Recent Advances in Pre- and Post-operative Treatment[1]

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IT is somewhat difficult to select a subject which can bring a message to a varied group of medical practitioners. I have elected to discuss certain general conditions affecting pre- and postoperative treatment because, although certain aspects of them may not interest some of us, the applications of the principles which these advances indicate are of more or less general importance.

For many years surgeons focussed their attention on improvements in surgical technic and neglected factors of equal importance in their effect on surgical morbidity and mortality. As a result of a better understanding of the processes involved in a normal physiological mechanism, there gradually evolved a more comprehensive knowledge of the alterations from the normal which occur in disease. The problems which we have to meet, are largely concerned with the nature and the extent of various chemical reactions in the body; changes in the environment in which these reactions take place, and the influence of these environmental changes on the reactions. The increasing importance of physiology and physiological chemistry as a means of better understanding normal and abnormal function has had a profound effect upon medicine and surgery. It is because of a more or less general acceptance of these facts by clinicians that the advances in pre- and postoperative treatment, together with certain surgical approaches to what previously were considered medical problems, have within the last decade been of more importance in affecting a reduction in morbidity and mortality then have the technical advances of a purely mechanical nature.

It is because I feel that by attention to the details of pre- and postoperative treatment of the individual patient as much as by the operation itself that mortality and morbidity can be still further reduced that I have chosen this subject for today. It is impossible to cover every advance in this field, but I shall attempt to cover certain significant contributions.

Nutritional Edema—

One of the most common conditions which we as surgeons are confronted with in surgical practise is malnutrition. Its existence is much more widespread than is commonly believed, and its effects, while usually believed to bear some relationship to resistance, are of a much more profound character.

Although the volume of the circulating blood is primarily dependent on the supply and nature of the electrolytes and the available water in the organism, other substances, principally the plasma proteins, play an important part in maintaining the proper fluid balance between the tissue cells and extra cellular fluid and the circulating fluid in the blood vessels.

1. Read at the Dalhousie Refresher Course, Halifax, Nova Scotia, August 16th, 1938.

The volume of the circulating blood of normal human beings has been estimated to be from one-tenth to one-twentieth of the body weight. Smith and Mendel have injected intravenously into normal rabbits sufficient amounts of solutions of various neutral sodium salts to double the blood volume and in every case they found that although most of the fluid was lost from the circulating blood within five minutes, there was in no instance evident tissue edema. If, however, the serum proteins had been reduced to a critical level prior to the injection of the solutions, the result would have been quite different.

If, as the result of a restriction of food intake there is a deficiency of the serum protein, the protein stores of the body are called upon. Up to a certain point, from the nutritional point of view, the deficiency of protein in the diet can be made up by increasing the intake of carbohydrate and fat, but there comes a time when, as the result of protein restriction, tissue wastage occurs regardless of the intake of carbohydrate and fat.

Prolonged restriction of protein in the diet results in a reduction of the plasma proteins. A reduction of the plasma proteins is of serious consequence in the surgical patient for a variety of reasons. As the plasma proteins are reduced in concentration from the normal level of approximately 7.5 grams per 100 cc. of blood, the circulating fluid begins to leave the vessels, resulting first in a latent and later in an evident tissue edema. This role of the plasma proteins wherein they play an important part in maintaining a delicate state of balance between the blood and the intercellular fluid by virtue of the osmotic properties of the protein is of considerable importance in a variety of lesions we are called upon to treat.

In complete pyloric obstruction where over a period of time there has been a marked restriction in the diet, a deficiency in the total plasma proteins nearly always exists when the patient is first seen, but in many patients the concentration of the serum protein is at this time within normal limits because of dehydration. When the existing dehydration is overcome the plasma proteins are very often low and tissue edema results. In gastric and duodenal ulcer, especially with obstruction, and in long standing biliary tract disease a reduction in the total serum proteins, and frequently the serum protein concentration, exists when the patient is first seen. This is especially true in gastric carcinoma. Even though the protein concentration is normal when the patient is first observed, it may rapidly fall as attempts are made to restore a normal fluid balance.

Jones and Eaton were, I believe, the first to call attention to the fact that nutritional edema may readily occur as a complication of a variety of surgical conditions. The patients who present this condition are, as a rule, undernourished prior to operation and usually are suffering from some lesion of the gastro-intestinal tract. In a number of patients edema is not grossly evident prior to operation but as a result of further dietary restriction imposed by the nature of the operation, and associated with a restoration or excess of the fluid and salt volume during the postoperative period, edema results. Van Slyke and others have shown that the critical level of the serum proteins at which edema begins is approximately 5.5 grams per 100 cc. of blood, while latent edema may occur at an even higher level. In such patients, the excess use of sodium chloride still further accentuates the edema, for the use of large amounts of sodium salts in hypoproteinemic patients is conducive to the production of edema at a serum protein concentration above the critical level of 5.5 grams per 100 cc. of blood. It is important, therefore, that we

investigate not only the state of the dehydration existing in a given patient but that the condition of the plasma proteins be likewise kept constantly in mind.

Of the greatest importance is the fact that edema may affect not only the subcutaneous tissues but the tissues of various viscera. The edema which may be precipitated in hypoproteinemic patients is, we believe, a factor in the production of postoperative pulmonary complications. These patients frequently have signs of mild pulmonary congestion and such a state is a precipitating factor in the more serious complications of atelectasis and infection.

We have shown that edema around a gastro-enterostomy stoma may be the cause of a poorly functioning gastro-enterostomy. There can be little doubt but that the edema involves other portions of the intestinal tract as well. We have, on a number of occasions, had evidence that a reduction of the plasma proteins after operation may cause such changes in the gastro-intestinal tract that the postoperative picture mimics in every way a technical defect in the anastomosis. Since our experience in this subject has become greater, we have become increasingly convinced that more than one patient has been subjected to a secondary operation with its attendant high mortality when in reality repeated transfusions, the use of lyophile serum, the passage of a Jutte tube through the stoma or a jejunostomy, which would permit of a more adequate program to fulfill nutritional requirements, would have led to a better end result with less risk to the patient.

One history may illustrate this point: W. S., Male, age 42. Admitted to the Surgical Division of the Hospital of the University of Pennsylvania on September 18, 1933, with a diagnosis of duodenal ulcer.

CC. Loss of weight, abdominal pain.

H.P.I. Since 1929 when symptoms of indigestion began the patient has lost 48 pounds. Because of dyspepsia he has markedly restricted his intake of food. He has had tarry stools on a number of occasions.

X-ray examination disclosed a duodenal ulcer with some pyloric obstruction.

There was no evidence of peripheral edema. The hemaglobin was 102 per cent on admission even though there was every reason to expect an anemia. The plasma proteins were 7.8 grams for 100 cc. of blood.

A posterior Polya operation was done on September 21st, 1933. No difficulties were encountered during operation. Subsequent to operation the patient was given normal saline intravenously and 5 per cent glucose by continuous intravenous drip and the Jutte tube in the stomach was attached for suction drainage.

After the fourth postoperative day the patient was given liquids by mouth but these did not pass the stoma, in fact, as soon as the Jutte tube was closed, he began to vomit. This continued in spite of all our efforts.

On September 27th, 1933, I made the following note—"The patient has been vomiting or draining from the Jutte tube considerable fluid. The abdomen is flat. The vomiting is of the type one would expect when there existed some mechanical defect at the gastro-jejunal anastomosis. The matter which must be determined soon is whether function can be restored without further operation. I can see no reason for a mechanical defect as a result of the operation."

He was given several transfusions and improved after these but the improvement was not maintained.

On the nineteenth day after operation the patient was still vomiting most of what he took by mouth. The serum proteins were 5.1 grams per 100 cc. X-ray studies on that day (October 10th, 1933) were reported as follows: almost complete obstruction at the site of the gastro-jejunal anastomosis in the erect and recumbent postures. There is considerable residue at the end of twenty-four hours.

At this time the patient showed considerable peripheral edema. A Jutte tube was successfully passed through the stoma and intensive protein feeding was begun, transfusions continued. Within three days the patient showed such marked improvement that regular feedings were begun. The serum proteins rapidly rose to normal and subsequent X-ray studies disclosed a normally functioning stomach.

It was exceedingly difficult to withhold doing a secondary operation when X-ray evidence of obstruction was obtained, but a regime which tended to restore the plasma proteins resulted in a rapid disappearance of the supposed technical defect in the operation. This experience is, I am sure, not a unique one. We have seen a similar condition in a number of patients. It is, therefore, advisable that where prolonged malnutrition or persistent vomiting has occurred prior to operation, the patient be given several transfusions prior to operation and that the Jutte tube be passed into the distal loop of the jejunum during the operation so that the nutritional requirements may be rapidly taken care of during the postoperative period.

In certain instances a satisfactory result can be obtained by the use of gum acacia. In concentrations above 8 per cent it is hypertonic and will temporarily draw fluids into the circulating blood. Where the nutritional state of the patient is such that massive edema is present before operation, the preliminary operation of jejunostomy should be considered so that the general nutrition of the patient can be improved prior to the major procedure. The surgeon must constantly be on his guard to balance, in the postoperative period, an adequate fluid intake and an adequate concentration of the serum protein.

Not only is edema of the gastro-intestinal tract of serious consequence in the restoration of normal gastro-intestinal continuity but the reduction of the serum protein is often associated with other serious catastrophes (duodenal fistula). Thompson, Mecray and I have shown that disruption of a wound after an abdominal operation is frequently associated with a lowering of the serum protein concentration. Fibroblastic cell proliferation is greatly retarded at such a period, but when the serum protein concentration is restored to normal, wound healing takes place promptly.

Not only are the serum proteins of importance in normal gastro-intestinal activity but certain accessory food factors, the vitamins, are equally important. A deficiency in vitamin B which is rapidly accomplished in many gastro-intestinal disorders, febrile states and hyperthyroidism results in gastro-intestinal atony and a deficiency in vitamin C is a further factor in failure of wounds to heal.

Thus, the problem of nutrition with which surgeons in the past have hardly concerned themselves, becomes of primary importance in a better understanding of the pathologic-physiology of abdominal operations and their complications.

Surgical Shock—

There is no subject in surgery of which more has been written and of which we as a whole have a poorer conception than surgical shock. Since the early nineties repeated attempts have been made to explain the phenomena of shock. In 1893 Malcom, after careful study, came to the conclusion that shock was the result of arteriolar constriction rather than arteriolar relaxation. His reasoning was clear and logical but his work came at a time when the persuasive power of Crile so caught the imagination of clinicians that for nearly forty years Crile's theories and those of many others continued to confuse not only the clinician but the investigator as well.

In 1914 Mann, who had done pioneer work in this field, came to the conclusion that "despite the enormous amount of work which had been done on surgical shock, there is still no general agreement as to the causes and nature of this condition. A critical review of the literature reveals an astounding amount of contradictory experimental data, and a great number of diverse conclusions based thereon".

The variations in the definition of shock are as numerous as the theories of shock. Within the past few years, however, a more accurate consideration of the phenomena of shock has resulted in a clearer understanding of the pathological physiology of this condition so that it is now more or less universally agreed that surgical shock is the result of a loss of blood volume and a deficiency in the rate of the flow of blood to the tissues. In order that we may properly evaluate the proof advanced for this concept it may be worth while rapidly to pass in review certain of the earlier theories which were widely accepted as an explanation of this condition.

Crile advanced the theory that the marked physiological and mental depression associated with shock was the result of exhaustion of vital nerve centers. The nerve centers were thought to be exhausted as a result of the constant bombardment of painful stimuli. He demonstrated morophological changes in the brain cells of various animals following prolonged injury to distant tissues, as proof of his theory.

Investigators began to question whether the changes which Crile observed were cause or effect. Dolley found similar changes associated with severe anemia. Janeway and Ewing were unable to produce shock after two hours of electrical stimulation in the presence of a maintained blood pressure. Cannon divided the cord above the lumbar plexus then severed the nerves to the hind limb of a cat, after which he traumatized the limb and produced shock. The death knell of the Crile theory was, however, provided by Forbes and his co-workers who found that failure in the cerebral circulation for only a very short period produced nerve cell changes identical with those which Crile had described. These changes were in effect the result of shock not the cause of it. It is now generally agreed that where no impediment exists to the flow of blood if the cerebral cells are adequately supplied with blood, so too are the other body tissues.

The acapnia theory of Yandell Henderson was widely accepted for some time. Henderson believed that the exhalation of carbon dioxide was responsible for the development of apnea and eventually respiratory failure. He found that when as a result of injury, afferent nerves were stimulated a violent and prolonged hyperpnea with the loss of carbon dioxide could be demonstrated. A similar condition of the loss of carbon dioxide might occur an opening of the abdomen and traumatizing the viscera. The theory was further strength-

studies initiated by Wiley and Newburgh on the fluid balance under a variety of environmental conditions have been extended by their associates Coller and Maddock, and by others.

Wiley and Newburgh have shown that normal individuals may lose from 600 to as much as 3000 cc. of fluid a day by way of the lungs and skin depending on the environmental conditions they are subjected to. Coller and Maddock using similar methods for determining the insensible loss of fluid found that the average patient lost about 1000 cc. of fluid during and in the first four hours after an operation. They found that the average surgical patient recovering from a major operation lost approximately 2000 cc. per day by the insensible routes.

If as a failure to appreciate the considerable loss of fluid by routes which are not easily calculated in the surgical clinic dehydration occurs, with a corresponding reduction of the blood volume, the patient becomes receptive to the shock-like state.

It is generally agreed that during the initial stages of anesthesia, there is an overactivity of the adrenal mechanism. This overactivity may in part intensify the loss of fluid. Other factors which may play an important role in the loss of fluid during the period of anesthetization and anesthesia, all of which initiate overactivity of the sympatho-adrenal mechanism are excitement, pain, cold, asphyxia, hemorrhage and a low blood pressure. Since many of these conditions are often present at the same time they thus cooperate in producing shock.

From the standpoint of prophylaxis the blood volume should be maintained at as nearly normal a level as possible at all times. In the patient whose volume has already decreased, rapid restoration of the volume by the use of blood, or serum, or a properly prepared solution of gum acacia will often prevent a catastrophe. It is of importance, however, when the volume has been seriously reduced to give blood immediately. The recent suggestion of McFee and Baldridge that saline infusions alone are efficacious in combatting shock and shock-like states fails to take into account certain of the fundamental facts now in our possession on the progressive factors initiating and intensifying the shock state. Surgical shock is dependent on a reduced blood volume. It can be prevented by maintaining a normal blood volume and blood flow and can be corrected by restoring a depleted volume, and correcting a reduced blood flow, with substances which will remain in the circulation.

Anesthesia—

From the time that Crawford Long first used ether for surgical anesthesia until the present time a wide variety of substances have been recommended for use. History has repeated itself time and again when as the result of enthusiastic reports surgeons have adopted new agents only to discard them as clinical experience with these substances increased.

We are still looking for the ideal anesthetic substance,—an agent which will rapidly induce anesthesia, from which there is rapid recovery, which is accompanied by no after effects which exerts no detrimental effects on the various body tissues, and which at the same time is without danger during anesthesia.

The new substances advanced for use in surgical anesthesia are too many to name, and to give their advantages and disadvantages. Certain generalizations concerning them can be given, however, with the hope that

we may be guided by common sense rather than be exploited by pharmaceutical advertising.

In general the use of any substance for complete anesthesia which depends upon the administration of an amount based upon body weight should be discouraged because it fails to take into consideration the individual reaction of the patient to the drug. Since very few, if any, of these substances have a specific antidote, they are in all instances potentially dangerous.

The various barbituric acid derivatives have a definite place in the anesthetist's armamentarium. Their exact place, however, is never beyond the stage of basal anesthesia. They may be used to advantage when general anesthetic substances are to be used which do not provide typical surgical anesthesia without pushing the anesthetic to the point of danger. With their utilization nitrous oxide and oxygen may provide excellent anesthesia and relaxation without reducing the oxygen concentration of the mixture to the danger point. The studies of Seevers, Meek, Rovenstine and Stiles, who found that preliminary morphine medication reduced the concentration of cyclopropane necessary to maintain third stage anesthesia by 66.6 per cent, are of great importance and further strengthen the idea that preanesthetic medication is of definite value. Halsey has shown that dogs breathing subanesthetic concentrations of ether develop surgical anesthesia when given 20 per cent of the minimal lethal dose of certain barbiturates. It should be remembered, however, that practically all of the substances now used to provide basal anesthesia tend to depress the respiration and to decrease the minute volume exchange in the lungs.

Of the newer general anesthetics, divinyl ether and cyclopropane much could be said. Suffice it to say at this time, however, that they are powerful anesthetics in that they both induce surgical anesthesia with a concentration of the anesthetic substance less than one-half that of chloroform. They are, therefore, useful but at the same time potentially dangerous agents. They both have a definite place, but they are not anesthetics to be administered by the novice.

One aspect of anesthesia must be reviewed in order that we may reorientate ourselves. Since the early twenties when Collip, Bollinger, Bourne, Stehle, and others reported that general anesthesia induced by ether or chloroform resulted in a reduction in the alkali reserve, much has been said of the tendency of these substances to cause acidosis and to explain certain complications during the postanesthetic period as a result of this. Leake and Hertzman have shown that similar, but less marked changes occur during nitrous oxide and ethylene anesthesia and more recent observations indicate that cyclopropane also causes similar changes.

The most interesting studies in this field are those of Cullen, Austin, Kornblum and Robinson. These authors have shown that if prior to operation no tendency to acidosis exists the degree of acidosis induced by surgical anesthesia will, as a rule, prove to be inconsequential. The acidosis induced during surgical anesthesia appears early and does not measurably increase during the later stages of the anesthesia. It is only in those patients then that present definite acidosis prior to anesthetization that a fall in the blood and serum bicarbonate during anesthesia may induce serious or alarming consequences in the postanesthesia period. In the usual patient coming to operation the acidosis induced by anesthesia is very rapidly corrected even without treatment during the recovery period.

It was shown many years ago by Opie and Alford, and later by Davis, Whipple and Hall, that an adequate glycogen supply in the liver protected the dog from the necrotizing effect of chloroform on the liver. Even before this work surgeons such as Kehr and Schreiber had suggested that glucose be used prior to operation on the jaundiced patient. It is now generally agreed that the bad risk liver patient will withstand anesthesia and operation better regardless of the general anesthetic used when the liver glycogen deposits are adequate. Until recently no one has explained why the liver glycogen had this beneficient effect. Experiments which Vars, Goldschmidt and I have been conducting, demonstrate that the protective action of a large amount of liver glycogen depends upon the fact that as a rule when the liver glycogen is high in amount the liver fat is low. Thus, when as a result of starvation or inadequate carbohydrate intake, or other factors which deplete the liver glycogen, the concentration of liver fat increases liver necrosis is apt to occur when the patient is subjected to a variety of anesthetics. Those anesthetics that are excellent lipoid solvents will, therefore, produce the greater injury, for the liver fat will hold a higher concentration of the anesthetic for a longer period of time. The deposition of large amounts of liver glycogen is, therefore, useful only if the liver fat is simultaneously displaced.

The effect of a variety of substances used preliminary to, during, or subsequent to anesthesia on the glycogen and fat stores of the liver is important since the presence of adequate glycogen and low fat stores in the liver is of real importance to the patient. Morphine, the barbiturates, and all of the general anesthetics cause a rise in the blood sugar. Epinephrine, ephedrine, and atropine act likewise as does anoxemia. Since the liver is the sole source of the blood sugar, the use of these substances tends to deplete the liver glycogen and simultaneously there occurs an increase in the liver fat, which conditions the liver to increased injury during anesthesia.

Unfortunately it is not always possible to prepare our patients for anesthesia for several days prior to operation, nor is it always possible, even if the time is available, to induce the damaged liver cells to increase their glycogen stores.

Goldschmidt, Lucke and myself have recently found that the use of an adequate supply of oxygen along with the general anesthetic substance will provide equally as efficient protection to the liver as will a high carbohydrate diet. Under conditions of one hour of chloroform anesthesia, the anesthetic being volatilized with air, 82 per cent of our dogs developed liver necrosis. If, on the other hand, the same anesthetic was volatilized with oxygen instead of air, only 32 per cent of the dogs developed liver necrosis after a similar period of anesthesia.

It is generally assumed that ordinary ether is without any definite effect on liver tissue. My associates and myself have, however, obtained convincing evidence that this assumption is unwarranted. If, during a three hour period of ether anesthesia in the dog, the ether is volatilized with a mixture which contains only 15 per cent of oxygen, 5 per cent less than does air, a very marked degeneration in liver tissue occurs. The degeneration may be so marked that at first sight one might assume that extensive liver necrosis had taken place and from the standpoint of function this may be true. It is highly likely that during ether anesthesia a state of anoxemia just as, or even more, serious than that which we imposed on the dog, does at times exist in many of our surgical patients. Under such circumstances the changes occurring

in the liver may be of such serious consequence as to result in the subsequent death of the patient. The protective action of oxygen, therefore, is of considerable moment since even with a reduced liver glycogen concentration an adequate supply of oxygen during anesthesia will offer a considerable degree of liver protection.

I cannot leave the subject of anesthesia without saying word about spinal anesthesia. There can be no doubt but that one can find certain definite contra indications to its use, but on the other hand there are a number of factors which favor its use. The relaxation which it affords, without doubt lessens tissue trauma. Excessive retraction is not required. The postanesthesia reactions are rarely so marked as when volatile anesthetics are used. The effect of the anesthetic on spinal tissues is negligible. For operations below the diaphragm in amounts of novocaine not exceeding 150 milligrams, with proper technic, the risk in the hands of an experienced anesthetist, is not greater than with other anesthetic agents.

The proper use of ephedrine prior to anesthetization is an added safeguard. Schmidt and Chen stressed the fact that ephedrine was efficacious in maintaining or raising a normal pressure and was of little use once marked hypotension existed. The method of Ferguson and North, which was developed in our laboratories, of giving ephedrine 15 to 20 minutes before injecting the spinal anesthetic, results in a rise in the pressure during anesthesia in a high percentage of our patients rather than a fall.

The statement frequently made that vasoconstrictor substances should not be used prior to the injection of a spinal anesthetic because they may cause the further pooling of blood in the splanchnic circulation, is based upon a false assumption. The splanchnic sympathetic vasoconstrictors are just as responsive to vasoconstrictor drugs as are the peripheral sympathetic fibres. It it high time that clinicians keep abreast of modern physiological advances and use these in interpretating the phenomena observed in man. More real nonsense has been written recently in regard to spinal anesthesia than any other subject with which we are at present daily concerned, and the constant reiteration that the fall in pressure is due solely to the splanchnic pooling of blood, is a perfect example.

Several years ago Schmidt called attention to the fact that we must look at the respiratory center from more than one point of view. It occasionally happens that a table catastrophe may take place under any anesthetic agent. Frequently the first evidence which the surgeon obtains that things are not going well, is when the anesthetist calls his attention to a change in the respiration. Often various respiratory stimulants are then rapidly administered in an effort to stimulate a flagging respiratory center.

In most instances had careful blood pressure records been kept during anesthesia, the presence of a failing circulation would have been established before changes in the respiration were noted. The change in the respiration is too often the result of the failure of an adequate blood supply to the center and its controlling mechanisms with a resultant deficient oxygenation rather than a primary failure of the cells of the respiratory center. If, at the first signs of a failing circulation, attempts were directed toward improving the blood volume, and the quality of the blood, respiratory failure would probably not occur. On the other hand, what usually occurs is that the anesthetist too frequently attempts to improve respiration by the administration of drugs which tend to whip up an already depressed respiratory center. With this

final stimulation the metabolites which have already caused respiratory depression accumulate in even greater quantity and the center succumbs. In the event of respiratory difficulties, if obstruction to breathing can be eliminated, more lives will be saved by directing our attention to improving the quantity and quality of the blood to the medullary centers by transfusion than by any other means.

Intestinal Intubation—

Although the early work of Hartwell, and the later work of Haden and Orr, gave us a better understanding of certain of the biochemical changes occurring in the higher types of intestinal obstruction, no material reduction in the mortality attended the restoration of the fluid and salt balance in this condition. While a disturbance in the fluid and salt balance may lead to serious consequences in acute intestinal obstruction, the mere restoration of fluid and salt is inadequate to offset the more serious results of other factors associated with this condition.

The later observations of Meek and Herrin, of Taylor, and of Wangensteen and Paine, demonstrated that distention of the bowel was of equal, or even more importance, in a consideration of the pathologic physiology of acute bowel obstruction.

Distention causes an impediment to the flow of blood in the bowel wall. There results first venous stasis and transudation of fluid into the lumen of the gut. As the distention increases the arterial blood flow is affected and as a result of this the vitality and integrity of the bowel wall suffers, leading first to hemorrhages into the wall, and later, if the condition persists, or is accentuated, to necrosis.

The introduction of the principle of syphon drainage of the stomach, and upper gastro-intestinal tract, by Wangensteen and Paine, did more to reduce the mortality of acute intestinal obstruction than any other advance of the previous 30 years. In the absence of herniation, and when a reasonable doubt existed that gangrene was not present, it was no longer necessary that "the sun must not rise or set on a case of acute intestinal obstruction". Operation could be done when the fluid and salt balance of the patient had been replenished, when distention had been, in part at least, relieved, and when blood volume, and blood flow, had been restored.

Jejunostomies and ileostomies, operations which were frequent in every surgical clinic, now became rarities.

Not only was the method which they advocated of use in many of the obstructions of a dynamic nature, but it was of equal importance in those obstructions associated with peritoneal infection, for in them distention is an important factor in the final collapse of the peripheral circulation which is observed in terminal stages of peritonitis.

Distention reduces the circulating blood volume by the transudation of fluid into the lumen of the bowel, and by the effect of distention on the rate of blood flow to and from the heart in the great vessels below the diaphragm. Thus, the minute output of blood from the heart is reduced, still further affecting the rate of blood flow and to all intents and purposes the exciting factors in the production of shock are initiated.

Wangensteen and Paine were loath to advocate syphon drainage for acute obstructive lesions of the large bowel. The frequency with which a competent ileocecal valve prevents the regurgitation of fluid and gas into the small in-

testine made them extremely cautious in advocating their method for the distal obstructions of the large bowel.

The recent studies of Abbott and Johnston on complete intestinal intubation offer further hope to patients with acute intestinal obstruction. Johnson, while one of my surgical fellows, conceived the idea that if the entire bowel up to the point of obstruction could be emptied, the principle of syphon drainage would be extended to the great advantage of both patient and surgeon.

With the use of the Miller-Abbott intestinal tube these men have been able to attain their objective in a very high percentage of these cases, with either high or low obstruction and in their hands, and in ours, we have witnessed the first great reduction in mortality of this disease.

You may well wonder why the balloon and tube advance in a greatly distended bowel where peristalsis may no longer be audible? Once a dilated loop of bowel is emptied, peristalsis returns, and the tube is advanced. The fact that this occurs even in patients with widespread peritoneal infection, may force us to revise our ideas of the mechanism of so-called paralytic ileus.

Evidence which Abbott has obtained from a study of our patients strongly suggests that the concept of reverse peristalsis in obstruction is in need of revision. The peristaltic waves are nearly always in the normal direction, and the return of fluid to the upper regions of the small bowel and stomach is accomplished as Brinton suggested seventy-five years ago, when he described the forcing backward of a body of fluid through a cylinder with a hollow center. For as the piston descends fluid is forced up through its central core. Thus, the mechanism of regurgitation is explainable by a simple physical fact.

The method of Abbott and Johnston permits of bowel evacuation up to the obstruction, of the feeding of low residue diets up to the time of operation, of more careful and specific localization of the point of obstruction, and of additional information of the nature of the obstructive lesion. Surely this is a procedure which will add to the comfort of the patient, to the ease of the operation, and to a substantial reduction in the morbidity and mortality of conditions causing obstruction of the intestinal tract. Not only will it permit of operation, when gangrene is not expected, at a time when this can best be done, but it will still further reduce the incidence of jejunostomies or ileostomies and colostomies for it will equally well keep the bowel empty during the critical period subsequent to operation.

I have had time to discuss at some length only a few of the important advances in pre- and postoperative treatment. If time had permitted much might have been added on a number of other interesting and important subjects. Vaccination of the peritoneum is receiving widespread attention at present and is a fertile field for discussion and speculation. Radiation for parotitis, sulfanilamide therapy in hemolytic streptococcal and Colon Bacillus infections, and numerous other advances are having a profound influence on surgical practise.

It is of greatest importance that we as surgeons be constantly familiar with new developments in our fields, that we evaluate them promptly and if found of value add them to the procedures already available. Only in this way can surgery remain a dynamic art and be of constantly increasing importance in the science of medicine.

*The Present Position of Endocrinology

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ENDOCRINOLOGY is a subject of such recent growth, and facts have accumulated so rapidly that it is a relief to find a plan beginning to emerge which can in some measure act as a guide.

I would stress three recent lines of advance which are leading to a clearer conception of the integration of the endocrine system.

1. The diencephalon has been conclusively shown to be the nervous structure concerned with the expression of the emotions.

2. The pituitary, which is so closely associated with the diencephalon, has become recognized as the leader of the endocrine orchestra.

3. It is now realized that all nervous impulses have a chemical mediator between the neuron and the tissue cell, and indeed between one neuron and another.

I shall hope to show how these three points are leading to a new conception of the unity of functioning of the body.

The diencephalon has ties in three directions, with the cortex of the brain above, with the pituitary below, and with the sympathetic nervous system of which it appears to be the head ganglion. In this way a psychical experience may record its effects either through the chemical mechanisms initiated through the pituitary, or through the sympathetic acting on the viscera or on other ductless glands.

From the experiments of Sherrington it has been known that if the higher parts of the brain be severed from the diencephalon in a dog, the animal responds to ordinary stimuli in an exaggerated way by an explosion of what he terms "sham rage". Cushing has reported similar explosions in a patient suffering from a cerebral tumour which similarly destroyed these connections. On the other hand, if this region be completely destroyed by a tumour, the power of emotional expression may be lost altogether as in a case reported by Naish. There is a close anatomical connection between the diencephalon and the pituitary body. Beattie has described a well defined bundle of nerve fibres, coming chiefly from the nucleus supra-opticus, and passing by the stalk of the pituitary into the posterior lobe. There is almost certainly a close physiological connection as well. Herring some years ago described the passage of hyaline bodies from this lobe into the hypothalamus and Frank has shown that the parts of the hypothalamus which do not ordinarily yield posterior lobe hormones, may after hypophysectomy take on the function of secreting these hormones. The difficulty in deciding whether certain cases of diabetes insipidus, adiposity and genital atrophy are due to hypothalamic or pituitary lesions is further evidence of the functional association between these structures. Interesting examples of this functional association between

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emotional centres and pituitary secretions can be given. Thus the cow which refuses to yield milk when deprived of its calf can be made to do so either on hearing the call of the calf or by an injection of pituitrin. Injections of the lactogenic principle of the pituitary will lead to the demonstration of maternal behaviour in the unimpregnated animal.

Having thus established the connection between the activities of the diencephalon and the pituitary we may proceed to establish the position of the pituitary as the leader of the endocrine orchestra. Cushing some years ago laid down the principle that polyglandular syndromes had their primary focus in some pituitary disturbance. The close association between the pituitary and the other endocrine glands is now generally admitted. We recognize three types of cell in the anterior pituitary—the chromophobe which resists staining, the eosinophile and the basophile. The chromophobe is probably the parent cell of the other two. An adenoma composed of chromophobe cells diminishes pituitary function. Fröhlich's syndrome of obesity of the limb-girdle type and genital hypoplasia was originally recognized in a case of this sort. Milder cases occur without the presence of an adenoma. They may be attributed to a delay in the differentiation of these chromophobe cells; puberty may be delayed but the outlook is not so serious. That the eosinophile cells are the source of a growth hormone can be definitely accepted. The experimental evidence as to the production of gigantism in rats, the clinical evidence derived from acromegaly and acromicry, from Simmonds' disease both in children and in adults seem alike satisfactory. The basophile cells became regarded as the source of the sex hormone after the researches of Evans and Simpson, and still more so after Cushing's description of the syndrome of pituitary basophilism. We may accept the view that the growth and sex hormones are antagonistic, and that it is not until the latter gains the upper hand that puberty occurs, but there are strong reasons to doubt the basophile cells as the source of the sex hormone. After the recognition of the growth and sex hormones, claims for other hormones secreted by the anterior pituitary multiplied rapidly. Of these the thyrotropic, adrenotropic, lactogenic and diabetogenic are best established. But we were a little too ready to conclude that the syndrome of pituitary basophilism confirmed the idea that the sex hormone originated in the basophile cells. Woollard was the first, as far as I am aware, to point out that if this were so, it is unreasonable to suppose that in women virilism and decay of sexual functions should follow excess of it. Injection of pituitary gonadotropic hormone produces nothing like pituitary basophilism, but may produce gonadal atrophy. He therefore does not believe that the basophile cells are the source of the sex hormone; rather, he envisages them as the inhibitors of the acidophilic activities. He thinks the evidence warrants the statement that the pituitary plays no part in sexual differentiation, but exerts its effects on either the testis or the ovary, bringing each to its structural differentiation and to its full endocrine activity. Levy Simpson and also Leschner and Robb-Smith have come to a similar conclusion, that the basophile cells are the source of some depressive inhibitory substance.

Crooke has described a characteristic hyaline change in the basophile cells in Cushing's syndrome, whether that syndrome be associated with basophilic adenoma or a neoplasm of the adrenal cortex. He did not regard this as a degenerative change, but as an expression of altered physiologica lactivity. In Addison's disease he, in conjunction with Dorothy Russell, found an ex-

treme reduction in the pituitary basophile cells. They think this may be the cause of the low blood pressure and possibly of the hypoglycaemia in this disease; it is certainly in sharp contrast with the high pressure and hyperglycaemia found with basophilic adenomas. These two authors together with Horace Evans have described two cases of such adenomas in which most of the characteristic symptoms of the syndrome were lacking, cardiovascular hypertrophy being the salient feature. Nevertheless, they are not prepared to go as far as Cushing in regarding essential hypertension as due to increase in the number of basophile cells. Broster and Vines regard an excess of fuchsin staining material as the essential change in the adrenal cortical cells which produces virilism. This change may be absent in pituitary basophilism. The way in which a growth in the thymus gland, usually regarded as antagonistic to sexual development, may simulate the basophilic syndrome adds to all these doubts concerning the sexual functions of the basophile cells.

The functions controlled by the anterior pituitary have multiplied until the existence of a separate hormone for each function has become almost incredible. As P. E. Smith puts it, "That this small gland, which in man averages less than half a gram in weight, secretes this number of hormones as separate entities throughout the entire secretory process taxes the imagination. The differentiation into two highly specialized secretory types suggests perhaps the formation of a corresponding number of basic secretory products which may be altered to give these specific responses. There can be no certainty until physiologically pure extracts are secured as to how much these impurities may modify the response." One might add to this the fact that somewhat violent chemical measures have been adopted to isolate these pituitary hormones even in only an approximately pure state. It seems more probable that such measures have produced alterations in the basic products.

In view of these facts, this newer conception of the anterior pituitary producing an accelerating hormone in the eosinophile cells and an inhibitory one in the basophile cells seems a rational one—the functions and the staining reactions of these cells being alike diametrically opposed. One may regard the anterior pituitary as largely controlled by the diencephalon and putting down the loud or soft pedal, as it were, on the other glands.

Fresh light on the whole subject has been thrown by Dodds who classifies hormones under two headings. The first are complex protein bodies formed by the anterior pituitary, which act on the other endocrine glands causing them to form the secondary type of hormones which are bodies of comparatively small molecular weight, most of which have been isolated in a crystalline form and some of which have actually been prepared synthetically. It will be noted that in this respect the posterior pituitary belongs to the second group. In conjunction with Cook he has carried out a brilliant series of researches into these secondary hormones and has shown that simpler compounds than those prepared by the body can have the same biological effect to a less or even greater extent. This basal group with the simplest chemical structure that can produce the biological effect he calls the "skeleton key" which picks the physiological lock. Even more striking was his demonstration that the same basal group could produce more than one biological effect. To such groups he gave the name of "pass keys".

It is accordingly by no means fanciful to regard the anterior pituitary as receiving the impulses from the diencephalon and producing an activating and an inhibitory hormone of a protein character according to demand, which

can speed up or inhibit the secretion of the simpler grade of hormone in the other endocrine glands; hormones which are of allied chemical structure and which, in some instances may even be interchangeable in their action. At any rate, it is a unifying hypothesis which deserves further and careful consideration.

This is perhaps the appropriate place to consider the position of hormones in the scale of substances influencing normal and pathological growth. The best examples of non-glandular hormones are to be found in the "organizers" of the embryo, which are not cellular structures but chemical substances. They are not ferments for boiling actually liberates them in an active condition in parts of an egg, where they never normally so appear. The best known of these is the one which organizes the first appearance of a central nervous system in the embryo. This is a sterol closely related chemically to oestrogenic compounds, which in their turn are chemically related to carcinogenetic substances on the one hand, and to bile acids and vitamin D on the other. This chemical relationship between various stimulants to normal growth and those to abnormal growth is both interesting and important. That there is also a functional relationship was clearly brought out by Dr. Needham in his paper read at the Oxford meeting of the British Medical Association. Let us consider some illustrative instances.

We know that parathormone and vitamin D each control calcium metabolism, though in a different way. Again, vitamin A is as necessary for the growth of the hind legs of an embryo pig as thyroxine is for the development of the tadpole's limbs. The old distinction between endogenous hormones and exogenous vitamins loses its validity now we know that the animal body forms vitamin A from carotene, that the embryo chick can synthesize its own vitamin C, and that irradiation of the skin will lead to the production of vitamin D. Œstrogens, moreover, are found in plants, and human oestrin can cause daffodils to flower all the year round.

Lack of vitamin A causes xerophthalmia and a defect in the visual purple. But if a sow be deprived of this vitamin her litter suffer a much graver ocular damage—the eye cup and lens fail to form at all. Now the normal stimulus to the formation of the lens resides in an "organizer" found in the eye cup. Moreover, even synthetic oestrogenic hydrocarbons have actually been shown to act as organizers of the nervous system in the embryo.

Carcinogens can excite oestrus and oestrin can have carcinogenetic effects. Human skin heated to a very high temperature will yield a tarry substance which is as carcinogenetic as any derived from coal tar. A strongly carcinogenetic substance has also been synthesized by Cook from deoxycholic acid, a sterol in bile. Therein is a hint at the explanation of the known close association between gall-stones and cancer. Again, if fertilization is delayed in amphibia, the organizer may escape from its proper site and set up teratomata capable of wide metastasis. This throws new light on the origin of these so-called "included twins". In this connexion it is interesting that Aschheim has found the gonadotropic hormone in the urine of patients suffering from a teratoma even in the case of a man. This may provide a test of real diagnostic value. The role of vitamin E in reproduction is also instructive. In its absence the embryo throws out a rapidly proliferating "lethal ring" of new growth, thus committing suicide by cutting itself off from its own food supply. Here the vitamin appears to impose order on what would

otherwise be a disorderly growth, just as vitamin D controls irregular ossification.

From this collection of amazing facts two definite conclusions emerge: (1) the overlap between the activities of these various stimulants to growth is very considerable; (2) from sterols normally occurring in the body a deranged metabolism may produce specific carcinogenetic substances which will stimulate certain cells to wild proliferation.

The question has not been simplified by the claims made for the existence of antihormones. Collip showed some time ago that parathormone gradually lost its effect on repeated injections. One might imagine that this failure could be adequately accounted for by its destructive action on the calcium content of bone and muscle, but he now thinks that there is an antihormone both to the pituitary growth and thyrotropic hormones, and advances the hypothesis that the production of antihormones may be responsible for hypoglandular states. He regards a hormone-antihormone linkage as the normal condition, which can readily be disturbed. The purposive character of such antihormones is hard to see; certainly thyroid administration is effective when continued over many years.

And this leads me to my third point. It has long been common knowledge that emotional states may modify secretion; the tears of sorrow and the dry mouth of fear are proverbial. In such instances it is obvious that a nervous impulse has produced or prevented a chemical process. But it is only quite recently that we have realized that all nervous impulses have a chemical mediator between the neuron and the tissue cell, and indeed between one neuron and another. In Hopkins' phrase, chemical substances are produced which translate for the tissues the messages received by nerves. We have indeed been curiously blind to the fact that the chemical changes produced in a gland by nervous stimulation is only a special case of a general law. I say curiously blind, because this century was only a year old when Langley found a clue which was not really followed up for years. We knew that adrenaline is manufactured by the cells of the adrenal medulla, which are actually formed out of sympathetic ganglion cells. Langley enunciated the law that the effect of adrenaline on any part is the same as if the sympathetic nerves to that part were stimulated; an extraordinarily interesting example of a chemical substance imitating a nervous response. The adrenal medulla was seen to represent the postganglionic element in the sympathetic. In 1907 W. E. Dixon made some tentative experiments on the liberation of a chemical substance in the heart after vagus stimulation; later the work of Loewi and of Dale has proved that acetylcholine is liberated at the terminals whenever sympathetic or parasympathetic preganglionic fibres are stimulated, and adrenaline at the sympathetic postganglionic terminals. So Dale speaks of cholinergic and adrenergic fibres and incidentally shows how this conception explains Langley and Anderson's cross-suturing experiments. You can cross-suture cholinergic with cholinergic or adrenergic with adrenergic, but you cannot successfully cross-suture cholinergic with adrenergic fibres. Cannon thinks that the substance liberated at the sympathetic postganglionic terminal is not identical with adrenaline; he thinks he can extract a slightly different one after an excitant action from that appearing after an inhibitory one. The non-commital name of adrenergin has consequently been introduced.

This leads me to an aspect of endocrinology which is urgently demanding attention.

Some thirty years ago Langley and Elliott independently postulated the existence of a receptive substance between the nerve ending and the tissue as necessary to explain the facts then known. If such a postulate was required then, how much more is it needed to-day. Just as the appropriate chemical material, such as pilocarpin or atropin, may get into this receptive substance so may a toxin. G. N. Myers has shown that a therapeutic drug may seize on the receptive substance and thus bar the way to the ingress of the toxin. It seems to me that the pharmacology of the future will have to concern itself with the natural history of these receptive substances, and find out in what way they can be helped by drugs both positively, by facilitating their reactions, and negatively, by blocking the way against the entrance of toxins. Nor is this topic remote from my subject, for Zondek maintains that the adsorption of a hormone, such as thyroxin, is decreased in the presence of narcotics such as the barbiturates, which are able to adhere to the cell surface and thus to displace the hormone from it. But it is also germane to my subject in a wider sense. We are still entirely without any conception why a particular cell should be sensitive to a particular chemical substance or why the same substance should augment the activity of one type of cell and inhibit that of another. The nature of these receptive substances is a problem to which many minds are beginning to devote themselves. The importance of the responsive capacity of the receptor tissues was clearly indicated by Harrison in his Harvey Lectures for 1934. He showed that when transplantation is effected between embryos of species of different sizes, the transplant responds according to its inherited growth capacity rather than to its new endocrine environment. As Keith pointed out some years ago, the partial gigantisms in certain cases of hyperpituitarism can only be explained on the theory that the locally hypertrophied tissues had developed a special sensitiveness to the growth hormone. H. M. Evans has recently shown that the response of the dachshund and of the sheep dog to injections of the pituitary growth hormone is entirely different. Indeed, if such things were not so, it would be difficult to account for the structural plasticity of dogs in the hands of the breeder.

Thyroxin can speed up changes in tissues in the direction in which they are going. Thus it will precipitate the degeneration of the tadpole's gills and hasten the development of the limbs. Here the response clearly varies with the capacity of the tissue rather than with any change in the stimulating hormone.

Zondek considers that the potency of such minute quantities of hormones implies that they act as physical catalysts, which circulate in the blood in an inactive form until they are absorbed and activated in the tissue they excite. In the case of thyroxin however, Mansfeld maintains as the result of his experiments, that it travels along the nerve fibre to reach the tissue cell in the same way as tetanus toxin and certain viruses. If this startling observation is confirmed, it will have important biochemical bearings. It would render such pathological processes more comprehensible if there is a physiological path already open to them.

The influence of hormones on sex is too large a topic to discuss fully here; suffice it to state concisely the known facts with regard to hormones and sex reversal. It would appear that the testis is monosexual while the ovary is bisexual, with a male medulla and a female cortex, as it has been expressed. Therefore physical sex reversal can only occur in woman, and may be due to:—

1. Overaction of a basophilic adenoma in the pituitary which inhibits normal ovarian activity, allowing the rudimentary masculine elements to reassert themselves.

2. Overaction of the adrenal cortex, which is mesonephric and contains similar cells to those of the testis.

3. Overaction of mesonephric cells in the rete ovarii, which, as in some of the arrhenoblastomas first described by Pick, may actually develop convoluted tubules resembling the seminiferous tubules of the testis.

Closely similar syndromes of virilism may originate in any one of these three positions and are all due to absolute or relative overaction of masculinizing mesonephric structures. On the other hand, the testis being monosexual, sex reversal in man can only be psychogenic. There seems to be only one exception to this rule. A female-included twin may produce some degree of feminism in the masculine "host".

I will sum up what I regard as the present position of endocrinology in a few dogmatically stated conclusions:—

(1) Hormones are a special instance of metabolic energisers which are widely spread throughout the body and which may give rise to either physiological or pathological effects.

(2) They are of two grades—the first, of complex chemistry, are formed by the anterior pituitary, which uses them to stimulate or inhibit the secretion of the second, chemically simpler grade by the other endocrine glands.

(3) They are not entirely specific; the same basal chemical group can act as a "pass key" producing more than one biological effect.

(4) To a large extent they have come under the control of the diencephalo-pituitary apparatus.

(5) Their activity is largely conditioned by the competence of the tissues to respond to them.

Control of Communicable Disease: A Federal Responsibility*

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AS one of the health officers of Nova Scotia, I greet my confreres from all parts of Canada, and hope that their respite in Halifax, the home of the immortal Howe and of three Prime Ministers of Canada, will, in addition to a whiff of the Atlantic sea-breeze, give a hint of the hospitality, national thought and outlook of this eastern part of our broad Dominion.

Ever since the discovery of the causative germs of communicable diseases, the profession, day in and day out, has endeavoured to inculcate the doctrine that there is no safety for the family, the community or the state, so long as the person infected, the host of the specific germ, is at large. The silent, subtle reasonings of men of science revolutionized the hitherto-held theory of heredity, cesspools, etc., and ushered in the new era of prevention. It soon became apparent that the person infected was the source of infection, and that garbage cans, sinks and cesspools, although unsightly and shocking to our aestheticism and self-respect, could not transmit communicable disease unless the germ were first introduced into them. Pasteur long ago exploded the theory of spontaneous generation. It was largely on the hypothesis of this theory of heredity, that the old doctrine of causation was based and measures of prevention directed. Before 1882, for instance, consumption was considered hereditary. No thought was given to the fact that the consumptive person alone is the sole and only source of infection, as shown by Koch's discovery of the tubercle bacillus, nor that isolation would be a good preventive measure. It took a good many years after Koch's discovery to dispel the old theory of heredity. Gradually, sporadic measures of control by institutional treatment were made. Today there is at least one sanatorium in every Province and the whole sanatorium movement receives a large measure of Provincial-Government support.

I believe that the control of communicable diseases never should have been made the burden of our local governments. If the Fathers of Confederation, or the law officers of the Crown, who drew up the British North America Act, could only have had a vision of the future, in the light of present-day knowledge they assuredly would have realized that prevention of the spread of communicable disease was no local responsibility but a great national obligation. Is there any other problem so transcendent, so vital, so far-reaching, or easily solved as "prevention of the spread of communicable diseases"? Granted the necessary equipment for isolation, the necessary money for maintenance, Scotland Yard organization in detection and isolation, enabling laws for detention of open cases, good care and treatment, I am convinced that not only consumption but all communicable diseases can be wiped from the face of the earth. There should be no compromise with home treatment and education. This compromise is quickly taken advantage of as a cheap way of escaping national

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obligations. There is no adequate safety in home treatment, no matter what precautions are taken. Education, while a help, is not all that is necessary. Surely, then, if the Federal Government will open their eyes, they must realize that, in co-operation with local governments, this is a national responsibility, though not so stipulated in the B.N.A. Act. It is, however, stipulated in the Act that the horse, cow, and pig, the leper, the gun of the highway man, the raving maniac, can all be detained for public safety. It is not so easy to see the writhing organism of syphilis, the lurking organisms of gonorrhoea, smallpox, typhoid fever, tuberculosis, etc., millions of which and of other causes of communicable diseases may be entrenched within their citadels in the human body, more deadly than the gunman, and most of them at large. Whose responsibility is it to apprehend and detain those who, day by day, sow the seeds of destruction? The point which I wish to emphasize is that this is not a local government problem but a national problem and that the B.N.A. Act should be forwith amended to meet the urgency of radical measures of control.

Within recent months, the Parliament of Great Britain has been asked for a precise and specific statement or amendment to the British North America Act to enable the Parliament of Canada to proceed at once with the centralized, Dominion-wide, much-needed social program of "maternity benefits, unemployment insurance, widows' pensions, old age and invalidity pensions." Not one word, not one thought probably, was given in this submission to the national responsibility for the spread of communicable disease, or to any suggested enabling alterations to the B.N.A. Act to cope with this problem, greater by far than all the social program above enumerated. Let us be united, definite and dogmatic in stressing our belief, and let us harken to the cry of humanity: "Save us from our friends; awaken our sleepy representatives, and beg them to take a look into the situation as it exists."

In conclusion, may I say I sometimes ponder the discoveries of the great men who have done so much for the prevention of the spread of communicable disease. Where can we find examples of devotion equal to theirs? Their patient, intensive pursuit of an ideal, their perplexities, fears, doubts, and hopes and their thrills of discovery of the specific organism causing the disease under investigation have no counterpart in any line of action.

We sometimes marvel at the indifference of the public—the beneficiaries of these "findings" and the lack of appreciation and even opposition of our governing bodies in implementing the discoveries for the benefit of humanity. Notwithstanding all this, their memories will never die. They blazed the trail —they led the way.

Bahá'-ul-Douleh and His "Quintessence of Experience"

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IN 1931 the Editor of the Annals of Medical History did me the honor of publishing my very imperfect translation of a Persian monograph on Atashak or Syphilis by 'Imád-ul-Dín Mahmúd bin Mas'úd.[1] This he did because of the statement of Fonahn that the publication of the pamphlet would be of great interest to historians of the spread of venereal disease.[2] In my preface to the translation I pointed out that the description of 'Imád-ul-Dín was not the earliest Asiatic description of the disease, as a short account had already appeared in a work known as the "Tibb-i-Yúsufí". Besides, 'Imád-ul-Dín himself in the text of his monograph admitted that an earlier writer, named Mír Bahá-ul-Douleh Núrbakhsh, had already written a brief account of that disease, although for various reasons that account was unsatisfactory. There the matter rested. Yúsuf's account was too brief to be of value: Bahá-ul-Douleh's was lost to the world.

It was mere chance that a friendly exchange of presents with a Persian bookseller of Teheran put into my hands a manuscript, written in 1624 A.D., entitled "Khulásat-ul-Tajárib", by this very Bahá-ul-Douleh, whom 'Imád-ul-Dín quotes. The manuscript was well written, complete, and not difficult to read. About a quarter of the way through, in Chapter 7 to be exact, occurs the description which 'Imád-ul-Dín so slightingly quoted. Word for word this version does not quite fit the cap, for the contemptuous references to contemporary physicians and the quotation from Sharaf-ul-Dín Hassan, which 'Imád-ul-Dín says was the spoiling of the work, are wanting. But that it is the fullest description of syphilis which Bahá'-ul-Douleh penned is fairly certain by comparison of it with a quotation in the Iksír-i-'Azam.[3] This last work is a mighty four-volumed compendium of standard opinions on all kinds of disease and may be presumed to quote the most characteristic statements of each author. All the quotations in the Iksír-i-'Azam on the subject of syphilis, which are ascribed to Bahá-ul-Douleh, are also to be found in the Khulásat-ul-Tajárib.

Quite apart from its immense interest as the earliest reference to syphilis in the East, the work is of very great value as a presentation of the state of medical knowledge in Persia at the end of the fifteenth century. The book combines the clinical acumen and personal touches of the "Continens" of Rhazes with the orderly reasoning of the "Canon" of Avicenna. It is essentially practical, yet full of original observations and aphorisms. It is, I venture to think, the finest textbook of medicine in the Persian language to be composed after the Mongol invasion. Nor am I alone in my views. For 'Alí Afzal Qáti' of Qazvin, a physician of the late Safavid period, can recommend to his brother, just starting Medicine, only two books in the Persian language,

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the "Thesaurus" of al-Jurjání and the "Khulásat-ul-Tajárib". The former is, of course, of the pre-Mongol era.[4]

It is strange that a work of such surpassing interest should have escaped the notice of medical historians. But then medical historians are not very interested in the so-called "decadent period" of Persian Medicine. Manuscripts of this work are not uncommon, though sometimes catalogued under the title of Khulásat-ul-Hikmat and ascribed to Bahá'-ul-Dín.[5] It was also lithographed in Lucknow in 1866 A.D. under yet a third title, the author now being styled Bahá' 'Abd Ullah Hakím Muhammad 'Ulawí Khán.

Of the author extremely little is known. The great encyclopedic work of Hájjí Khalífa, entitled "Kashaf-ul-Zanúm", which is usually so detailed, is content to dismiss him in a few lines.[6] The Matrah-ul-Anzár, which is the chief source of later medical biography, is equally brief.[7] In short, we are driven back to an examination of the only surviving work from his hand to extract such details of his personal history, as he incidentally shows.

His father was Mír Qawám-ul-Dín and was a citizen of Ray, a town close to the modern Teheran, and the birthplace of the great Rhazes and the Imám Fakhr-ul-Dín. I am inclined to think that he was a doctor, both because it was extremely common in those days for a son to follow his father's footsteps, and also because there is found in the text an unnamed person, whose doings and sayings Bahá-ul-Douleh frequently quotes with an intimate knowledge and reverence, which suggests more than the relationship between pupil and teacher. In any event, his brother was also a doctor, for he mentions him by name, calling him Sháh Shams-ul-Dín, and recounting his successful cure of an impotent man, who was enabled through his treatment to take two wives and to have a son by each.[8] Bahá-ul-Douleh himself was a married man and had several children. He says that he experimented upon them with the various methods of curing otorrhea.[9]

Bahá-ul-Douleh was born about the middle of the fifteenth century at a time when the Timurids were rulers of Persia and Sháh Rukh had made Herat his capital. He studied Medicine both in Ray and in Herat under Persian and Indian teachers and imbibed a great sympathy for and knowledge of Indian methods. During some part of his life he was attached to the suite of Sultán Husayn Mírzá, ruler of Herat and the last of the Timurid princes.[9] It was, no doubt, on the death of Sultán Husayn that he returned to Ray and became the leading physician of his native city. Here he very nearly died of an attack of dysentery,[10] and here in the year 1501 A.D. he composed the only book which he is known to have written.[11] Hájjí Khalífa says that he died in Ray in 1507.

His book, the "Khulásat-ul-Tajárib" or "Quintessence of Experience", is exactly what the title implies. It is the quintessence of a life of clinical experience, a summary of the observations of a man trained in the wide School of Medicine which only Islam could produce. His quotations show the breadth of his reading. The name of Hippocrates appears twelve times, of Galen thirty-seven times, of Avicenna twenty-seven times, and of Rhazes ten times. Besides these he quotes Sábit ibn Qurra, Sayyid Ismá'íl al-Jurjání, Ibn Baytár of Damascus, several Indians and others too numerous to mention. Only of writers of the Western Caliphate does he seem to be ignorant.

It is customary to speak of Arab Medicine as enjoying a Golden Age under the early 'Abbásid Caliphs and as beginning to sink in the eleventh century into a state of decadence from which it never emerged. I am inclined

to think that this low estimate of Persian national Medicine (for Arab Medicine became totally Persian after the fall of the Caliphs of Baghdad) is really due to the fact that it has never been studied. The Renaissance in Europe removed the need of further translations of Eastern sages. Great Persian medical writers, such as Rashíd-ul-Dín, 'Imád-ul-Dín, and Bahá-ul-Douleh, are still unknown in the West. Physicians have given up learning Arabic; Persian they never knew. Hence, the standard of Persian medical speculation and surgical technique in the fifteenth and sixteenth centuries, as revealed in such a book as the "Khulásat-ul-Tajárib", comes as a sharp surprise to anyone who is wont to dismiss those centuries as superstitious, ignorant, and decadent.

Bahá'-ul-Douleh himself must have been a keen observer. Scattered through his book are observations, which a physician of to-day can neither accept or deny. They have never been put before him. Thus, Bahá'-ul-Douleh asserts that stammerers never become bald,[12] that a black and lusterless pupil in a state of health signifies a short life,[13] that as long as a splenomegalic complains of pain in the left side there is hope of a cure,[14] that a fruit-eater is very prone to catarrh,[15] and that an appearance of pigmentary patches on the face or body of an epileptic heralds the cessation of the fits.[16]

In addition to minor aphorisms which are scattered throughout the book, there are several original contributions to the clinical study of disease. He was the first to record (as far as I know) the spontaneous cure of cutaneous leishmaniasis after twelve months of ulceration.[17] In his chapter on eruptive fevers he describes three diseases which he says have been unnoticed up to his time, which, though resembling, are neither smallpox nor measles. He makes one wonder whether he was not describing chickenpox, german measles, and the fourth disease.[17] In his terminal paragraph to the chapter on diseases of the eyes he is undoubtedly describing what is now popularly called hay fever, which was not recognized in Europe until Bostock wrote his papers in 1819 and 1828 on catarrhus estivus.

I have seen many persons whose brains become heated in the spring by the smell of red roses. They get a catarrh and a running at the nose. They also have an irritation of the eyelids, which, when this season has passed, subsides together with the catarrh and the nose-running. These people were very little benefited by the treatment which I have described.[18]

His description of an epidemic cough, which occurred at Herat while he was there, can be nothing else but the earliest account of whooping cough. The disease was not recognized in Europe till the end of the sixteenth century and was not described until Willis wrote his monograph in 1658.

Coughs and such diseases as arise from excessive damp air, also sometimes arise from infected air on account of the aversion of the Spirit and the lungs to inhale infected air. I have several times proved this. Twice while I was at Herat, there was a mild infection of the air, which caused an universal cough without catarrh. The cough became so severe that it did not cease until vomiting occurred. Patients grew weak; children lost consciousness. Many people, old and young, fainted from the violence of the cough and in some cases during the first epidemic even died. At last an Indian physician ordered people to eat every day a miscal or more of raw ginger dissolved in warm water. The second epidemic occurred in the spring and there were fewer fatal cases. The treatment was venesection, laxatives, feeding with powdered ginger, etc. I and all my household caught the cough, but by the

above methods of treatment it subsided in a couple of months. But it did not completely disappear until we had made a change of air.[19]

It is, of course, in his description of syphilis that he is preeminent. Be it remembered that syphilis became endemic in Europe in 1495. Only nine years later Bahá-ul-Douleh could devote many pages to a description of its signs, symptoms and complications.[17] The disease first appeared, he says, in Azerbaijan in the year 1498. From there it spread to 'Iráq and Fars and by the time that he was writing it was almost universal throughout Persia. What he called Atishak or Abileh-i-Farang, that is, the "little burning disease" or the European pox, was the secondary syphilitic rash. But he also realized that the sore throat and the chancre were other manifestations of the same disease. He even diagnosed a case of syphilitic diplegia. He recognized that the spread of the disease was chiefly by sexual intercourse, though he admitted the possibility of infection through the body vapors given off in the hot bath. Nor did he fail to associate gummata and ulceration with the vanished rash.

With regard to treatment he is not very hopeful.

Anyone afflicted with this disease and wrongly treated may remain sick for two, three, four or even more years, though without any sores or very few. But, if the rash does not disappear at the time of the final crisis and when the body is full of peccant humors and if the spots are many and the treatment unsatisfactory, then the patient will very soon die.

He considers seventeen months the normal time before the disease maturates within the body and therefore treatment should be continued for nearly two years. He considers it possible, however, for a cure to be effected in less time and he states that he himself has cured several cases by prolonged treatment with an electuary of mercury. He does not, however, seem to give to mercury the importance which later physicians, notably 'Imád-ul-Dín, gave to it. Sarsaparilla was not yet introduced into Persia; zedoary was then their sheet anchor.

Bahá'-ul-Douleh was no surgeon; on the contrary, he strongly recommends all physicians to hand over their surgical cases to a master surgeon. Yet his digressions into Surgery show that surgical technique was very highly developed and that the range of operative interference was very wide. Over and over again he states that the patient should be given an anesthetic before the operation, but unfortunately he leaves the problem of Arab anesthesia almost as far from solution as before.

Historians of Surgery will be surprised to learn that he describes a case of skin graft, performed by an Indian surgeon in Herat,[17] laparotomy with drainage for a peritoneal abscess,[20] and suprapubic cystotomy for removal of vesical calculi and retention of urine.[21] He was not unaware of the difficulty of getting the wound to close in this last case, but, as he shrewdly remarks, "it is better to live with it open than die with it closed." Even more remarkable is his statement that the popular treatment of cancer was an extensive surgical amputation, but that in his opinion no treatment was of any use excepting the application of a theriacum of aqua fortis in which lead had been dissolved.[17]

Throughout each chapter stories of patients, usually his own or his father's, are scattered to illustrate his points. Their clarity and accuracy resemble the clinical accounts in the "Continens"; their vividness makes the book far more readable than the "Canon". An occasional humorous story makes his work interesting even to a non-scientific reader. For example, he tells the story

of the unexpected cure of a hernia (or more probably of a hydrocele) in an elderly merchant. A certain unfortunate man, he says, had a rupture as big as a melon. To contain it he had made a special bag, which he rested upon his saddle bow when riding to and from the city. One day he met on the road a rascally Turcoman, who demanded to know what the bag contained. He naturally refused to believe what he was told and thought that the rider was trying to deceive him. He raised his staff to attack and rob him. The poor man, dodging the blow aimed at his head, received the full force of the staff on his rupture. He fell from his horse unconscious and the Turcoman made off. A surgeon was hurriedly called, who stitched up the scrotal wound. The wound healed perfectly and the man found to his joy that he was completely cured of his rupture.[8]

Were the book not so long (it consists of 355 closely written folios) I would consider translating it into English, for it represents to my mind the most original, the most interesting, and the most instructive textbook of Medicine ever written in the Persan tongue.

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*An Account of Paris at the Close of the Seventeenth Century

MARTIN LISTER was born about the year 1638. His family which came originally from Yorkshire, was at the time of his birth settled in the county of Buckingham, and had produced several individuals who became eminent in the medical profession. Among these was Sir Matthew Lister who had the distinguished honour to be physician to King Charles the first, and President of the College of Physicians.

Martin enjoyed the great advantage to be educated under the direction of his uncle Sir Matthew, and was sent to St. John's College, Cambridge, where he took his Bachelor's Degree in Arts in the year 1658, and at the Restoration in 1660, he was, in consequence of his determined and steady loyalty, appointed fellow of his college by Royal Mandate. Two years afterwards he proceeded Master of Arts, and applying himself to physic, travelled to France, for the purpose of enlarging his knowledge, and was very assiduous in the pursuit of it.

In 1670 he returned to England and settled at York, where he acquired great and deserved reputation as an accomplished and scientific physician.

In 1709 he was appointed physician in ordinary to Queen Anne, an honour which he did not long enjoy. He died in February, 1711-12, in his seventy-fourth year, worn out with age and infirmities.

The final chapter in his book treats of the air of Paris, the prevalent diseases and the state of physic in that city. After writing about the air and the diseases caused by drinking the water of the Seine he continues:

"Another popular disease here is the stone, and there are men who are well practised in cutting for it. There are also two hospitals, viz. la Charite and the Hotel-Dieu, where great numbers are operated on annually. In both these there are wired chests full of calculi, which were extracted from human bodies. In the chest of La Charite is one which for its magnitude exceeds all belief it was taken from a monk, and is as large as a child's head. He died under the operation. Of this stone it is only the model which is kept in the chest and on it is inscribed, 'Figure et grosseur de la pierre, pesant 51 ounces, qui font trois livres, trois ounces, qui a été tirée dans cet hôpital au mois de juin, 1690, et que l'on conserve dans le couvent de la Charite."

But that which I shall chiefly dwell upon is the new way practised by a monk named Frére Jacques. On the 20th of April he operated upon ten persons in the Hotel-Dieu in less than an hour. On the third day after the operation all except one, were hearty and without pain. I saw him operate a second time in the Hotel-Dieu. On this occasion he performed the operation with

great dexterity on nine patients in three-quarters of an hour. He seemed to venture at all cases and put me and a stouter Englishman than myself into some disorder at the apparent cruelty of the practice. I afterwards saw the patients in their beds and found them more amazed than in pain.

He also cut his way in the other hospital, La Charite, operating on eleven patients at two different times and with the same rapidity.

Here M. Mareschal, the most expert lithotomist in France, harangued the governors against him. They coldly answered that they would be determined as to the superiority of either method by the event.

Of those who were cut in La Chartie one died, and on examining the bladder it was found that the bladder was wounded in four or five places, that the psoas muscle was sadly mangled and the vesiculae seminales on the left side divided.

Frére Jacques operates both by the grand and little apparatus. In both he boldly thrusts a broad lancet or stiletto into the middle of the muscle of the thigh near the anus, till he joins the catheter or staff, then he widens the incision of the bladder in proportion to the size of the stone, with a silver oval hoop; if that will not do he thrusts in his four fingers and tears it wider; then with the duck's bill he draws out the stone.

Whatever objections there may be to the coarse and savage manner in which this man operated, there is no doubt but that if the method were to be well executed by a skilful hand, it might prove of great use to mankind.

A footnote by Henning says, "A larger and more interesting account of this man's rise and progress is given by M. Dionis, a very eminent surgeon and contemporary from which I have selected a few particulars. In 1697 arrived at Paris a sort of monk in the dress of a Recolet with this difference only that he wore shoes and had a hat instead of a cowl. He assumed the name of Brother James and appeared plain and ingenious; he lived on pottage and bread only. He had no money and never asked for more than a few sols to pay for the repairs of his instruments and his shoes. He belonged to no religious order. He made himself known to M. Mareschal, the lithotomist of La Charite, produced the certificates which he had brought from Burgundy and desired that he might be allowed to operate, saying that he came to teach the surgeons a new way of operating. They permitted him to exhibit his method on a dead body, which he did, but they found fault with it. He therefore went to Fontainbleau where the court was, and applied to the court physicians, M. Duchesne, Fagon, and Bourdelet, who saw him operate successfully. All Paris resounded with his praises and he obtained the authority of the magistrates that in the approaching spring, which is the season for operating at La Charite and Hotel-Dieu, he should be allowed to operate. He did so in fifty different instances; and though a greater number died than recovered, yet the deaths were suspected to be caused by poison given by the regular surgeons. Such however, was the desire to see him operate, that there was not a physician or surgeon who did not endeavour to get admittance; two hundred persons were at one time present, and guards were necessary to keep out the crowd. His reputation, however, rapidly declined, to which the death of the Marshal de l'Orge the very day after he was operated on, greatly contributed; so that even M. Fagon, one of his earliest patrons, preferred being operated on by Mareschal. The great cause of his failure was the rashness with which he made his incision, and the roughness with which he extracted the stone. To the dressing of the wound after the operation

he paid no attention and when some one remonstrated with him on this account his reply was, "I have drawn out the stone,—God will cure the patient."

See Dionis Chir. Oper. p. 130.

* An account of Paris at the Close of the Seventeenth Century.—By Martin Lister, M.D. Revised by George Henning, M.D.

Work originally written and published in 1698 by Dr. Lister, a physician of great eminence in London, who attended the Earl of Portland in his embassy to France to negotiate the Treaty of Peace of Ryzwick.

On this occasion Dr. Lister resided at Paris for six months, during which time he employed his leisure in conversing with the literati of that capital and in inspecting its various museums of natural and artificial curiosities and antiquities, the libraries and gardens, the palaces and mansions. Whatever he saw he recorded, and at his return made the whole subject matter of a volume to which he gave the title of *A Journey to Paris in the year* 1698.

Received through the courtesy of Dr. N. H. Gosse.

Notice has been received by the Secretary of the meeting of the Sixth Session of the Australasian Medical Congress which will take place in Perth, Western Australia, August 1940. Although this is well ahead of time we have been asked by the Honorary Secretary to give notice of this to the members of the profession in Nova Scotia. The main feature of this course will be rheumatic and allied disorders. The time of year has been selected as one of the most pleasant for visiting Australia. Future notices of this Congress may appear in the Bulletin. Anyone intending to make this trip can secure full information from the Hon. General Secretary, Dr. Noel M. Cuthbert, "Shell House", Perth, W. A.

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THE CONSULTATION

A FEW days ago, I was in consultation with three of my confreres in a serious case. The patient was a man of outstanding prominence; one that had contributed much to social betterment and the general progress and welfare of the state. Besides the inherent virtues of the healing art, therefore, his family and the public expected every visible resource of modern, progressive medicine should be explored that the patient might be given every chance for recovery. Therefore, the pooling of the best thought of qualified doctors, in conference, was sought; in other words, a consultation. This is essentially an impressive function, because a human life is at stake, and a wrong decision may spell disaster for the individual, or may leave him weak and unable to take his place as before.

It is good philosophy to assume that the most valuable asset on this earth, at least, is human life. Every civilized effort, wise and unwise, from time's beginning has been concerned somehow with improving man's lot here below so that the earth and its fullness may contribute generously to one individual object, namely, the well being and happiness of the lives of men and women. There is nothing else worth while, whether you mold your chain of reason on nature's evolution, or go to Genesis for the significant lesson, that the Creator prepared all things before he called into being the man and woman for whose service He had designed them. The healing art is deeply rooted in this philosophy; and, when doctors come together to pick the better way for saving life, they, quite unwittingly we may suppose, are placing themselves well in the vanguard of human progress, and at the head of a profession that started with the ills of mankind.

Well, our consultation was about the usual. The patient's ailment dated back a considerable time and was steadily getting worse. The symptoms were of a constitutional character and we had to study the history, heredity, focal infections and all possible disease agencies. A dangerous malady in the past, for which a serious operation had been performed, seemed the start-

ing point of the patient's trouble. He was not completely well since and blamed the stress and anxiety of those days of pain and sickness for his present poor health. An exact diagnosis was not easy. We decided to avoid, at least for the present, all radical surgery and devote our efforts to clearing up certain focal points of infection that we believed were causing chronic irritation and most of the patient's trouble. The treatment prescribed conformed to the diagnosis: a more tranquil environment, open air and sunshine, no sedatives with a dangerous hangback, moderation in food, drink and all things, and immediate removal of focal infections. It was understood by the consultants that, failing this plan of treatment, the patient might have to be subjected to the risk of a very serious operation.

By the rarest coincidence in history, another consultation was going on in Munich. The consultants were four of the world's eminent specialists, and the patient, one born of humanity's first conception of the powers of the mind, universal progress and good will; old, but ever young; one that renewed his youth and vigor with every new advance in science, arts, literature, government and all resources of nature and religion that could be shaped and applied to the service and improvement, in time and out of time, of the human race. His name is Civilization; often called by such less comprehensive names as World Peace, Human Progress, International Amity, and the like. Surely a very remarkable patient. The whole world stood on its toes and listened for whisperings from the consulting chamber; for all normal people everywhere could claim kinship with the distinguished sufferer.

The patient's illness had reached a critical stage and the consultation was hurriedly called because some of his best friends advised that the terribly radical operation to which he was about to be subjected might result in permanent disability, or even death. He had suffered in the past by periods of illness during which his work ceased, and progress either stood still or moved back. This forced inactivity was often caused by the exhausting effects of ill-advised national therapeutics and harassing exposure to storms of military passion, of violence and greed that so often swept through his world dominion. He was now on the verge of another such catastrophe, and he felt his general health, still weakened from a recent shocking ordeal, might not survive a repetition. To his rather frayed constitution was now added the awful spectre of fear which, as all doctors know, may break the health and morale of the most robust. The strong will and professional resource of a great specialist urged the consultation, and succeeded in bringing together men who had most to do with the patient's present condition of ill health. Never was human judgment loaded with such responsibility. But reason finally prevailed and, although the consultants were of different schools of thought and practice, they agreed to adopt a conservative and expectant plan of treatment. A more tranquil environment was ordered; removal of fear, doubts, suspicions and all inhibitions that tended to derange the general psychology of the patient. A minor operation for the removal of certain focal infections, which were acting injuriously on the whole system, should be done at once. A checking up of all the bodily organs was planned so that the functional relations between them should become more harmonious and helpful to a permanent good health program. Nostrums and quack remedies were forbidden, and the patient was urged to walk out frequently in the light of the world, to gather strength for himself and to permit all men of good will to observe what this new kind of consultation had done for mankind.

My editorial space signal is up; so now for a word in conclusion. Why should not the doctors' consultation plan be followed by the world statesmen? I mean a real consultation, of course; not a pathological conference. Perhaps something akin to our consultation did begin at Munich the other day; and, maybe, the beginning of a new epoch has dawned.

We cannot see the future; but a great English poet had once, for a brief space, this privilege. There were no Wright brothers and no science of aviation when he described vividly air navigation as we know it to-day. He even left us a striking pen picture of the nations' "airy navies" fighting in the heavens. Is it not possible the rest of this prophecy may yet be fulfilled? May it not be that we are now on the edge of its fulfilment? The vision found reality in one part; why not, too, in this:

> "When the war-drum throbb'd no longer and the battle flags are furl'd
> In the Parliament of Man, the Federation of the World;
> There the common sense of most shall keep a fretful realm in awe,
> And the kindly earth shall slumber, lapt in universal law."

G. H. M.

THE BRAIN

(From Dr. Oliver Wendell Holmes' "Living Temple")

Then mark the cloven sphere that holds
All thought in its mysterious folds,
That feels sensation's faintest thrill,
And flashes forth the sovereign will;
Think of the stormy world that dwells
Locked in its dim and clustering cells.
The lightening gleams of power it sheds
Along its hollow, glassy threads.
O, Father, grant thy love divine
To make these mystic temples thine.
When wasting age and wearying strife
Have sapped the leaning walls of life,
When darkness gathers over all,
And the last tottering pillars fall,
Take the poor dust thy mercy warms,
And mould it into heavenly forms.

Abstracts from Current Journals

MEDICINE

New England Journal, July 21, 1938. **Tolerance to and Toxicity of Insulin.** Frederick M. Allen.

The literature covering the physiological, pathological and clinical effects of insulin in excess shows that the experience of clinicians, from Byworth (1928) to the present, is that large doses 1000 units or more per day can, when necessary, be given in diabetic coma without harm and with benefit. Also, there have been reports of danger or death from insulin in cases of circulatory disease. Animal experiments revealed numerous effects. In all such work the factor of hypoglycemia has been involved.

An attempt to determine the tolerance to, and toxicity of insulin has been tried out on several patients in the Psychiatric Institute, Morristown, N. J., by the author. A strong, young diabetic patient was given subcutaneous injection of 750 to 1000 units of insulin. His insulin requirement was 75 units per day. These trials, together with animal experiments, have disposed of fears that a great supply of carbohydrates would be necessary. Instead of 100 gm. of starch and sugar it was found that 10 gm. would act temporarily as an antidote for 750 to 1000 units of insulin. These feedings had to be repeated because the patient was unable to eat enough to give protection through the entire duration of the effects of such a dose.

The observation that patients insensitive to insulin are usually nervous, while those of higher resistance are more phlegmatic may, if generally confirmed, be significant from the psychiatric as well as the general physiological point of view. No animal ever succumbs to insulin hypoglycemia while eating to the capacity of a normal individual of the species. Loss of appetite always precedes any dangerous symptoms.

The high tolerance of strong or average persons confirms the prevailing view of the non-toxicity of insulin for them up to an extremely high limit, but it does not imply that similar doses can be safely given to weak or sensitive individuals.

L. R. M.

The Practitioner for June 1938 contains a symposium on diseases of the liver and gall-bladder. It submits the following articles, all of which are of exceptional merit.

Diseases of the Liver by Sir Arthur Hurst.
Medical Aspects of Gall-bladder Disease by A. E. Gow.
Surgical Aspects of Gall-bladder Disease by Sir James Walton.
Malignant Disease of the Liver by Frederick Langmead.
Jaundice in Adults by A. C. Hampson.
Jaundice in Infants by Robert E. Steen.
Laboratory Tests in Diseases of the Liver and Gall-bladder by J. Douglas Robertson.
Diet in Health and Disease: xii.—*Diet in Disease of the Liver and Biliary System* by John H. Anderson.

The choice of an article to review at some length does not indicate any superiority over the others but is taken at random.

Medical Aspects of Gall-bladder Disease, by A. E. Gow, M.D.,F.R.C.P., Senior Physician, St. Bartholomew's Hospital.

The anatomy of the gall-bladder is discussed in clear terse language. Under the nerve supply he states the motor nerve is probably derived from the right vagus (parasympathetic) and the hepatic sympathetic plexus—the stimulation of the former contracts and the latter relaxes the musculature. The contraction of the gall-bladder also depends on the hormone cholecystokinin which may be activated by animal fat, magnesium sulphate and olive oil in the duodenum. Sensory fibres probably pass through the right phrenic nerve to the 3rd, 4th and 5th cervical segments—pain therefore may be referred to the right shoulder and neck or along the sensory branch of the 9th thoracic below the angle of the scapula (right) and above the umbilicus.

Bile is excretory and digestive and contains biliverdin and bilirubin, also cholesterol and lecithin. Cholesterol is the main constituent of gallstones; the main exogenous food sources of it are egg-yolk, meat fat, butter, brains, kidney and liver. In a diseased gall-bladder wall the cholesterol may be precipitated.

Physical Examination: Uncover abdomen in daylight if possible to catch slight tints of jaundice. In stout persons a swelling is rarely seen. In inflammation there is limitation of movement on respiration in right upper quadrant and tenderness in the costo-rectus angle or along the right costal margin. Deep palpation with left hand in right loin and right hand around costal border reveals swelling continuous with liver and moving on respiration and is more easily palated with patient in the knee-breast position. Dullness is continuous with liver. Auscultation may reveal a friction rub.

Differential Diagnosis: Swelling of renal origin—this is deeper and can be pushed forward and is not wholly dull on percussion. A pyelogram and renal function test settle the diagnosis.

Tumours of pancreas are seldom palpable and may cause jaundice and enlarged gall-bladder. Carcinoma of the head of the pancreas and impacted common bile duct stone may be determined by exploration. Watch for Riedal's lobe of the liver.

Inflammation of the Gall-bladder: Acute cholecystitis is usually a complication of an existing infection. Coliform bacilli are the most common microbes. Obstruction of the cystic duct by stone means a rapidly developing pyocele. In typhoid fevers the organism is present in the gall-bladder but exceptionally may cause symptoms. Pneumococcal and B. influenzae metastases may occur. The gall-bladder may become gangrenous like the appendix and surgery is the only hope.

Subacute attacks may subside by use of heat, diet of skimmed milk, glucose, fruit juices, unlimited fluids, alkali, and full doses of hexamine.

Differential Diagnosis: Acute appendix with the appendix high up behind the colon; acute pyelitis with or without stone; coronary thrombosis.

Chronic cholecystitis may be *sui generis* or a sequel to the acute form. Patient has the hypochlorhydric type of dyspepsia-flatulency with distension-nausea with relief by vomiting. Such recurrent attacks associated with tenderness in the gall-bladder area are diagnostic of this type. "Bilious attacks" and recurrent jaundice occur in this type.

Focal Sepsis: The gall-bladder may be the site and the toxemia may be far reaching.

Symptoms are pallor with sallowness, extra systoles, panniculitis, easy fatigue and apyrexia. Chronic infective multiple arthritis is rarely due to this cause. The blood picture helps in diagnosis. Sometimes this focal sepsis may cause certain allergic states as asthma and urticaria.

Gall-stones: Cholelithiasis is usually a sequel to chronic cholecystitis except in the rare cases where stones form without infection, or when a large single cholesterol stone is formed.

Biliary colic is due to—distension of the gall-bladder—or—spasm of the transverse colon near the gall-bladder—or—passage of stone into the cystic or common bile-ducts. The treatment is morphine.

Graham and Cole's cholecystography is a great advance in the diagnosis of gall-stones. Gall-stones are found in 20% of women and under 8% of men who reach adult life and only a small number give symptoms. In elderly patients the differential diagnosis between chronic cholecystitis without stones and large chronic duodenal ulcer presents difficulties. Chronic cholecystitis with or without stones is a real cause of "indigestion"—and the gall-bladder must be specially considered if symptoms do not readily yield to treatment.

When stones are present or recurrent colic, followed in 24 to 48 hours by jaundice, the treatment is cholecystectomy. If no stones present, put patient to bed for a month; the diet low fat with at least 3 pints of fluid in 24 hours. In the morning give a concentrated solution of magnesium sulphate, not enough to cause diarrhoea; the patient lies on the right side for 10 minutes, a dessertspoonful of olive oil is taken soon after beginning each meal. Hurst claims enough alkali must be given to maintain alkaline urine and then add 100 grains of hexamine three times a day until all symptoms are cleared away.

Pancreatitis may complicate cholecystitis. The ultimate diagnosis lies in examination of the stools for fat and undigested muscle fibre and of the urine for diastase. The treatment is the same as for chronic cholecystitis.

L. R. M.

NOTICE

WANTED—Physician for the district of Havelock, Kings Co., New Brunswick. Further information may be had by communicating with the Reverend J. E. DeLong, Havelock, N. B.

OBITUARY

DR. ALEXANDER FRASER

A NATIVE son of Nova Scotia, graduate of Dalhousie University and Harvard, who started his practice in his native village of West River, Pictou County, Dr. Alexander Fraser, a leading pathologist of New York, passed away at his home in New York on September 18, in his 70th year. For many years he occupied the position of Professor of Pathological Histology at New York University College of Medicine.

Dr. Fraser, who won international recognition as a surgeon, lecturer and author of medical works during his forty-one years of practising and teaching, was pathologist at St. Vincent's Hospital until his death. He was also consulting pathologist at New York Poly-clinic Hospital, New York Foundling Hospital and Manhattan Maternity Hospital.

The funeral services were conducted by Mgr. John J. Hickey in the Chapel of St. Vincent's Hospital on Wednesday, with burial at Flushing, N. Y.

Born in West River, Nova Scotia, January 8, 1869, Dr. Fraser studied at Dalhousie, Halifax. He graduated in 1889 with a B.A. degree, winning special honours in mental and moral philosophy, the Governor General's medal and a scholarship in Philosophy at Harvard. After a year at Harvard, Dr. Fraser, from 1891 to 1893, was a fellow of Clark University at Worcester, Mass. At Clark University Dr. Fraser specialized in research in psychology and while there wrote articles for *The American Journal of Psychology* on the psychology of philosophy and on allied subjects. In 1893 he returned to Dalhousie where he graduated in 1897 with the degrees of Doctor of Medicine and Master of Surgery.

After practising in West River and New Glasgow until 1910, Dr. Fraser was invited to New York to become assistant in clinical pathology at the New York University College of Medicine.

After he became Professor of Pathological Histology, Dr. Fraser for several years lectured at Fordham University on biology and social hygiene. Among his contributions to medical literature were articles on goitre, tumors of the salivary gland and congenital heart disease.

Death came to the aged, retired pathologist following an illness of several months. Surviving to mourn the loss besides his widow, Lillian, are a son, Frank, and a daughter, Mrs. John Waterhouse, both of New York; two brothers, Dr. J. Frank Fraser of New York and Martin L. Fraser of New Glasgow; and two sisters, Miss Margaret Fraser of Bedford, N. S. and Mrs. Ella Irving, Rutherford, N. J.

The BULLETIN extends its heartfelt sympathy to Dr. T. M. Sieniewicz in the death of his wife, Elizabeth Hazlett, which occurred at the Halifax Infirmary, September 27th, after an extended illness.

Much sympathy is felt for Dr. and Mrs. L. R. Meech of North Sydney in the death of their son, John, who passed away in the Hamilton Hospital, at North Sydney on Wednesday, September 14th, after an illness of several weeks.

Department of the Public Health

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MEDICAL HEALTH OFFICERS FOR CITIES, TOWNS AND COUNTIES

ANNAPOLIS COUNTY

Hall, E. B., Bridgetown.
Braine, L. B. W., Annapolis Royal.
Kelley, H. E., Middleton (Mcpy. & Town).

ANTIGONISH COUNTY

Cameron, J. J., Antigonish (Mcpy).
MacKinnon, W. F., Antigonish.

CAPE BRETON COUNTY

Tompkins, M. G., Dominion.
Fraser, R. H., New Waterford.
Francis, Bernard, Sydney Mines.
Sutherland, Harvey, Glace Bay.
McLeod, J. K., Sydney.
O'Neil, F., Sydney (County, South Side).
Murray, R. L., North Sydney.
Baird, R. P., Louisburg.
Gouthro, A. C., Little Bras d'Or Bridge, (Co. North Side).

COLCHESTER COUNTY

Eaton, F. F., Truro.
Havey, H. B., Stewiacke.
Johnston, T. R., Great Village (Mcpy).

CUMBERLAND COUNTY

Bliss, G. C. W., Amherst.
Gilroy, J. R., Oxford.
Hill, F. L., Parrsboro, (Mcpy. and Town).
Cochrane, D. M., River Hebert (Joggins).
Walsh, F. E., Springhill.

DIGBY COUNTY

Doiron, L. F., Little Brook, (Clare Mcpy).
McCleave, J. R., Digby.
Harris, W. C., Barton, (Mcpy).

GUYSBORO COUNTY

Chisholm, D. N., Port Hawkesbury, (M.H.O. for Mulgrave).
Sodero, T. C. C., Guysboro (Mcpy).
Moore, E. F., Canso.
Monaghan, T. T., Sherbrooke (St. Mary's Mcpy).

HALIFAX COUNTY

Almon, W. B., Halifax.
Forrest, W. D., Halifax (Mcpy).
Payzant, W. A., Dartmouth.

HANTS COUNTY

Bissett, E. E., Windsor.
MacLellan, R. A., Rawdon Gold Mines (East Hants Mcpy).
Reid, A. R., Windsor, (West Hants Mcpy).
Shankel, F. R., Windsor, (Hantsport).

INVERNESS COUNTY

Muir, J. A., Port Hawkesbury.
Grant, T. E., Port Hood.
Proudfoot, J. A., Inverness.
McNeil, A. J., Mabou, (Mcpy).

KINGS COUNTY

Bishop, B. S., Kentville.
Bethune, R. O., Berwick, (Mcpy & Town).
de Witt, C. E. A., Wolfville.

LUNENBURG COUNTY

Marcus, S., Bridgewater (Mcpy).
Rehfuss, W. N., Bridgewater.
Donaldson, G. D., Mahone Bay.
Zinck, R. C., Lunenburg.
Zwicker, D. W. N., Chester, (Chester Mcpy).

PICTOU COUNTY

Blackett, A. E., New Glasgow.
Chisholm, H. D., Springville, (Mcpy).
MacMillan, J. L., Westville.
Crummey, C. B., Trenton.
Sutherland, R. H., Pictou.
Whitman, G. W., Stellarton.

QUEENS COUNTY

Murray, D. K., Liverpool.
Smith, Harry, Mill Village, (Mcpy).

RICHMOND COUNTY

Digout, J. H., St. Peters, (Mcpy).

SHELBURNE COUNTY

Corbett, J. R., Clark's Harbour.
Fuller, L. O., Shelburne.
Banks, H. H., Barrington Passage, (Barrington Mcpy).
Lockwood, T. C., Lockeport.
Churchill, L. P., Shelburne, (Mcpy).

VICTORIA COUNTY

MacMillan, C. L., Baddeck, (Mcpy).

YARMOUTH COUNTY

Hawkins, Z., South Ohio, (Yarmouth Mcpy).
Caldwell, R. M., Yarmouth.
Lebbetter, T. A., Yarmouth, (Wedgeport).
Siddall, A. M., Pubnico Head, (Argyle Mcpy).

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 September 1st., to October 1st., 1938.

During the month, 267 tissues were sectioned and examined, which with 28 tissues from 8 autopsies, makes a total of 295 tissues for the month.

Tumours, simple	24
Tumours, malignant	58
Tumours, suspicious of malignancy	3
Other conditions	182
Tissues from 8 autopsies	28
	—295

Communicable Diseases Reported by the Medical Health Officers for the month of SEPTEMBER, 1938.

County	Infantile Paralysis	Chickenpox	Diphtheria	Influenza	Measles	Pneumonia	Scarlet Fever	Typhoid Fever	Tbc. Pulmonary	Tbc.-other forms	V. D. G.	V. D. S.	Whooping Cough	Cholera Infantum	Entero Colitis	Diarrhoea	TOTAL
Annapolis	..	..	..	..	..	..	..	..	..	..	3	..	4	..	..	..	7
Antigonish	..	5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5
Cape Breton	..	..	12	5	1	..	12	2	..	..	..	..	..	1	6	..	39
Colchester	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...
Cumberland	..	..	..	3	..	..	1	..	..	..	1	..	..	..	..	..	5
Digby	..	..	..	..	..	..	..	2	..	1	..	..	..	..	..	..	3
Guysboro	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...
Halifax City	..	..	..	..	..	..	7	..	..	..	..	..	..	..	..	..	7
Halifax	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...
Hants	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1
Inverness	..	..	..	4	8	..	..	..	..	..	..	..	..	..	..	..	12
Kings	..	..	..	3	..	..	..	..	..	..	2	..	..	..	..	..	5
Lunenburg	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...
Pictou	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...
Queens	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...
Richmond	..	..	..	4	2	..	..	..	1	..	..	..	1	..	..	3	11
Shelburne	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...
Victoria	..	..	..	..	..	..	4	..	..	..	..	..	..	..	..	..	4
Yarmouth	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	...
TOTAL	..	5	12	19	11	..	24	5	1	1	6	..	5	1	6	3	99

Positive cases Tbc. reported by D.M.H.O.'s. 17.

RETURNS VITAL STATISTICS FOR AUGUST, 1938

County	Births M	Births F	Marriages	Deaths M	Deaths F	Stillbirths
Annapolis	12	21	14	10	12	0
Antigonish	14	12	1	13	7	2
Cape Breton	110	83	114	28	23	3
Colchester	22	21	27	10	3	3
Cumberland	34	32	43	20	7	5
Digby	22	19	14	11	5	2
Guysboro	14	15	11	12	4	1
Halifax	121	123	71	53	36	10
Hants	17	26	23	6	7	1
Inverness	21	16	13	7	5	0
Kings	37	35	17	14	15	3
Lunenburg	28	23	29	7	9	0
Pictou	38	37	21	12	11	2
Queens	5	6	6	3	2	0
Richmond	5	7	2	4	1	0
Shelburne	13	5	5	5	6	0
Victoria	6	7	3	8	3	0
Yarmouth	15	10	23	13	14	1
	534	498	437	236	170	33

OBITUARY

MANY friends throughout the province will learn with genuine regret of the death of one of New Glasgow's highly esteemed citizens in the person of Dr. Hector H. MacKay who passed peacefully away at his home on September 25th. He had been in failing health for several years. His wife, formerly Christene Young Miller, of Saint John, N. B., one of the first nurses to graduate from Aberdeen Hospital, predeceased him in November last. There survive to mourn his passing, one daughter, Mrs. Sawyer, wife of Dr. Reginald Sawyer of the staff of the Royal Military Hospital, Kingston, and two sons, Dr. A. Miller MacKay, New Glasgow, and Donald, with the Royal Air Force, England.

Born at Plainfield, Pictou County, eighty years ago, Dr. MacKay was a son of the late Mr. and Mrs. John MacKay, pioneer residents of that community. He was a graduate of Pictou Academy and McGill University, 1890, and immediately started practising in New Glasgow. An outstanding physician and surgeon he was well known throughout the province and county. With a genial and kindly manner he was highly regarded as a citizen and physician. For many years a member and office bearer of Trinity United Church, he was when health permitted a regular attendant at its services. His religion was without display but his contact with his fellow men revealed the christian gentleman. His life was one of usefulness and good deeds and his memory will be revered for many years, particularly in those homes where he served as the beloved family physician.

In addition to his sons and daughters, he is survived by two sisters, Mrs. Charles Sutherland, Miss Margaret MacKay, at Elmfield, and two brothers, Roderick and Duncan, at Plainfield. The late Dr. A. H. MacKay, for many years superintendent of education for Nova Scotia, was a brother.

The funeral service took place on September 27th from Trinity United Church, with interment at Scotsburn Cemetery.

News of the passing at his home in New Glasgow on October 9th of Dr. John W. MacKay, prominent surgeon, at the age of seventy-nine years, will be learned with sincere regret by many friends not only in Pictou County but throughout Nova Scotia. He had been in good health and was ill for only a few hours, his death coming as a grievous shock for family and friends. He had celebrated his birthday, October 6th.

One of New Glasgow and Pictou County's most beloved physicians he was predeceased ten days ago by a cousin, Dr. Hector H. MacKay. Dr. John was senior doctor on the Aberdeen Hospital staff, having been associated with the hospital since its inception, in the closing days of last century.

Born in 1859 at Balmoral Mills, near Earltown, Colchester County, he was educated at Pictou Academy, home of many great scholars, and as many others at that time, taught school for some years before taking up a medical career. Graduating from Bellevue Medical School in New York City in 1886 he went to Thorburn where he practised for a three year period. He then went to Edinburgh where he took a post graduate course in medicine after which he returned to Thorburn for a brief period. Going to New Glasgow in 1895 he had practised there ever since.

He was without doubt one of the most skilful surgeons and physicians in eastern Canada. He was possessed of wide sympathy and understanding.

For years his services were in almost continual demand and he never spared himself, but gave of his best and rich and poor alike received the benefit of his skill. In hundreds of homes throughout Pictou County where he served as the beloved family physicians, news of his passing will come with a keen sense of personal loss. Dr. MacKay was a member of the Provincial Medical Board for twenty years, a member of the original board of Aberdeen Hospital, and an honorary member of the Medical Society of Nova Scotia.

His busy professional life left little time for other activities but he was keenly interested in all that pertained to the welfare of the town and the poor and needy found in him a friend. He was a fine Christian gentleman whose memory will long be fragrant in the town where he lived the greater part of his life.

His wife predeceased him in 1922 and there survive to mourn his passing, one daughter, Isabel, wife of Dr. A. E. Doull of Halifax, and one son, Dr. Hugh MacKay, New Glasgow, who practised with him, also several grandchildren, and one brother, Hugh S. MacKay, New Glasgow, and three sisters, Mrs. Allister D. Matheson, Rochester, N. Y., Mrs. Joseph Stewart, Los Angeles, and Mrs. Charles MacKean, Tatamagouche. Dr. George Townsend, New Glasgow, is a brother-in-law.

The funeral service took place from his residence on October 11th.

Personal Interest Notes

Dr. and Mrs. S. W. Williamson of Yarmouth have arrived home from a visit to relatives at Providence, Rhode Island.

Dr. and Mrs. G. L. Covert of Halifax are receiving congratulations on the birth of a son on September 27th.

Dr. R. G. A. Wood of Lunenburg who has been taking a postgraduate course at Cleveland, Ohio, has arrived home. Dr. Wood was caught in the flood area near Athol, Mass., and was forced to abandon his car and flee for safety.

Dr. H. R. and Mrs. McKean of Millertown, Newfoundland, are visiting Nova Scotia as part of their honeymoon. From here the doctor and his wife will go to North Carolina, and on their return Dr. McKean will take up practise at New Germany, N. S. Dr. McKean graduated from Dalhousie 1934, a gold medallist together with Dr. M. B. Dockerty. For the past number of years he has been with the Anglo-Newfoundland Development Company at Millertown.

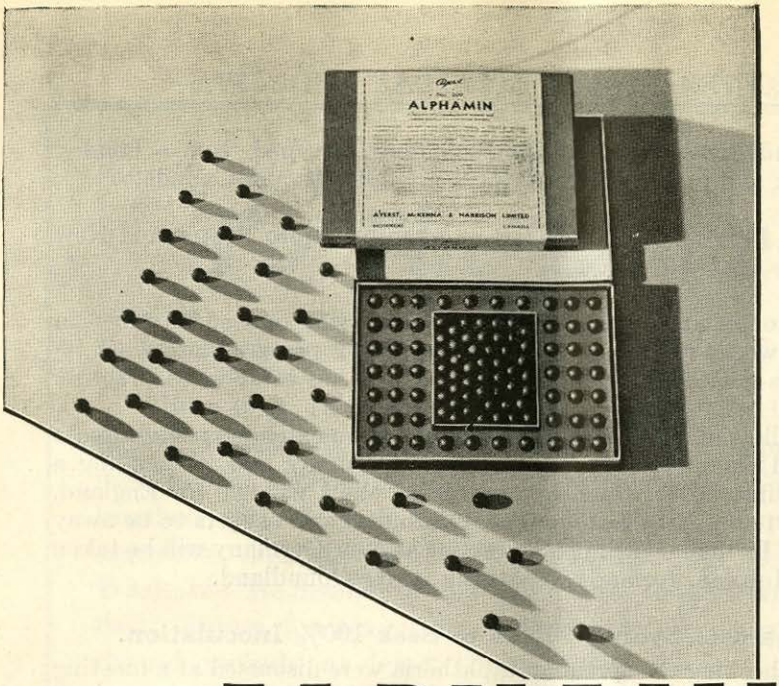
Dr. P. E. Belliveau of Meteghan has returned from a conference of the Medical Association of French Doctors of North America recently held in Ottawa. Dr. and Mrs. Belliveau also visited Toronto, Hamilton, and other places in Upper Canada.

Dr. and Mrs. A. C. Gouthro of Little Bras d'Or have been visiting Upper Canadian cities by motor.

Dr. Michael R. MacDonald, son of Mrs. Daniel M. MacDonald of North Sydney, has returned home. Dr. MacDonald received his B.A. and B.Sc. degrees from St. Francis Xavier University and from there went to McGill University to study Medicine. Following his graduation from the Medical School at McGill he has been doing postgraduate work in St. Mary's Hospital, Montreal. Dr. MacDonald plans to establish practise in Sydney Mines.

Dr. T. W. MacLean, formerly of Scotsburn, but who has been ill at Kentville for some time recently made a visit to Pictou and Scotsburn. His many friends there were delighted to see the doctor appearing in such good health and congratulated him on his recovery.

Construction work on the new Annapolis General Hospital has commenced and is proceeding rapidly. Plans, as approved by the Provincial Department of Health are for a fifteen bed hospital. Sufficient contributions have been received to purchase the land and make a start on the building.



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MONTREAL CANADA

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Dr. Hugh and Mrs. Martin of North Sydney returned from a holiday trip to New York and other centres in the United States and Canada.

Dr. and Mrs. Fraser Young have left on a motor trip to Boston and New York.

Dr. T. T. Monaghan, formerly at Sherbrooke, who opened an office in Antigonish some weeks ago on returning from taking postgraduate work on the continent, has gone to Charlottetown, where he has established practise.

Dr. W. E. Pollett of New Germany has planned an extended postgraduate course in the Old Country. He has left New Germany and is spending a short time in Halifax, after which he and Mrs. Pollett will sail for England. Dr. Pollett plans to study at London and Edinburgh and expects to be away about two years. In the meantime his practice at New Germany will be taken care of by Dr. McKean, formerly practising in Newfoundland.

Health Board of Sydney Mines to Seek 100% Inoculation.

Methods of checking the spread of diphtheria were discussed at a meeting of the board of health of Sydney Mines which was held in the town council chamber on October 3rd. Two deaths have already resulted from the dread disease. Dr. C. W. Beckwith, district medical officer, gave a very informative address on the subject and strongly recommended the inoculation of all children within the town who are over three months of age. He pointed out that this method had already been put into operation in New Waterford and that, as a result, the disease had been checked. The council, which serves as the board of health, decided to follow Dr. Beckwith's advice and a 100% inoculation of children in the town was ordered. Dr. Francis also spoke at the meeting.

Dr. and Mrs. K. A. MacKenzie, Halifax, have returned from an enjoyable three weeks' trip across Canada. During his visit Dr. MacKenzie spoke to the Associations in the different cities in Western Canada, including Winnipeg, Regina, Port Arthur, Vancouver and Victoria.

The marriage took place at Bayfield, N. B., on September 23rd of Gertrude Florence, daughter of Mr. and Mrs. W. M. Allen, and Dr. Brunswick Edward Barnhill, son of Dr. and Mrs. H. B. Barnhill, all of Bayfield. Dr. B. E. Barnhill graduated from Dalhousie Medical School in 1937.

Dr. and Mrs. J. H. Buntain of Upper Stewiacke are spending a well earned vacation in Prince Edward Island.

Dr. and Mrs. W. W. Bennett of New Germany are spending a week's holidays in Boston and vicinity.

Dr. and Mrs. Gerald Burns are receiving congratulations on the birth of a son on October 12th.