why waste valuable time trying minor procedures and at the same time rendering the results of thoracoplasty more uncertain. Citing one point as instance, if a patient has a large apical cavity, thick wall and placed close to the periphery, why try a pneumo or a phrenic? It is quite probable that the apex is so adherent as to prevent collapse of the cavity by pneumo. If it is attempted, the pleura over the lower lobes will become thickened. Hard fibrosis of the lung will occur as a result of lymphatic stasis, and make the subsequent compression of the cavity more difficult. Obviously phrenic "per se" in such cases is of little or no value. Other examples might be cited and I would plead that if the best results of thoracoplasty are to be obtained, the cases must be presented as early as possible. The candidates for thoracoplasty may be placed in three classes (Archibald) with respect to the risk of the operation and the hope for final result obtained. I will name these classes first and then attempt to explain them. A fourth class can be added, namely, bilateral cases, but the discussion of such cases does not come within the scope of this paper.

The first class is the good chronic; the second class is the doubtful chronic, the third is the poor or unfavorable chronic. In general the operation is indicated in these chronic cases in which the disease is confined principally in one lung in which pneumo of an effective type is not possible. As a rule they are usually cavity cases. The disease in the affected lung should be in a chronic state and the patient of good resistance as exemplified by retraction in that lung. This retraction is seen in the X-ray by the shifting of the medi-

astinum of the affected side and depression of the ribs. Seldom does one meet with the ideal in the contra lateral or good lung of no disease at all. However, small areas of quiescent or healed disease do not contra indicate the operation. However, before proceeding one must be convinced that disease is quiescent. This assurance comes from the observation of a series of plates over a number of years and the opinion of a good internist. Preceding remarks apply only to the classical unilateral thoracoplasty. Bilateral partial thoracoplasties are done for bilateral disease. But this is a refinement which I'll not attempt to discuss here. Now for the three classes.

First, the favorable or good chronic. Here we are dealing pathologically with the chronic fibroid T. B. Predominantly unilateral and usually with cavity, although in this class the cavity should not be more than 3 cm. in diameter. There are, of course, no signs of activity in the good lung and what points of disease there are should be small. The patient is an adult in good general condition, that is he maintains his weight, has a good appetite and has little or no fever. When observed over a period of years, there is evidence of constant resistance. He has had few or no breaks in immunity. His sputum, however, is positive. He cannot resume regular work on account of his positive sputum and the probability that it would provoke a relapse. His ultimate outlook also is bad as statistics show that the majority of these cases die within five to ten years from progress of the disease. This tendency to gradual deterioration and their progression toward death is sufficient reason to have thoracoplasty done early. Even in these good cases, the classification of the National T. B. Association is "far advanced". In this class operation is extremely promising and in the light of past experience, extremely satisfactory. The percentage of cures should be around 80% with an additional percentage of improvements, provided the operation is done with the proper technique and done by one conversant with the principles of chest surgery. The surgeon who has not specialized in this type of work will not attain as good results regardless of technical skill as the one who has. The X-ray in these cases show disseminated lesions in one lung or lesions confined to the upper third. What is especially important evidence of scar contraction as exemplified by depression of the ribs, elevation of the diaphragm and displacement of the mediastinum and heart to the side of the lesion. The lesions of the opposite lung are minimal and fibrotic. These cases are crying out for thoracoplasty. Nature has reduced the size of the chest cavity the best she can but the rigid chest wall prevents this process from completing itself. To use the words of Dr. Archibald "The ribs are the innocent guilty. They must be removed and thrown into utter darkness and generations shall know them no more."

The second class of case is the doubtful chronic. Do not let your good chronics progress into this or the third class. Here somewhat unwelcome circumstances make themselves apparent. The infiltration in the diseased lung is more extensive. The cavities are multiple or large and show a tendency to progression. The lesions in the good lung may be somewhat doubtful, that is the evidence of fibrosis or calcification may not be absolute and there may be evidence of activity in plates taken six months or the year before. Clinically their general condition is not the best. They are subject to periods of slight rise of temperature and pulse. They probably have lost a little weight and strength, the appetite is poor; sputum is markedly positive. By observing a series of X-ray plates it is seen that over a period of a year or two there has been a steady progression. The cavities have become larger and evidence

of flare ups with fresh seeding is seen. These new areas are imperfectly re-absorbed. They present, however, evidence of fair resistance in way of scar contraction. The prognosis of these patients without operation is practically hopeless and in spite of the comparatively low percentage of cures it is definitely indicated. In rough figures one can expect about 40 to 45% cures with additional 10 to 15% greatly improved. About 10% will die from the result of the operation or early progression of disease.

The third class is the unfavorable or poor chronic. In this class the lesions are definitely progressive. The cavities are large and often occupy two lobes. In the so-called good lung one often sees comparatively recent tuberculous infiltration, which doubtlessly have been active a few months previously. They have been running fever for months, lost weight and strength and eat poorly. They are unable to sleep well and have the appearance of chronic toxemia. The X-ray shows extensive lesions and in many parts recent invasion. The lesions are soft and infiltrated. There is definite evidence of failing resistance and the patient is bordering upon a negative phase of immunity. Results of operation in this class of case are uniformly bad. Seldom does one achieve a practical cure. The number of improvements is small and percentage of death high. The operative death is at least 30-35% and if one includes with this death from early progression of disease, it would probably amount to some 28% more. One might ask why, considering the results, this whole class is not excluded from operation. This outlook, before operation, as before stated is hopeless and if one succeeds in saving only the occasional case, the procedure is justified. Again, it is only our judgment of resistance that puts a certain patient in this class, and how often that judgment is in error. It is easy to state with assurance that patients in the first class should have thoracoplasty. Judging the dubious risks, however, is far more difficult. In operating upon these patients, one has to face an extremely high mortality rate and extremely high number of poor results. With these patients the technique is extremely important and I believe with due regard to this point, future results will be decidedly better. The old type of thoracoplasty of removal of short sections of a comparatively large number of ribs is not at all applicable. It is true that only a small amount of operating should be done at one stage, removing only two or three ribs. However, the amount of individual rib removal should be extensive and in all doubtful cases, your motto should be "leave the next rib in." With these cases always err on the side of conservatism if error must be made. I have briefly enumerated the chief indication for thoracoplasty and attempted to classify these cases. There is another class of patient, however, that should be subjected to early thoracoplasty. These are the ones in which artificial pneumothorax for various reasons is unsatisfactory. For instance, it may be only partial and leaves the important part of the lung adherent. Its effectiveness may be prevented by inoperable adhesions or it may be obliterating. Time should not be lost in substituting thoracoplasty. In my opinion the longer it is delayed the more difficult it becomes and more uncertain of results.

There is one more type of case for which thoracoplasty is indicated. To discuss these thoroughly would require considerable time and I will not attempt to go into them very extensively beyond laying down certain principles which I believe to be sound. These are the tuberculous empyemas. Their mode of origin and common causes will not be considered.

Of these there are three types (Archibald). Type one, the sero purulent effusions. Here the effusion is straw-coloured but turbid, which however

contain tubercle bacilli. In favourable cases, these effusions will disappear after aspiration and refill with air. When, however, after six or seven aspirations over a period of six months or more, the effusion returns and contains bacilli, a thoracoplasty is indicated. If not done, these effusions in a large proportion of cases progress into the second class. The results of operation in the first class are exceedingly good.

In the second class the effusions are definitely purulent and heavily laden with tubercle bacilli. There are, however, no secondary organisms. The pus is thick, heavy and greenish. In this class I believe that one should proceed to thoracoplasty almost as an emergency operation. Provided the pleura is not extremely thick, the results again are exceedingly good. One might stop here and argue thoracoplasty vs oleothorax of the disinfecting type. That I will not do. Opinion differs as to the value of oleothorax, but I've seen so many serious accidents from its use I am prejudiced against it and if I attempted to discuss it, it would be very one sided.

The third type of empyema consists of those purulent effusions containing tuberculous bacilli and secondary infected by staphylococci, streptococci and sometimes anaerobes. The clinical appearance of the patient is well known. He is toxic, has fever, rapid pulse and has lost weight. There are often sinuses in the chest wall coursing along needle puncture wounds. There is often broncho-pleural fistula which in many cases is the prime cause of the mixed infection. The disease is almost invariably fatal in a short period of time. Some are kept alive by repeated aspirations or open drainage. Even these ultimately die. These types are the most difficult to handle. One should avoid if possible the opening of the chest wall and the putting in of a drain. Irrigation should first be tried, but these are often impossible on account of the presence of the broncho-pleural fistula. Every attempt should be made to reconvert the patient to the second type, but this attempt is seldom successful. If after weeks, the patient is steadily failing, one is forced to do an open drainage. This may remove the distressing symptom. Following this procedure, thoracoplasty is usually impossible and one has to resort to more extensive Schede type of operation in which the ribs, intercostal muscles and pleura are removed from over the lung as one mass, that is, a complete undocking is done and the large defect is covered in with skin and muscle. The result of operation on these patients is poor at the best and is in decided contrast to the other two classes of empyema and is just another reason why tuberculous empyema should receive thoracoplasty early.

In conclusion, I will consider briefly the technique of thoracoplasty. Today this is not at all standard and you will see thoracoplastic done in various ways. I will indicate what I think to be the most effective method, but let it be warned that each case has to be considered unto itself and that a technique applicable to one cannot be applied to another. In general, considering the chest as a cone, it is my belief that compression should be accomplished by completely cutting off sections from the top of the cone and not be reducing the size of the cone by cutting out lateral sections, i.e. reducing the size of its diameter. In general start from the top and remove the ribs completely from the transverse processes of the spine to the costal cartilages. With the upper three ribs parts of the cartilages should also be removed. Care should always be exercised not to uncover too extensively the great vessels or the heart. Usually one is able to remove three or three and a half ribs at a time.

In certain cases where cavities are placed near the mediastinum additional compression may be obtained by carefully peeling the pleura from the spinal gutter after the ribs have been removed, and displacing this medially and forward.

In certain cases it is necessary to do an antro lateral stage as sufficient ribs cannot be removed from the back to allow of satisfactory collapse. When this is deemed necessary, I believe it should be done as a first stage. In the first place rib regeneration is much slower in front than behind and it leaves a softer, more compressible chest at the second stage. In the second place should wound infection occur, it is removed from the second operative site and will not cause delay, and as you know, delay in secondary operating is an unwelcome feature in thoracoplasty as it allows the part first operated upon to become fixed and hard before maximum compression is obtained.

With these few remarks on technique I will close as technique is relatively unimportant here.

From the whole discussion the only important thing to remember is that certain cases of pulmonary tuberculosis are definitely surgical problems, just as truly and wholly as is carcinoma of the stomach. If good results are to be expected, they must be regarded as such and passed to the surgeon at as early a date as possible, before the progress of their disease renders them bad risks or technically difficult to do.

100% Pasteurization, Why and How Obtained

C. E. A. DEWITT, M.D.

MY purpose in suggesting this paper is not because I can throw any new light on the subject of Pasteurization of milk, because a great deal has been written about it, and one seldom reads a public health journal without seeing a reference to it. However, I did think it might be of interest, and perhaps of some practical value to those in authority, who are still struggling to obtain the desired goal of 100% pasteurization of milk.

I might say at the beginning, that the Town of Wolfville passed a By-law, forbidding the sale of unpasteurized milk or cream in the Town after May 1st, 1936. This By-law was ratified by the Provincial Government. I can assure you this step, and what we know is an advance made in Preventive medicine in our community, was not taken without careful study of the whole problem of a clean and pure milk supply. Personally, from my experience as Health Officer for many years, I can say our Town has had, as good, if not a better supply of milk, in regard to cleanliness and quality, than any other town where raw milk has been used by the consumer. In spite of every precaution, however, we would occasionally get this and that epidemic, which could be traced directly to the milk. One of the greatest authorities on the North American continent has said that the only safe milk is pasteurized milk. He expressed the opinion that milk produced under the very best sanitary conditions, and care, and with scrupulous cleanliness, is only 70% safe, the other 30% you have to get by pasteurization, the only possible way. We hear the expression raw milk, sometimes you hear raw milk referred to as milk in its natural state, practically there is no such thing as milk in its natural state. The only place where milk in its natural state exists, is in the udder of a healthy cow. The cows teats acquire contamination from contact in the stable, in the pasture and elsewhere, and in the process of milking this contamination finds its way into the milk as it is drawn. With every precaution you care to adopt, you cannot get pure raw milk. Raw milk is contaminated milk no matter how carefully it may be produced.

There are certain duties, including inspections, that Health Officers, sanitary inspectors, and other public health officials, are supposed to do, in order to see that as clean and safe a milk supply is given to the consumer as is reasonably possible, but it certainly is a problem to do this as thoroughly as it should be done, when as in our own district, producers come from various farms, many miles from the town. We inspect at various intervals, give the farmers advice about clean stables, clean cows, healthy cows, sanitary handling of milk and utensils, cooling of milk, etc., etc., and yet we know only too well there is many a slip, in the busy season, farmers get extra men to help with the milking, they are not always healthy or clean, on one occasion, when a small epidemic of dysentery occurred among a certain group, it was traced to a certain stable, where a man was found sick with a chronic diarrhoea, who was doing the milking. The man was sent home and treated, all delivery of milk stopped from that stable for 48 hours and the trouble cleared

up immediately. During the past two years we have had two cases of Undulant Fever, both were traced to infected milk, many tests were made in both cases, one cow was found positive to *Brucillus Abortus*, and several suspicious. We acted promptly, had all suspected cows eliminated from the herd, and demanded all producers to bring their raw milk to our local dairy for pasteurization before delivered in the town. This was continued until we were sure by repeated tests that all cows were free from Bangs disease.

But, could we be sure? Producers were continually changing cows, selling some, buying others, and it seemed to me the time was ripe to do all in our power to educate the people to the necessity of scientific pasteurization.

We have a town we are proud to advertise to tourists, a town of about 2000 people, and in addition some 700 university students, we protect them all with a good water supply, why not a clean and safe milk supply? After all that has been said in these modern times regarding unpasteurized milk, it seems almost superfluous to write on the obvious dangers to health that may follow its use. In towns where milk is consumed raw, various reasons may account for it, the chief ones being, ignorance in respect to its dangers, imperfect conception of the principles of pasteurization, expense of a plant, hardship against the milk producer, increase in the price of pasteurized milk, and the misunderstanding that milk will suffer a loss in vitamins, and bone forming salts. And just the other day, a prominent gentleman, said to me, in milk there are diseased organisms, and protective organisms (the lactic acid group of bacteria) the lactic acid bacteria are killed, as well as the others when you pasteurize, and if you kill off the lactic acid bacteria, the milk may become reinfected, and you have no protective element left. Ayers and Johnson, research workers, have demonstrated definitely that the proportion of lactic acid bacteria in pasteurized milk, is much higher than in unpasteurized milk. The above mentioned, and many other arguments were brought up in our personal campaign for pasteurization of milk. We met all arguments as best we could, knowing full well that education and propoganda based upon established facts, must not only accompany, but precede any effort to control successfully the public or the individual in respect to legislation.

Now, the next problem was, if we felt convinced that 100% pasteurization was the goal we were to aim at, what would be the best way to go about it? We had for some time been questioning many influential citizens, and also milk producers, and we knew we would have to proceed slowly and carefully and I felt convinced that only by thorough cooperation of all the doctors, board of health, milk producers and a majority of the intelligent men and women of the town, would we be able to succeed in our undertaking.

There was one thing I did not want, and did not have, and that was a public meeting to discuss the subject. The number of people who attend such a meeting is very limited, the majority are present because they have personal interests at stake, and the true facts do not reach the bulk of the people. As one authority put it, a professional "Anti" is readily obtainable, who can hold the floor for the evening, and when a meeting of so-called rate payers has thus expressed itself as opposed to pasteurization, it is difficult for a council, even if in favor, to carry a By-law requiring pasteurization.

I read in a magazine recently, where it stated that some years ago the medical health officer of a western city, saw in a typhoid epidemic in a city College an opportune time for the reintroduction of a By-law for the compulsory pasteurization of all milk sold in the city. The Governors of the College in which the outbreak occurred had thought that, by providing raw

milk direct from the farm, they would be giving the resident students a better quality of milk than that purchased at large from city pasteurizing plants. A milk-borne epidemic of typhoid fever among the resident students resulted in 83 cases, and 9 deaths. The council before considering the By-law, decided to discuss the question at a public meeting to which they invited all officials and individuals interested in the city milk supply. Amongst those who spoke was the Principal of the College which had lost 9 young men and women through the epidemic. He made a most eloquent appeal to the council to pass the By-law, and spoke of their ignorance of the dangers of raw milk, but the council was crowded with the raw milk vendors, and their supporters, elections were approaching, and when the vote was taken the pasteurization By-law was again defeated.

And so our first object was to have as thorough cooperation as possible, before attempting any pasteurization By-law.

First, we discussed the problem with each individual member of the board of health, next we arranged individual meetings with seven of our large milk producers. These farmers were intelligent men, and they knew of the trouble we were up against, when Undulant Fever, septic throat, etc., broke out in our town. We had gone to their herds, and repeatedly taken samples of milk from every individual cow. As many as 20 and 30 samples would be sent to Halifax at a time. I asked each one of them, if we could come to a reasonable agreement, regarding price, if they would deliver their raw milk to a central modern scientific pasteurizing plant. Next the Dairy Company in town, said they were willing to install such a plant, and deliver the pasteurized milk if satisfactory arrangements could be made, this would be easily accessible to inspection any day of the week. We talked over the situation very thoroughly, especially from the standpoint of the farmer, whom I felt should get the highest price possible for his raw milk and at the same time not raise the price to the consumer, unless absolutely necessary however, if this had to be done, it would be cheap health insurance.

I then gave a talk on the subject of clean and safe milk, with special reference to pasteurization, to various women's organizations. These meetings were open for questions and discussions, and from the response received I felt sure, we would have strong support from the women of the town.

This personal investigation, and feeling out, so to speak, of the attitude and response of the various parties concerned, took many months, and then, when the time seemed opportune, a meeting was called, which included the board of health, the farmer producers who delivered milk in the town, and the officials of the local dairy company, and to these groups, I put the whole situation of the milk problem in as clear and comprehensive a manner as I possibly could. The meeting was then opened for discussion, each was asked to speak frankly and express his views, they did so, and in this way several misunderstandings were ironed out, and in the end, everyone agreed, that pasteurization, scientifically carried out, was the only sure way of protecting our citizens from infections carried by raw milk, such as, septic infections, tuberculosis, typhoid, paratyphoid, diphtheria, scarlet fever, and Undulant Fever. And as I said before the two cases of Undulant Fever that were traced directly to our milk supply, and the extensive investigation that followed, was a big influence in obtaining a unanimous decision for pasteurization. It was forcibly pointed out, that pasteurization, is the only practical means, at present of preventing the milk-borne part of Undulant Fever infection.

With the exception of one farmer producer, who was operating a small pasteurizing plant, all the producers came to a satisfactory agreement with the Dairy Company in the town, to deliver their raw milk to them, and they would pasteurize and deliver.

Having successfully carried through the above mentioned campaign, a meeting of the town council was called, and as the members of the council, are also members of the board of health, each was familiar with the resolution that the Medical Health Officer presented to them. It was carried unanimously and the following By-law passed, and later ratified by the provincial government. "No person shall after the first day of May 1936, sell or offer for sale, within the town of Wolfville, milk or cream, which has not been pasteurized, no such milk or cream shall be deemed to have been pasteurized, within the meaning of these regulations, unless such pasteurization, has been made in strict conformity with the provision of the 'Public Health Act' relative thereto."

We were fortunate in having in our town a dairy, which has been managed by a staff of intelligent and trained men, it is situated centrally, so that frequent inspections can be made. This company installed one of the modern Cherry-Burrell scientific pasteurizing systems, made of all alloy steel, as standard construction, consisting of direct motor driven pasteurizer, milk filter, a large tubular surface cooler, and automatic bottle filler and capper and self recording thermometer and chart. This whole system is enclosed by a wood and glass enclosure. This company was fortunate in having lots of high pressure steam available, so important for sterilizing bottles, cans, etc., and also adequate refrigeration, it is also equipped with a small laboratory where testing is daily carried out. All raw milk received must be up to a standard for temperature, sediment test, acidity, butter fat, etc., and at intervals samples of both raw milk and pasteurized milk are examined for bacterial count.

We are at present investigating a new test, which has been tried out successfully in Great Britain, called the "Phosphatase Test". The test depends on the detection of the Enzyme known as phosphatase which is always present in raw milk, but is destroyed at the temperature necessary for efficient pasteurization. The absence of phosphatase indicates that the milk has been adequately heated, while its presence points to insufficient heating or to contamination with raw milk. The recent literature on this test is interesting and may make it much easier for health authorities to test the product as it goes to the consumer.

We have had 100% pasteurization for only eight months, and that is too short a period for any worth-while statistics, but complaints have been few, producers, distributors, and consumers are satisfied, we feel we have protected our community from infection from a milk-borne origin, and especially Undulant Fever and tuberculosis. We can advertise our town to new citizens, tourists, and students, as one which has, not only a safe water supply, but now a safe milk supply as well.

Considering the limited number of tests that are being made for diseased conditions in our cows today, can we say that raw milk is safe?

In closing let me quote the words of a noted British authority. "It must be noted that a clean milk is not by any means, necessarily a safe milk. Milk obtained from a herd infected with tuberculosis or contagious abortion is never safe, no matter how cleanly it may be produced. Cleanliness of the general milk supply is desirable, but cleanliness is not enough. To ensure its safety, that is to say, its freedom from pathogenic organisms, pasteurization is essential."

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and the Secretaries of Local Societies

It is to be distinctly understood that the Editors of this Journal do not necessarily subscribe to the views of its contributors, except those which may be expressed in this section.

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No. 1

THE Editorial Board is of the opinion that there is a distinct field for the provincial bulletin quite apart from that of the national journal, and that in a sparsely settled country such as ours they should be for the most part complementary. A national journal with its continent wide distribution must of necessity differ from a local publication, both in its outlook and type of article presented.

Assuming that all are interested in what is going on in medical science laboratories the teachers in these different departments at Dalhousie were interviewed and all expressed a willingness to help from time to time in keeping the graduate familiar with progress in anatomy, biochemistry, pathology, pharmacology and physiology. They all agreed with the views of the clinical teachers that Dalhousie University should seek to serve the people of these Maritime Provinces through other channels than that of the under-graduate class-room. Experience leads us to look forward to the contributions of Professors Mainland, Young, Smith, and Dryer, and we take this opportunity to welcome Dr. Weld.

It is difficult for any of us to find time to read or money to purchase all the journals we would like to have. In an attempt to remedy this state of affairs some of our members have been asked to select and prepare for the rest what in their opinion is worth while in the current literature. Dr. L. R. Morse will cast a critical eye over that of general medicine. Dr. D. A. McLeod will sift the grain from the chaff in the realm of general surgery. Dr. Frank Mack will do the same for urology; Dr. C. S. Morton for obstetrics and gynaecology; Dr. P. S. Campbell for public health; Dr. M. J. Carney for paediatrics; Dr. N. H. Gosse will be held responsible for the cancer section, and Dr. S. J. MacLennan for the eye, ear, nose and throat. Dr. H. L. Scammell has consented to give us historical articles from time to time and on occasion tell us about the trends in the hospital world. With so much talent to call upon to act as reviewers of the scientific we experienced the confusion of abundance, but when it came to so subtle a matter as the quality of humour we felt wholly incompetent to select a judge of judicious jokes, and accord-

ingly decided to ask all to act as both reviewers and reporters. We propose to change the reviewers from time to time in order that as many as possible take part in this Society activity. By distributing the work as widely as possible the interest of many is pleasantly and profitably stimulated and our organization made just that much more valuable. Each reviewer will judge just a little differently; the particular selection made and emphasis placed being determined by the light of his experience.

As in the past, however, clinical papers, society reports, historical records, case reports, correspondence and personal interest notes, to which may on occasion be added an article of general interest appearing elsewhere will constitute most of our material. We plan to continue to work with the Dalhousie Refresher Course Committee and secure for you a record of the presentations, both clinical and didactic, given during the post-graduate week which we hope will serve as valuable reminders.

The editors central would urge that the editors peripheral, namely, the Secretaries of the Branch Societies, would promptly send full reports of their activities to this, the official organ of the Medical Society of Nova Scotia. Your editors are asking every reader to assume some responsibility in connection with this publication. We are all members of the same body and enjoying the same lavish salaries in our editorial and contributing capacity it seems only fair that all should give of their time and thought to the duties of their respective office. There is not a physician in this Province who is essentially incapable of preparing a case report. If every case is studied as a potential one to report the practice would shortly evolve into a habit and soon the Editorial Board would have all the true detective stories it could publish. One report every year from each practitioner would provide amply material and to spare. Meditate on this during the silent watches of the night and follow the advice of the apostle Paul and "be ye transformed by the renewing of your minds"—in short, turn over a new leaf. To those to whom much has been given much is expected. Physicians with internes to search the records, arrange and prepare the material will have only to review, correct, suggest and add the illuminating comments. Our hospitals should be an inexhaustible source for material. The exercise of preparing should be profitable to the house-surgeon and the directing a joy to the commentator.

We do not intend to follow the example of other journals and make it imperative that all matter be typewritten and well spaced, even if it would save hours of typing and tedious deciphering preparatory to forwarding it to the printer. However, we do ask that your writing be executed in good old fashioned copy book style so that it may be read easily, mistakes reduced to a minimum and the work of your servants facilitated.

As you read the foregoing perhaps you said to yourself, "If I were Editor". We want that very idea, and every idea that might make this Society publication more useful.

H. W. S.

Incomplete Social Legislation.

SOME aspects of the Old Age Pension and the Mother's Allowance Acts in their relation to the Medical Profession are worthy of consideration.

We can all agree that these measures have been of great benefit to those eligible to receive aid under their provisions. However, in actual operation,

they have resulted in a substantial increase in the amount of unpaid work which practically every doctor is called on to do.

Previous to the passing of the Old Age Pensions Act, aged people were, roughly, in two classes,—first—those with some property or other means of support, who, in case of illness, expected to pay at least something in return for the doctor's services; second—those who had no means of support;—these people were often attended gratuitously, but occasionally the Municipality would authorize and pay for medical attention. Under present conditions the Old Age Pensioner gets just enough to live on. Even the full allowance of Twenty Dollars a month does not allow any leeway for payment of medical attention, or hospital bills,—yet when any of these Pensioners are sick, we are always called early, and when we mention remuneration, the answer from relatives and Municipality alike is, invariably,—“This man is a Pensioner and we have no responsibility for him financially.”

The Mother's Allowance Act produces a similar result. Previous to its passage, someone, either a relative or the Municipality, often assumed responsibility for the expense incurred during the husband's last illness and gave assurance for at least some remuneration for medical attention given. Under the Act, the allowance given is just sufficient to cover living expenses, and is meant to be so. It is not sufficient to cover payment for medical and hospital care, and so these bills are mostly left unpaid.

These Acts have, in this way, definitely increased the amount of unpaid work we do. As a Profession we have always accepted our responsibility to care for the aged and fatherless, and we do not seek to evade it now, nor do we suggest that these Acts are not good, but it is clear that they are incomplete in that no provision whatever is made for sickness.

We suggest that each doctor keep a record of cases of this kind occurring in his own practice. Such data placed in the hands of a Committee on Legislation would be invaluable when we seek some amendment to correct these conditions, for certainly some provision for care in sickness should be added in amendment to these Acts.

A. B. C.

Professional Totem-Poles.

SYMBOLIC of the historic lore and noble ancestry of a great race, inhabiting the northern territories of our country, the Totem-pole stands, individually, silently, stupidly, oblivious to the ever changing terrestrial conditions about it.

Likewise, we members of a great profession, symbolizing the glorious achievements of our predecessors and patterned after a noble ancestry, are but Totem-poles as we stand silently and stupidly, through the instrument of our individual professionalism, oblivious to these same changing conditions of environment.

Sociologically, we differ as individuals, in that we are not all of the same economic strata.

Some, blessed with an iron constitution, an indomitable will and ample money are graduated by their Almamaters, to enjoy the rest of their natural existence free from the stress, strain and vicissitudes of that complex conglomeration of adversities, called life.

But, we of the less fortunate variety, destined by fate, to wrest our livelihood in a more arduous manner, whilst rubbing shoulders with the multitude, and exposed to these same varied and sundry adverse forces of life; do not bask, in the warmth of such social and financial sunshine.

Pathologically, we are microscopically and macroscopically inundated and permeated, with a malignant form of social inertia.

Namely—Is there any reason why three thousand Canadian Physicians should not buy group life insurance, at almost half the cost of the individual policies?

Is there any reason why the same three thousand physicians should not furnish their own accident, sickness and automobile insurance, on a satisfactory and sensible basis, free from the present racketeering, at one-half the cost?

Is there any reason why the same group of physicians, organized as they are from coast to coast as a national medical association, should not do something practical for themselves and thereby alleviate the many disadvantages which they, as untrained individuals encounter in commercial channels?

Is there any reason why many services of great value could not be instituted and sponsored by so powerful a group?

Is it not time that the professional body politic, administer to itself, large and repeated doses of cooperative therapeutics or must its members remain for another decade—just Totem-poles?

J. P. McG.

Dental Health Campaign Is Planned For Nova Scotia.

A dental health campaign throughout Nova Scotia similar to those already carried on in all other provinces of Canada will be launched during the winter of 1937-38, it was decided at a conference of the Oral Hygiene Education committee of the Nova Scotia Dental association. Attending the conference was Dr. Harry Thomson, field secretary of the Canadian Dental Hygiene Council, who arrived in Halifax recently from Montreal.

Plans for the campaign, in which the Provincial Department of Health is co-operating, will be laid at the sessions of the N. S. D. A. next summer. For the sake of more efficient organization, the province will be divided into five zones: Cape Breton Island, Antigonish-Pictou-Guysborough, Cumberland-Colchester, Annapolis-Hants-Kings, and the South Shore.

General secretary of the campaign is Dr. G. K. MacIntosh of Halifax, and general chairman Dr. G. R. Hennigar of Halifax. Those in charge of zones are Dr. R. R. Dalglish of Sydney and Dr. C. D. Clough of Inverness for Cape Breton; Dr. J. D. MacLean of Pictou and Dr. V. C. Calkin of New Glasgow, for Antigonish, Pictou and Guysborough; Dr. N. McG. Layton of Truro, for Cumberland and Colchester; Dr. W. H. Young of Kentville, for Annapolis, Hants and Kings; Dr. H. O. Harding of Yarmouth, for the South Shore district.

Attending the conference of the Oral Hygiene Education committee were, besides Field Secretary Dr. Thomson, Dr. G. R. Hennigar, Dr. G. K. MacIntosh, Dr. J. F. Griffin, Dr. H. M. Eaton and Dr. G. M. Logan, all of Halifax.

Doctor David Fraser Fraser-Harris

AN APPRECIATION

MANY who have read the two great historical novels of Sir Arthur Conan Doyle will remember that his hero, Sir Nigel Loring, the brave, gentle little knight, on one occasion, when death seemed very near, gave thanks that God had seen fit to permit him to participate in so many battles and to have made the acquaintance of so many worthy men. It is with much the same feelings that I approach the task of penning a few lines in appreciation of a man whom many of us called "friend", and who has recently departed on "the long journey". I was in his class the year he left Dalhousie, and with vivid memories of his last lectures, his last days with us, and the illness which forced him to leave us, I am filled with a deep desire to show, if I can, to those who did not know him, what sort of a man he was and what he did for Dalhousie University and its Medical School. Consult any volume of "Who's Who" and you will find his life and honors concisely portrayed. Such was the man the world knew. We, his students, knew him better.

He came to Nova Scotia and Dalhousie in 1911, a participator in the new era of the Medical School. Preceded by a brilliant scholastic career and an established reputation as a physiologist and teacher within the walls of learning in the Old Land, he, no doubt, sought with eagerness "fresh fields" in the New World. The next ten years displayed him as a man with an enormous desire and capacity for work. The University might demand his days, but his spare time was devoted to a thousand occupations, always useful and ever unselfish. His willing shoulders assumed heavier burdens each year and the marvel was not only how well he did them but how he was able to do them at all. In these years he taught Physiology, Histology and Biochemistry and he taught them well. His classes in some years were larger than those today. His one faithful and most loyal full time assistant was Miss Margaret Low and in the various laboratory classes busy practitioners of the city gave their services. But, regardless of the presence of the assistant, Dr. Fraser-Harris was always present at lecture room and laboratory. True, his laboratory in Physiology would cause a smile to pass across the faces of today's students. It was situated in the basement of the Forrest Building behind the stairs and could only care for eight or ten students at a time. But what was lacking in equipment was more than compensated for in the energy and enthusiasm of the teacher. From every experiment a lesson was learned, a principle enunciated. To him, Physiology was a romance, a glorious vital romance, and we were invited to explore its secrets under his leadership. Histology was taught and demonstrated in epic fashion. How well I can hear him say: "The great Physiologist, Schaeffer, first demonstrated to me the interstitial biliary canaliculi from an injected specimen, and before I left him he gave me a little bit of this specimen, a slide of which you will see today under the microscope."

Biochemistry was taught in the laboratory now occupied by the Botany Department and these quarters were shared with the Maritime College of Pharmacy.

A feature of the classes conducted by Dr. Fraser-Harris was the wealth of interesting illustrative data displayed. You were taught Physiology as a

Science, as a record of achievement of men through the ages, and as a practical background to the study of Medicine. Rare the lecture without its lantern demonstration of slides collected from many sources over many years.

If one were to search for his weakness, it would be displayed as a secret pride, shyly displayed at times, in what he felt were the notable accomplishments of his career. He was one of the first to introduce the use of Formalin as a tissue preservative; he made a noteworthy contribution to the Study of Sleep; he proposed the theory of the Functional Inertia of Living Matter; and was the author of numerous scientific papers. Up until 1921 his most lengthy work was "Nerves", a popular work with a wealth of scientific knowledge contained in it. It was considered a most useful investment for his students in Physiology, and the most wary were wont to have their copies autographed by the Author. Fortunate indeed, was the student who, making heavy weather in an oral examination, was able to aptly quote from this or any of the Author's works. The temperature at once crept up a few degrees, and with continued good fortune a "pass" might follow. The man who is invulnerable rarely commands affection, and perhaps this little foible, above everything else, endeared him to his students.

As Secretary of the Faculty of Medicine, he played a part in student discipline as well as in teaching. He had a keen sense of humor of a cultured nature. Horse play was not tolerated, but more civilized departures from the rules were dealt with lightly, if nobody was harmed by them. If one did sin, his wisest move was to confess it at once and receive punishment. If it involved a breach of University rules, the confession would be followed by the sight of a familiar figure tightly grasping an umbrella by the middle, hurrying in the direction of Studley to plead the offender's cause. Small wonder that the Students in Medicine honored and loved him.

At length came the day when, following an acute illness, the news descended like a bolt of calamity on the Medical School that Fraser-Harris was to retire. There was genuine student consternation. A petition signed by all of us went to him to reconsider his decision but without avail. His days at Dalhousie were over.

In the thirteen years since his departure he did much valuable work, and his pen was at all times active. But he never forgot Dalhousie or his students, and many a little note was received from their teacher with a reminder of old scenes, old incidents and a bit of news of what he was then doing.

What did he do for Dalhousie Medical School? Need I answer that he gave to its service twelve of the best years of his life, during which he did the work of three full time professors and assistants and did it with enormous credit to himself. By his contacts personally and through his writings he elevated the Medical School to a place of importance in the Nation. All this he accomplished, surely enough, but he did more, and that unconsciously: To the hundreds of Medical Students whom he met he gave of his knowledge abundantly, but by example he taught them to be kindly, and considerate, with a love of learning and of the higher things which make life worth while; in other words, he made them better gentlemen.

David Fraser Fraser-Harris has gone but he has left with us a glorious and undying heritage.

CASE REPORTS

Far Advanced Tuberculosis—Complicated by Congenital Absence of Left Diaphragm.

D. S., Male, Age 18, white, student. Admitted to Nova Scotia Sanatorium November 26th, 1932, complaining of cough with moderate expectoration, loss of weight and strength, tiredness on exertion, fever. Symptoms present for five months. Two of his maternal aunts died of tuberculosis. There was no history of haemoptysis or pleurisy with effusion. There were very few symptoms referable to the gastrointestinal tract. Three years ago he began to complain of distress and gaseous eructations, one half to one hour after meals, gradually increasing in severity. A physician was consulted and magnesia in powder form prescribed. Vomiting before retiring was also a fairly constant symptom, and he stated that the above symptoms were intensified on being confined to bed.

Physical examination revealed a tall, fairly well developed young man, with an appearance suggesting considerable loss of weight. Examination of the chest as follows:

Inspection: Long, thin chest, much flattened anteroposteriorly and presenting a depression along the left border of sternum. *Palpation:* There was definite limitation of movement on the left side. *Percussion:* Rt: Slight dulness to 2nd rib and 5th vertebral spine. Lt: Slight dulness to 2nd rib and 5th vertebral spine. From there to base the note tended to hyper-resonance, but changed on inspiration to dulness to level of the 5th vertebral spine. In front there was no resonance to the 3rd rib, then hyper-resonance to base. *Auscultation* Rt: Broncho vesicular breathing over front and back. A few moderately coarse rales were heard to the 2nd rib and 5th vertebral spine. Lt: Breath sounds diminished to 2nd rib and 3rd vertebral spine, then more diminished to 5th vertebral spine, beyond which very distant sounds were heard in the interscapular region to base. The vocal resonance was definitely increased to the 5th vertebral spine and increased to base. The vocal resonance was absent over whole front.

Radiographic examination of the chest revealed a moderately extensive exudative tuberculosis involving the right lung to the 4th rib and 9th vertebral spine with thin walled cavity formation present. The left lung revealed a scattered tuberculosis to the 3rd rib. From there to base there were numerous circular areas, especially noted from the 4th rib downward. In appearance these trabeculated shadows suggested bowel markings. The diaphragm could not be clearly demonstrated. Fluoroscopic examination showed paradoxical movement present on left side and dome of diaphragm unable to be definitely demonstrated. The findings are similar to those noted as a result of paralysis of phrenic nerve.

Radiographic examination of the entire gastrointestinal tract presented the following findings: Immediately after the first mouthful of the barium was swallowed, it was seen to drop down in the fundus of the stomach which was well down in the pelvis. The stomach was atonic and markedly dilated.

Motility and peristalsis were greatly decreased. The first portion of the duodenum was filled by manual palpation, assumed a vertical position and was elongated. The second portion could not be clearly defined. The jejunum was seen to lie behind the stomach and a barium filled loop was seen to pass up into the thoracic cavity. The two hour examination revealed 70 to 80 per cent gastric residue, the remainder being in the small bowel which made up a part of the herniated loops. At five hours the stomach contained 60 per cent of the ingested barium and the coils of the ileum containing the meal were made out above and below the usual position of the diaphragm. The seven hour examination showed 40 per cent gastric residue, the head of the column had reached the proximal end of the transverse colon. The terminal ileum and ascending colon assumed a position in mid portion of the thorax anteriorly. In twenty-four hours the stomach was empty, the meal was in the terminal ileum, ascending colon and in the loop of bowel corresponding to the transverse colon. These coils of bowel occupied the lower half of the thorax, extending as far up as the level of the 3rd rib anteriorly. The distal end of the transverse colon was seen to extend vertically from above downwards to pelvis opposite mid portion of sacrum. This portion of bowel presented a smooth and ribbon-like appearance. Subsequent examination of the colon with barium enema presented the following: The rectum was moderately dilated. The sigmoid described a course to the right of the midline and from there, a loop of descending colon extended transversely across pelvis to a point opposite the upper end of the left sacroiliac joint and from there it described an abrupt upward course to the left thoracic cavity opposite level of the 3rd rib anteriorly. Above the position of the diaphragm, it passed along the posterior chest wall close to spine, and at level of the 5th vertebral spine, the bowel was seen to run transversely from back to front. From a point near the 3rd rib anteriorly it turned sharply downward to enter the true abdominal cavity. The caecum was situated opposite the 10th dorsal spine. As previously noted, practically all the small bowel was in the thoracic cavity.

Sputum examination was positive for tubercle bacilli. Blood picture essentially normal, and urine negative.

During the next six months the patient showed no response to treatment and films of the chest taken in May revealed a marked extension of disease with increased cavitation in both lungs.

Death occurred June 21st., 1933—seven months following admission.

A synopsis of the post mortem examination is as follows: There was a relatively enlarged liver, and the stomach appeared below the level of partial diaphragm on left side and extending directly down to pubic bone, then turning upwards with the pylorus situated on right at level of 2nd lumbar, immediately opposite spine. On opening the chest, the large bowel was seen to occupy the left chest up to the level of the 2nd rib. This condition existed both anteriorly and posteriorly, lung tissue being present only from 2nd rib to the apex. The diaphragm was at its normal level presenting a central tendon, but only extending backwards about 2 inches from anterior chest wall. There was no diaphragm posteriorly. It tapered off to nothing at the posterior axillary line. The oesophagus entered the abdomen in the normal position. The fundus of stomach was at the level of the 4th rib anteriorly and adherent to spleen. The pancreas was also adherent to stomach. The course of the large and small bowel followed approximately the course described in the gastrointestinal examination. The left lung lay entirely above the 2nd

rib anteriorly and 5th rib posteriorly. It was adherent to parietal pleura laterally. Dense adhesions were also over the apex. The left bronchus left the trachea at level of 5th vertebral spine. The left lung consisted of two lobes, the upper lobe showed a distinct cleft about half way along the fissure. Extensive disease was noted in both lobes. The right lung showed extensive disease with multiple cavitation. Heart was small and atrophic.

Anatomical Diagnosis:

1. Congenital absence of posterior half of diaphragm.
2. Eventration of large and small bowel into left thorax.
3. Macrogastric.
4. Far advanced bilateral pulmonary tuberculosis.

H. R. CORBETT, Radiologist.

Far Advanced Tuberculosis. Recovery as Result of Artificial Pneumothorax Treatment.

M. E., female, age 16, had lived eight years previously for a period of three to four months in the same house with a tuberculous patient.

Family history negative. Previous history negative.

Present Illness: In June 1933, the patient developed a dry, unproductive cough. During the school holidays her cough grew worse until the latter part of August when she consulted her family physician who advised complete bed rest. After two weeks in bed the cough cleared up although an X-ray at this time disclosed Pulmonary Tuberculosis. She was admitted to the Nova Scotia Sanatorium on October 4, 1933.

On admission: There was no history of loss of weight, strength or appetite; no haemoptysis, pleurisy or night-sweats. She had a slight cough with one dram of sputum daily and slight hoarseness of the voice.

Physical examination of the chest showed restriction of the respiratory excursion on the right side with dulness to the 2nd. rib and 6th vertebral spine. Breathing was broncho-vesicular to the 3rd rib and 5th vertebral spine and vesicular to the base front and back. Vocal resonance was greatly increased to the 2nd rib and 4th vertebral spine. On coughing, there were moderately coarse rales to the 3rd rib and 4th vertebral spine. Vomica at 2nd rib. Left lung was normal.

General physical examination was negative except for the presence of early Tuberculous Laryngitis.

X-ray of chest showed: Right—A recent exudative tuberculosis chiefly involving the upper lobe with a cavity 3 x 3 cm. just below the clavicle. Left—Normal.

Sputum: Positive for tubercle bacilli. Gaffky 9.

X-ray of the colon showed slight involvement of the ascending colon with tuberculous colitis.

Urine negative.

Temperature: 99.6° to 99.8°. Pulse: 94 to 100. Respirations: 20.

On October 22, 1933, artificial pneumothorax was commenced on the right side and a 60% collapse was obtained within a month. By the end of November, the patient was permitted to take her own bath and in February she was allowed to dress and walk to the patients' dining room for her meals. By this time her sputum was negative and she was afebrile. In October 1934, she was given definite walking exercise besides that of going to meals. She

continued well until her discharge in June 1935, at which time she returned home, coming to the sanatorium for refills of air every twelve days. In the fall of 1935, she was enrolled at Acadia University as a special student, carrying four subjects; and this spring she was elected a Princess in the Apple Blossom Festival. This fall, she entered the University as a regular student, in every way leading a normal life. She is now carrying a 70% collapse of the lung and is receiving refills of air every two weeks and her laryngeal and intestinal lesions have completely cleared up.

Her ultimate prognosis is excellent and we will probably consider re-expanding her lung during the summer of 1937.

Comment: This patient presented few marked symptoms of pulmonary tuberculosis and yet had a far advanced lesion of the lung with cavitation. Tuberculous laryngitis and colitis also complicated the picture.

Immediate adequate pneumothorax compression rapidly brought the case under control and she may now look forward to leading a normal life.

Upper Lobe Tuberculosis with Atelectasis.

A. D., male, age 32, school teacher, was referred to the Nova Scotia Sanatorium as an outpatient Sept. 4, 1935. He was last perfectly well in June 1935, although he had had repeated colds the previous winter, these colds being confined to nose and throat. Patient developed what he called "bronchitis" and had been in bed for the last two weeks in August with cough and a fever around 102 degrees. At the time of examination, there was no sputum. Strength and appetite good. There was only questionable loss of weight and no history of haemoptysis or pleurisy.

Physical examination showed moderate dulness over right apex to level of 6th vertebral spine. Breath sounds were granular over this area, but otherwise the findings were normal. No rales elicited.

X-ray showed on the *right*: a localized area of fairly marked density forming a triangle and extending from the extreme apex to the 2nd rib. The remainder of lung was free from pathology. A special film of this area taken with heavy exposure showed calcification above the 1st rib and several areas of opacity rather roughened and of varying density in the 1st interspace. No retraction of heart or mediastinum. On the *left*: a normal lung.

At this time our differential diagnosis rested between (1) fibrocaceous tuberculosis, (2) upper lobe abscess, (3) upper lobe tumour. The presence of calcification led us to favour the first diagnosis.

On the strength of this, the family physician was advised to have the patient admitted to the Sanatorium for a period of observation. This he did on September 10th, 1935.

General physical examination at this time was negative and chest examination was as previously described. Blood was normal with a sedimentation rate of 1 hour and 50 minutes. Urine negative. No sputum was being expectorated at this time.

On September 13, 1935, lipiodol was introduced into the right upper lobe and presented the following findings: with the patient in the horizontal position and lying on the right side, 20 c.c. of the oil was injected and the head then lowered. An anteroposterior film was taken and this showed the opaque oil in the pyriform fossae, trachea and branches of the middle lobe bronchus. There was an almost complete blockage at the upper level of the 7th dorsal vertebra. Summary: definite occlusion of the upper lobe bronchus.

The patient was referred to the Massachusetts General Hospital, at his own request, for bronchoscopic examination. A bronchoscopic biopsy was done of the right upper lobe bronchus which showed congestion and thickening of the mucous membrane. The Pathological Report was Tuberculosis.

At this time, a chronic pan-sinusitis was discovered and a modified operation was done in an endeavor to improve his general condition.

He returned to us for a check up on June 1, 1936. At that time he was gaining weight and was symptom free.

X-ray examination, *right*: There has been definite improvement and apparent clearing of the atelectasis and there is now a slight tuberculosis of the upper lobe. *Left*: No lung pathology.

Chest examination: No rales.

On August 21, 1936, he again returned for a check-up. This time there were moderately coarse rales on the right side apex to clavicle and 4th vertebral spine. X-ray showed slight extension of the disease in the 2nd interspace but moderate clearing of the initial tuberculous process.

He was then advised to follow rigid rest hours and is continuing his curing at home under the direction of his family physician.

Comment: This case afforded considerable difficulty of diagnosis. The X-ray interpretation of calcification within the lesion led us to favour the presence of tuberculosis and this was verified by means of a pathological report on tissue removed from the lung during a bronchoscopic examination. The extension of the disease within the lung was typical of tuberculosis also.

J. E. HILTZ, Resident Physician.

Unusual Survival.

Mrs. O., aged 25 years, Primipara.

Menstrual history has always been normal. Her last period, which was January 3rd to 8th, 1936, was at regular time, normal duration and normal flow. The last week in May she began to have some leakage of amniotic fluid. She was kept in bed but labor commenced the night of June 16th. She was delivered easily, of a 1 lb. 4 oz. female premature baby, the evening of June 17th. The baby was wrapped in absorbent cotton, and in the absence of an incubator was put in a basket lined with hot water bottles. No milk being in the mother's breasts, even after stimulation, we were fortunate to obtain some each day from another healthy mother. Beginning with one drachm milk and one-half drachm water we gave two drachms of the mixture every two hours with the Breck feeder. This formula was gradually changed until the baby was taking whole mother's milk, four drachms every two hours.

On July 9th we had to change to an artificial feeding preparation; powdered milk was used. The baby had an uphill pull for life but finally won out. Today, October 1, 1936, she is a very fine specimen of a baby, weighing over 23 lbs.

Were it not for the patience and perseverance of the nurses at the S. M. Hospital, this baby would not have lived. Today they may well be repaid by seeing "Patricia".

"The Lost Hair Pin."

Remembering Dr. Curry's case of the "pickle-bottle" I am reporting my case of the "bobby-pin".

Miss A., aged 18 years, came to my office with the story that during the night a bobby-pin from her hair, after chasing around the bed, was found in

the introitus. In her own effort to extricate the pin, it was pushed farther into Valhalla. Speculum examination of vagina did not reveal the concealed pin.

Due to the insistence of the maiden of its presence, she was taken to hospital, fluoroscoped, and there was the bobby-pin. A film was taken for posterity. Another examination of the vagina with speculum was negative. She was given an anaesthetic, and a dilatation of cervix done. Feeling with an uterine probe the pin was felt. A sponge forcep was introduced into the uterus and when withdrawn, in its grasp was the elusive bobby-pin.

I. R. SUTHERLAND, Annapolis Royal, N.S.

Unusual Clinical Picture accompanying a Case of Acute Purulent Maxillary and Ethmoid Sinusitis.

F. G. Male. Age 11 Years.

Two mild cases of influenza had appeared in this family and on June 5th, the patient complained of headache and malaise. These symptoms increased markedly during 48 hours and on June 8th swelling appeared over the left supraorbital and malar regions with pain in the L. ear. Temp. 103; and increasing prostration. On the 4th day he was brought to hospital and subsequent notes are from records of Eastern Kings Memorial Hospital.

On admission Temp. 104°. Pulse 128. Resp. 24. Patient dull, aroused with difficulty, but rational. Swelling and pain on pressure in left upper lid and malar region. Examination of eyes, eyegrounds, nose and throat, negative. The L. tympanic membrane was bulging and, with the walls of the canal, showed hemorrhagic blebs.

L. Ear-drum was incised and a small amount of pus found, followed by profuse bleeding, easily checked.

5th Day of illness. Temp. range from 99° to 104°. Purulent discharge in L. ear. No other ear symptoms. Swelling in L. supraorbital and malar regions increasing and extending to auricle. Tenderness on pressure over malar bone. L. eye closed by swollen upper lid. Ear irrigated every 4 hours and ice bag constantly to temporo-malar region. No tenderness or pain over maxillary antrum. No pus in nose.

6th Day of illness. From the increasing swelling and tenderness it appeared that there was an extension of the infection from the L. middle ear to the temporal bone, probably in the base of the zygoma. The "rocketing" type of temperature range, with the profound general disturbance, seemed to indicate involvement of the lateral sinus.

Patient was irrational at intervals during night with Temp. 105°. No meningeal symptoms. No blood cultures made.

For these reasons patient was prepared for operation to explore the L. mastoid and lateral sinus.

Meanwhile X-ray pictures were made and the following report submitted:

"L. Mastoid negative. Sclerotic L. Maxillary Sinus and Ethmoids cloudy. Frontal Sinuses show no dividing septum and are uniformly dull."

Here was an unexpected picture. It was decided to open the L. group of nasal accessory sinuses.

7th Day of illness. Temp. 103.6°. Pulse 118. Patient dull, aroused with difficulty, does not complain of pain, and has taken no nourishment except occasional sips of liquids.

Operation at 7 P.M. The L. maxillary antrum was opened through the canine fossa. When the bone was opened the antrum was seen to be full of pus. Counter opening was made in L. nostril through which a drain was carried. There was little thickening and no degeneration of the lining of the antrum. Incision in the canine fossa was closed. An incision as for radical opening of the frontal sinus and ethmoid body was made. This extended from the outer end of the eyebrow through the line of the brow to the inferior edge of the nasal bone. When this incision was carried through the periostum a bead of pus was seen in the supraorbital region. A separate incision 3cm. long was made over the malar bone, where swelling and tenderness were greatest. No pus was seen here, and none was seen subsequently. The ethmoid cells were full of pus and were exenterated. The fronto-nasal duct was enlarged and a probe passed into the frontal sinus. As no pus was seen and the patient was not in very good condition, it was decided not to make any further investigation of the frontal sinus at this time. The supraorbital end of the incision was closed. A drain was carried externally into the ethmoid region. This drain with the antral drainage was removed at the end of 24 hours, and the incision allowed to close. Further cleansing was carried out through the nose.

8th Day of illness. Temp. 99° at 8 P.M. Pulse 86. Patient comfortable and sleeping naturally.

9th Day of illness. Temp. normal. Patient began to take liquid nourishment. From this day convalescence was uninterrupted. The left ear-drum was healed in 1 week. Patient was discharged from hospital June 26th, the 21st day of his illness, 14 days after operation, with 17 days of hospitalisation. At this time there was no pus in the nose, and at no time since his discharge, has he had any symptoms referable to his nose or ear.

Points of Interest.

1. The unusual, overwhelming character of the infection and range of temperature.
2. The tenderness and swelling in the tempero-malar and supraorbital regions, which, with the pus found in the supraorbital ridge, point to a periostitis.
3. The absence of tenderness over the maxillary antrum and of pus in the left nostril, in spite of the fact that the antrum and ethmoid cells were full of pus.
4. The coincidental appearance of the middle ear infection which made diagnosis difficult.

J. A. M. HEMMEON, Wolfville, N.S.

Two Cases of Ectopic Gestation.

Case 1. Mrs. J. a 38 year old housewife.

Complaints—When seen on Jan. 10th severe abdominal pain with nausea. Severe pain in rectum. She had always enjoyed good health. Married 17 years. No pregnancies. Had normal menstruation Dec. 14th. Began flowing

again Dec. 28th. and continued with a slight show up to the time when this attack occurred. The day previous to this attack she had two attacks of lower abdominal pain more pronounced on right side, lasting about $\frac{1}{2}$ hour. She did not have any feeling of faintness either then or during the present attack.

On abdominal exam she was extremely tender over right lower quadrant with rigidity. Otherwise abdomen was apparently normal, temp. 98.4, pulse 78. Taking into consideration her previous history of 17 years married life with no pregnancies I perhaps rather lightly dismissed any idea of an ectopic and diagnosed her case as acute appendicitis of the obstructive type.

She was immediately taken to the hospital where on admission, Jan. 10th her temp. was 99 and pulse 96. Respiration was 20. She was immediately prepared and taken to the operating room.

Anaesthetic—Ethyl Chloride and Ether.

Right rectus incision appendix examined and found uninflamed. The incision was extended downward and patient put in Trendelenberg position. On exploring the pelvis found a small amount of bright blood and the right tube bleeding quite freely.

The right tube and right ovary were removed and the abdomen closed.

The patient made an uneventful recovery and was discharged on the 12th day.

Case 2. Mrs. R. age 38. Married. One child born 1921. Later divorced and has not remarried.

Mrs. R. has had a rather checkered surgical career. In the early part of the last decade she had severe attacks of abdominal pain for which her appendix was removed in St. John in 1921. Her gall bladder in Yarmouth in 1922. The attack of pain continuing. Further investigation revealed the presence of spinal cord tumours which were removed in Yarmouth by Dr. Campbell in 1923. Following recovery from this operation she had several years of good health. In 1930 Dr. Cushing diagnosed a brain tumour but advised against operation. She has had no further trouble from it.

The present illness began three weeks ago, Aug. 11th, with a slight abdominal pain bearing down in both front and back passages. No faintness but some nausea. She was seen by Dr. Rice who gave her two hypodermics to control the pain. She felt much better for about 10 days when she had a similar attack which lasted several hours and eased down. The third attack which occurred Sept. 2nd. was similar to labour pains. She was flowing slightly. Her last menses was June 27th. Dr. Rice decided he was dealing with an abortion and brought her to the hospital. When seen by me she was having typical labour pains with slight bloody show. On exam p.v. the os was closed and rather firm. A tumour about the size of a three months pregnancy could be palpated. Her temp. was normal, pulse rate 100. Respiration 22 on admission.

On Sept. 3rd she passed several clots and a piece of tissue which looked like a Decidual cast which was later verified by the laboratory. Following this she felt better for several days. Her pulse rate settled down, temp. remaining around 98-99. The only change in her condition was the size of the abdominal tumour which was extending upwards and almost reached the umbilicus.

Following the receipt of the laboratory report on the tissue passed I decided the condition must be an ectopic. She was prepared for operation

and taken to the operating room. Under general anaesthesia the abdomen was opened in mid line suprapubically and a large partly organized blood clot was found adherent to the bowel etc. extending up almost to the umbilicus. This was removed and it was found that the seat of the trouble was the right tube which was removed. The abdomen was closed and the patient made an uneventful recovery.

JOHN R. MCCLEAVE,
Digby, N.S.

Unusual Developments During Puerperium.

Mrs. F. F. was a healthy female of 20 years and her second pregnancy had terminated normally on July 13, 1936 after a short labour of two hours. Only rectal examinations had been made, no forceps had been used and there were no tears. She received chloroform during the last four contractions. The placenta and membranes were delivered 15 minutes later and the amount of blood lost was well within normal limits. Her prenatal months had been unattended by any abnormal disturbances.

On the day following this easy and normal labour she had chills, temperature of 103.8, pulse of 130, respirations 32. Her W. B. C. count was 9000. She looked pale, drowsy and sick. There was no pain or nausea. The breasts and fundus were normal, the lochia was of usual amount, colour and odour. Urine passed without difficulty. There were no rales in the chest nor any other complaints or symptoms.

For a week this condition continued essentially the same. The morning temperature would vary between 99 and 100 and the pulse remained rapid between 120 and 160 and the shallow rapid respirations varied between 32 and 45. Every day she would have several "sinking spells." A very slight and unproductive cough appeared after a few days and some rales were heard in the lower lobes of both lungs posteriorly and there was an impairment of the percussion note over the lower right chest. The apex beat was not appreciably displaced. Her abdomen was uniformly distended but soft and tympanitic. She complained of vague abdominal discomfort and would vomit part of her liquid diet three or four times a day. The breasts, fundus and lochia appeared to be normal, as was also the urine except for the presence of acetone. This disappeared after intravenous glucose and saline. A consultation was held, puerperal septicemia discussed as a probability and a large dose of Scarlet Fever antitoxin was given intramuscularly.

During the following three weeks the patient's condition continued critical. Her pulse rate lowered a little and would seldom be more than 130. The right chest was quite dull to percussion below the third rib and breath and voice sounds were absent. There were a few rales in left lower lung behind. There was a slight unproductive cough. The apex beat was 3 $\frac{1}{2}$ inches from M. S. L. and the right chest did not bulge but moved with respiration. She was too ill to stand an exploratory needle. Vomiting continued in small amounts and the abdomen was distended, soft and not tender, and the bowels were kept regular. Nothing abnormal was noted in the stools. About the end of this three weeks a soft mass gradually became more and more apparent in the right lumbar region of the abdomen. It was not very move-

able or tender and could not be clearly outlined. A little later another similar mass appeared in the left lumbar region and was the size of an orange. The breast secretion had dried up, lochia gradually became paler and stopped. There was only a small amount of subinvolution and the uterus was moveable. Bimanual examination was not painful and no masses were felt.

During the fifth week she continued to be about the same except that she was becoming weaker and thinner. Doctors examining her were puzzled. Tuberculosis of lungs and peritoneum accompanied by a right-sided pleural effusion was considered. The mass in the left lumbar region was thought to be a collection of faeces by one man and an enlarged spleen by another, but the bowels had been kept evacuated throughout her illness and no splenic notch could ever be felt. Nor was free fluid demonstrable in the abdominal cavity as one might expect in tuberculous peritonitis. The mass in the right side was as large as a turnip. Its limit seemed clearly marked above at three fingerbreadths below costal margin but its lower limit was less clearly defined but seemed to extend at least as far down as the caecum. Her blood picture showed about two and a half million red cells, a Hbn. of 50% and 14000 white cells with a preponderance of polymorphonuclears.

On August 23—six weeks after her baby was born—fluctuation was felt for the first time over the mass in the right abdomen. An exploratory needle withdrew thick greenish pus. She was given glucose and saline and prepared for laparotomy.

Thick greenish pus with no very bad odour escaped on opening peritoneal cavity. As it drained away, gas also escaped and the masses on both sides of abdomen soon disappeared. An opening not quite large enough to admit a finger was noted lateral to the caecum and pus escaped through this opening when abdomen was compressed. Further exploration was not done. The postoperative diagnosis now seemed to be Pelvic Abscess tracking up retroperitoneally and bursting into abdominal cavity near the caecum, and I felt very foolish that I had not detected bulging in the Pouch of Douglas at any time.

On the following day feces appeared through the wound and the wound drained well for a month. Patient's improvement was rapid and steady and she went home early in October. Breath and voice sounds were now heard in right chest and percussion was not so dull. There were no rales or cough.

For six weeks the wound discharged pus at intervals of a few days at a time and then appeared to close, but otherwise she felt well and had gained much in strength and weight and she was able to be up about the house. On Nov. 28 sharp pain was felt in the wound. On changing her dressing she found two small pieces of wood with a little pus and blood staining on the dressing. One piece was 1/2" long and 1/8" wide. The other was 3/4" long and 1/16" wide. It was of the type of wood commonly found in the form of chips around a farm dooryard. The wound closed for about a week and then began to discharge again. Possibly another small fragment or fragments of wood remain there. It might easily have been eaten with greens or lettuce.

One should apologize for several limitations in reporting this case. Since no X-ray facilities were at hand no information from this source is forthcoming. An exploratory puncture of chest would have showed the presence or absence of fluid, but the signs seemed to be more consistent with atelectasis, and she was too ill to explore needlessly. And again, the symptoms have not all

disappeared. Discharge from the abdominal wound continues intermittently, and more foreign bodies may pass or the need for an exploration arise. But while the case is not so very enlightening it is, in a great many ways, interesting and unusual.

E. B. HALL, Bridgetown, N. S.

Mandelic Acid Treatment of Urinary Infections.

It is approximately a year since Rosenheim demonstrated the value of Mandelic Acid as a substitute of the ketogenic diet in the treatment of urinary infections.

This work was followed shortly by that of Dunlop and Lyons, who simplified the technique of treatment by the use of Sodium Mandelate.

Although these two methods proved satisfactory, the need for large amounts of Ammonium Chloride rendered the treatment somewhat difficult in some cases as this was not well tolerated.

The introduction of Ammonium Mandelate by Holling and Platt proved to be the next forward step for these workers showed that the use of Ammonium Mandelate made the collateral administration of large amounts of Ammonium Chloride unnecessary.

The British Drug Houses Limited have been in the forefront of this work from its commencement and issued in turn Mandelic Acid, then Sodium Mandelate, and later Mandelix which is a palatable and convenient form of administering Ammonium Mandelate in the required dosage.

This product has now been considerably reduced in price and the reduction has made possible its routine use in the treatment of urinary infections.

The British Drug Houses (Canada) Limited, Terminal Warehouse, Toronto, will be pleased to send descriptive literature to any physician on request.

Department of the Public Health

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Those physicians wishing to make use of the free diagnostic services offered by the Public Health Laboratory, will please address material to Dr. D. J. MacKenzie, Public Health Laboratory, Pathological Institute, Morris Street, Halifax. This free service has reference to the examination of such specimens as will assist in the diagnosis and control of communicable diseases; including Kahn test, Widal test, blood culture, cerebro spinal fluid, gonococci and sputa smears, bacteriological examination of pleural fluid, urine and faeces for tubercle or typhoid, water and milk analysis.

In connection with Cancer Control, tumor tissues are examined free. These should be addressed to Dr. R. P. Smith, Pathological Institute, Morris Street, Halifax.

All orders for Vaccines and sera are to be sent to the Department of the Public Health, Metropole Building, Halifax.

Report on Tissues sectioned and examined at the Provincial Pathological Laboratory from December 1st, 1936, to January 1st, 1937.

During the month, 168 tissues were sectioned and examined, which, with 9 tissues from 3 autopsies, makes a total of 177 tissues.

Tumours, simple	20
Tumours, malignant	23
Tumours, suspicious of malignancy . . . . .	..
Other conditions	125
Tissues from 3 autopsies	9

Communicable Diseases Reported by the Medical Health Officers
for the month of December, 1936.

County	Chickenpox	Diphtheria	Cerebro Spinal Meningitis	Influenza	Measles	Mumps	Paratyphoid	Pneumonia	Scarlet Fever	Typhoid Fever	Tbc. Pulmonary	Tbc.-other Forms	V. D. G.	V. D. S.	Whooping Cough	Pink Eyes	Erysipelas	German Measles	TOTAL
Annapolis.....	7	6	..	..	..	..	..	2	..	..	..	..	1	..	..	..	..	..	16
Antigonish....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	75	..	..	..	75
Cape Breton...	..	15	..	..	..	..	..	..	14	..	..	..	..	..	..	..	..	..	29
Colchester.....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Cumberland...	4	..	..	..	..	1	..	..	4	..	..	..	..	..	13	..	..	..	22
Digby.....	..	..	..	..	..	..	1	..	7	..	..	..	..	..	10	..	..	..	19
Guysboro.....	..	..	..	..	..	..	..	..	..	..	2	..	..	..	5	..	..	..	7
Halifax City..	1	2	..	..	..	..	..	..	7	..	..	..	..	..	13	..	1	..	24
Halifax.....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Hants.....	..	..	..	..	2	..	..	1	1	..	..	..	..	..	..	..	..	..	4
Inverness.....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Kings.....	..	..	..	3	..	..	..	..	..	..	..	..	..	..	1	..	..	..	4
Lunenburg....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Pictou.....	4	..	..	..	..	..	..	2	1	..	..	..	2	..	..	..	..	..	9
Queens.....	6	..	..	27	3	..	..	1	6	..	..	..	2	..	125	..	..	..	170
Richmond.....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	20	..	..	..	20
Shelburne.....	..	..	..	..	..	..	..	..	2	..	..	..	2	..	..	..	..	..	4
Victoria.....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Yarmouth.....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
TOTAL.....	22	23	..	30	5	1	1	6	42	..	2	..	8	..	262	..	1	..	403

Positive cases Tbc. reported by D. M. H. O's. 42.

RETURNS VITAL STATISTICS FOR NOVEMBER, 1936.

County	Births		Marriages	Deaths		Stillbirths
	M	F		M	F	
Annapolis.....	15	9	20	13	7	0
Antigonish.....	9	9	17	2	5	1
Cape Breton....	98	120	90	36	28	3
Colchester.....	27	16	17	5	10	1
Cumberland....	27	30	33	20	17	2
Digby.....	19	11	26	6	8	1
Guysboro.....	11	7	10	8	1	0
Halifax.....	85	96	79	81	65	9
Hants.....	10	22	18	5	6	2
Inverness.....	17	23	12	8	5	0
Kings.....	22	13	21	11	6	0
Lunenburg....	23	27	28	7	11	0
Pictou.....	23	29	18	19	9	3
Queens.....	9	3	10	5	4	0
Richmond.....	9	9	5	5	2	0
Shelburne.....	11	12	11	5	6	0
Victoria.....	5	2	4	3	0	0
Yarmouth.....	14	20	17	11	9	0
	434	458	436	250	199	22

OBITUARY

IN the last week of December there passed away two of our oldest confreres in the persons of Dr. J. Rupert Chute of Elderbank, Musquodoboit, and Dr. Duncan Andrew Murray of River John. The former was eighty-six years of age and the latter seventy-three.

Dr. Rupert Chute, (Died December 27th, 1936).

Dr. Chute was one of the early graduates of the Halifax Medical College, (Dalhousie), 1877, and began his practice in Newfoundland. He later located in Guysboro County, and then to be nearer his family home in Upper Stewiacke, he moved to the Musquodoboits. In his early years he was keenly interested in his profession and attended all medical meetings that were held in the shire town of Truro. He had, however, a hobby which made it hard for him to confine his time to medical practice alone, for he was an ardent lover of the woods and fishing, and would frequently absent himself from his work only to be found camped beside some lake or stream after several days of absence. Dr. Chute was a member of an exceedingly brilliant family. A brother, Rev. Arthur C. Chute, D.D. of Acadia University died but a short time ago, and a nephew, Arthur Hunt Chute, a brilliant writer, died earlier in 1936.

Dr. Duncan Andrew Murray, (died December 28th, 1936).

The writer first met Duncan Murray at McGill from which he graduated in 1889. Even then he took a serious view of living while I thought more of football than practice, and he well upheld the name of Pictou County in his scholarship. He at once located in River John, not far from Meadowville where he was born. Here he remained, like Doctors Collie, Roach and others, loved and respected in the community, as much so as any "Meenister", his entire life, till failing health compelled him a few years ago to retire in favour of his son, Dr. J. Stewart Murray, who bids fair to follow in his father's footsteps.

Of Dr. Murray the New Glasgow Evening News says,—“In the whole of the extensive countryside around River John Dr. Duncan Murray was a by-word to the fishermen and farmers. One of the old school of doctors he was known to every family on the coast for his never failing answer to the call of duty in every season. For forty odd years he carried on in addition to his medical practice, a drug store, that he relinquished at his retirement when advancing years compelled him to give way in favour of his son, Dr. Stewart Murray, who continues the good work of his father.”

He is survived by his wife, who is a sister of E. S. McKenzie, druggist of New Glasgow, by his son, Dr. Stewart, and four married daughters living in Montreal, New York and River John.

Dr. Ronald Foley MacDonald, Antigonish, died in St. Martha's Hospital, on December 17th, aged fifty-three, after an illness of less than a week. We cannot do better than quote freely from the Antigonish Casket in the lengthy tribute it paid to his memory.

"The funeral took place Sunday afternoon, December 20th. The attendance of mourners from county and town and from points outside, offered a tribute, such as no layman has received here for many a year. The Cathedral was crowded to the doors during the requiem service. . . . The funeral procession was headed by the medical men of Antigonish with Dr. Smith of Goldboro and Dr. J. J. McDonald of New Glasgow. They were followed by the uniformed nurses of the Hospital, then by members of St. Ninian's Council, Knights of Columbus. Then came the hearse and then a multitude of friends on foot and in cars. The pall bearers were: A. O. Philip, Tupper Foster, C. D. Chisholm, J. R. Kirk, M.P., Dr. C. S. Agnew and J. P. McKenna. . . . Dr. MacDonald was born at Antigonish Landing August 14, 1883. . . . He attended St. Francis Xavier University, graduating in 1903. He took an active part in all college affairs and was a valued member of the football team and the senior class track team. . . . In due time he entered the University of Pennsylvania, completing his course in 1910. For the next ten years he practised his profession at Riverton, New Jersey, then, yielding to the solicitations of relatives and friends, he returned to his home town. In the fall of 1924 he went to London where he specialized in eye, ear, nose and throat work, and returning the following year, gave up general practice for his specialty, in which he continued with success until his death. . . . In the untimely death of Dr. MacDonald, Antigonish has lost a citizen who possessed the warm regard of the community at large. The news of his passing was heard by many who treasured his friendship with a sense of personal loss—a loss that was all the greater because it was so widely shared. Dr. "Ronnie" was called a friend not only by the members of the profession which he adorned, not only by his associates in the various social and recreational clubs to which he belonged, not only by his many patients throughout Eastern Nova Scotia, but by all who in casual daily contact warmed to his quiet greeting. He carried himself with an easy dignity which few, even of his intimates, ever saw ruffled. At all times he was a gentleman."

Requiescat in Pace.

S. L. W.

Dr. George E. Drew, of New Westminster, B.C., passed away on December 14th after a brief illness. Dr. Drew was born in Petite Riviere. He attended Mt. Allison University at Sackville and later graduated in medicine from the University of New York in 1881. He then practised in Petite Riviere for a period of twelve years, moving from there to New Westminster, B.C.

We regret to learn of the death of Dr. David Fraser Harris, former Professor of Physiology at Dalhousie, who passed away in a nursing home in London, England, on January 3rd, at the age of sixty-nine. Dr. Fraser Harris was born in 1867 at Edinburgh, the son of David Harris, F.R.S.S., F.R.S.E. of Bath, and Elizabeth Sutherland, daughter of Sheriff Fraser of Kamisky, New Brunswick. He was educated in Edinburgh, Glasgow, Birmingham, London, Berne, Jena and Zurich, and was honoured by degrees by the Univer-

sities of London, Birmingham and Glasgow. Coming to Dalhousie as Professor of Physiology in 1911, he remained here for a period of twelve years, when he was forced to retire on account of ill health. Dr. Fraser Harris was a great favourite in Halifax, not only with the University body, but with society in general. He was known particularly for his brilliance as a scientific lecturer. He took an active interest in Medical Society affairs, and at one time was President of the Halifax Branch. Dr. Harris is survived by his wife, the former Eleanor Leslie, daughter of Lt. Col. F. M. Hunter, C.B., C.S.I. attached to the Bombay government's political department, and his son Alexander, a sub-lieutenant in the Royal Navy. The Misses Mary and Flora Fraser of Halifax are cousins.

What Every Woman Doesn't Know—How To Give Cod Liver Oil.

Some authorities recommend that cod liver oil be given in the morning and at bedtime when the stomach is empty, while others prefer to give it after meals in order not to retard gastric secretion. If the mother will place the very young baby on her lap and hold the child's mouth open by gently pressing the cheeks together between her thumb and fingers while she administers the oil, all of it will be taken. The infant soon becomes accustomed to taking the oil without having its mouth held open. It is most important that the mother administer the oil in a matter-of-fact manner, without apology or expression of sympathy.

If given cold, cod liver oil has little taste, for the cold tends to paralyze momentarily the gustatory nerves. As any "taste" is largely a metallic one from the silver or silverplated spoon (particularly if the plating is worn), a glass spoon has an advantage.

On account of its higher potency in Vitamins A and D, Mead's Cod Liver Oil Fortified With Percomorph Liver Oil may be given in one-third the ordinary cod liver oil dosage, and is particularly desirable in cases of fat intolerance.

SOCIETY MEETINGS

At the annual meeting of the Cumberland Medical Society held in Amherst in November the following officers were elected:

President—Dr. J. A. Langille, Pugwash.

Vice-President—Dr. M. J. Fillmore, Advocate Harbour.

Secretary-Treasurer—Dr. J. W. Sutherland, Amherst.

Representatives to the Medical Society of Nova Scotia—Dr. J. A. Langille and Dr. J. W. Sutherland.



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Institute of Public Affairs at Dalhousie University

Dalhousie University has recently established an Institute of Public Affairs aiming to promote and facilitate co-operation between governments and universities in the field of Public Administration. The Institute will give special attention to the administrative, financial and social problems which face the municipalities of the Maritime Provinces at the present time. It co-operated with the Union of Nova Scotian Municipalities in preparing its Annual Meeting at Digby, on which occasion President Stanley and Professor L. Richter of Dalhousie University were among the speakers. A few weeks ago the Institute organised a Provincial Conference on Unemployment Relief that was attended by officers and social workers of nearly all the municipalities where relief is still an acute problem. As a result of this conference, the Institute has been asked by the municipalities to do further research on unemployment in Nova Scotia.

Initiated by the Institute, a series of public lectures is being held this winter in Halifax and Truro on current problems of government in Canada. Prominent speakers from all over the Dominion have agreed to participate. The series has been started with a lecture on "The Crisis of Democracy" given by B. K. Sandwell, Editor of Toronto Saturday Night. Further speakers will include P. E. Corbett, former Dean of McGill Law School, who will discuss "Canada's Foreign Policy"; in February, Sir Edward Beatty will speak on "The Canadian Railway Problem"; in March, Dr. Morgan, the new principal of McGill University, on "Government and Education" and in April, Miss Charlotte Whitton, Executive Director of the Canadian Welfare Council, on "Government and the Social Problem".

In order to arouse interest in the problem of public administration in the Province, the Institute has further decided to publish a series of bulletins dealing with important aspects of public life in Canada. Some of the lectures given on behalf of the Institute will be made available to the public at large in that way. The first four bulletins in the series have just appeared. They are:

1. Dalhousie Institute of Public Affairs by President Carleton Stanley.
2. A discussion of Municipal Finance and Administration by Thomas Bradshaw, President of the North American Assurance Company.
3. Unemployment and Unemployment Relief in Nova Scotia by L. Richter.
4. The Crisis of Democracy by B. K. Sandwell.

For the time being the Institute will on application send copies free of charge to readers of this BULLETIN. Applications should be directed to the Institute of Public Affairs, Dalhousie University, Halifax, N. S.

LOCUM TENENS REQUIRED.

A Locum Tenens is required for two or three months. Will anyone who would like to take this up kindly communicate with this office at once.

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Personal Interest Notes

Dr. D. J. MacKenzie, Director of the Public Health Laboratory, Halifax, has returned from a visit to Toronto where the annual meeting of the Canadian Public Health Association was held.

Dr. H. B. Whitman of Westville is rapidly convalescing from an attack of appendicitis. He was operated upon on December 23rd, at the Aberdeen Hospital, New Glasgow.

Dr. and Mrs. E. K. Woodroffe were guests of honor at a party in Canning, just previous to their removal to Chester early in December, at which their many friends presented them with a handsome parlor lamp, expressive of their regret over their departure, as they had both been very active in all community welfare work.

Dr. Frank J. Hebb, son of Mr. and Mrs. W. E. Hebb, Halifax, has been appointed to the staff of the Montreal General Hospital. Dr. Hebb began practice in Liverpool, N. S., and recently returned from post-graduate work in London.

Dr. Edward DuVernet has resigned as Medical Health Officer of Digby, and his work has been taken over by Dr. W. R. Dickie.

Will build addition to Berwick Hospital.

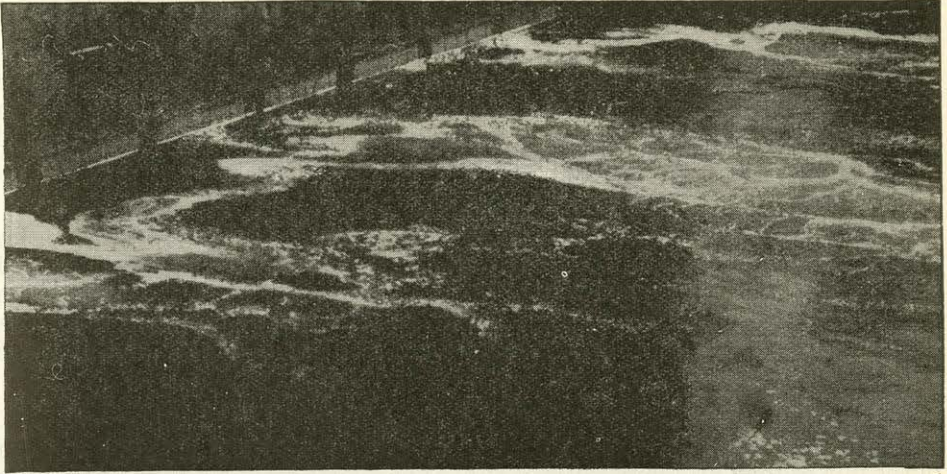
At the annual business meeting of the Western Kings Memorial hospital held early in November at which Mr. A. V. Crook, president, presided, it was decided to renovate the building and build additions in the spring. The sum of \$12,000.00 is in the hands of the Hospital Aid towards this work and a committee to arrange work appointed as follows: Mayor Hiram Thomas, D. B. Parker, and A. S. Patterson. The financial statement showed a balance of \$628.43.

Dr. Allan Morton of Halifax has returned from New York where he spent two months in post-graduate study.

Dr. and Mrs. H. K. MacDonald of Halifax have returned from a short visit to New York.

The BULLETIN extends congratulations to Dr. and Mrs. R. Ian Macdonald of Toronto, formerly of Halifax, on the birth of a daughter on November 27th.

Dr. R. G. A. Wood of Lunenburg left during the latter part of December for New York and Cleveland for two weeks post-graduate work.



“ c a s t y o u r b r e a d . . . ”

One would think that the high standard of ethics maintained by the medical profession should not be too high for the manufacturer of medicinal preparations who would minister to the needs of the profession. Unfortunately this desirable state is not always found and, from time to time, relatively untried, though potent products enjoy an extensive sale as the result of claims based on limited clinical evidence.

In an editorial in the Journal of the American Medical Association, under date of October 24th, there appear some interesting remarks concerning such occurrences which merit the attention of physicians. One paragraph in particular provides ample food for thought. “. . . A physician engaged in a busy practice who reads these glowing reports tends to undergo a transition from amazement to general interest, to acceptance, to clinical application. What he does not often see in print are the conservative reports, or the reports of failure.”

As manufacturers, it has been our privilege for six years to make available the oestrogenic hormone Emmenin, elaborated by Dr. J. B. Collip in the Department of Biochemistry, McGill University. With a conservatism befitting such a background, our statements concerning Emmenin Liquid have been made with careful regard to all the clinical evidence, a policy which an international acceptance of Emmenin shows to have been a wise one.

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The recently-compiled bibliography of Emmenin
is available to physicians who are interested.

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CANADA

The marriage took place on December 30th in Ottawa of Miss Margaret Isobel Weeds, daughter of Mr. and Mrs. J. B. Weeds, and Dr. W. Douglas Piercey, son of Mr. and Mrs. W. D. Piercey of Halifax. Dr. Piercey graduated from Dalhousie in 1934 and Mrs. Piercey is a graduate nurse of the Ottawa Civic Hospital. After a brief visit in Halifax Dr. and Mrs. Piercey returned to Ottawa where Dr. Piercey is an assistant to Dr. S. I. Evans.

Miss Barbara Sieniewicz, daughter of Dr. and Mrs. T. M. Sieniewicz and Miss Margaret Rehfuss, daughter of Dr. and Mrs. W. N. Rehfuss of Bridgewater will sail from Montreal on May 3rd, to attend the Coronation of King George VI. Miss Sieniewicz and Miss Rehfuss are two of the Nova Scotia Girl Guides who will represent Nova Scotia in the party of thirty-five Girl Guides chosen from Companies throughout the Dominion.

Not Nourishing—An old darky was admitted to the hospital and one of the nurses took his temperature. When the doctor made his round he asked: "Well, Mose, have you had any nourishment?" "A lady done gimme a piece of glass to suck on, boss, but I'se still pow'ful hungry."

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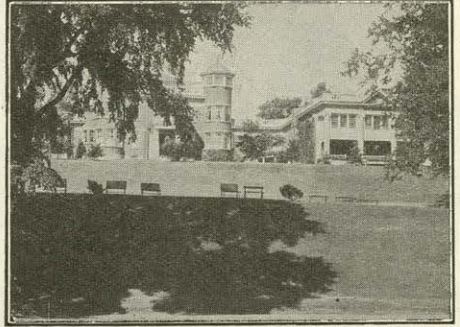
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