

# The Canada Lancet

VOL. XLVII.

TORONTO, JULY, 1914

No. 11

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## EDITORIAL

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### INSECTS AND DISEASE.

During the past seventeen years more than 8,000,000 persons have died in India of the plague, or more than the entire population of Canada. The disease had its origin in the upland of the far interior of China, from whence it has found its way to every continent.

In their efforts to find the cause first came the discovery of the bacillus pestis, or plague germ. There was, however, much work to be done before the method of conveying the infection to the human body became known. In the course of investigation it became known that the bacillus of the disease was frequently to be found in the body of the rat.

The next step was the discovery that the flea was the intermediary that carried the infection from the rat to man. These parasites infest the bodies of rats, bite them and suck blood, and then do the same thing to man, thereby infecting him.

The way the flea infects the rat or man it feeds upon is very interesting. When a flea sucks blood from an infected rat, the bacilli multiply in its stomach with great rapidity, and form jelly-like masses. These block the entrance to the flea's stomach. When the flea bites and sucks another rat or a man the blood it sucks can no longer find its way into the stomach, and fills what is known as its pre-ventriculum or gullet. This becomes distended with blood, and some of it regurgitates back through the flea's "pricker" or proboscis, and thus the rat or man is infected.

This theory of regurgitation had been speculatively guessed at by some for some years, but it was definitely proven recently by Mr. A. W. Bacot, Entomologist to the Lister Institute, and Dr. C. J. Martin, F.R.S., Director of the Institute. In cool, damp weather, a plague infected flea will live a considerable length of time, but heat soon kills it. This accounts for the subsidence of the plague in the hot, dry weather, and its spread in the cooler, wet season.

## DRUG FIENDS.

Of late years, the numbers who use narcotic and habit-forming drugs are steadily on the increase, and are threatening the well-being of the community. The dope habit has become one of the grave perils that threaten society. A noted French physician recently said that the use of cocaine and such like drugs was ruining more lives than liquor. There are many moderate drinkers, but no moderate dope fiends. The one who uses "dope" becomes its slave.

In South America, long before the discovery of the crystal cocaine, the natives ate coca leaves and drank tea made from these, and found that the practice conferred upon them remarkable powers of endurance. This practice reached the negroes in the United States, and from them spread among the white population. The negroes were among the first to use the white powder as a snuff.

One of the seductive dangers in this class of habit-forming drugs is that their primary effect is to retrieve the secondary or reactionary effect which these very drugs produce. Thus the cocaine and morphine habitués resort to these drugs to remove the later feeling they have caused. The depressing effects that follow their use is relieved by the stimulating effects of further doses. So the habit goes on and grows steadily.

Some resort to the use of these drugs because they do not get sufficient rest and sleep, as druggists and doctors. Others because their use gives them strength and endurance, as our professional athletes. Others, that under their influence they may do deeds of daring and terrible crime.

Mrs. W. K. Vanderbilt has given much time and money to the suppression of the drug habit and the restraint of the sale of these drugs. After much investigation it appears that one person in twenty-five in China is a drug fiend, while there is one in every twenty-three in the United States. The effect of cocaine has been shown to lead to many forms of crime. The drug habit cannot be satisfied short of \$4 to \$5 a day, while the person is no longer able to work for this. He then resorts to crime for the needed money.

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STATE MEDICINE.

This thought is not a new one. The salaried doctor, in some form, has been tried in many countries and in many ways. We are all familiar with the Chinese plan of pay the doctor when all members of the family are well, and stop his pay when any of them are ill.

In Germany there have been a sort of state doctors, drawing some pay from the public in addition to their income from practice. In this country and in Britain there are many practitioners who derive a good portion of their income from state or municipal funds, such as those who are inspectors of public school children, attend paupers under the poor relief funds, or are paid out of the insurance fund. Then there are those who are attached to the army and navy. In Britain at the present time there are 10,000 doctors who are drawing annually from £300 to £1,000 from the national insurance scheme.

In support of publicly paid doctors, we notice the recent article of Professor Paul L. Vogt, of Miami University. He contends that two things are to the front for consideration: the prevention of disease and the cure of disease. He argues that a medical profession that must exist by its labors must of necessity be more concerned with the cure of disease than its prevention. The real work of prevention must belong to the state and be paid for by the state in the form of health officers of various kinds, and research workers.

Professor Vogt also directs attention to the fact that there must always be a pauper class which cannot pay. For these free dispensaries are started and doctors give their services for nothing. Doctors frequently answer the calls of this class without expectation of any reward. He is of the opinion that this system is unfair to the medical profession and unsatisfactory to the poor.

He contends that the prevention of disease and the care of the poor are of too much importance to be left to chance methods, and should receive the care of the state. There should be state doctors to care for the poor, and others to concern themselves with preventive medicine.

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#### THE INSPECTION OF DAIRIES.

The Department of Agriculture at Ottawa is responsible for a very sweeping set of regulations dealing with tuberculosis among dairy herds. Towns of not less than 5,000 persons which have made provision for the licensing of dairies from which their milk is to come, may avail themselves of the aid of the department in the inspection of these dairies to ensure their conforming to the standard required as to air space for the cows, proper drainage, and sanitary conditions. The cows must, at the time of issuing the license, undergo a tuberculin test.

In two years from the first test, milk from such dairy shall be prohibited unless the cattle show a clean bill of health when tested by the veterinary inspectors. Each town shall appoint an inspector to see that the cows are kept clean and properly housed, fed and cared for. When

a town complies with these regulations it may apply for the assistance of one of the Dominion veterinary inspectors to apply the tuberculin test, and make a physical examinations of the animals.

Cows that may be found to be affected with open tuberculosis, and therefore, distributing the germs are slaughtered in the presence of an inspector, who shall give directions as to the disposal of the carcass. Cows that are not affected with open tuberculosis, but are reactors to the test, are to be slaughtered, or may be separated and prepared for the block by feeding, or they may be retained in the herd, but no milk or cream shall be sold from the herd until it has been pasteurized.

The regulations provide for compensation to the extent of one-half the value of the animals slaughtered because of open tuberculosis, and one-third the value in the case of reactors. The owner of the cattle is allowed the salvage of the carcasses, but this with the amount allowed by the Government must not exceed the value of the animals.

From time to time tests of the dairies are to be made; and no new animals added to the herd without first undergoing a tuberculin test. When an animal has been tested twice with negative results it is considered free from the disease, and the veterinary inspector gives a certificate to this effect.

It has been urged against these regulations that it will increase the price of milk to a prohibitive one. Not so. The number of cows afflicted with open tuberculosis will not be great; and those affected with closed tuberculosis and revealed only by test, may be left in the herd, but all milk from such a source must be pasteurized in a proper manner. If this is not complied with, then the animals must be slaughtered or separated from the herd and allowed to go dry and be fed for the block. It has been asserted by some veterinary authorities that all the way from 65 to 90 per cent. of cows are tubercular. The City of Toronto has taken a step on its own initiative by compelling all milk to be pasteurized.

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#### RECENT EXPERIMENTS ON THE FUNCTION OF THE ADRENALS.

Prof. W. B. Cannon, of Harvard University, and his students have been doing some very valuable work on the suprarenal glands. These investigations have shown that fear, rage and pain rapidly cause an increased production of adrenin and its entry into the blood. This is born out by observations on animals under these conditions. During the struggle that takes place between animals that are engaged in fight. the amount of adrenin that is thrown out is sometimes very remarkable.

The effect of this adrenin in the blood is to overcome fatigue and enable the animal to put forth an extra amount of effort in attack or self-defence. It has the effect of causing the blood vessels to contract, and the blood to clot more rapidly than otherwise, and materially lessen the loss of blood through any wounds that may exist. It is in this way that students after a football game or during examinations show an increase of blood pressure, have an extra amount of muscular energy, and there is an increase of sugar in the blood, as the adrenin sets free the stored quantity in the liver.

This extra amount of epinephrin in the blood causes the vessels of the stomach and bowels to contract, and sends the blood to the other parts of the body. It in this way seriously lessens the activity of digestion. It is in this way that anxiety and worry have a bad effect upon digestion. The emotions stimulate the flow of adrenin and the results mentioned follow.

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#### THE WORKMAN'S COMPENSATION ACT.

We are not going to comment on this act as a whole, but merely to call attention to the fact that in the act there is no provision for the payment of the services of the physician or surgeon who may be called in to attend the persons coming within the meaning of the act. This is entirely wrong.

Indeed, the act goes as far as it can to prevent the doctor being paid, because it clearly forbids the workman from assigning his claim for the attendance he receives; and, in addition, gives a long list of persons who would have a prior claim over the doctor in the event of death.

Our advice to the medical profession is to insist on having the act amended in such a way as to overcome this glaring injustice. We are quite sure that such an effort will succeed. It should be conducted in a dignified manner, and along the lines of reason, and the claim for that only which is just and right. All the medical societies should take this matter up.

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#### RESEARCH WORK, UNIVERSITY OF TORONTO.

It is an encouraging sign of the times that several citizens of Toronto have agreed to contribute sums, amounting to \$15,000 for five years, to enable the University of Toronto to engage in research work. It must be admitted that this is one of the important tasks which any great university has to perform for the public.

The great work of a university is not solely limited to teaching. The staff of a university should be outstanding men in their various callings, and be leaders of opinion by their writings. They should also be makers of men by their teachings and examples. In addition to these functions, a university may add very greatly to its prestige by well conducted laboratory and research work.

This is one part of the university's work where we think there can be no ground for two opinions on the matter of state aid. Every discovery made in the way of preventive medicine, or on the cure of disease, is for the good of all; and should have the assistance of all through the public treasury. This is now coming to be recognized, but not to the extent that it should, or will in the near future.

It is very gratifying that a few of those, who have the wealth, are disposed to voluntarily aid such work, but all who can afford to do so, should in some way be made to do. This could be accomplished in several ways. There might be a certain percentage of the succession income set aside for this purpose. Or estates assessed over a given amount might be taxed a very small amount for this sort of purpose, the total returns being ample. Or, research work might be made the same as the civil service and paid for as a service rendered to the state and for the common weal.

In the meantime, until some more permanent plan is evolved we wish to congratulate those who have been mainly instrumental in securing the funds that have made a good beginning possible. The work is only in its infancy, and as more funds are available the work will be enlarged and additional workers appointed. Toronto is now a large city, with a great wealth of clinical material and several well equipped hospitals. There is an abundant harvest, we need the reapers and the means of paying them for their labor.

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#### THE TRUE HERO.

All ages have admired the brave man or woman, and when a great crisis arises these are not wanting. Poets have sung the praises of the hero. Historians have told of his deeds. Philosophers have discussed the motives that make the hero, and have argued at length on the difference between animal and moral courage. Quietly and unobserved there are men and women discharging their duty and, often humble duties, that have within them all the elements of the true hero.

At the time of the Titanic wreck, a young woman, who was an ordinary domestic, said to another woman, "You are the mother of several children, and take my place in the life boat." The mother was

saved and the domestic was drowned. During the recent wreck of the *Empress of Ireland*, there were several instances of noble self-sacrifice, and generous aid extended to others.

A young lad, Laurence Belmont, gave up his life belt to his mother who was saved thereby, but he perished. The bar steward of the *Empress*, known only by the name "Tom," gave his life belt to Mr. Henderson, of Montreal, because the latter was a married man. Mr. Henderson was saved and "Tom" of the generous heart was lost. Dr. Hunt, of Hamilton, had a life belt on, and was in the water making for a boat. He generously offered the help of this belt to a young man in the water and told the latter to grasp the belt. In this way he saved a life. It is impossible to speak too highly of the heroism of the ship's surgeon, Dr. Grant. His many acts of daring and bravery would take a lengthy article to tell.

A few years ago a young woman in Montreal lost her life in a burning school by going into it to see that all the children were safe. A year ago two sisters lost their lives in a burning school in Texas, which they would not leave until every pupil was out. Not long ago in a flood in India two nurses remained in a small hospital with their patients. As the waters rose they removed the patients higher and higher in the building until they had them on the flat roof. At this stage the waters began to subside. When the flood commenced these nurses could have made an easy escape, but they chose the path of duty and danger along with their patients.

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#### THE EFFECTS OF TOBACCO.

In a recent issue of the *Medical Times* there was a symposium of papers on the effects of smoking. The trend of these articles is that the use of tobacco is harmful, and especially in the case of growing boys. Some of the writers hope that the day is not far off when teachers will be required to explain the injurious effects of tobacco on the brain and growth.

Other writers pointed out that users of tobacco have not as good a chance of recovery from severe illnesses as those who have not used it.

The concensus of opinion is decidedly against cigarette smoking, as the most injurious form of using tobacco.

One of the writers states that in a certain college the non-users gained in height and weight 18 per cent. more than the regular smokers, and 12 per cent. more than the irregular smokers.

Ford and Edison are both of the opinion that the use of tobacco is

harmful, and Mr. Ford has a notice posted in his workshops that cigarette smoking will not be allowed. Edison is equally emphatic.

Very eminent medical men attest the fact that the use of tobacco is a potent factor in causing disease of the heart and vessels, of the nervous system, of lower muscular tone, and lessening resistance to disease.

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#### SIR THOMAS GEORGE RODDICK.

To no man ever did knighthood come more worthily than to Dr. Roddick, of Montreal. When his Majesty conferred his favor upon this distinguished member of the medical profession in Canada, he acted wisely, justly and popularly. We congratulate Dr. Roddick on his high distinction, and wish to say that he has worthily won it. We can say of him:

He is a scholar and a ripe and a good one,  
Exceeding wise, fair spoken and persuading,  
And to those who seek his council, sweet as summer.

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#### INFLAMMATION OF THE GALL-BLADDER.

The importance and time of surgery in inflammation of the gall-bladder is emphasized by J. Tyson, Philadelphia (*Journal A. M. A.*, April 25), who reports three cases of cancer following this condition. The fulminating form often terminates in abscess and if unrecognized may terminate in perforation. Next to the typhoid bacillus the colon bacillus is a frequent cause. A result appreciated only recently is adhesions now recognized as a frequent cause of pain in the right upper abdominal quadrant, formerly unrecognized. Other predisposing causes are: Sedentary habits, lack of exercise, tight lacing, childbearing and abdominal tumors, which contribute to explain the four times greater frequency of the condition in women. The most important consequence on account of its frequency is gall-stones, and the relation of these to cancer is now recognized; hence the necessity of prompt operation. Other results of neglected cholelithiasis are hardly less serious, such as abscess of liver and biliary fistulas into various organs, including the veins, the intestine, the stomach, the bronchi and the external integument. Atrophy of the gall-bladder is not infrequent. Tyson believes that in doubtful cases exploratory operation is sometimes justified, the more so since other conditions may be discovered which would also require operative relief. He does not deny that cancer may precede gall-bladder inflammation, but there is as much reason to believe that they were consequences in the cases reported.



## ORIGINAL CONTRIBUTIONS

PERSISTENT INDIGESTION: ITS CLINICAL SIGNIFICANCE.  
ITS SURGICAL TREATMENT.

BY W. J. MACDONALD, M.D.,

Attending Surgeon, Wellandra Hospital, St. Catharines, Ontario.

**D**YSPEPSIA is not always the result of some mild functional derangement of the stomach, but is frequently a marked symptom or clinical manifestation of some serious intra-abdominal organic lesion either of the stomach itself, of the duodenum, of the gall bladder or of the appendix. The frequency with which chronic gastric ulcer, the early stages of gastric carcinoma, duodenal ulcer, cholecystitis, stasis, and even chronic appendicitis is the direct cause of a persistent and troublesome indigestion is being revealed in the operating room every day. When we take into consideration the role which is played by each of these organs in the function of digestion, it is readily understood how an organic lesion in any one of them is likely to manifest itself through the old fashioned symptoms of dyspepsia. During the last few years the brilliant work of Sir Arbuthnot Lane has also shown the extent to which these so-called dyspeptic symptoms may be produced by chronic intestinal stasis.

Gastric and duodenal ulcer is an exceedingly common disease. Carcinoma of the stomach is on the increase. Gall stones with subsequent involvement of the gall bladder and bile ducts are now known to exist much more frequently than was commonly supposed, even when no other symptom than chronic indigestion is present, and appendicular gastralgia is now a well-known and accepted pathological entity. While it is all important to locate definitely the source from which the dyspeptic symptoms spring in any of the foregoing pathological conditions, it becomes doubly so when the involvement is due to a carcinomatous nodule, which in the stomach especially, so frequently follows in the wake of ulcer.

Ulcer of the stomach is the most invariable forerunner of cancer, therefore if by reason of the dyspeptic symptoms manifested we can definitely diagnose and successfully remove this lesion before the advent of the carcinomatous engraft, we have gone a long way in eradicating malignancy in one of the most frequent locations in the body. Furthermore this is the only way in which it can be effectively eradicated, for when pylorotomy is done in the presence of carcinoma, it is with the full knowledge that in at least 50 per cent. of the cases there will be a

reincurrence in less than three years. In gastric carcinoma probably more than in any other pathological lesion is the truth of the old adage exemplified, "An ounce of prevention is worth a pound of cure."

It is the surgical conditions in the stomach itself which give rise to typical dyspeptic symptoms—ulcer and its frequent accompaniment, Carcinoma—that this article has to deal.

If definite symptoms were always produced by, and the result of, definite pathological lesions, diagnosis would be readily reduced to an exact science, but this is far from being the case. It is but too often we find that a definite pathological lesion in one patient will produce a certain train of symptoms, and to find in another with the same lesion a chain of symptoms of a very different character altogether. This is what makes the art of diagnosis so peculiarly difficult. When a scientific diagnosis has been definitely arrived at, treatment is a comparatively easy matter. The act of removing an ulcer from the stomach wall, of short-circuiting a duodenal stenosis due to a cicatricized ulcer, or even of removing a portion of the stomach itself because it is affected by carcinoma, is a much easier task than arriving at the diagnosis at a sufficiently early period to make such action productive of the best results.

When a patient suffering from definite and persistent indigestion presents himself for treatment, a routine examination of the stomach must invariably be made. This routine examination will include a thorough and complete history of the case, a physical examination, a test of the motor functions of the stomach, a complete gastric analysis obtained from a test meal, and finally a complete fluoroscopic examination of the entire gastro-intestinal tract. There is a tendency now-a-days to lay too much stress on the value of the chemical analysis of the stomach contents, and too little on the mere clinical examination while as a matter of fact either one can only prove of the highest value when corroborated by the other.

The *history* in all gastric cases is of the utmost importance. Very much valuable information will in this way be noted; whether the indisposition has been accompanied from the first by pain, whether the pain was constant or intermittent, whether it was present before or after meals, whether it was confined to the epigastrium or radiated to the right lower abdomen, and finally the character of the pain itself. The majority of gastric lesions have associated pain almost from the first, but this is also true of other lesions affecting the stomach such as gall-bladder disease or appendicular gastralgia. The location and character of the early pain will frequently help to differentiate these conditions, as in cholelithiasis the pain is often agonizing and situated to the right

of the middle line. Duodenal pain is also as a rule definitely located to the right of the middle line, gastric pain to the left. The pain in appendicular gastralgia ranges all the way from a dull aching in the epigastrium to a severe pain radiating to the right lower abdomen.

The question of constancy of the pain is important. Gall-bladder troubles and duodenal lesions are manifested by an exceeding irregularity in the onset of the pain. In both conditions months may elapse between attacks and in the interval the patient be entirely free from any discomfort whatever. Gall-bladder pain bears no relation whatever to the taking of food: duodenal pain a very definite relationship. The presence or absence of vomiting is important. The amount, frequency, and character of the vomit should be noted. Pyloric stenosis is frequently present when vomiting occurs every two or three days and contains particles of food known to have been eaten two or three days before.

Physical examination does not reveal as much as either a careful history or a complete gastric analysis, though some points may be obtained which will add greatly to the definiteness of a diagnosis. There are times when cancer of the stomach can be diagnosed from the facial expression; so also the facial expression in some instances carries great weight in the diagnosis of duodenal ulcer. In gastric carcinoma the blood pressure is low and the pulse weak, while in ulcer of the duodenum the blood pressure is usually high. If the cancer is far advanced abdominal palpation may reveal a tumor: if the pyloric stenosis has been long present an obviously dilated stomach may be observed.

If the motor functions of the stomach are perfect there will be no food residue in the stomach in the morning. This is best tested by thoroughly washing out the stomach at night, and giving fifteen ounces of milk to drink and a dozen raisins to eat. Under normal conditions the stomach will be empty in the morning, while if pyloric stenosis exists to any extent, there may be even more than fifteen ounces present, and in some instances as much as twenty ounces have been withdrawn. The amount of stenosis regulates the motor function which in turn regulates the amount food residue, so that by this means an estimate of the amount of stenosis may sometimes be made.

When there is no stenosis, duodenal ulcer is frequently responsible for the rapid emptying of the stomach, so much so that when other symptoms point to this lesion, hypermotility may be accepted as almost conclusive evidence.

The clinical examination being complete, the laboratory investigation of the stomach contents is a most valuable aid in diagnosis. Too great importance cannot be attached to the information thus obtained,

but it is only when this information is interpreted in the light of the clinical facts already adduced, that its value will be the greatest, the results of the examination of a series of test meals, when interpreted in the light of the clinical history of a given case will in the majority of instances allow of a fairly accurate diagnosis being made.

The best time to administer the test meal is in the morning. Before doing so the stomach tube should be passed and any gastric contents removed. For this reason it is well to give the test meal from one half to one hour after the motor functions of the stomach have been investigated. The most convenient and generally used meal is that of Ewald which consists of two slices of dry toast and fifteen ounces of weak tea without either milk or sugar. In exactly one hour after the commencement of the meal the stomach contents should be withdrawn. In a normal stomach at least one quarter of the meal or four ounces should be recovered. If stenosis is marked, as much as twenty or even twenty-two ounces may be withdrawn, while in the presence of duodenal ulcer and no stenosis, a condition in which the stomach empties itself more quickly than usual, as little as two ounces, or even none at all may be recovered.

*Qualitative tests.* Normal gastric contents should be acid. The presence or absence of free hydrochloride acid should be noted. It is usually present in cholecystitis producing gastric symptoms, in gastric ulcer at the pylorus, in duodenal ulcer, and *sometimes* in chronic appendicular diseases producing gastric symptoms. Likewise it is unusually absent in any form of maglignant disease in the stomach or pylorus, in old gastric ulcer in the cardiac end of the stomach, and frequently in cases of hour glass stomach.

*Quantitative tests.* The two quantitative tests of greatest importance are for the total acidity and the amount of free hydrochloric acid.

In a healthy individual the normal total acidity is 60 and may vary from 55 up to 65. If below 50 there is a distinct hypo-acidity, if over 70 a definite hyper-acidity. Hyperacidity is usually present in gastric ulcer at or near the pylorus and in duodenal ulcer; while hypoacidity in the presence of characteristic clinical symptoms is strong presumptive evidence of malignancy.

In a condition of health the normal amount of free hydrochloric acid is 0.020. In the early stages of gastric ulcer near the pylorus, and in duodenal ulcer, an excess in free hydrochloric acid is the rule. In the late stages of gastric ulcer situated away from the pylorus, or of gastric ulcer causing pyloric stenosis, free hydrochloric acid is frequently absent. Hour glass stomach usually negatives free hydrochloric acid, and in malignant disease free hydrochloric acid is rarely found.

In the fluoroscopic examination much valuable information may be obtained by observing the time required for the stomach to empty itself of a bismuth or barium meal, by noting the position of the viscus, the presence or absence of visible peristalsis, its form, its mobility, whether it is free, slightly fixed or fixed, whether there are any filling defects, the length of time required for the ilium to completely empty itself, and finally the time required for the bismuth meal to be entirely eliminated from the intestinal tract.

*Symptoms.* There are few abdominal lesions in which the symptoms are more unmistakable, clear-cut and simple, than in chronic ulceration of the gastro-intestinal tract at or near the pylorus. In the vast majority of cases these symptoms appear in such a definite and well-defined order, as not to be easily mistaken. True it is, that in an occasional instance, the symptoms may appear in an entirely different sequence, or the acuteness of some one symptom may overshadow all others, but these cases are the exception, and indeed are few.

The diagnosis of ulcer in this region may almost invariably be made on the history of the case. The physical signs, and stomach analysis being employed only as confirmatory evidence. It is a fact however, that the farther from the pylorus the lesion is situated the diagnosis will be correspondingly more difficult. Should the lesion appear on the greater curvature and toward the fundus, the symptoms will invariably lose their peculiar characteristics and clear-cut significance, the patient will be void of that characteristic train of symptoms so peculiar to ulcer near the pylorus, and a positive diagnosis be arrived at only after the greatest difficulty. A careful development of the history of each individual case will, however, almost invariably establish a train of symptoms sufficiently characteristic to allow not only of a diagnosis of ulcer, but also of its location with a certain degree of precision.

*Pain.* In most cases the patient will date commencement of his illness many years back, the complaint coming on so insidiously as to preclude the possibility of fixing any definite time for its commencement. If his memory serves him well, he will recollect the first indication of trouble was the presence of a slight gastric distention, or a sense of fullness accompanied by pain, which would occasionally succeed a hearty meal. As time wore on this discomfort would succeed many meals, until finally, he had his first attack of "indigestion," when every meal would be followed by pain, described by many as burning or gnawing, with eructations of gas from one to five hours afterwards. This condition would last for days, weeks or even months, then without any warning it would suddenly cease, to be followed by a period of perfect health. For a time he would be well, only to be again suddenly stricken

with another attack of the same malady, probably months or even years afterward. So complete may be the relief during these intermissions that even the idea of any organic trouble may be scouted, but the cycle thus formed of attack and relief, are definite links in the symptomatic chain so peculiarly characteristic of chronic ulcer in this location.

At first he notices the attack to appear with any sudden change of temperature, notably spring and fall, then, as the periods of cessation and ease become shorter, his indigestion will return without discernable cause, and in due time will disappear just as mysteriously. Each day's routine is but a repetition of the previous one, ease for a time after meals, then pain, belching of gas, sour eructations making the teeth feel like chalk, and finally more or less vomiting as stenosis of the pylorus commences to develop.

The *time* of the commencement of the pain is very characteristic. Though usually described by the patient as being after a meal, it will be more correct to say, before a meal. It will usually appear in from two to four hours, though sometimes even as late as six hours after partaking of food. In other words it asserts itself when the stomach is commencing to become empty, and consequently has been aptly described as a "hunger pain." The period of time elapsing between the partaking of food and the appearance of pain, depends to a great extent on the character of the food. If the meal consists of solid or heavy indigestible food, the pain is longer in making its appearance; should the nourishment taken be fluid, the pain appears much earlier.

The amount of time elapsing between a meal and the appearance of the pain, will give some indication of the location of the ulcer. If the meal be solid or semi-solid, and four hours or more pass by before the appearance of the pain, the ulcer will almost invariably be found on the duodenal side of the pylorus, and on the posterior surface of the gut. Should the pain, after such a meal, appear in two hours or less, the lesion will undoubtedly be discovered either on the lesser curvature of the stomach right at the pylorus, or if beyond it, on the anterior surface of the bowel.

During one of these periodical attacks, this hunger pain will appear whenever the stomach becomes empty, and is frequently quite severe enough to wake a patient in the night. I have frequently had patients tell me they never retire without laying out a biscuit or a glass of milk on a table beside the bed, to take when they were awakened by pain during the night, having soon learned by experience the benefits to be thus derived. In order to remain as free as possible from discomfort, many patients arrange to take five or six meals during the twenty-four hours. When the pain is severe it will sometimes be relieved by pressure, hence

it does not take the sufferer long to discover the comfort he may experience by doubling up a blanket or a pillow and hugging it to the stomach when he is thus awakened at night.

The ingestion of an alkali mixture will frequently afford great relief, presumably by its neutralizing effect on the already too acid stomach contents. Vomiting will almost invariably produce the same results. In the latter stages of the disease, when one of the various complications, such as cicatricial stenosis is seriously affecting the motility of the stomach, there is nothing which appears to afford such instant and complete relief as gastric lavage. It is remarkable to observe the avidity with which some patients in this condition will resort to the stomach tube, and an occasional one will be found whose daily practice is to wash out the stomach at a stated period after each meal.

Now, epigastric pain, belching of gas, eructations and vomiting are not in themselves pathognomonic symptoms of ulcer. Other conditions such as chronic appendicitis or chronic cholecystitis due to gall stones, are frequently accompanied by similar periodical manifestations. It is not the *chronic* character or the *periodical* attacks of pain, gas or vomiting; it is not the *location*, *intensity*, or *kind* of pain that tells the story; it is the invariable *time* of the pain, two to four hours after meals, it is the fact that during the attack, pain accompanies almost *every* meal, and finally it is the *means* by which the pain can be relieved, injection of food, which stamps it as characteristically pathognomonic of ulcer in this location.

*Hyperacidity.* So called "hyperacidity" of the stomach has long been recognized as an accompaniment of ulcer, and in its direct relationship to this lesion has been the theme of many able discussions. It is an interesting fact to note, however, that in many cases of supposed hyperacidity or "acid dyspepsia," where intensely acid matter is vomited, that a test meal will reveal a normal or even subnormal amount of free HCL. Whether hyperacidity is the cause or result of ulcer has long been a moot question, but as more of these cases are being constantly submitted to operation, and a clearly defined and tangible ulcer is being found in every instance, the weight of proof is fast accumulating to show that this supposed "hyperacidity" is the result and not the cause, of ulcer. This has been demonstrated many times. Sir Berkeley Moynihan has indeed gone so far as to assert that chronic recurrent or protracted hyperchlorhydria is ulcer.

*Hemorrhage.* Hemorrhage, as made manifest by hematemesis or melaena should never be considered a symptom, but rather a late complication of ulcer. In at least 80 per cent. of all cases a diagnosis should be made before the ulceration has progressed to such a stage as to

open a deep vessel. The clinical picture of ulcer is now so complete, that its existence should be recognized early, and by timely treatment obviate all the later complications such as hemorrhage, pyloric stenosis, hourglass stomach and eventually the most serious complication of all, carcinoma engrafted on the base of an old ulcer. I have within the last six months seen two fatal cases of duodenal hemorrhage. Both these cases had had malaena for months, one of them also having had several attacks of hematemesis. In each case the patient had refused operation, and in each finally suffered a hemorrhage which proved fatal before surgical aid could be given.

*Tenderness.* In the majority of cases of ulcer, no physical signs or manifestations are present, though sometimes in the latter stages, especially if subacute perforation has produced a localized peritonitis, tenderness will be observed to the right of the median line, if the ulcer be duodenal; and sharply localized in the epigastrium if it be gastric.

*Differential Diagnosis.* The only condition which is at all liable to become confused with ulceration in this location is cholecystitis and its complications due to the presence of gall stones. Cholelithiasis, with the numerous complications occasioned thereby, is the most frequent disease of the upper abdomen. It is four times as frequent as duodenal ulcer, it is eight times as common as ulcer of the stomach, and it presents itself at least ten times for every once we see cancer of the stomach.

I have some time since ceased to believe that the mere presence of stones in the gall-bladder may be productive of no symptoms whatever. It is a common fallacy, a belief concurred in by many of our able men even to-day, that stones may lie quiescent in the gall-bladder for many years, or be even carried throughout life, without occasioning the slightest inconvenience. A stone in the gall-bladder is a foreign body, and the presence of any foreign body is certain to produce some symptoms denoting its presence. The fallacy of the belief that the first symptoms produced by the presence of gall-stones is when they commence to produce ulceration, inflammatory changes, infection, or obstruction to the biliary flow, has many times been demonstrated.

It is now the generally accepted opinion that he who is the possessor of one or more calculi in his biliary tract, is also subject to occasional attacks of "stomach trouble," and these irregular gastric inconveniences may be, and generally are, the only indication of the presence of biliary calculi. If this warning note were more frequently recognized, it would be the means of saving many invaluable lives. The first symptoms of early gallstone disease are invariably referred to the stomach, symptoms which in nearly every instance will permit of a definite



diagnosis being made, and thus, by early operation, avoid all the serious complications which later on are so liable to arise. Operation at this time is also followed by practically no mortality.

The gastric disturbances indicative of early gall-stones formation are frequently but slight, are scarcely considered by the patient, and oftentimes entirely overlooked by the physician. These are sudden and irregular attacks of fulness in the epigastric region, having no definite relation to the ingestion of food. The sensation may be even one of extreme tightness, which, unless relieved by loosening the clothing, may finally be productive of pain. Deep inspiration will frequently produce a pain in the region of the right costal margin. In a small percentage of these cases chilliness is occasionally observed after meals, the evening meal more particularly. The typical syndrome of symptoms of this early stage of gall-stone disease may be conveniently described as epigastric fulness, gas, and a sense of weight and upward pressure in the epigastrium, coming on from half an hour to an hour after meals. This condition may be very irregular, it may be present after every meal, or only after an occasional one. These "dyspeptic" attacks are usually of short duration, and should they be immediately and entirely relieved by belching, or upon vomiting, they may be considered as truly pathognomonic of early gall-stone disturbance as the subsequent and more commonly recognized typical attacks of intense gall-stone colic.

The great majority of all operations performed on the gall-bladder or biliary ducts are for pathological conditions, the direct result of gall-stones. They are in most instances the common cause of empyema of the gall-bladder, gangrene of the gall-bladder walls, acute perforation of the viscus, cystic distension due to block of the cystic duct, or, if the hepatic or common duct should be similarly obstructed, the great distension of the gall-bladder will be accompanied by intermittent jaundice. Cystic distension, accompanied by permanent jaundice, will usually be found to be the result of cancer. This permanent jaundice is produced by the constant pressure on the duct. In 85 per cent. of all cases of cancer of the liver, the gall-bladder or biliary ducts, gall-stones are present.

Without obstructive symptoms, the presence of stones in the gall-bladder may be the cause of any degree of inflammation from a simple catarrhal condition up to the most virulent form of suppuration and necrosis. There is perhaps in all surgery no single exciting cause productive of more extensive and varied complications than the presence of gall-stones. Many and varied are the conditions, frequently of an exceedingly serious nature, which demand operative interference. The chapter on the evolution of the surgery of the biliary passages rivals

only in interest that of recent work on gastric and duodenal ulcers, with their manifold complications. The operative demand may be for any condition ranging from an ordinary catarrh of the bile passages to acute phlegmonous cholecystitis and gangrene of the gall-bladder.

In the large majority of cases, gall-stones cause but few symptoms, and throughout life they may be carried around with but very little inconvenience, mainly occasioned by irregular attacks of supposed indigestion. When, however, a stone leaves the bladder on its migration to the intestine, severe symptoms are produced, such as intense colic caused by its passage through the ducts, dilatation of the gall-bladder or acute cholecystitis, as a result of its impaction in the cystic duct; infective cholangitis and jaundice, should there be obstruction or semi-obstruction of the ductus choledochus. Furthermore, the continued presence of a stone impacted in one of the ducts is liable to lead to ulceration, terminating in perforation and a general peritonitis, should the perforation lead into the general abdominal cavity; or a permanent fistula, should it find its way into any part of the intestinal tract. Superficial fistulae are known, where a gall-stone has suppurated its way through the anterior abdominal wall.

Perhaps the most intense pain the human being may be called upon to suffer is occasionally produced by the passage of a stone through one of the biliary ducts. The passage of such a stone does not always cause much suffering, but in many cases the pain is truly great. It appears, as a rule, suddenly, without any warning, though occasionally prodromal symptoms may have been present. In many instances it disappears as suddenly as it commenced. Commencing in the right hypochondrium, it radiates to the right shoulder blade. In contradistinction to the pain produced by gastric or duodenal ulcer, this biliary colic has no relation whatever to the ingestion of food. This pain is often associated with chills and a rise in temperature of from three to four degrees.

As in an acute attack of appendicitis, tenderness may be elicited over McBurney's point, so in biliary colic tenderness may be and usually is present in the region of the gall-bladder.

*Vomiting*, as a rule paroxysmal, is present at some time during the attack. It usually occurs toward the end of the seizure. In fact, it may be a determining feature in its cessation. In many instances the first sign of relief is experienced immediately after a severe vomiting spell. At first the ejected matter is ordinary stomach contents, to be followed by intensely bitter bile, if the common duct is free.

When a stone becomes so lodged in the cystic duct as to cause obstruction, there will be almost immediate dilatation of the gall-bladder.

This may, in many instances, be of short duration, and the obstruction being removed, there will be an entire subsidence of the symptoms. In other cases, an acute suppurative cholecystitis may supervene, and relief be obtained only after surgical interference.

*Empyema* of the gall-bladder is a common accompaniment of gall-stones. When a stone becomes impacted in the cystic duct, the gall-bladder, as a result of the accumulation of secretions, may attain a very great size. The presence of micro-organisms will produce an infection, suppuration ensue, and the gall-bladder be converted into an abscess sac. Should adhesions be present, as is almost invariably the case in empyema, the organ will be fixed. In the absence of adhesions it may be quite freely movable.

A stone may become lodged in any part of the common duct. Should it be tightly wedged, the jaundice will be deep and enduring. Should it be of the ball-valve type, the jaundice will be more intermittent and transient. A common location is the junction of the cystic and common ducts, where the stone rests partly in each canal. Another common location is the diverticulum of Vater. In common duct obstruction the gall-bladder rarely becomes enlarged, though the common and hepatic ducts may attain a very considerable size. The hepatic branches throughout the liver may also become greatly enlarged.

In *infective cholangitis*, from incomplete common duct obstruction by stone, the patient will suffer from intermittent but repeated attacks of chills, followed by an immediate rise in temperature. This febrile reaction usually reaches from 102° to 103° F. Pain is not a marked symptom. The chills may recur daily, or less frequently, and after each seizure the jaundice may deepen in intensity. Icterus may be intense. Nausea and vomiting are, as a general rule, a marked symptom. These attacks may recur at indefinite periods for years without the development of suppuration, until which time there is frequently no permanent loss of health. In attempting to ascertain the primary condition productive of the existing infective cholangitis, the condition of the gall-bladder is a valuable sign to go by. In practically all cases where the lodgment of a stone in the common duct is the primary cause, the gall-bladder will be found to be either normal in size or contracted. Should the occlusion of the common duct be the result of other causes, the gall-bladder will almost invariably be found to be considerably dilated.

In *suppurative cholangitis* we simply have the former condition in an intensified form. Suppuration may develop in any part of the biliary tract, and, spreading upwards through the hepatic ducts, develop focusses of infection with localized abscesses throughout the liver. *Empyema* of the gall-bladder is also a common accompaniment. In the

suppurative condition the jaundice is not so intense, and after the attacks does not deepen so appreciably as it does in the infective condition. Suppurative cholangitis with secondary hepatic abscess formation is always fatal.

*Why Operate Early.*—A differential diagnosis having been made and a positive diagnosis of gastric or duodenal ulcer arrived at, what is the proper course to pursue for its relief? Until within the last few years the frequency of this condition has been entirely unappreciated, mainly because these patients were put to bed with a somewhat hazy diagnosis of "indigestion," "acid dyspepsia," or "hyperchlorhydria"; were treated expectantly until the acute symptoms had subsided, and the patient had either become well, or passed into that most unfortunate class, chronic dyspeptics, when the only opportunity of demonstrating the true pathologic condition was the post mortem table.

Of late years, however, the surgeon, in the course of other abdominal work, has been able time and time again to demonstrate decisively an old cicatrized ulcer in the duodenum, or stomach. After treating this condition in the proper surgical manner, the old chronic dyspepsia or recurrent hyperchlorhydria, would disappear, until at the present time, as the result of such work, the characteristic clinical manifestations are so closely associated with a definite pathological lesion, that in the vast majority of cases a positive diagnosis may be readily arrived at, and in those chronic cases at least a complete and permanent cure may be confidently anticipated by the proper application of those surgical measures which we have learned to be peculiarly applicable to each variety of condition. Far be it from me to say, however, that all cases of chronic dyspepsia should submit to surgery. Only those whose condition can be shown to be due to a definite lesion, as typified by the symptoms already described, will reap the benefits they so much desire. This definite demonstrable lesion is in most instances an ulcer of one variety or another, either in the duodenum or the pyloric end of the stomach. If in the duodenum, it will give rise to those classic symptoms of hyperchlorhydria; if in the pylorus, by contraction in the process of healing, will produce stenosis with all the characteristic symptoms of stomach distention; while if in the pre-pyloric region we may have an extensive saddle ulcer on the lesser curvature, or, if on the greater curvature, that somewhat more rare condition, an hour-glass stomach. If any such definite lesion is the direct cause of the symptoms manifested by the chronic dyspepsia, surgery will at once offer to him excellent prospects for complete relief.

But it is not for the exclusive relief of the present symptoms that surgical measures should be undertaken in these chronic cases, but also

to prevent a catastrophe, which in a certain percentage of all cases is sure to come sooner or later—perforation—fatal hemorrhage—gastric cancer becoming engrafted on the base of an old ulcer.

*Acute Perforation.*—An acute perforation of a gastric or duodenal ulcer is not an uncommon complication, and unless prompt surgical measures are adopted every case must rapidly reach a fatal termination. When perforation has occurred, general peritonitis is rapidly established, and death cannot be delayed many days. The subacute form is not necessarily fatal, for protecting adhesions frequently limit the infection, and thus protect the general peritoneal cavity. In this class of cases the resultant condition is usually a localized abscess.

Duodenal ulcer perforates twice as often as the gastric variety. In gastric ulcer perforations occur more frequently in women, in the ratio of about 4 to 1, while duodenal perforations occur more frequently in men, the ration in this case being about 10 to 1.

Perforation in gastric or duodenal ulcer should be of rare occurrence, because, as a rule, the previous history is so clear that ample warning is usually given in time to forestall the occurrence of one of the greatest calamities which may befall the human being. However, the fact remains that even yet in a certain percentage of cases, some authorities place it even as high as 20, there may be no previous warning whatever, the disease may be comparatively latent, and the first indication of serious trouble the acute onset of a severe hemorrhage; hematemesis, as a rule, should the ulceration be on the gastric side of the pylorus; melaena if it be in the duodenum.

*Fatal Hemorrhage* from an ulcer is a complication of comparatively infrequent occurrence, though much more common in the duodenal than in the gastric variety. A severe hematemesis may result from gastric ulcer, and yet the patient quickly rally and rapidly recover, but in the duodenal variety such a happy ending must not be too confidently anticipated, especially if the hemorrhages are recurrent. The risk of fatal termination from this cause is an ever-present danger to one suffering from ulcer.

*Gastric Cancer* is perhaps the gravest complication which can befall the patient suffering from an old, deep-seated, chronic ulcer. That this should be productive of more fatalities than perforation or hemorrhage is because of its more frequent occurrence. Indeed, it may in the near future be decisively demonstrated that in every case of carcinoma of the stomach, by no means an infrequent malady, the disease is engrafted directly onto the base of an old chronic ulcer. At the present time over 70 per cent. of the cases can be thus demonstrated. In perforation, or hemorrhage, the diagnosis is comparatively easy, and

immediate surgical aid will frequently save the patient, but in cancer the prospects for complete cure have so often vanished before a diagnosis is made. The positive diagnosis of cancer in that early stage when operation would procure the desired results is so difficult at the present day that many a patient has lost his chance for life before he is really aware of his perilous condition.

For the immediate relief of the present symptoms so characteristically portrayed in the chronic dyspeptic, and for the prevention of any of the graver complications so liable to occur in the majority of cases, every person whose chronic indigestion, or "dyspepsia," can be directly attributed to a definite lesion of the stomach, or duodenum, should at the earliest possible opportunity receive the benefits of the present-day surgery.

*The Operation of Gastro-Enterostomy.*—There is, perhaps, no operation better illustrating the recent advances in surgery than that employed in the surgical treatment of gastric or duodenal ulcer. The first occasion on which the operation of gastro-enterostomy was performed was when, on Sept. 27, 1881, Wolfier of Vienna short-circuited the pylorus for obstruction from cancer, his patient living four months. From that time until 1885 there are on record thirty-five cases with only twelve recoveries, showing a mortality rate of 65.71 per cent., one so appalling as to cause the operation for a time to fall into utter disrepute. It may be said, however, that this early death rate was largely the result of operations on moribund patients, surgery only being resorted to when all other hope had gone. In all of the cases the operation was performed to overcome obstruction at the pylorus, in most of them the obstruction being due to cancer.

As time went on this operation was revived, and, being recommended for all conditions the result of pyloric stenosis, began to show marvellous results, this being more especially the case when surgery was resorted to in the earlier stages. The results were good and the mortality rate greatly reduced, according to the early stage of the disease for which the operation was performed. As the mortality rate rapidly decreased (in 1905 it had been reduced to five per cent.), thus bringing the operation into the realm of comparative safety, it began to be applied in the treatment of those conditions most likely to produce stenosis and obstruction of the pylorus, notably ulcer in this location. In several instances where gastro-enterostomy was performed in those early days for the relief of pyloric obstruction, and where at operation this obstruction was found to be the result of the cicatricial contraction of an old ulcer, the patient has become entirely well, being completely relieved of all the former symptoms. In some of these cases at least,

death having at some future date ensued from an entirely different cause, the post-mortem table revealed the fact that the old obstruction had disappeared, and the gastro-intestinal tract in this location had resumed a much more normal condition.

As a direct result of several such instances, the question arose as to whether earlier operation, thus securing complete physiological rest of the affected part, would in these cases not only prevent stenosis, but be the means of curing the ulcer. The work on this class of cases has indeed been very recent, the bulk of it having been done since 1905, but the results so far have been good, in fact so good that to-day I know of no operation in surgery which gives such speedy and complete relief and shows such truly remarkable results as does this, in that class of chronic dyspeptics whose primary lesion is ulcer. The victim of an old chronic ulcer, who may be wasted and wan, and who has been, figuratively speaking, for years with one foot in the grave, will occasionally derive such benefits from a gastro-enterostomy as to give him an entirely new lease on life, he will rapidly regain his lost weight, his meals will be heartily enjoyed, and life in general be viewed from an entirely new perspective. Great discrimination, however, is required in selecting cases for operation, but now that the symptoms are so well known, each group of symptoms bearing, as it were, the almost indelible stamp of the pathological lesion beneath, no great difficulty should be experienced.

Of varieties of technic there are many, though of distinct methods only two. In one, Wolfier's, the anastomosis is made between the jejunum and the anterior wall of the stomach. In this case the jejunal opening must necessarily be at a considerable distance from the pylorus, on account of the jejunum being looped up over the transverse colon. This long loop of bowel, by forming an impediment to the onward passage of intestinal contents, has been found in many cases to favor regurgitant vomiting, and consequently, as the operation of election, has given place to the posterior route. In those cases, however, where for some reason or other, such as dense adhesions, the posterior route is impracticable, the anterior is used, and the occurrence of regurgitant vomiting guarded against by anastomosing the afferent and efferent loops of bowel about four inches below the opening into the stomach.

The other method, Von Hacker's, is known as the posterior operation, and is effected between the jejunum and the posterior wall of the stomach. This is accomplished by opening the transverse mesocolon and effecting the anastomosis through this opening. The advantages of the posterior operation are mainly these:

- (1) The anastomosis can be made at the most dependent portion of the stomach, thus securing the most efficient drainage.

- (2) The jejunal opening can be made in most cases at a point within twelve inches of the pylorus, thus obviating the necessity of separately anastomosing the two loops of bowel.
- (3) There is no loop of bowel constricting the transverse colon, hence all danger of obstruction from this source is removed.

No operation of this nature is finally complete without either the excision or the infolding of the ulcer, the primary cause for surgical interference. Infolding will usually be the better method of dealing with it, as it involves much less time and risk, and moreover serves exactly the same purpose. It has recently been shown that this method speedily removes the ulcer, leaving the mucosa intact and clean, and by thus securing a permanent contraction of the gut at this point, doubly ensures the gastro-enterostomy opening as the constant outlet of the stomach, a decided advantage.

In cases where the ulcer is left untreated, the gastro-enterostomy opening secures for that portion of the stomach or intestine containing the ulcer absolute physiological rest, and thus secures perfect healing. But as time goes on and the pylorus again becomes normal, the food commences to take the natural channel, the anastomotic opening contracts, and ere a great while, possibly from the friction of the passing food, the old ulcer is revived and the second condition is the same as the first. The old clinical picture is revived. It will readily be seen then how, by securing contraction at the site of the ulcer, the anastomotic opening will become permanent, and the chances for ulcer occurrence removed to the remotest degree.

Dr. Robert J. Buchanan, of Liverpool University, thus tersely summarizes the results to be obtained by operation on selected cases:

1. Rest to the duodenum and pyloric region.
2. Prevention of mechanical irritation by food.
3. The provision of a second outlet through which food may pass.
4. The neutralization of gastric contents, or the outlet of them before maximum acidity is reached.
5. The relief of pain. This is practically a certain result, at least in the early post-operative period.
6. The prevention of perforation and hemorrhage.
7. A lasting cure and the prevention of recurrence.

One more important result should have been added. By thus inducing early and permanent healing of an ulcer, the possibility of the development of cancer is reduced to a minimum.

*After Treatment.*—In any operation of any magnitude the after treatment is one of the most important essentials of success, but especially is this true after an operation on the gastro-intestinal tract. After an



operation such as the one just described, it is always well to get the patient in the Fowler position as soon as possible. This can usually be done in from three to four hours, the feeling of nausea from the anaesthetic having worn off by this time. This Fowler, or sitting, position is used for the purpose of facilitating drainage of the stomach. As a result of the gastric atony, which in a great many cases is present, there is liable to be an accumulation of secretions which supine position would cause to be retained, but which is readily drained by posturing the patient up in the sitting position.

As a general rule gastric operations are comparatively free from pain, though, if on the first night it should be present, no harm can be done by giving 1-6 to 1-4 grain of morphine by hypodermic injection. This injection, however, should not be repeated on succeeding nights except under exceptional conditions. Water in small quantities, an ounce at a time, may be given as soon as it is asked for, and as the first few hours after operation pass by it may be given in increasing quantities, as much as twenty-five or thirty ounces being taken in the first twenty-four hours. Should weak tea or albumin water be preferred, there is no reason why they should not be given.

For the first few days the patient will usually be satisfied with fluids such as tea, cocoa, broth, soups, etc., and as a rule will not ask for anything solid. These in the meantime may be given *ad lib.* In the course of five or six days the appetite for stronger nourishment commences to assert itself, and as soon as the desire is manifested no harm can be done by giving bread and butter, poached egg, fish, and in fact any kind of light diet.

A high simple or turpentine enema should invariably be given about twenty-four hours after operation, as it relieves the patient of much gas, and makes him feel quite comfortable. About the fourth or fifth day it is always well to thoroughly evacuate the bowels by a dose of calomel or castor oil. About the tenth day he is allowed to sit out of bed for a while, and each succeeding day for a longer period, until in ordinary cases he leaves the hospital in from two to two and a half weeks after his operation.

Such indeed is the usual post-operative routine in patients who have been submitted to gastro-enterostomy, but occasionally complications arise which produce the most alarming symptoms. In the early days of the operation serious post-operative complications accompanied the majority of cases, but as greater care is now being exercised in the selection of cases, and as the technic has of late years been improved to its present state of efficiency, the once-dreaded sequelae have now become the exception rather than the rule. Only two will be considered here—

regurgitant vomiting and secondary jejunal ulcer.

*Regurgitant Vomiting.*—Regurgitant vomiting, in the early days one of the most formidable terrors of all gastro-anastomotic cases, is now being rapidly obligated to oblivion. The early literature abounds with instances in which this “vicious circle” has proved the undoing of the patient, but in the elimination of this one complication, perhaps more than in any other, has the improved technic of these later days produced the most brilliant results. We have learned conclusively that the posterior anastomosis, rather than the anterior, mitigates against its occurrence; we have learned that an intestinal loop of less than ten inches is likely to forestall any complication of this nature, and we have also learned that where, as a result of adhesions or other causes, the anterior anastomosis must be made, or the jejunal loop be longer than twelve inches, that an entero-anastomosis between the afferent and efferent loops of bowel, about four inches below the anastomotic opening, will effectually prevent any such distressing occurrence.

When, however, the vicious circle does become established, and even in the most carefully performed technic it is yet occasionally liable to happen, the symptoms are often severe, alarming, and fraught with the gravest danger. In most instances the vomiting appears within the first two or three days, though occasionally it may not supervene for several weeks. In a recent case in my own practice all went well for three weeks, the patient had returned home feeling in the best of condition, when suddenly and without warning regurgitant vomiting appeared, and almost at once became so severe that he was compelled to return to the hospital and have an entero-anastomosis performed before relief was obtained.

The quantity of ejected material may vary from several ounces to several pints, and usually appears only once, or at most twice, in the twenty-four hours. There is seldom any retching, and as a rule the act of vomiting is painless, the fluid simply pouring from the mouth without the slightest effort on the part of the patient.

Vomiting of this nature is the result of obstruction high up in the bowel. As a rule the obstruction is found in the afferent loop, which, when it is more than nine or ten inches in length, becomes “waterlogged” and sags heavily from the anastomotic opening.

Among the means at our disposal for the relief of this condition, the first which should be tried is lavage of the stomach, and it is sometimes remarkable the amount of relief which may be obtained by this simple proceeding. In some instances it will entirely abolish all the symptoms. This lavage should be continued at least twice daily for several days, when, if in spite of its continuance, regurgitation continues, the abdomen should be reopened and entero-anastomosis performed between the proximal and distal limbs of the jejunum, about four or five inches

below the anastomotic opening. This will allow the over-distended proximal limb to empty itself directly into the empty and collapsed distal portion.

*Jejunal Ulcer.*—Mayo Robson has called attention to the fact that peptic ulcer of the jejunum follows with greater frequency the anterior operation, and this may, therefore, be added as still another reason why the posterior route should be invariably chosen whenever possible.

Secondary jejunal ulcer is perhaps the most serious complication which we have to meet to-day. Its occurrence is of greater frequency than the recorded statistics would indicate, and yet in comparison to the number of operations performed, its appearance would seem to be but a remote possibility. Certainly, since the posterior operation has become the one of choice, its occurrence has steadily diminished.

This secondary ulceration is found on the wall of the jejunum within a very short distance of the stomach. If not bordering on the very edge of the stomach mucosa, it will in the majority of cases lie from one-quarter to three-quarters of an inch from the anastomotic opening. Peptic ulcer of the jejunum has never been observed after operation in malignant cases. This may be due to the absence of free H.C.L. in the gastric juice. All recorded cases have followed operation for simple ulcer of the stomach or duodenum, and in most cases there has been an intense excess of free H.C.L. Four distinct varieties have been described:

- (1) The acute round ulcer, which develops very rapidly after operation. This is usually associated with hyperacidity, and may develop so quickly as to be scarcely recognizable before perforation has taken place.
- (2) In this variety the symptoms begin to appear within a few months of operation, and simulate to a great degree those for which the operation was originally performed. In several instances it has been diagnosed as a recurrence of the original ulcer.
- (3) Those falling into this category are very similar to the classic subacute perforation of the stomach. The ulcer develops insidiously, partially perforates, and gradually develops a tumor in the epigastrium, which is frequently adherent to the anterior abdominal parieties. The symptoms are unimportant at first, and in many instances they pass almost unnoticed by the patient for some considerable period of time.
- (4) The fourth and final type of ulcer is one which, by an inflammatory process, becomes adherent to a neighboring viscus, usually the stomach or colon, and finally perforates into either one or other of these organs.

The one ever-present danger in ulcer of the stomach is its exceeding great liability to gradually assume a cancerous character, when we have at once a transformation from a condition of benignity to one of deadly peril.

*Gastric carcinoma*, one of the most formidable of all internal maladies, is, in this portion of the continent at least, steadily on the increase. In order of frequency it stands second only to cancer of the uterus. There is to-day probably no pathological lesion so fatal in its ultimate results, which, at the only time when any hope for recovery can be offered, presents such difficulties in diagnosis. Many a doom is sealed before the patient becomes aware there is really anything serious the matter. The proof, however, which is fast accumulating day by day, that in at least a great majority of cases, the seed bed of gastric carcinoma is the indurated edges of an old peptic ulcer, is shedding that ray of light which may enable us more frequently in the future to discover and radically remove this dread disease, while yet there is time to effectually save life. One thing is certain, that when carcinoma in this region is discovered and radically removed in this early stage life is saved. To be diagnosed before metastasis commences to produce involvement elsewhere is to-day the acme of internal diagnostics, and the physician making such early diagnosis does more to save the life of his patient than the surgeon who effectually removes the disease.

Along this line of diagnosis much practical knowledge has been gained through laboratory research, but even more has been achieved by clinical and surgical methods. Surgery has conclusively taught us that at least some of the predisposing conditions may be effectually removed, and by thus operating during this precancerous state, usually a typical history of long-standing ulcer, the development of the cancerous state may be prevented. This indeed is the time ideal for operation, and thus by prevention rather than by cure may we yet succeed in blotting out to a great extent this, one of the most dreaded scourges of our race.

Such indeed is one of the various results aimed at in operation for the radical cure of gastric ulcer, but the day has not yet arrived when the diagnostician may determine which ulcer is likely to degenerate into cancer, and which not. In the meantime we must strive to so improve our diagnostic methods that we may speedily reach the time when all gastric carcinomas may be discovered and removed at a time when practically all lives may yet be saved.

*Symptoms.*—In obtaining the history of patients suffering from gastric carcinoma three distinct types may be elicited:

- (1) Those with a long history of constant gastric disturbance.
- (2) Those with a history of intermittent stomach trouble, which

- may have covered many years or been of much shorter duration.
- (3) Those who have heretofore enjoyed the best of health, and whose present illness attacked them unawares, without the slightest previous warning.

The second type of history is by far the most common—the typical clinical condition presented by the long-standing chronic gastric ulcer. Many patients, especially in the later stages of carcinoma in this region, present a typical facial expression very significant of this disease. The presence of this dread malady may indeed be frequently foretold by this typical facial expression. Pallor about the mouth and nose, the face wan and thin, the eye anxious and penetrating in an endeavor to read the opinion of the physician, all combine to give that pinched look its chief characteristics.

The mental attitude as thus depicted in the features is one of hopelessness. The patient is apparently possessed of the idea of impending danger, and is usually resigned to his fate, presenting the appearance of calm dejection. Weight is lost rapidly, a feeling of lassitude and extreme weakness pervades, and anaemia quickly develops. There is often a sickening pain in the region of the epigastrium, or, rather, the feeling of a strange, indescribable distress, which may or may not be directly referable to meals. The fears of the patient, as portrayed by the anxious expression so frequently seen, are well grounded, for in every case when cancer has once developed in the stomach the condition is one of utter hopelessness unless relieved by early surgical intervention. In the absence of such intervention the progress is steadily downward, with seldom any recession in its progress.

The symptoms of gastric carcinoma will very frequently cover many years from the earliest commencement of the precancerous state to the fulmination of the disease, cancer itself. This early history may be conveniently divided into three separate stages. The first stage is marked by a particularly good appetite, the presence of pain from two to four hours after meals, a feeling of excessive acidity, as manifested by an increasing bitterness in the mouth, and finally an occasional belching of gas and sour eructations. These symptoms will disappear entirely, and for some time the patient will enjoy the best of health, and so complete may be the apparent cure he may even entirely forget he has had any stomach disorder at all.

After several such attacks, or perchance a period of quiescence for a longer or shorter period, the second stage is ushered in. It is practically a repetition of the first, only in a more aggravated form. The vigorous appetite so noticeable at the earlier period has somewhat disappeared, the keen relish for food is lost, and the pain, so noticeable

before, now appears much earlier after meals and in a much more intensified form. Gas and sour eructations are common, and for the first time appears the vomiting of sour, bitter, acrid material, often containing food particles. This vomiting is invariably followed by a sense of great relief, so much so that many patients resort to the use of the stomach tube in order to obtain the same relief and freedom from distress. Loss of weight now commences to appear, though at the culmination of this present attack the lost flesh is rapidly regained.

The third stage is but a further aggravation of the former symptoms, and may only appear after several attacks such as that just noted. It is marked by a rapidly decreasing appetite, and in many cases an absolute fear to partake of any food at all, so great is the distress occasioned afterward by the pain, gas, sour eructations, bloating and vomiting. The period of relief produced by food becomes much shorter. The obstructive symptoms are now, as a rule, well marked. As the patient passes from one stage to the next constipation gradually becomes more obstinate. Blood appears for the first time in a test meal.

The transformation from the third stage to the presence of cancer is extremely difficult to diagnose. It is when this period is more easily read that more lives will be saved, for it is the signal indication for immediate operation. Stage three is still ulcer; stage four, dread cancer. Any peculiar marks of differentiation between stages three and four are exceedingly difficult to locate. The regurgitation, so acid and bitter in the earliest stage, loses to a great extent its apparent acidity, but becomes much more copious. Vomiting is excited more by liquid food, in this later stage becoming intensified, irregular and copious. The vomitus also contains much more frequently large quantities of blood partly digested, thus presenting the classical symptom of "coffee ground" vomiting. Gas and bloating persistently increase the patient's discomfort. Pain, which heretofore was periodical, now becomes much more constant, is of a dull, heavy, sickening character, is less localized than formerly, and will not so readily yield to pressure or the partaking of food. As cancer progresses the pain becomes more diffuse.

The whole composite picture is one which cannot fail to impress. The pale, anxious features, the pinched expression and languid air, the rapid loss of flesh, the character and persistence of the pain and vomiting, all combine in impressing the fact that the stage of ulcer has passed and cancer has at last fastened its hold upon the stomach.

*Differential Diagnosis.*—Of the surgical diseases likely to be mistaken for cancer of the stomach, gall-stones with their accompanying complications, such as duct obstruction, infections, adhesions or pancreatitis, are the most prominent; while large saddle ulcers, hour-glass

contraction, or even pyloric obstruction due to ulcer cicatrization, are more easily differentiated. Duodenal ulcer, because of its typical, clear-cut symptoms, is not likely to be confounded with cancer.

Gall-bladder disease, with its various complications, is the source of the greatest difficulty in differentiation. In the late stages of disease due to gall-stones the stomach symptoms are so truly characteristic of malignancy as to thwart even the most expert in arriving at an accurate diagnosis. The early history of the case in these instances must invariably be relied on in solving the difficulty. If the early history reveals the presence of sudden severe attacks of epigastric pain, radiating under the right shoulder blade, such attacks ceasing as suddenly as the onset, and being in no way related to the partaking of food, the present trouble will usually be found in the gall-bladder. The early history must invariably be relied on to clear up the diagnosis, and will frequently be the means of preventing an otherwise excusable error.

In extensive saddle ulcers, or marked hour-glass contraction, the clinical picture is frequently one as though stamped with malignancy. There is often that emaciation and cachexia so significant of carcinoma. Hemorrhages are sometimes frequent, and may even present the coffee ground appearance so typically characteristic of cancer. In a condition such as this we may even have a complete absence of hydrochloric acid, and the presence of lactic acid with the Oppler-Boas bacillus, so frequently considered as positively significant of cancer.

In differentiating between such extensive ulceration and true cancer, one must remember that in ulcer the appetite remains good until quite late in the disease, and the loss of flesh and strength is consequently slow. In cancer the appetite is lost early and rapid emaciation supervenes. In cancer the pain is more diffuse, is more constant and depressing, and not so closely related to food. If a movable tumor of the stomach be discovered with the presence of lactic acid and the Oppler-Boas Bacillus, and the absence of hydrochloric acid in a test meal, cancer may, with comparative safety, be diagnosed.

Inasmuch as a definite diagnosis of gastric carcinoma may so frequently be arrived at only in the presence of an exhaustive early history, and as the associated condition is likely to be one of only three, viz.: gall-stones, gastric or duodenal ulcer, I have tabulated below some of the most important points in their differential diagnosis:

## PAIN.

Gall-stones.	Gastric Ulcer	Duodenal Ulcer.
The pain in gall-stones is sudden, sharp, severe, and intense. It commences in the right hypochondrium	Is present in most cases, but is much less exertuating than in gall-stones. It radiates from the epi-	The pain in duodenal ulcer appears in cycles ranging in time from a few days to several months. It is of a

and radiates to the right shoulder blade. It appears without the slightest warning and disappears just as suddenly. These seizures have no relation whatever to the injection of food, and are frequently accompanied by chills, fever, and sweats. Should a stone be occluding the common bile duct, periods of jaundice of longer or shorter duration will frequently follow the attacks of pain.

gastric region to the left shoulder blade. It is increased by the injection of food. The location of the ulcer may be partially determined by the period elapsing between the injection of food and the commencement of the pain. If along the lesser curvature, pain appears in from one-half to one hour. If in the pre-pyloric region in from one to three hours.

burning, gnawing character, and may be described as a "hunger pain," always appearing from two to four hours after meals, when the stomach is becoming empty. It is invariably relieved by food. An ulcer in the immediate pre-pyloric region will exhibit the same symptoms as one just beyond the pylorus.

#### VOMITING.

##### Gall-stones

Frequently accompanies the intense pain, and usually gives relief. Is of a greenish color and intensely bitter.

##### Gastric Ulcer

Is usually a prominent symptom. Occurs from one to four hours after a meal, according to the location of the lesion. These vomiting spells are usually accompanied or followed by distressing eructations of gas.

##### Duodenal Ulcer.

Nausea and sour eructations are prominent symptoms from the first, while vomiting in the later stages is always present. Commences as a rule from two to four hours after a meal, though in some cases will appear only once a day, or perhaps only every second or third day. Gas formation is typical of ulcer either just beyond the pylorus or in the immediate pre-pyloric vicinity. Is invariably relieved by food for a period of from two to four hours.

#### HEMORRHAGE.

##### Gall-stones.

Rare—and, if present, is only accidental.

##### Gastric Ulcer.

Probably 60 per cent. of all cases of gastric ulcer have hematemesis, which in the acute round variety is frequently fatal. Hematemesis is, strictly speaking, not a symptom, but rather a late complication

##### Duodenal Ulcer.

Many cases of duodenal ulcer suffer from sudden, severe fainting spells, to be followed almost immediately by blood in the stool (melaena). In this condition the stools have a tarry appearance. Microscopically blood is much more frequently found in feces in duodenal than in gastric ulcer.

#### STOMACH CONTENTS.

##### Gall-stones.

Usually normal.

##### Gastric Ulcer.

Usually an excess of hydrochloric acid. Blood may be found microscopically.

##### Duodenal Ulcer.

As in gastric ulcer, hyperacidity is frequently marked. Blood is not usually present in stomach contents, but may be discovered in the feces.



## TENDERNESS.

## Gall-stones.

During or immediately after an attack, tenderness is frequently marked in the right hypochondrium. Muscular rigidity is also often present.

## Gastric Ulcer.

Is usually quite marked in the epigastrium. Is sometimes diffuse, though usually quite definitely localized.

## Duodenal Ulcer.

If tenderness is present, it will be found to the right of the median line. Is marked, however, only in the presence of localized peritonitis.

The treatment of cancer of the stomach is essentially surgical. True it is that many, anxious for surgical relief, must be refused because of the extensive proportions to which the disease has already advanced; there are also many patients who refuse operation. These two classes must be treated palliatively. To the other class, those whose diagnosis is made at a comparatively early period, while yet there is prospect of cure, and who are willing to undergo the risks of operation, surgery will indeed offer good prospects for a long lease of life. Surgery offers the only hope of cure, and the great problem before the medical profession to-day is to evolve some means of arriving at an early and accurate diagnosis, so that surgical intervention may more frequently be instituted at such an early period as to ensure the saving or prolonging of many useful lives. To the man who may thus evolve such a method of early and accurate diagnosis the world will indeed owe one of its greatest debts of gratitude.

Any operation for the radical cure of cancer of the stomach involves in every case the removal of a greater or lesser portion of the stomach wall. In planning the effectual removal of malignancy in this location, several factors must enter into the consideration of each individual case. In the first place the conception of the modern technic is based on the location of the lymphatic glands and the consequent direction of the lymph currents in the stomach wall. On the observance of this fact more than on any other will depend the freedom from recurrence, our highest aim when effecting such a removal. Then again, the involvement of the duodenum is much more frequent than was hitherto supposed. Heretofore it has been the popular opinion that the instant the involvement reached the duodenal wall the disease was abruptly cut short, but recent researches conducted by Borrmann have shown that in at least one case in every three the disease does not stop there, but continues to invade the duodenum. Hence the necessity of making it an invariable rule to remove at least from one to one and a half inches of the duodenum in all cases of cancer involving the pylorus.

The lymphatic drainage of the stomach stands as the most important consideration when deciding on the lines along which resection must take place. Cuneo has exhaustively studied this question from an experimental standpoint, and to him we are indebted for much of our

knowledge relating thereto. According to his observations, the gastric walls are supplied with two sets of lymphatics, the one draining the mucous and the other the muscular layer. The general trend of the lymphatic stream is toward the right, except at the fundus, where it flows in the opposite direction.

There are in the stomach three separate and distinct areas, each of which is drained by a separate chain of lymphatics. A line drawn from the apex of the fundus to the centre of the pylorus along the juncture of the middle and lower thirds of the stomach wall, and another from the centre of the greater curvature perpendicularly upward to meet the former line, will serve to make out these three areas. From the upper area all lymph vessels flow to the glands along the lesser curvature and to those around the cardia. From the lower right area the drainage is to the glands along the greater curvature and around the pylorus. The glands around the spleen absorb all drainage from the lower left area of the stomach.

It is thus obvious that not only must the growth itself be removed, but also the lymphatic vessels which drain the region, with the primary glands into which they drain. The primary glands liable to become infected in a case of gastric carcinoma are:

- (1) The *Coronary chain*. This comprises a series of half a dozen glands placed along the course of the gastric artery and some of its branches. They receive the lymph from the upper two-thirds of the stomach, and thus from their position along the lesser curvature right up to the cardia necessitate a wide resection when they become involved.
- (2) The *Suprapyloric gland* or glands lie immediately above the pylorus, and in the immediate vicinity of the pyloric artery.
- (3) The *right gastroepiploic chain* is comprised of two clear and distinct glandular groups.
  - (a) The *subpyloric chain* comprise a series of from three to six glands, and lies between the layers of the great omentum immediately beneath the prepyloric zone of the stomach. They are seldom found in the region of the greater curvature, and never in the region of the fundus. These glands receive the lymph from the interior portion of the pyloric end of the stomach, and also from the upper portion of the great omentum, consequently their removal is not so important as if they drained the region of the lesser curvature, the usual seat of malignancy.
  - (b) The *retropyloric chain* is situated along the gastro-duodenal artery, forming a continuation of the subpyloric below and

the coronary above. It is composed of three or four glands which lie along the upper border of the pancreas and immediately behind the pylorus. The presence of this chain is not always constant, but when present is invariably infected. Their lymph supply comes from the posterior surface of the pylorus, the subpyloric group and the first portion of the duodenum.

The technic of pylorotomy is therefore essentially founded on the following three cardinal points:

- (1) The metastatic connection between the stomach and the duodenum is limited, therefore infection is not liable to advance very far into the intestine.
- (2) Metastasis from cancer at the pylorus first invades the glands along the lesser curvature, then the subpyloric group at the extreme right of the greater curvature.
- (3) Since there is practically no lymphatic connection between the pylorus and the dome of the stomach, this latter portion is usually free from infection.

It will therefore be noted that:

- (1) The duodenum may be saved to within one or one and one-half inches of the pylorus;
- (2) That the whole of the lesser curvature with the coronary chain of glands, and the prepyloric portion of the greater curvature with the subpyloric glandular group, must invariably be removed; and
- (3) That the greater portion of the greater curvature, with the entire dome of the stomach, may be saved.

To recapitulate:

- (1) Cancer of the stomach begins as a purely local affection. At first it is confined to the part in which it begins to grow.
- (2) If removed at an early period, it can be cured.
- (3) Unless removed early, it can only end in death.
- (4) Cancer is often present without pain. In some cases pain appears only in the later stages of the disease.
- (5) Ulcer of the stomach predisposes to cancer. In a great majority of all cases of gastric carcinoma the seed bed can be shown to be the indurated edges of an old peptic ulcer.
- (6) The best time to effectually attack the disease is in the pre-cancerous state—the ulcer stage. Thus by prevention rather than by cure will the greatest triumphs in the treatment of this disease be attained.

*After-Treatment and Complications.*—Were it possible that all

danger had passed with the successful conclusion of an operation surgical science would be nearing that perfection for which we never cease to strive; but it is an unfortunate fact that as yet we still have to pass through that period of anxiety coincident with convalescence. In the vast majority of cases, however, recovery is uninterrupted, but occasionally sequelae arise which may seriously threaten even life itself.

Even the most minor operations in which a general anaesthetic has been used are not free from subsequent disturbances, but may cause the patient much discomfort by constant nausea and vomiting, severe pain, extreme nervousness or even persistent hiccough. I remember one patient only a short time ago, who, after a minor operation, was seized with hiccoughs, which for one week remained persistent and severe, and at one time seriously threatened his life. In another case in the practice of a confrere a young woman of twenty years, perfectly strong, robust and healthy, gave birth to her first baby under chloroform. Within a few hours persistent hiccoughing developed, and in spite of all treatment ended fatally. Without doubt this condition in both of these cases was directly due to the anaesthetic.

Atony of the bowel, producing tympanites in all degrees of severity from a mildly rounded abdomen to enormous distention, is liable to follow any intestinal work where there has been considerable manipulation. Prolonged exposure of the viscera or an unusual degree of hemorrhage will frequently be the cause of prolonged shock, from which it may require all the recuperative powers of even the most robust to effectually rally.

The insecure tying of a ligature may be the cause of a fatal post-operative hemorrhage. The use of insecure ligature material may also be productive of the same result. An instance of this kind is vividly recalled to my mind. Some years ago I was assisting one of Canada's foremost surgeons do a hysterectomy. In tying off the ovarian artery he used a strand of No. 2 chromic catgut, *remarking at the same time his belief that it would hold*, because there appeared to be so little tension on it. Until the following morning, eighteen hours after the operation, everything was favorable, and in no way could her condition be improved upon, when suddenly she began to complain of pain in the side, and at the same time the nurse observed a rise in the pulse rate. From this time onward the pulse steadily increased in rapidity, gradually becoming more and more thready, until at four in the afternoon, thirty hours after the operation, she passed away. On reopening the abdomen post-mortem, the ligature on which there had apparently been so slight a strain had given way and the unfortunate patient had slowly bled to death.

Another eminent surgeon once told me that he attributed his success to the fact of his always being prepared for any emergency in any abdominal or other operation. *Preoperative preparation for any emergency liable to occur during operation* is only equalled in its importance by the thorough performance of the surgical work itself, thus insuring as far as possible against any post-operative complications. In many instances these complications may be avoided by more careful technic. In the instance above referred to, a ligature of silk or linen thread would not have slipped, and the life in question would have been spared. The knowledge of having performed each successive step of the operation by the most approved technic will be a matter of great satisfaction to the surgeon, and be his best guarantee against complications, thereby lessening the mental strain during these first few post-operative days on which sequelae are liable to arise.

The early detection and skilful treatment of any arising complication is frequently just as important as the operation itself; consequently the man in whose hands the case is left post-operative will occasionally find himself face to face with a responsibility only equalled at an earlier period by that of the operating surgeon.

If all goes well, the after-treatment is simple. Only ordinary care must be exercised to insure a splendid result in most cases. The general lines of treatment are the same as those indicated after gastro-enterostomy. But in at least a small percentage of cases the road to complete recovery is not just as smooth as one would wish, and we are liable to become confronted with one or more serious complications. These are, of course, much more infrequent than of old, when the technic was in a state of evolution, but even yet, with the present-day technic, certain sequelae are liable to arise which may seriously jeopardize the life of the patient. The most important complications for which we may be prepared are shock, hemorrhage, vomiting, tympanites, peritonitis and acute obstruction of the bowel.

*Shock*, the most common complication following surgical interference, is usually observed either during or immediately after the operation, and may be produced by one of three causes, extensive trauma, prolonged exposure of the viscera and intestines, or loss of blood. Trauma, by producing a profound impression on the nerve centres, will invariably produce the greatest degree of shock, and, because of this impression on the central nervous system, causes more anxiety to the attending surgeon than that produced by either of the other two. Prolonged exposure of the viscera or intestines produces shock only by the radiation of heat, and consequently is more easily dealt with.

Excessive loss of blood in a robust person, or even a moderate loss in a patient already anaemic, will not frequently produce serious collapse.

The extent of shock likely to be produced by any given trauma is difficult to forecast. A long operation accompanied by extensive manipulation may be productive of but the slightest degree, while, on the other hand, a very short procedure with scarcely any manipulation at all, may produce a deep impression on the nervous system. The same may be true with loss of blood, only to a lesser degree. A small hemorrhage may be the cause of considerable shock, while an extensive loss of blood may not produce nearly so much as would appear consistent with the amount of blood lost. As a general rule we may say that loss of blood is attended by shock of a lesser degree, and that it is more rapidly recovered from than that produced by extensive traumatism. While any one of these conditions may independently of each other produce a condition of prolonged collapse, any two or all of them acting in combination will produce a condition from which the patient may fail to rally at all.

*Symptoms.*—The symptoms of shock will vary more or less with the temperament of a patient. A highly strung, nervous, excitable person will manifest the effect of trauma in a much more marked degree than the less excitable, phlegmatic individual. One of the characteristic features of this condition is the almost immediate culmination of the distinguishing symptoms, and we have at once a clinical picture complete.

An increase in the pulse rate of from thirty to fifty beats, accompanied by marked pallor and a cold and clammy skin during the operation, indicates the rapid onset of shock, and demands the urgent attention of the anaesthetist. The operation is completed as rapidly as possible, and the patient placed in a bed previously heated to a high degree. Consciousness is regained slowly, he lies on his back helpless, unable to move, scarcely able to utter a sound, pays no attention to what is transpiring around him, and appears utterly oblivious to the gravity of his condition. The face is pale, the features are pinched, the nostrils are dilated, the body is bathed in a cold and clammy perspiration, the pulse is almost imperceptible, and is small, wiry, thread-like and often intermittent. After the initial rapidity it will often drop to fifty, or even forty, beats to the minute. The respiration becomes irregular, sometimes deep and prolonged, then again superficial, frequent and scarcely perceptible. The body temperature becomes subnormal.

In recovery, all the vital functions gradually begin to show signs of a general reaction. The temperature rises, the pulse becomes stronger and more regular, the respirations are deeper, the color improves, and the general expression becomes brighter and more natural.

*Diagnosis.*—A diagnosis is usually not difficult when the condition is pronounced, and, following an operation, must lie between shock, syncope, and chloroform asphyxia. Syncope is much more sudden in its onset, is evanescent, and produces at least momentary loss of consciousness. In chloroform asphyxia the onset is also sudden, the face becomes ashen white, the pupils dilate and the pulse entirely disappears. These symptoms will be promptly relieved by lowering the head, withdrawing the tongue and resorting to artificial respiration. In shock the onset is gradual and, in marked contradistinction to the other two conditions, all resuscitative measures act very slowly indeed.

*Prognosis.*—Those cases which recover usually begin within the first few hours to show promising symptoms in the form of a rise in temperature, return of color to the lips and face, deeper respirations, and a desire to change position and take notice of what is transpiring around them. These symptoms frequently develop within the first few hours, but if delayed beyond twenty hours the prognosis becomes very gloomy indeed. A persistently low temperature is a very grave symptom, and one which falls to  $96^{\circ}$  or below offers but the poorest prospect for recovery. On the other hand, should the temperature suddenly rise to from  $102^{\circ}$  to  $104^{\circ}$  and be accompanied by delirium, the case will almost invariably prove fatal.

*Treatment.*—The first consideration and primary principle in the treatment of shock is to aim to avoid it if possible, and for this reason an operation should never be performed in a cool room. The most satisfactory temperature is from  $75^{\circ}$  to  $85^{\circ}$  F. Surgical interference on a weak and debilitated patient should be deferred until such time as he may be strengthened by regular nourishing diet, tonics, etc., unless by such waiting the disease is making too rapid progress. He should be kept as warm as possible by having the extremities wrapped in blankets and, if necessary, hot water bottles placed at the feet and between or beside the lower extremities. If it is found necessary to lift the omentum or intestines out of the abdomen, they should be wrapped in gauze wrung out of normal saline solution at a temperature of  $110^{\circ}$  F., and should be frequently wetted with the same solution at the same temperature. Extreme care must be taken to avoid all loss of blood by promptly clamping or ligating all bleeding points. As general anaesthesia is frequently a potent predisposing factor in the production of shock, all preparations for the performance of the operation should be completed before the commencement of the anaesthetic, and then the patient kept under its influence for as short a time as possible.

*Immediate Treatment.*—When, in spite of all preliminary prophylaxis, shock develops, a reaction must be established as quickly as pos-

sible, though at the best all treatment must of necessity be purely symptomatic. As a rapid cardiac stimulant, brandy and strychnine have not lived up to the reputation they once possessed. It is not so very long ago since brandy M. 30 and strychnine sulphate gr. 1/30 were given hypodermically immediately there was any indication of shock, and followed up by the administration of the same quantity of brandy and strychnine gr. 1/60 every hour until twitching of the muscles or stiffness of the jaws was observed. The indiscriminate use of strychnine in this connection cannot be too strongly deprecated, as it has been clearly demonstrated that its administration is of doubtful value, except, perhaps, in cases of collapse due to mental impression. Probably the safest and most reliable drug used in this connection is adrenalin chlorid. Of the 1-1000 solution M10 may be given hypodermically every hour until a beneficial effect is indicated by the pulse or respiration. In cases of profound collapse, as high as M20 or even M30 may be given, though the effect of each administration must be closely observed, and the dose reduced as soon as any response begins to be manifested.

Hypodermic injections of sterilized camphorated oil is highly recommended by some surgeons, and I have experienced exceedingly beneficial results from twenty minims administered by this method every fifteen minutes until four doses are taken. Just a word at this point in regard to the administration of a hypodermic. Very little benefit will be derived by injections into the legs or arms where the circulation is almost at a standstill, but should be given in the deep tissues over the chest or abdomen. The old method of merely running the needle along under the skin will be much less beneficial than were the needle injected at right angles to the skin, and at least one half inch deep.

*Enteroclysis.*—By this term is meant the administration of nutritive or stimulating enemata, and has been practised for many years. With the lower bowel already cleansed, an enema consisting of *brandy* two ounces, *carbonate of ammonia* twenty grains, and sufficient beef tea at a temperature of 100F. to make an eight ounce mixture, will, in case of moderate shock, prove beneficial. Hot normal saline solution given every three or four hours in quantities ranging from one pint to a quart, is very satisfactory treatment indeed, but the best way to administer normal saline solution is that devised by Murphy, of Chicago, in which he gives it continuously. A fountain syringe is hung about six inches above the level of the bed and the nozzle of the tube introduced into the rectum. This height is usually sufficient to allow but a drop at a time to pass, and this process is kept up continuously, being allowed to flow only as fast as it will be taken up by the bowel. Several instru-



ments have of late been devised for giving a continuous saline, but none appear to give any better satisfaction than the method just described.

*Hypodermoclysis.*—The injection of a stimulating solution, usually normal saline, beneath the skin, is less frequently indicated than formerly. Absorption is necessarily slow, in fact, much slower than will be obtained from the mucous membrane of the bowel. There is also the added danger of inducing pressure necrosis to the surrounding soft parts by the injection of too great a quantity at one spot. One half pint in a place should never be exceeded, and even this quantity will make the skin tense and hard. In case of moderate shock, this method is still popular, and no doubt is very effective. Massage of the parts should always succeed the injection, thus assisting absorption.

*Infusion.* The introduction of normal saline solution into the circulation in order to increase the blood pressure, is a very valuable remedy indeed. It must be carried out under the strictest aseptic conditions. It is better to open a vein at some distance from the site of operation, one of the large veins of the arm being preferable. A bandage is tightly wrapped about the arm to render prominent the vessel to be opened. After thorough disinfection of the skin, the vein is exposed and isolated from its surrounding structures, and a fine linen ligature passed around this vessel and tied securely. Another ligature is now passed around the vessel at a point about one inch proximal to the first ligature, and left untied. This second ligature is nearer the heart, as the saline flow must be invariably introduced in this direction. The bandage is now removed from the arm, and the vein transversely incised by a pair of scissors for about one half of its circumference, and a cannula attached to the tube of a fountain syringe suspended about three feet above the level of the bed, introduced into the vessel, the loose ligature tied with a knot over it, and the flow allowed to proceed. To obviate the possibility of air entering the vein, it is well to have the fluid flowing freely from the canula as it is introduced. When a sufficient quantity, usually from one pint to a quart, at a temperature of 118F. has been received by the vein, the canula is withdrawn and at the same time the knot on the vein is tightened and tied securely, and the skin wound closed.

Various solutions have been used from time to time. In a private home one heaping teaspoonful of ordinary sterile table salt to a quart of sterile filtered water will answer very well. In our hospital the following formula is kept prepared and ready for use:—

℞ Sterile filtered water .....	32 oz.
Sodium chlorid .....	1½ drams.
Sodium carbonate .....	15 grains.

An exceedingly useful ingredient may be added to either of these formulae, in the form of one dram of adrenalin chloride (1-1000) to the quart of saline solution. Its action when administered in this manner is very prompt, and strongly recommends its use.

*Needling the Artery.*—In cases of great emergency during an operation it may become necessary to raise the blood pressure, when time becomes the very essence of success. An ordinary hypodermic needle of large calibre is attached to the tube of a fountain syringe. An artery is picked up and isolated, the needle introduced directly into its lumen, and the saline solution to the extent of one to two pints allowed to enter. The possibility of the accidental introduction of air into the artery is obviated if the syringe is elevated at least 6 inches above the table, and the solution allowed to flow during the introduction of the needle. Should the vessel bleed on the withdrawal of the needle, an ordinary pair of haemostatic forceps will readily control it.

*Transfusion.*—The direct transfusion of blood from one person to another has been made not only possible, but perfectly safe, by the experiments and technic devised and elaborated by Dr. Crile, of Cleveland. Shock, as a result of the direct loss of blood, will consequently be benefited to a greater extent by the direct introduction of blood into the depleted circulatory system, than by any other means. To accomplish this safely, it becomes necessary to preclude the possibility of clot, and this can only be done by attaching the vessel of the donor to that of the recipient in such a manner as to prevent leakage and make continuous the intima of one blood vessel with that of the other.

The instruments required for making this anastomosis comprise a specially prepared canula, scalpel, scissor, blunt dissector, very fine mosquito haemostatic forceps, special forceps for compressing the blood vessels, fine linen thread and a needle for closing the skin at the conclusion. This canula is made in various sizes to accommodate the various sized vessels which may be brought into use. The kind I prefer is simply a straight steel barrel about one inch in length. On one end there is a small handle at right angles to the barrel, which may be readily grasped by a pair of haemostats, and dividing this barrel into thirds are two grooves.

The donor and recipient are placed on separate tables so that their left arms may lie closely together on a table intermediately placed. Experience has proved that in the majority of cases it is best to open the radial artery of the donor and the median basilic vein of the recipient. When these vessels have been dissected free from their surrounding structures, a ligature is thrown around each and tied securely. A pair of arterial compression forceps is now applied a short distance proximal

to each ligature., care being exercised to bring the pressure only to the point where the flow is checked, and not exerted beyond this for fear of injuring the vessel walls. The artery and the vein are now each divided between the forceps and the ligature, and the distal end of each, containing the ligature, dropped back into the wound.

The handle of the canula is now grasped by a pair of haemostats, a ligature passed through the end of the vein, this ligature then drawn through the lumen of the canula, and by means of traction on it, the vein drawn through also, so that it projects slightly beyond. The vein is now turned inside out backward over the end of the canula, thus forming a cuff, and tied around the groove nearest the handle. The artery is next drawn over the canula on top of the vein cuff and tied in the first groove, and the anastomosis is complete. The forcipressure is now relieved from the vein first, then from the artery, and circulation is immediately established. At the conclusion of the treatment, each vessel is ligatured, cut off and dropped back into the wound, which is now closed.

As to how long the anastomosis should be allowed to continue, no definite rule can be exercised. This will depend entirely on the condition of the donor and the recipient, which should be carefully watched, and the responsibility of its discontinuance rests entirely with the operating surgeon. It may be said, however, the main symptoms to watch for in the donor are loss of color in the mucous membranes, uneasiness, a slightly increased pulse rate, and a decrease in arterial tension. When these symptoms become progressively marked, the anastomosis should be immediately stopped. In the recipient the chief danger to avoid is acute cardiac dilatation, caused either by transfusion at too rapid a rate of flow, or in excessive amount. This condition is particularly liable to occur in persons suffering from some organic cardiac complication, or perchance one who has become greatly weakened and the system depleted by a long or severe illness. The rate of flow can be steadily controlled by the finger on the artery of the donor, at a point slightly proximal to the point of anastomosis.

*Post Operative Hemorrhage.*—Secondary hemorrhage, one of the most frightful of accidents, is fortunately of very rare occurrence. It is usually caused by either the slipping of a ligature or capillary oozing, though occasionally the pressure of a drainage tube against an important vessel may produce sufficient necrosis to cause a large hemorrhage. The slipping of a ligature is usually the result of dividing the vessel in too close proximity to the ligature, or occasionally to a defective knot. After a ligature has been tied, care must be exercised to put as little traction on it as possible, else it may become loosened and subsequently

slip. Extensive oozing is directly due to the separation of adhesions.

*Symptoms.*—The rapidity of the symptoms will develop in proportion to the activity of the hemorrhage. When sudden bleeding occurs from a large vessel, pain radiating over the abdomen will be experienced at once, the pulse becoming quickened and very much diminished in volume. The skin becomes cold and clammy, with an increasing pallor. Sighing respirations are accompanied by a distinct restlessness. The pain in the abdomen continues. Vomiting sometimes occurs, and is occasionally persistent.

*Treatment.*—The indications for treatment are perfectly clear. The hemorrhage must be controlled, employing if necessary the boldest and most heroic methods. On symptoms of extensive hemorrhage appearing, the abdomen must be immediately reopened, the bleeding point searched for, located and controlled. Should this be a slipped ligature, the vessel will be re-tied; the abdomen sponged dry and closed. Should the cause prove to be extensive oozing, the part must be firmly packed, and this packing left in situ for at least forty-eight hours. After a severe hemorrhage, it is always well to bolster up the blood pressure by the infusion of from one to two pints of normal saline solution into the circulation. By this means the crisis is tided over in safety.

When hemorrhage occurs subsequent to an operation on the stomach, it can only be from one source, the cut edges of the stomach or jejunum where the anastomosis is made. If proper care is exercised in making the anastomosis, no fear of subsequent hemorrhage may be entertained. The inner, overlapping, through-and-through suture, drawn tight, will effectually control all bleeding from the cut surfaces of stomach or bowel. The most sedulous and painstaking care must be exercised in all stages of the operation, and this, more than anything else, will mitigate against any subsequent sequelae which otherwise might supervene.

When, however, hemorrhage does occur in any considerable quantity, the stomach should be immediately irrigated with normal saline solution as hot as can be conveniently borne. This is followed by the administration of adrenalin (30 minims of the 1-1000 solution) in a couple of drams of water every half hour until six or eight doses have been taken.

*Vomiting.*—Simple post operative vomiting, if not one of the most dangerous, is certainly one of the most distressing of symptoms. Although following to a more or less extent the administration of an anaesthetic at any time, it is only liable to become severe or persistent or excessive when a patient has been under such influence for some considerable length of time. That the nausea is due directly to the narcosis, and

not to the operation itself, is shown by the fact that it is present in as high a percentage of cases where anaesthesia is produced for the purpose of making a complete physical examination, as where some definite operation has been performed. The element of personal idiosyncrasy enters largely into each individual case. Where one person may be able to endure complete narcosis for a lengthened period without inducing the slightest gastric disturbance, the next, as the result of only the slightest degree of anaesthesia, may be the victim of excessive vomiting.

The condition of complete narcosis is produced in no small degree by the presence in the blood of certain toxic substances. In the majority of patients these are thrown off completely by the lungs, kidneys and skin, but in others the gastro-intestinal tract becomes an important eliminative channel, hence producing nausea to a greater or lesser degree.

*Treatment.*—As a prophylactic, a hypodermic of morphia, gr.  $\frac{1}{4}$ , and atropine, gr. 1-100, given an hour before the operation, will sometimes be the means of avoiding a troublesome nausea afterwards. With this object in view, some surgeons use it as a routine treatment. My own objection to this routine administration of morphia before operation, is that it interferes with the pupil of the eye, and consequently makes more difficult the administration of the anaesthetic.

For at least twelve hours after operation, the stomach must have absolute rest. The *rational* of this is readily recognized, when we remember that the gastro-intestinal tract, during this time, is playing its part in the elimination of toxic elements produced by the narcosis. There is usually, however, no contra-indication to the administration of a teaspoonful or two of hot water at frequent intervals. This is exceedingly grateful to the patient, and, moreover, may assist in quelling the nausea by its diluent action on the offensive material already in the stomach.

If, after a few hours, there is no improvement, it is well to make a definite attempt to control the nausea by means of gastric lavage, which is probably the most reliable remedy in cases of obstinate nausea, and in every case where vomiting continues beyond a few hours I would strongly recommend its use. The stomach should be thoroughly washed out with either a normal saline or saturated boric acid solution. If much offensive material has already collected in the stomach, this lavage may have to be repeated two or three times, but the cases are few and far between where this will not give complete and permanent relief.

If lavage should fail the nausea may be controlled by medication. *Tincture of capsicum* in three or four minim doses given in a teaspoon-

ful of hot water is sometimes beneficial. *Spirits of chloroform* given at frequent intervals in the same manner will often have a good effect. *Subnitrate of bismuth* with *cerium oxalate* in small doses frequently repeated, has worked well in many cases. *Iced champagne* has been freely recommended, and in several cases in my own practice I believe it saved the life of my patient.

The medication which in the majority of cases I have found to give the best results is *dilute hydrocyanic acid*. It may be given in the following form:—

℞ Acid hydrocyanic dil. . . . . 1 dram.  
 Aq. Laurocerasi ad. . . . . 2 ounces.  
 Sig. Thirty minims every half hour until stomach is settled.

*Cocaine* in the two per cent. solution in a ten to twenty minim dose, will frequently settle the stomach completely. *Chlorotone* in ten grain doses sometimes acts well. *Counter irritation* to the stomach in the form of a weak mustard plaster will occasionally give very beneficial results.

In all cases it is best to withhold all food by the mouth until such time as the stomach is thoroughly settled, and there are no more evidences of nausea. Nutrient enemata are easily assimilated if the bowel is previously prepared by a cleansing enema, and, if necessary, be relied on exclusively for two or three days. A very good formula is the following:—

One egg;  
 One-half ounce of brandy;  
 Three ounces of peptonized milk;  
 A little table salt.

Thirst may be relieved by a pint of normal saline solution thrown high up into the bowel.

*Tympanites*.—Extreme abdominal distention from atony of the bowel may follow even the simplest of abdominal operations. In cases of greater severity, where, for instance, a gangrenous portion of intestine may have been resected, or where purulent peritonitis is present as the result of a perforated appendix, gall-bladder or stomach, the loss of tone in the bowel may become such that the distention will be the direct cause of death. Death will occasionally occur from paralysis of the diaphragm as a direct result of the intense pressure from an enormously distended intestinal tract. In any event this complication is frequently one of the most distressing which may follow an abdominal section. If there is no acceleration of the pulse rate, nor fever, nor constipation, nor vomiting, it is probably the result of simple atony,

which will readily yield to appropriate measures; while the presence of fever, of constipation, of vomiting, or a rapid pulse would indicate the onset of peritonitis.

*Treatment.*—The application to the abdomen of hot turpentine stupes so widely recommended but a few years ago, has not been productive of the good results so much anticipated, so that the practice is now falling somewhat into disuse. Turpentine enemata, however, are exceedingly beneficial, and when given high in the bowel will usually relieve the patient of large quantities of gas. The best method of administering turpentine by bowel is by either of the following formulæ:

℞ Turpentine, 2 drams;  
White of one egg;  
Hot water ad one pint.

or

℞ Turpentine, 2 drams;  
Hot water soap suds ad one pint.

A rectal tube should be passed at least twelve to fourteen inches into the bowel, and either of the above preparations allowed to pass through it from the nozzle of a fountain syringe suspended some feet above the bed. In cases of minor flatulence small doses of turpentine by mouth will occasionally assist the expulsion of gas. Doses of five to ten drops on a little white sugar will usually be sufficient, though more may be given if necessary.

If possible the bowel should invariably be opened and evacuated by a copious draught of sulphate of magnesium. It is best to give half an ounce of the sulphate in two ounces of hot water. If in three hours this has not been effectual, it should be repeated.

When the magnesium by mouth and the turpentine by bowel have either individually or in combination been unsuccessful, a very efficient remedy is what is popularly known as the 1-2-3 enema. It consists of:

℞ Mag. sulph. . . . . 1 ounce.  
Glycerine. . . . . 2 ounces.  
Aqua. . . . . 3 ounces.

making a six-ounce mixture in all. This is introduced hot into the rectum as high as the rectal tube can be passed. The forefinger should always be well oiled and passed into the rectum to guide the end of the tube is passed for any purpose whatever. I must say that of all the become coiled up in the ampulla, and the injection never reach the upper bowel at all. This should always be done whenever the restal

tube through the ampulla and into the upper bowel, else it is likely to remedies for relieving distress due to excessive distension, I have found the 1-2-3 enema to give the best results.

The administration of ox-gall in the form of a high enema has frequently given splendid results. Used in the following formulae it can be relied on in many cases.

R	Ox-gall. . . . .	2 drams.
	Glycerine. . . . .	2 drams.
	Turpentine. . . . .	4 drams.
	Aqua ad . . . . .	1 pint.

*Peritonitis.* Post operative peritonitis is fortunately becoming much more uncommon than of old. It is not so very many years ago that this complication was of very frequent occurrence, but the advances in technic and after treatment have been so great in recent years, that this once most dreaded of all sequelae is being rapidly shorn of its terrors. One is well within the mark in stating that up until within the last five years, post operative septic peritonitis claimed more victims than all other sequelae combined. During the past five years the mortality from this cause has year by year been so perceptibly and persistently reduced, that now we look for its occurrence scarcely more frequently than ileus or hemorrhage or profound shock. Whenever it does appear and become general, it carries with it the gravest danger to the patient, because at the present time there is no post operative sequelae offering a more grave prognosis. In the majority of cases this condition is present prior to operation, and operative interference is undertaken in the hope of removing the cause.

Where septic peritonitis is entirely post operative, it is the result of either introducing some infection into the abdomen during operation, or contaminating the peritoneum by some localized infection within its limits. Either of these is due to faulty technic. The first is easily prevented by the proper preparation of the patient, the instruments, the assistants, and the operator himself. The second is much more difficult, as will be readily understood when we consider the difficulty which is occasionally experienced in approaching an acute suppurative cholecystitis, an acute suppurative pyosalpingitis, or an acute appendix greatly distended with pus. In one case of the latter description, I was only able to protect the peritoneal cavity from infection by first aspirating the acutely distended appendix and through the aspirating needle withdrawing all the pus, then closing the aspiration aperture by fine



Lembert sutures and dissenting the organ free from its bed. Had an attempt been made in any other manner, rupture would certainly have occurred and infection been inevitable. As it was, the abdomen was closed without drainage, and an uninterrupted recovery ensued. On several occasions I have been compelled to follow the same technic in cases of suppurative pyosalpingitis. The comparative infrequency of septic peritonitis of a purely post operative character is due solely to the prophylaxis obtained by the great advances made in technic.

*Symptoms.*—The diagnosis of acute septic peritonitis is not always an easy matter. It may readily be mistaken for simple traumatic peritonitis, or for acute obstruction of the bowel. The main symptoms, however, are, as a rule, outstanding and clear, and quite characteristic enough to make a typical clinical picture. The patient will frequently pass the first two or three days without the appearance of any untoward symptoms, then he will commence to complain of sudden sharp stabbing pains in the abdomen. These attacks are intermittent and severe, and as the case progresses in severity, the pain entirely disappears, leaving in many cases of the general diffuse variety, no pain at all. Tympany is usually present. In the milder forms it is frequently excessive, and may occasionally remain so even in the severest variety, though as a rule in the latter condition it is often absent. Accompanying the peritonitis at its onset, is tenderness which increases in intensity as the peritonitis does in severity, until in the severest form the tenderness is excessive. Vomiting is frequent and protracted. The temperature usually runs a high course and shows no tendency to fall, the pulse is feeble and rapid, with a tendency to steadily increase in rate. In the milder cases it runs from 120 to 130, and in the more acute conditions to 160 and above, according to the severity of the case. The vomit is at first brown, becoming darker, until finally it is black. The general appearance is that of a patient extremely ill, the facial expression is pinched and anxious, and as dissolution draws nigh, the mind becomes cloudy, and there is a tendency to gradually drift into delirium.

*Prognosis.*—The prognosis in septic peritonitis is invariably bad, although the degree of gravity will depend on the extent and character of the infection. If the whole of the peritoneum is involved, it will almost invariably end fatally, even though the character of infection be of lesser virulence. If the pus shows the presence of streptococci, even though the area of infection be limited in extent, the prognosis is far more serious than in a case of much more extensive infection from the colon bacillus. A microscopical examination of the pus should invariably be made, and according to the presence of streptococcus or colon bacillus will the prognosis be of the gravest order or somewhat more

hopeful. One thing is certain, and that is a large percentage of cases of general diffuse septic peritonitis end fatally, no matter what the character of the infecting medium may be.

*Treatment.*—In probably no department of abdominal surgery have the advances been so great in recent years as in the treatment of septic peritonitis. Where only a few years ago the prognosis was almost invariably fatal, a large percentage are now rescued from the doom which heretofore would have awaited them to a certainty. No small portion of the credit for bringing about this transformation is due to the late Dr. Fowler, of New York, and Dr. Murphy, of Chicago. A combination of the treatment instituted by these two men has wrought marvelous results.

*Medical Treatment.*—On the appearance of the first symptoms of peritonitis, the immediate indication is to secure a thorough evacuation of the bowels. In securing this result medicinal agents are of doubtful utility, owing to the persistence of the vomiting. After lavage of the stomach, calomel may be retained, and of the various medicinal agents in use, it will probably offer the best prospects for success. Castor oil, to those who have no repugnance for it, will sometimes produce excellent results, when all other measures fail. In several instances I have proved this to be the case.

The value of eserin given hypodermically is in these cases of doubtful value, though on several occasions I have used it with decided success.

Atropine has its advocates, and doubtless is not without value in these cases of intestinal paresis.

Gastric lavage is decidedly beneficial. It removes from the stomach all accumulated offensive material, thus greatly comforting the patient and leaving the stomach in a condition to accept and retain any medication which may be administered.

*Enemata.*—Any of the various enemata discussed under the heading of tympanitis, will prove of decided value in reducing tympanitis in these cases. Personally, however, I have obtained more direct value from the 1-2-3 than from any of the others.

*Drainage.*—The placing of an efficient drain (a gauze cigarette is best) into the peritoneal cavity in such a manner as to guard against the further accumulation and absorption of septic material is at all times very necessary and important, though I cannot speak too strongly against the routine practice of reopening the peritoneal cavity as soon as septic peritonitis may be suspected. The question of when to open, and when not to, is a matter of serious responsibility to the surgeon, and of great import to the patient. Any definite and fixed rules are

useless, though on evidences of the accumulation of septic products with a tendency to localization, it is always well to provide an avenue of escape.

*Combined Fowler and Murphy Treatment.*—The treatment first instituted by Fowler, and later elaborated by Murphy, had for its primary object the drainage of the peritoneal cavity, and the subsequent prevention of absorption of toxic products. This treatment has been concisely described as follows:—

- (1) “Drainage of the germ-impregnated fluids into the pelvis, where absorption is least active, and away from the diaphragh, where absorption is most active, thus tending to diminish systemic infection. This is accomplished by means of the Fowler position.
- (2) Drainage of the pelvis to prevent stasis and accumulation of the peccant matters, which is in furtherance of the same object. The drainage is effected through tubes usually introduced through a suprapubic incision, to the bottom of the pelvis, though on occasions the drainage may be effected through the vault of the vagina.
- (3) Surcharging the lymphatics with a saline solution to prevent their taking up and conveying into the general circulation the poisonous products of the pathogenic germs themselves. This is effected by rectal installation.”

If septic accumulation shows indications of localization, a drainage tube should be introduced at that point; if the septic peritonitis is of the diffuse variety, with no tendency to localize, drainage should be established to the bottom of the pelvis, where in the Fowler position the septic fluids will gravitate. This tube drainage should be left in position until the last indication of a purulent discharge ceases. This will often occur about the fourth or fifth day.

For the effectual accomplishment of rectal installation, it is necessary that the patient should be seated on a rubber ring to avoid a kink in the tubing and thus stop the flow. A small nozzle is attached to the tube of a fountain syringe, introduced into the rectum and left there continuously; for days, if necessary, according to the virulence of the infection. The flow should never be regulated by forcipressure to the tube, but rather by the height of the syringe above the level of the buttocks. About six inches will usually give the proper pressure, though

this can be raised or lowered according to circumstances. The pressure should be such as to give drop by drop an average of one pint an hour, thus administering by this method twelve quarts in the twenty-four hours. This should be kept up until the acute stage of the disease has passed, which in many instances, will be several days.

*Acute Intestinal Obstruction.*—This accident is by no means a common occurrence after operation on the stomach. But very few cases are on record. As is the case in most post operative complications, this accident may almost invariably be prevented by the most careful attention to technic. If the cut margins of the mesocolic opening are not sutured to the stomach wall, an internal strangulation is liable to occur from a piece of the bowel slipping through into the lesser sac. A more likely occurrence is for a portion of bowel to slip through between the duodeno-jejunal flexure and the anastomosis, where it is liable to become constricted by pressure between these two, and against the mesocolon. Should the anastomosis be made on the anterior part of the stomach, the loop of jejunum crossing the transverse colon may be drawn too tight, and thus constrict the colon to a point of complete obstruction. This will only occur if the point of the jejunum selected for anastomosis is too close to the duodeno-jejunal flexure. In one of my own cases, a loop of the distal limb of the jejunum became strangulated by an adhesive band from a point on the greater curve to the anastomatic suture. The abdomen was reopened and the obstruction relieved, but the patient succumbed to acute suppression of urine, the result, in our belief, of chloroform poisoning.

*Symptoms.*—The first indication of an ileus is intermittent colicky pain in the abdomen, the paroxysms commencing mildly and increasing until the maximum of intensity is reached, then gradually waning, only to be repeated in a few minutes. If the bowel is much distended above the obstruction, the peristaltic wave may be readily observed through a thin abdominal wall. Tympany of the abdomen becomes apparent at an early stage, and the passage of feces and flatus per anus is entirely stopped. Vomiting, first mucous, then bilious, and finally fecal, is established early, and is greatly aggravated by any attempt to force an intestinal evacuation by purgatives. The temperature is rarely affected in the early stages.

*Diagnosis.*—With the presence of the symptoms above enumerated, the diagnosis of an ileus is made comparatively easy. That it should be made early is of the utmost importance, for on this early diagnosis lies the only hope of success in its treatment.

The two most common conditions with which post-operative ileus

is liable to be confounded, are excessive tympanites and peritonitis. In tympanites the pain is not paroxysmal in character, the pulse is but slightly affected, the expression does not portray that profound depression so common in ileus, and finally persistent efforts will result in a copious evacuation of the bowels.

The differentiation between peritonitis and ileus may be an exceedingly difficult matter. Both conditions are frequently present at the same time. If the abdomen has been opened for an acute infection, the resultant ileus will probably be caused by intestinal adhesions around a septic focus. In peritonitis the temperature is usually elevated, while in an uncomplicated obstruction there is but little rise. In peritonitis again, the pain is more diffuse and is not paroxysmal in character, and vomiting is more continuous.

In ileus it is frequently possible to detect the presence of a hard tumor immediately above the seat of obstruction. This is caused by the accumulation of gas, which, in its efforts to pass the obstruction, produces a distinct rounded mass, sometimes readily detected on palpation.

The prognosis in these conditions is always grave, but the degree of gravity will depend entirely on the time elapsed before a diagnosis is made. The earlier the diagnosis, the greater will be the prospects for a successful result.

*Treatment.*—When the presence of an ileus has been definitely established, no time should be lost in re-opening the abdomen for its relief. Four main lines of treatment are open to the operator, viz.:

- (1) He may separate any adherent coils of intestines from a raw surface, or divide bands of adhesions, and thus establish the continuity of the intestine.
- (2) Failing in this, a short-circuiting operation may be done, thus side tracking the obstruction by a lateral anastomosis of the proximal to the distal loop of intestine around the seat of obstruction.
- (3) In the presence of gangrene it may be necessary to resect the involved intestine, making union of the divided ends by either an end-to-end or lateral anastomosis.
- (4) Should the condition of the patient be extremely bad, it may be necessary to simply bring a distended loop of intestine to the surface, preparatory to the performance of enterostomy. This may tide the patient over in the meantime, and thus an-

able him to get into good condition for the radical treatment of the obstruction later on.

In the class of cases in which this operation becomes necessary, the patient is usually in a very weakened condition, and ill able to withstand the shock of much intra-abdominal manipulation. As little anaesthetic as possible should be given, as these patients always stand it badly. I have seen two cases terminate fatally as a direct result of the second administration of an anaesthetic. The operation must be completed as quickly as possible, and especially is it necessary to avoid evisceration, or any extra handling of the intestines.

Hot water bottles must be placed around the patient both during and subsequent to operation, in order to maintain the body temperature. The heart action must be sustained by interstitial or intravenous injections of one pint of normal saline solution, to which had been added thirty minims of adrenalin (1-1000). In one case where a weak thready pulse was running at 160, an intravenous injection of one half pint of normal saline solution brought it down at once to 80, and it immediately became strong and regular.

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#### A DIGEST OF THE REPORT OF THE LONDON RADIUM INSTITUTE FOR THE YEAR ENDING 1913.

BY G. STERLING RYERSON, M.D., L.R.C.S.E., F.R.S.A., LOND.

**M**R. A. E. Hayward Pinch, Medical Superintendent of the London Radium Institute publishes in the British Medical Journal of May 23rd. the annual report of the Institute a resumé of which may be of interest.

*Epithelioma.* The results obtained in the treatment affecting glabrous surfaces call for no fresh comment and in suitable instances removal of the growth by radium may be confidently anticipated. Epitheliomata of the buccal, lingual and pharyngeal mucous membranes still prove refractory. Cancer of the tongue gives encouraging results when a tube of active radium is buried in the tumour.

*Carcinoma of the uterus.* "Uterine cancer still continues to yield most gratifying results and the effects of the radium treatment in inoperable cases are far in advance of those obtained by any other known medical or surgical methods.

*Carcinoma of the thyroid.* Encouraging results have been obtained in a few instances, the progress of the disease has been arrested and a decrease in the size of the existing growth has been obtained, the general discomfort and dysphagia when present being greatly relieved. Powerful applicators have to be used.

*Carcinoma of the rectum.* This disease displays much variation in its response to radium therapy. Speaking generally, the soft annular and vascular type of growth is much more favorably affected than the flat, hard non-annular plaque with much subjacent infiltration. Growths situated in the upper part of the rectum appear to be more amenable to treatment than those lower down. Colostomy may be necessary to prevent irritation by constant passage of faeces. Some patients are very susceptible to radium in this region and severe reaction occurs lasting for a considerable time.

*Carcinoma of the prostate.* "The number of cases of this condition which have been treated up to the present time is not very large, but benefit has been noted in all of them." Haematuria, when existent has either become diminished or abolished, pain has been greatly lessened and the size of the growth decreased.

*Carcinoma of the bladder.* "Nine cases have been treated and in six instances the results have been most gratifying." Subjective symptoms have disappeared and cystoscopic examinations of the bladder have shown the size of the growth diminished.

*Rodent ulcer.* Mr. Hayward describes two types as follows—"1. The hypertrophic nodular type with slight superficial ulceration of a scaly character. This class responds extremely well to radium and yields most satisfactory results to radium.

2. The excavating type with undermined edges and gelatinous base. This not infrequently proves very intractable and repair is most difficult to affect. Rodent ulcers attacking bone cartilage or mucous membrane are very refractory with the exception of the orbital mucosa, which is generally very amenable to radium."

*Sarcomata.* "Speaking in general terms these growths, if taken in their early stages, and before dissemination has occurred, do very well under radium treatment." The burying of radium tubes in these tumours should be practicable. "Lymphosarcomata also give excellent results." Melanotic sarcomata are not influenced by radium and in the few cases observed no benefit was obtained.

*Lymphadenoma.* When the disease is localised the disappearance

of the enlarged glands is frequently brought about by the use of radium.

*Mediastinal tumours.* "In almost every instance which has come under my notice" says Mr. Pinch, "the rate of growth has been markedly checked by the use of radium, and in one or two cases a definite decrease in the size of the tumour as seen by X-ray screening, has undoubtedly occurred." In these cases a very large amount of radium, 400 to 500 mg. has to be used. They should be screened with 2 mm. of lead. Treatment must be very persistent.

*Fibroid disease of the uterus.* "Radium exerts a most beneficial influence upon the distressing symptoms of menorrhagia and metrorrhagia though it seldom produces a very great diminution of the size of the uterus."

*Leucoplakia* of the tongue, cheek or vulva are speedily removed by radium but they tend to recur sooner or later.

*Naevi.* Definite patience is required in the treatment of these cases and the utmost caution to prevent teleangiectasis as an after result. Cavernous naevi do particularly well under radium.

*Warts and papilomata* yield readily to short exposures. The reaction is slight and the resultant scar a scarcely noticeable.

*Tuberculous glands* in cases in which operation has been declined for cosmetic or other reasons do well under radium with lead screening.

*Lupus vulgaris.* As a routine treatment Finsen light is better than radium but where this is not available or fails radium often proves of greater use.

*Keloid.* This condition continues to give excellent results with radium.

*Lupus erythematosus* often responds favorably where routine treatment fails.

*Exophthalmic goitre.* A few cases have been treated at the institute and have given sufficient encouragement to work further trial.

*Arthritis deformans.* "The daily administration of 250 cc. of radium emanation solution of a not less strength than one millicuri per litre to patients suffering from this obstinate and crippling disease is sometimes attended by very remarkable results." Those under 40 respond more readily to treatment. Little or no improvement can be looked for in cases in which osseous and cartilaginous changes are predominant. Favorable results are the lessening or disappearance of muscular and articular pains, grating of the joints and general improvement of health.



## PERSONAL AND NEWS ITEMS

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*Ontario.*

During the past year there were 2,108 patients admitted into the Kingston General Hospital. In the Hotel Dieu of the same place the number of patients treated was 1,823.

The Ontario Legislature approved of the Toronto Western Hospital Bill. Only two members opposed it in the Private Bills Committee, and two when it came before the full House. The Bill confers upon the Governors full power to manage the hospital as they may deem best. In future the board will be composed entirely of laymen. The hospital staff in the future shall have no say in the management of affairs, other than as it may be consulted by the board.

During the recent sojourn in Toronto the Royal party visited the New General Hospital. The Duke and Duchess of Connaught and Princess Patricia were very well pleased with the institution and its many facilities for the medical and surgical care of patients.

Dr. Hunt of Hamilton, had a thrilling experience during the wreck of the Princess of Ireland. He sprang into the water when the vessel was within six feet of sinking. He was drawn under by the currents, but came to the surface. He made an attempt to rescue a man, but the latter was drawn away by the current. Later on he came upon two men who grabbed hold of him, from whom he freed himself with difficulty. He then came upon a young man whom he helped to keep above water, and both were picked up by a life boat.

The Hamilton Health Association held its annual meeting recently, when very satisfactory reports were submitted. This association has charge of the work of the Preventorium.

Many of the doctors who attended the Ontario Medical Association spent an afternoon at the Woodbine Races, on the invitation of the directors of the Ontario Jockey Club.

Dr. K. C. McIlwraith has returned from his trip to Europe, where he spent three month's of pleasure and profit in the leading medical centres.

A couple of weeks ago a rather serious outbreak of Scarlet fever of a virulent type occurred at the Indian Reserve of Cape Crokes near Wiarton. The local Board of Health took prompt steps to suppress the epidemic.

Dr. Bain, who has graduated from the Western Medical College, London, has been appointed to the position of House Surgeon to the Brantford Hospital.

Dr. and Mrs. Harrison, of Toronto, who were recently married, will locate in fall at 29 Roxborough Street W. Till then they will be at 32 Roxborough Street East.

The Wellesley Hospital, Toronto, has issued a writ against Williams and Cole, Consulting Engineers, claiming \$6,136.63. It is claimed that the defendants violated their agreement with the hospital authorities.

Dr. Chester P. Brown, of Toronto, has been appointed assistant medical officer at the Williams' Head Quarantine station, Victoria, B.C.

In the will of the late John Moses, of Burford Township, his estate of \$3,350 goes in equal portions to the John H. Shutford Hospital, at Brantford, and the Victoria Hospital, London.

Cobourg Hospital recently received a check for \$200 from Mr. and Mrs. Hargraft, of Winnipeg.

In June a year up, Dr. Andrew Haight, of Campbellford, treated a patient for some eye trouble. The patient brought action against the doctor, contending that the eye had not been properly treated. The doctor in defence stated that he had employed the usual treatment. The jury gave a verdict of \$1,200 against the doctor. The latter appealed, but the finding of the jury was sustained. The doctor is entitled to the sympathy of the medical profession in this case.

There will be a vacancy for a house surgeon in the service of Otolaryngology in the Toronto General Hospital in the first of September next. The service is for a period of eighteen months, with residence in the hospital. Applicants must have had previous hospital experience as internes, and must have spent at least two years in private practice. This position offers unique facilities for beginning the study of the specialty. Applications, with testimonials, should be made at once to Dr. D. J. G. Wishart, Chief of Service.

Dr. W. P. Caven will leave early in July for Europe for a holiday trip.

Dr. D. U. MacLennan is enjoying a trip to the Mediterranean.

Dr. A. O. Hastings, of Toronto, has been for some time in Britain.

Dr. Cooper Cole, of Toronto, has been in Britain for some time engaged in post-graduate work.

Dr. R. L. Manion, of Fort William, spent several months in study in Europe.

A number of changes have been made in the Medical Staff of Queen's University. Dr. R. W. Garratt has resigned the Professorship of Obstetrics and Pediatrics. Dr. Mylks has been appointed Professor of

Gynæcology and Padiatrics and Dr. A. R. B. Williamson, Professor of Obstetrics. Dr. Fotheringham has been made assistant professor of Surpery; Dr. E. D. C. MacCallum, lecturer in clinical medicine; Dr. G. M. Asseltine, in Pharmacology; and Mr. J. M. Farrell lecturer in Jurisprudence.

At the recent session of the Ontario Legislature an act was passed to provide a reception hospital for the insane in cities of 100,000 or over. The plans must be approved by the provincial authorities, and the institutions will be under the control of the Provincial Secretary. The cost of maintenance will be provided by the province, less what may be paid by municipalities for the care of their poor. The one for Toronto is already in operation in a portion of the old General Hospital.

The Victoria Hospital, London, has opened a ward for eye, ear, nose and throat work; and a roof garden has been provided for tubercular cases.

A short time ago a dispute arose between the Board and Staff of the Weland Hospital. The difficulty has been adjusted by two members of the Staff acting as advisers to the board.

Queen's University has adopted a full five year's course. At the end of the course the degrees of M.D., C.M. will be conferred. The rule applies to all students entering in 1914 and after.

The Ontario Government has made a grant of \$10,000 in aid of the Medical Department of Queen's. This will be used, in part, in the payment of the additions that have been made to the teaching staff.

The Ontario Government has made a grant of \$10,000 to the Medical Department of the Western University, London.

The Governors of the Western University have appointed a professor of physics and a professor of physiology. This gives the Medical Department six full time professors.

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### *Quebec.*

Dr. R. F. Ruttan, a graduate of Toronto in 1881, and now of the McGill Medical College, was in Toronto at the time of the recent commencement exercises. Many old friends were glad to meet him again.

The will of Henry Herbert Lyman, of Montreal, who, with his wife, perished in the Empress of Ireland disaster, has been filed for probate. There are several charitable bequests, as follows: To McGill University, Lyman's entomological collection, library and cases and the sum of \$20,000. To aid in the establishment of a Montreal public library, free from all civic or ecclesiastical control, \$125,000.

To the Children's Memorial Hospital, \$25,000, in memory of the late Roswell Cross Lyman. To the Montreal General Hospital, \$3,000; to the Royal Victoria Hospital, \$3,000; to the Protestant House of Industry, \$2,000; to the Protestant Hospital for Insane, \$3,000; to the Anti-Tuberculosis League, \$1,000; to the Sailors' Institute, \$2,000; to the Grace Dart Home, \$2,000.

The will of the late Lord Stratheona makes the following bequests: The Royal Victoria College of Montreal receives from the will more than any other institution. Lord Stratheona has provided a fund amounting to a million dollars. He also donates to the Royal Victoria College the land fronting on Sherbrooke Street, worth about a quarter of a million dollars. Half a million dollars is provided for the Royal Victoria Hospital. There are no details in the further clauses of the will that have not been already published.

Dr. A. J. Richer, the well-known physician, of Montreal, is in London, England.

Dr. C. F. Martin, of Montreal, had a trip around the world, and has returned home.

Dr. H. C. Burgess, of Montreal, recently spent two months in Europe and has returned.

The engagement of Dr. William Graham Hepburn, of Montreal to Miss Breadner, is announced the marriage to take place in the autumn.

As a result of the Fete des Berceaux, those who had charge of the affair, have handed over to the St. Justine Hospital, of Montreal, the handsome sum of \$5,000.

The University of McGill has decided that in future all students must provide a certificate of vaccination prior to entering.

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#### *Maritime Provinces.*

At Dorchester, N.S., there was some excitement over some cases of a severe type of diarrhoea. It was thought at first that they were genuine examples of cholera.

Dr. A. W. H. Lindsay, Professor of Anatomy at Dalhousie Medical College, took ill last winter. His place was taken by Dr. Robinson of Toronto Medical Faculty.

The Pathological Department of Dalhousie Medical College is now located in its new building. When the new University buildings are completed, the Medical Faculty will occupy the present University buildings.

Dalhousie University graduated this year thirteen men and one woman from the Medical Department.

The Fourteenth Annual Meeting of the Canadian Association for the Prevention of Tuberculosis will be held in the Technical College, Halifax, N. S., on Monday and Tuesday, 13th. and 14th. July, 1914. Sir Adam Beck, of London, is President, and Dr. George D. Porter, of Toronto, is Secretary. An interesting and instructive programme of papers and discussions have been arranged for.

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*Western Provinces.*

An effort will be made in Winnipeg to prevent the formation of slum districts. The city has engaged two nurses to visit tubercular cases.

Dr. O. T. Grain, of Winnipeg, has been appointed Chief of the Indian Department Medical Staff for the Dominion. He was at one time member for Kildonan.

Dr. R. J. Blanchard, for many years Chief Surgeon to the Manitoba division of the Canadian Pacific Railway, has resigned and has been succeeded by Dr. A. W. Moody.

The Provincial Board of Health for British Columbia will forward to any practitioner in the Province the means for treating cases of hydrophobia; and will also supply anti-typhoid fever vaccine. This latter has been employed with excellent results.

The following have passed the examinations of the College of Physicians and surgeons of British Columbia: S. Eagleson, R. A. Yeld, S. M. McGibbon, A. D. Campbell, G. W. Flumerfelt, D. J. Millar, W. E. Ainley, E. J. Foster, N. W. Kennedy and J. Gillies.

The University of Alberta had twenty-five medical students in attendance last winter, which was the first medical session. The examinations for the Province are conducted by the University.

There has been a lively dispute at Lethbridge over vaccination. The Medical Health Officer took the position that all should be vaccinated, while the local Board of Health thought that those who had conscientious objections should be exempted. In one case the Health Officer refused a certificate, and the Chairman of the Board signed it on his own authority.

At the recent session of the Legislature for Saskatchewan an act was passed regulating the practice of osteopathy. The act appoints a board of examiners and no one can practise who does not pass the examinations and register. The act is similar to those for Alberta and British Columbia.

Dr. D. D. Ellis, of Flemming, Sask., was elected Grand Master of the Orange Order of British North America.

Dr. H. A. Gibson, of Calgary, has passed the examinations for the Royal College of Surgeons of Edinburgh and has received the diploma of F.R.C.S.E.

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*From Abroad.*

Dr. Walter F. Chappell and daughter, of New York, paid a visit to former friends in Toronto.

Dr. Edith Brown, founder of the Woman's Medical College at Lukiana, India, during her recent visit to Toronto said that there are at least 40,000,000 women and girls in India who are denied the services of a male doctor in sickness. For this large number there are only 640 woman physicians. In the hospital of the College last year there were treated 1,648 in-patients and 26,000 out-patients. The great need is more women doctors and the College is now educating native women. The College receives no state aid and is supported by voluntary donations, and \$25 will endow a cot in the hospital.

The drink till for 1913 was greater in Britain by \$25,000,000 than for the year 1912. Setting aside children under 15 years and abstainers, this would mean an annual consumption of liquor in Britain to the amount of \$35 per head. At present there is one public house for every 330 persons. The annual consumption of alcoholic beverages is 28 gallons for each person.

Dr. Francis Forward, Deputy Governor and Medical Superintendent of Holloway Jail, was recently attacked in a violent manner by two Suffragettes, but was rescued by a policeman. This is the second time he has been attacked in a similar manner.

Agatha Doherty of Toronto has been receiving many congratulations upon her appointment as senior house surgeon to the new London hospital for women. It is the first time that anyone from the overseas has received an appointment. She is the youngest daughter of Dr. Doherty, Abbey Court, Toronto.

The next Congress of Surgeons of North America will be held in London, England, July 26th. to 30th. Dr. J. B. Murphy, of Chicago, is President, and Dr. G. E. Armstrong is Vice-President. Sir Rickman Godlee presented the invitation last year when he attended the meeting in Chicago.

At the Australasian National Medical Association action was taken for the prevention of venereal diseases. It was held that education and publicity were the only successful means, and it was resolved that the Government be asked to more vigorously combat these diseases by spreading information.

In a paper before the New York Conference on Sanitation, Dr. Wal-

ling Beveridge contended that the bedbug was responsible for spreading several diseases, among which might be mentioned tuberculosis. Leprosy and spinal meningitis are two other diseases that the bug may transmit.

The Medical Union of New South Wales reported at its annual meeting a cash balance of £6,294 8s. 10d. The Union is for the purpose of assisting members.

In view of the undoubted increase in the mortality from cancer, the Department of Health, New York, is seeking in every way to educate the general public as to the importance of early recognition and treatment. It is usually not known that the general death rate of persons over forty years of age is *higher* now than it was thirty years ago.

The trustees of Stanford University, San Francisco, have approved the plan for a graduate course in medicine to be given during the summer months. In offering this work the trustees and the medical faculty are endeavoring to open to the profession during vacation the clinical material and the laboratory and hospital facilities enjoyed by the regular Stanford medical students during the college semesters.

The London School Authorities has expressed the view that it is not advisable to teach sex subjects to young pupils; but that some instruction should be given the teachers in order they may be able to deal intelligently with cases as they may arise. It is also stated that some instruction should be given to adolescent pupils, and to pupils attending night schools.

Recently a party of 34 Canadian medical men visited Oxford as guests of Sir William Osler, who showed them through the Radcliffe Infirmary and several of the Colleges.

Dr. John McGibbon, of Edinburgh, died at the age of 85. He had practised in Edinburgh for upwards of 50 years.

The General Education Board at a meeting on May 29 made a grant of \$500,000 to Yale University as an endowment for the medical school, it being a condition of the gift that the school procure complete teaching and medical control of the New Haven Hospital, and that the teachers in the main clinical branches be placed on full-time or university basis. On similar conditions the board last year made a grant of \$500,000 to the Johns Hopkins Medical School, Baltimore, and a grant of \$750,000 to the Washington University Medical School, St. Louis.

Dr. Emil Gruening, emeritus professor of ophthalmology at the New York Polyclinic Medical School, died at his home from cerebral endarteritis, after a short illness, on May 30, aged 71 years. Dr. Gruening was born October 2, 1842, in Hohensalza, Prussia, and came to this country when twenty years of age.

Dr. W. G. Tucker, the acting dean of the Albany Medical College,

was presented with a silver loving cup by the alumni at their annual banquet on May 26th. Governor Glynn, in his speech, paid a high tribute to the college and to Doctor Tucker, who for thirty-one years, ending January 1st, was the registrar. The Alumni Association was founded in 1873 and Doctor Tucker was the first secretary, holding the position for twenty-three years.

There has been organized in Paris a committee to obtain subscriptions for a monument to be erected to the late Professor Just Lucas-Championnière. Dr. W. W. Keen, of Philadelphia, and Dr. C. L. Gibson, of New York, are the American members of this committee, and they invite personal contributions to the fund. Subscriptions may be sent to Dr. Keen, at 1729 Chestnut Street, Philadelphia, or to M. Georges Steinheil, 2 rue Casimir-Delavigne, Paris. In case subscriptions are forwarded direct to Paris, Dr. Keen would be very glad to know of the fact and also the amount sent, in order that he and Dr. Gibson may know the total amount of the American subscription.

Report from Berlin on May 23 announces that von Behring's new toxin-antitoxin diphtheria serum is soon to be placed on the market for use as a durable immunizing agent against diphtheria. Excellent results from its use have been reported in the German medical journals.

It is announced that the President of the French Republic has recently conferred the cross of chevalier of the legion of honor on Dr. Simon Flexner, director of the of the Rockefeller Institute for Medical Research, for his services to science in the treatment of epidemic cerebrospinal meningitis.

From the *Antiseptic* we hear that there has been a good deal of discussion over the practice of the Madras General Hospital admitting patients into the wards who are in good circumstances and in this way evading the fees due the medical profession.

At a recent meeting of the Chicago section of the American Chemical Society, Dr. Ira Remsen, emeritus president of John Hopkins University, was decorated with the Willard Gibbs medal for his distinguished researches in chemistry.

The recently published twenty-fourth annual report of St. Mary's Hospital, Rochester, Minn., records the work of that institution for the calendar year 1913. During this period, the total number of patients treated was 7020, upon whom 10,166 operations were performed, with a total death rate of 1.5 per cent.

Dr. F. E. Daniel of Austin, Texas, editor of the *Texas Medical Journal*, popularly known as the "Red Back," died at his home on May 14 after an illness of long duration. He was born in Greenville County, Va., July 18, 1859, and was educated in Vicksburg, Miss. He served as



surgeon in the Confederate Army from 1862 to the end of the war, and then began practice in Austin where he established his journal in 1885.

The title of Emeritus Professor of Clinical Surgery, at University College, has been conferred by the Senate of the University of London upon Sir Rickman Godlee, F.R.C.S., and upon Mr. Bilton Pollard, M.D., F.R.C.S.

Dr. P. H. Pye Smith, Consulting Physician to Guy's Hospital, died recently in his 75th year. He had been during his long professional career a constant contributor to medical literature.

The reports submitted at the annual meeting of the Governors and General Council of King Edward's Hospital Fund for London on April 30th. showed that the receipts during the year 1913 were £187,704, the amount distributed being the same as in the previous year—namely, £157,500. The latest statistical report on the expenditure hospitals showed that the cost of working them had increased by some £22,000, but, in so far as this increase was due to rise in prices and the continued introduction of more costly methods of diagnosis and treatment, it did not nullify the efforts towards economy which had previously resulted in savings estimated at £47,000 a year.

Dr. John H. Scott, for many years professor of Anatomy and Physiology in the New Zealand Medical College, died recently. He had a large share in shaping the medical education of that island.

H. M. The King has been pleased to appoint Sir Bertrand Dawson, K.C.V.O., M.D., F.R.C.P., Physician in Ordinary to his Majesty, in the room of the late Sir Francis Laking.

The *Berliner Medizinische Klinik* reports the ages of 1,732 noted physicians of different countries and periods. One fourth of the number lived to ages between 70 and 80, and 12 per cent. lived to ages from 80 to 90. More than half of the entire number reached ages over 60.

Mr. Henry Ford, the automobile manufacturer, in a letter to the directors of the Detroit General Hospital, now in course of construction at Detroit, has offered to take over the property on West Grand Boulevard, complete the building, and present the whole to the city of Detroit. The offer, which will involve the expenditure of about \$3,000,000, has been unanimously accepted.

Fund for the London School of Tropical Medicine has now reached the sum of £72,000. This will be used to secure good laboratories and comfortable sleeping apartments for the students, and in the maintenance of research.

OBITUARY

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E. S. ROWE.

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Dr. E. S. Rowe, of Vancouver, B. C., died last May. He was very well known in British Columbia.

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J. HILL.

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Dr. Hill, of Norwich, died at his home in the latter part of May. At one time he practised in Woodstock and had many acquaintances in that part of the country. He was sixty years of age, and leaves a widow and two sons.

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M. J. AHERN.

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Dr. Ahern, of Quebec, died about the end of April. He was born in Quebec in 1844, and graduated from Laval University in 1868. In 1880 he was appointed Professor of Practical Anatomy at Laval, and later on Dean of the Faculty. He was Chief Surgeon to the Hotel Dieu and acted on the Royal Commission on Tuberculosis.

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W. E. HAMILL.

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The death occurred on 31st. May of Dr. William Edward Hamill, a well known oculist in Toronto. Dr. Hamill was born in York Township 54 years ago and was a graduate of the old Toronto School of Medicine. He first practised in Mount Albert and later in Unionville. From there he removed to Toronto, but remaining for only a year went to Chicago. Fifteen years ago Dr. Hamill returned to Toronto. About a week earlier he suffered a paralytic stroke from which he never recovered. He is survived by a widow, a daughter, Delma, at home, two brothers, Dr. J. D., postmaster at Meadford, and T. N., of Los Angeles, and a sister, Mrs Alfred Graham, of Aurora. The remains will be interred at Aurora.

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## BOOK REVIEWS

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### PSYCHANALYSIS: ITS THEORIES AND PRACTICAL APPLICATION.

By A. A. Brill, Ph.B., M.D., Chief of Clinic of Psychiatry and Clinical Assistant in Neurology, Columbia University Medical School; Chief of the Neurological Department of the Bronx Hospital and Dispensary. Second edition, thoroughly revised. Octavo of 393 pages. Philadelphia and London: W. B. Saunders Company, 1914. Cloth, \$3.00 net. The J. F. Hartz Company, Toronto, Canadian Agents.

This Work covers a wide range of topics, such as Psychoneuroses, Dreams, Actual Neuroses, Compulsion Neuroses, Unconscious Factors, Psychoanalysis, Psychological Mechanism in Paranoia, Psychopathology of Every-day Life, Hysterical Fancies and Dreamy States, Oedipus Complex, The Favorite Child in Adult Life, Effects of Fairy Tales, Anal Eroticism, and Freud's Theory of Wit. The author lays it down as a condition to success in Psychoanalysis that the practitioner should have a knowledge of psychiatry and neurology. A thorough training in these is an essential, as this branch of medical science deals with mental factors. There is in the volume a large amount of valuable information on this field of work. The author has been a close student of the teachings of Dr. Sigmund Freud, and now gives a very carefully prepared statement of the views of that distinguished neurologist. There may yet be acquired a great deal of work to be done along the lines laid down by this school of psychologists before the medical profession will be prepared to accept its teachings in all its details, but it will be admitted that the investigations of Freud, Breuer, Bleuler, Brill and others compelled the psychologists of the world to give their views a hearing. At the very foundation of Breuer and Freud's theory lies the position that such conditions as hysterical neuralgias, paralyses, and epileptiform attacks are caused by some form of psychic traumatism in the past. The patient may no longer be able to recall this traumatism unless the hypnotic state be induced. On this view of these States Freud works out the treatment by catharsis, by which through a mental effort the pent up emotions are discharged by intellectual labor and speech. We very cordially recommend this work of Dr Brill's.

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### DaCOSTA, S MODERN SURGERY.

Modern Surgery: General and Operative. By J. Chalmers DaCosta, M.D. and Samuel D. Gross, Professor of Surgery, Jefferson Medical College, Philadelphia, Pa. Seventh edition, revised, enlarged and reset. Octavo of 1515

pages, with 1085 illustrations, some of them in colors. Philadelphia and London: W. B. Saunders Company, 1914. Cloth, \$6.00 net; half morocco, \$7.50 net. The J. F. Hartz Company, Toronto, Canadian agents.

This is a really excellent work on surgery. It goes without saying that the author has spared no effort to make this edition as perfect as possible. Although only a one-volume work it is by no means a small contribution to surgical literature, for here we have over 1,500 pages. Throughout the volume are 1,085 illustrations, many of which are original and many are taken from well-known works. In his preface the Author remarks that "in the making of this, as of previous editions, I have again and again been in profound perplexity as to whether an alleged discovery is a fragment of eternal truth or a nebulous emanation of chaos." The author who approaches any great task in such a spirit as this is likely to escape the pitfalls that beset the footsteps of the writer who is cocksure of everything. What may appear to be solid ground to-day becomes the quicksands of to-morrow; for through doubtings and gropings we arrive at the truth, to this all sciences say, "Amen." When we congratulate the author on the splendid results of his efforts, we are not indulging in any mere set phraseology, but voicing a genuine conviction of the merits of the work before us. It was Goethe who said "we must daily conquer things anew if we would keep abreast of truth." Dr. DaCosta is ever conquering his experiences, and anew checking up old positions with new ones. As the result of this painstaking method, we have a book that is condensed, accurate and covers the whole field of surgery in a scholarly way. Though the work is condensed in style it is by no means meagre or obscure. When one knows what to say and how to say it, it does not usually take a long while to do it. It is a pleasure to once more review this work on surgery. It has been said that one should be on his guard with the person who is an authority on any one book. It would be a boon to humanity if the medical men of the country would make themselves authorities on such a volume as DaCosta's Surgery.

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#### WARD'S CLINICAL HEMATOLOGY.

Clinical Hematology: An introduction to the Clinical Study of the So-called Blood Diseases and of Allied Disorders. By Gordon R. Ward, M.D., Fellow of the Royal Society of Medicine, Medical Society of London, etc. Octavo of 394 pages, illustrated. Philadelphia and London: W. B. Saunders Company, 1914. Cloth, \$3.50 net. J. F. Hartz Company, Toronto, Canadian agents.

This volume deals with the blood-forming organs, the making of blood examinations, affections of blood-forming tissues, chloroma and

myelæmia, Hodgkin's disease, localized affections of blood forming tissues, red cell formation, aplastic anæmia, atrophic anæmias, cholæmia, Addisonian anæmia, cyanosis, leucocytosis, chlorosis, hæmophilia, purpura, leukæmia, hæmoglobinuria, etc., etc., and methods of treatment. This book is of very recent date. It is well written and careful in its statements. To the working physician it fills a medical want. The entire group of blood diseases are discussed in a lucid and scientific manner, and the best that is known about these affections told in the pages of this book. This is the first edition and the author puts it forward mainly to set out the clinical aspects of these diseases, and to offer a good working classification of blood affections. Under the heading of classification the author has some interesting observations. He regards Leukæmias, Hodgkin's disease, the Gaucher form of splenomegaly, as generalized affections of blood forming tissues. Then there is a group of blood diseases caused by localized affections of blood forming tissues. This group includes multiple myeloma, lymphoma, splenic anæmia of adults, and lymphatism. In discussing the subject of red-cell formation and destruction, we are told that the diseases are primary and secondary, and may give rise to an increased formation of red cells, as erythæmia, polycythæmia, blood crisis, and post-hæmorrhagic anæmia, or to increased destruction of red cells as cholæmia, Addisonian Anæmia, and hæmolytic anæmia. There are states of decreased formation as aplastic anæmia, congenital anæmia, atrophic anæmia, senile anæmia and splenic anæmia of infants. The author also deals with affections of the circulating cells themselves, such as met with in ague cyanosis, carbon monoxide, and some other conditions. With regard to the white cell formation and destruction, we learn under increased formation that there are those forms, polymorph leucocytosis, eosinophil leucocytosis, mixed leucocytosis and lymphocytosis. He discusses decreased formation under the heading of of the secondary type of leucopenia. The three conditions of chlorosis, hæmophilia, and hæmophilia neonatorum, he classes under affections of the blood plasma. Leukanæmia and purpura, we are not yet in a position to classify with any definite group. One of the most interesting chapters in the book is that devoted to the blood forming organs. These are taken up as the bone marrow, the lymph tissues, the spleen, the liver, the blood and its cells. We cannot follow the author through the sections of the book, but would recommend that all who are interested in this important subject should give this work early and careful study.

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## NEWCOMET ON RADIUM.

Radium and Radiotherapy. Radium, Thorium and other Radio-active Elements in Medicine and Surgery. By William S. Newcomet, M.D., Professor of Roentgenology and Radiology, Temple University, Medical Department; Physician to the American Oncologic Hospital; Fellow of the College of Physicians, Philadelphia. 12mo., 315 pages, with 71 illustrations and 1 plate. Cloth, \$2.25 net. Philadelphia and New York: Lea & Febiger, 1914.

The extraordinary element radium has been thoroughly investigated, and its powers and properties are now becoming known. Like other potent agents, it can do great good or great harm, according to the intelligence or ignorance with which it is used. Dr. Newcomet is a leading authority on radium, and the whole field of radio-active substances. In this small volume of absorbing interest he first conveys a knowledge of what radium actually is, its nature, its physics and its chemistry, and in the second half of his book he details its use in all the diseases in which it has been found of value, and gives full directions for its application. His chapters on cancer and other tumors will be read with special interest. Simple illustrations are used to make clear any point, and typical cases are introduced to proof of the practical value of this newest and most powerful addition to the armamentarium.

If one desires to do good work with radium he will consult his best interests by reading this book. Many harsh criticisms have appeared of late against this agent; but the foundation for most of these aspersions can be traced to ignorance regarding the methods of its employment. This book clears up the ground very carefully and thoroughly.

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GOODMAN ON BLOOD PRESSURE.

Blood Pressure in Medicine and Surgery. A Guide for Students and Practitioners. By Edward H. Goodman, M.D., Associate in Medicine in the University of Pennsylvania. 12mo., 226 pages, illustrated. Cloth, \$1.50 net. Philadelphia and New York: Lea & Febiger, 1914.

No physician is properly equipped to-day unless he understands blood pressure and carries with him an instrument for its measurement. It is quite as important as the thermometer and stethoscope. The subject has been thoroughly investigated in all its bearings by many of the foremost physiologists and clinicians.

A brief, clear and authoritative book has been needed to place this definite body of knowledge readily at command of the practitioner of medicine and surgery. Dr. Goodman has devoted years of study to the subject, and is qualified to present it in every particular. He covers the physics and physiology sufficiently to convey an understanding of the

principles, and then devotes successive chapters to Hypertension and Hypotension; Blood Pressure in Cardiovascular, Renal, Infectious and Nervous Diseases. Chapters are also given on Blood Pressure in Obstetrics and in Surgery. Then the author deals with conditions in the Gastro-intestinal tract and the Internal Secretary Glands and in Ophthalmology. He closes with chapters on the Effect of Drugs and other Therapeutic Measures on Blood Pressure and on the treatment of Hypertension and Hypotension. His style is exceedingly simple, clear and direct, and he introduces many typical and instructive diagrams. As an authoritative compendium of the subject this handy volume accomplishes its purpose "to make fully available the assistance which the study of blood pressure affords in the diagnosis, prognosis and treatment or disease."

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### OCULAR THERAPEUTICS.

Elements of Ocular Therapeutics. By Dr. A. Cantonnet, Ophthalmologist of the Hospitals of Paris. With extracts from the Formulary of the Therapeutic Clinic of Dr. L. Pron. Published by A. Maloine, 25-27 Rue de l'Ecole de Medicine, Paris. Price, 1 fr. 5c. All rights reserved.

In this small book there are many formulæ and useful hints for the treatment of medical and surgical affections of the eye. The book is printed in the French language and the formulæ are given in the decimal system. The precise indications are laid down in each case as a guide to treatment and the proper selection of the formula. We have looked over this little book very carefully and highly recommend it.

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### PROGRESSIVE MEDICINE.

A Quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences. Edited by H. A. Hare, M.D., and L. F. Appleman, M.D., of Philadelphia. June, 1914. Price, paper covers, \$6.00 per year.

This volume is good and contains lengthy articles by W. B. Coley on Hernia; by J. C. A. Gerster on Abdominal Surgery; by John G. Clark on Gynecology; by Alfred Stengel on Diseases of the Blood, and by Edward Jackson on Ophthalmology. The volume is in the same style of type and binding as the others in the same series. It is well illustrated. The series is a very valuable one, and this number is of as high a standard as any one that has preceded it.

## ANNOUNCEMENT.

Mr. W. M. Leonard, of Boston, announces that the next volume of the Case History Series will be De Normandie's "*Case Histories in Obstetrics*," an octavo of 460 pages by R. L. De Normandie, M.D. of Harvard and the Boston Lying-In Hospital. The book presents 71 case histories, classified in definite groups under Section headings as follows: Section I, Diagnosis of Pregnancy. Section II, Miscarriage. Section III, Normal Pregnancy. Section IV, Forceps Delivery. Section V, Breech Presentation and Delivery, etc.

Each section is followed by a special chapter entitled "Summary." We would call attention to this feature of the book, unique among the Case History volumes. Each summary is a careful consideration of the subject in hand based upon the cases just considered.

The book is thus an orderly succession of clinics with deductive instruction from detailed consideration and comparison of conditions present in each group of cases.

The final chapter is devoted to *The Baby*.

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 MISCELLANEOUS MEDICAL NEWS
 

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 THE ONTARIO MEDICAL ASSOCIATION.
 

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The Association met, for its 34th annual gathering, in the Medical Building of the University of Toronto, on 26th., 27th., and 28th. of May. Dr. C. F. McGillivay, of Whitby, presided. The meeting was well attended.

In the forenoon of the 26th. there was a symposium of papers in syphilis contributed by Drs. J. A. Fordyce, of New York, and Arthur Ellis and J. W. S. McCullough, of Toronto. The President then read his address, after which he appointed Drs. Mullen, Sutton and Mann as scrutineers who took up the ballots for the election of a nominating committee. The following were elected: F. N. G. Starr, G. A. Bingham, H. B. Anderson, D. J. G. Wishart, J. H. Elliot, J. F. Fotheringham, Moir, A. T. Shillington, Neal, Cameron, McCallum, Mullin and Parfitt.

The Treasurer submitted his report, and reports were submitted from committees as follows: Necrology by Dr. J. H. Elliott; Audit by Dr. A. R. Gordon; on Fees by Dr. H. B. Anderson; Credentials by Dr. R. R. Wallace; By-laws by Dr. C. P. Lusk; and County Societies by F. Arnold Clarkson. These reports were adopted.

With regard to fees the report contained the following clause:



“That a standing committee of this Association be formed for the purpose of considering from time to time the question of fees in all its bearings, with a view to safeguarding the interests of the public and the profession and making such recommendations for changes or readjustments as may be deemed advisable and the adoption of which will carry the approval of this representative body of the profession.”

It was moved by Dr. F. N. G. Starr and seconded by D. Shillington that the question of Amalgamation of the County Societies be left to the Executive. This was adopted.

Dr. A. H. Wright moved and Dr. W. H. B. Aikins seconded a motion “That affiliation between the Ontario Medical Association and the Canadian Medical Association in its present form be terminated.”

Drs. R. R. Wallace and N. A. Powell moved in amendment “That a committee composed of nine members of this association, four of whom are resident in Toronto, be appointed to take into careful consideration the future relationship of the Ontario and Canadian Medical Associations; to formulate the arguments for and against a continuance of the present arrangements; and to make recommendations as to whether this can be modified to the manifest advantage of both associations and of the profession generally; and to report at the next meeting of the Ontario Medical Association.”

Dr. Wright withdrew his motion and the amendment was then carried. Dr. Wallace moved, seconded by Dr. J. H. Elliott, that the committee consist of the following: “Drs. H. J. Hamilton, H. B. Anderson, D. J. G. Wishart, C. L. Starr, A. T. Shillington, N. W. E. Wilson, John McGregor, R. R. Wallace, and Mullin,” this was adopted

It was moved by Dr. W. Harley Smith and seconded by Dr. W. A. Young and carried “That there be formed a standing committee on Resolutions to which shall be referred all resolutions that any member may desire to bring before the Association.”

Dr. B. L. Riordan moved and Dr. J. F. Uren seconded “That this Association request the Government of the Province of Ontario that an amendment be made to the Employees Liability Act, so as to provide for the payment of first aid in such cases by registered medical practitioners for a period not to exceed six weeks, the fees for services received to be passed on by the Commission in the accounts being presented to them in detail, such accounts to be paid out of the funds of the Commission.” Carried.

In the evening Dr. Finney, of Baltimore, gave the address in surgery, and Dr. B. P. Watson, of Toronto, that in obstetrics.

The forenoon of Wednesday, 27th, was spent at the General Hospital and the Hospital for sick Children.

In the afternoon, Dr. Libmann, of New York, delivered the address in medicine.

The Nominating Committee submitted its report as follows:—Next place of meeting, Peterborough; President, Dr. D. J. G. Wishart; First Vice-President, Dr. A. T. Shillington; Second, Dr. J. T. I. Halliday; Third, Dr. J. A. Marquis; Fourth, Dr. Francis Williams; Secretary, Dr. F. Arnold Clarkson; Treasurer, Dr. J. H. Elliott; representatives to the Canadian Medical Association, Drs. H. B. Anderson, A. T. Shillington, and Ingersoll Olmstead.

The usual honorarium was voted to the Secretary. The new President was then installed.

Thursday forenoon was spent by the members attending clinics at St. Michael's, Grace and the Western Hospitals. In the afternoon many of the members attended the races at the Woodbine, as the guests of the Ontario Jockey Club.

#### UNIVERSITY OF TORONTO MEDICAL EXAMINATIONS.

Fifth Examinations. Degree with honors—Group I., C. C. Macklin, Group II., H. K. Detweiler. Group III., F. L. Eberhart.

Medials—H. K. Detweiler, gold; S. R. H. Hewitt, first silver; K. G. McKenzie, second silver; H. E. Brown, third silver.

Chappell Prize in Clinical Surgery, H. K. Detweiler.

Pass—G. C. Anglin, C. C. Ballantyne, A. F. Bastedo, J. R. Beaven, G. E. Binkley, J. E. Bond, J. M. Bremner, R. J. W. Brooke, H. H. Burnham, G. L. Caldwell, K. W. Cameron, W. A. Cardwell, H. Clarke, E. J. Clifford, R. E. Coleman, H. R. Conn, L. H. Cook, R. Coutts, xMiss E. M. Cowling (obstetrics), R. E. Crane, W. W. Cross, xF. G. Davis (path. and gynaecology), O. J. Day, T. G. H. Drake, J. A. Duck, F. M. Dure, G. M. Flock, G. S. Foulds, C. T. Galbraith, W. J. Gardiner, G. C. Gliddon, B. L. Guyatt, W. Hamilton, R. E. Hartry, xR. E. Horkins (med., clin. med. and obstetrics), J. N. Humphrey, H. B. Jeffs, J. E. Knox, O. J. S. Little, W. T. Little, xB. O. Lowrey (med and e. med. and obstetrics), F. G. Mack, H. S. Martin, J. C. Maynard, xMiss L. I. F. Moodie (medicine and clin. med.), J. E. McCorvie, W. V. McIntosh, H. R. MacIntyre, H. A. McKay, R. D. MacKenzie, W. W. MacKenzie, A. E. McKibbin, W. J. McLean, E. J. McQuade, J. F. McQuay, L. C. Palmer, A. A. Parker, M. H. Paterson, D. A. Quick, W. R. Reeds, E. F. Risdon, D. E. Ross, W. E. Sinclair, R. F. Slater, xR. P. Smith (med. and clin. medicine), R. S. Smith, xMiss A. B. Speers (med. and e. med. and obstetrics), xE. H. Stephen (med. and clin. medicine and path. and

obstetrics), J. M. Stewart, R. G. Struthers, xH. C. Sutton, (med. and clin. medicine), E. C. Syer, A. Taylor, xM. G. Thompson (med. and clin. medicine), W. L. Tyrer, W. . Watson, R. R. Wilson (med. and clin. med. and therap.), H. A. Wolverton, C. S. Wynne.

T. F. Graham is granted aegrotat standing in the subjects of the fifth year.

A. J. McIntosh passed in clinical psychiatry, but was conditioned again in clinical medicine.

The following are eligible for the George Brown memorial scholarship in medical science and rank in the order named:—H. K. Detweiler, C. C. Macklin, F. L. Eberhart, W. Hamilton, A. E. McKibbin.

Fourth Examination. Special Proficiency—1, R. I. Harris; 2 G. M. Dale; 3, W. R. Hodge; 4, D. E. S. Wishart; 5, R. H. Fraser; 6, C. R. B. Crompton.

Third Examination. Honors—Anatomy—N. A. Wallace. Physiology—1, N. A. Wallace; 2, H. B. Maitland; 3, R. M. James. Pharmacology—1, N. A. Wallace; 2, G. A. Davis; 3, H. B. Maitland; 4, W. P. McCowan; 5, W. C. Givens; 6, Miss O. G. Patterson.

Special Proficiency—1, N. A. Wallace; 2, F. M. Johnson; 3, H. B. Maitland.

Second Examination. Scholarships—1, B. S. Cornell; 2, A. M. Jeffrey.

Special proficiency—1, B. S. Cornell; 2, A. M. Jeffrey; 3, I. H. Erb.

First Examination. Scholarships—1, R. B. Hare; 2, G. H. Agnew.

Special Proficiency—1, R. B. Hare; 2, G. H. Agnew; 3, D. M. Low; 4, G. R. D. Farmer; 5, R. W. Ranklin; 6, R. J. Spence; 7, R. Davis and N. E. McKinnon.

Examination for Diploma of Public Health. Pass—F. Adams, M. B.; A. Grant Fleming, M.B.; R. D. Defries, M.D.; J. W. S. McCullough, M.D.

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### McGILL MEDICAL GRADUATES.

Students from many parts of the continent shared the honors in the Faculty of Medicine at McGill University last session, according to results announced for all five years of the course.

The highest prize, the Holmes gold medal for the best aggregate in all subjects during the course, was won by R. C. Royce of Woodstock, Ont., and the first prize for the highest aggregation standing in fifth or final year subjects by L. C. Pearce of Brantford.

A. L. Jones of Victoria, B. C., secured the Wood gold medal for the

best examination in all clinical branches, and the McGill Medical Society senior prize went to a Montrealer, G. A. Fleet.

The fourth year prizeman was J. A. Urquhart of Revelstoke, B. C., while the Joseph Hill prize in the same year went to H. L. Moffatt of Rialto, Cal.

In the third year N. M. Guieu of Ottawa headed the class, and also won the Morley Drake prize. Mr. Louis Cross of Montreal was Sutherland medalist.

The pass list entitling graduates to the degree of M.D., C.M., contains the names of the following Ontario students: A. F. Argus, Carp; J. A. Couillard, Ottawa; Harry Dower, Ottawa; C. R. Joyce, Woodstock; A. MacIntosh, Iroquois; C. R. L. Morgan, Hamilton; L. C. Pearce, Brantford; J. W. Peck, Seaforth; J. M. Pollock, Berwick; R. D. Ranklin, Stratford; L. H. Roberts, Ottawa; W. C. Scott, Ottawa; T. G. Wilson, Wingham; E. P. Wright, Ottawa.

#### MEDICAL COUNCIL OF CANADA.

Officers were elected by the Medical Council of Canada, which concluded its annual session at Ottawa on 25th. June as follows:

Honory President, T. G. Roddick, Montreal; President, R. S. Thornton, Deloraine, Man.; Vice-President, Dr. R. J. Gibson, Sault Ste. Marie, Ont.; Registrar, Dr. R. W. Powell, Ottawa; General Counsel, F. H. Chrysler, Ottawa.

The examinations of the council admission to the register were ordered to take place at Montreal in October, 1914, and the Spring examination in Winnipeg in June, 1915.

At the close of the session Dr. T. G. Roddick, the retiring President, who was elected Honory President for life, with a seat on the executive, entertained the Council at luncheon. The next session will be held in Ottawa, June, 1915.

All the provinces were represented at the sessions, as well as all the universities, the Government appointees being Dr. T. G. Roddick and Dr. Braithwaite, of Edmonton. Dr. Bapty, of Victoria, was present. The diploma of L.M.C.C. was granted to Hon. Dr. Roche, Minister of the Interior.

#### THE INFECTIVITY OF PULMONARY TUBERCULOSIS.

Report by the Royal College of Physicians of London.

At the Comitia on July 3rd, 1913, a motion was brought forward by Dr. Freemantle, and seconded by Dr. Lauriston Shaw in the following terms:

That in view of the exaggerated fear of the infectivity of pulmonary tuberculosis entertained by the public, the consequent unnecessary disabilities imposed upon sufferers from the disease, and the opposition raised in many places to the establishment of institutions for its detection and treatment, a reassuring statement with regard to the degree of danger attaching to contact and communication with tuberculous persons be prepared by the College and issued in its name at an early date.

It was resolved with reference to this:

That the subject of Dr. Fremantle's motion on the infectivity of pulmonary tuberculosis be referred to a special committee, nominated by the President, which shall make a report to the College at an early date.

The resident nominated as members of the Committee Drs. Sharkey, Habershon, Sandwith, Fremantle, and C. J. MPartin, F.R.S.

At the Comitia on April 6th, the Committee presented the following report, which was adopted.

#### REPORT ON THE INFECTIVITY OF TUBERCULOSIS.

1. Tuberculosis is an acquired disease, but certain constitutional types may be inherited which render the patient specially susceptible to infection, and there is reason to think that such susceptibility is an inherited character.

2. The infective agent is the tubercle bacillus. This may be contained in the various discharges and excreta of the patient, and especially in the sputum of those suffering from pulmonary tuberculosis. No discharge is infective unless it contains tubercle bacillus.

3. Cases of tuberculosis of bones, glands, and internal organs from which there is no discharge or which do not furnish any excretion, and cases of arrested pulmonary tuberculosis, have never been proved to be infectious.

(By arrest is here meant that all symptoms and physical signs of activity have disappeared, and the sputum has either ceased or no longer contains tubercle bacilli).

4. The means by which tubercle bacilli may enter the body are:

(a) *By inoculation* through a wound or abrasion of the skin. This has occasionally occurred to workers in laboratories, *post-mortem* attendants, and others dealing with tuberculous material, and is presumably the way in which lupus is acquired.

(b) *By inhalation.* Susceptible are readily infected by the inhalation of air containing tubercle bacilli, whether in droplets or suspended as fine dust, but in the spread of the disease among human beings the latter appears to be the more important means of infection.

The sputum of other discharges, whether on soiled handkerchiefs, linen, garments, or elsewhere, when dried, may become pulverized, and in this condition may be readily dispersed in the air of a room. That droplets of sputum are less important agents of infection is suggested by the fact that the incidence of consumption upon the staff, nurses, and others engaged in hospitals for the treatment of tuberculous disease, where all discharges are carefully disposed of, is not above the average in the general population.

(c) *By swallowing.* Dust infected by the tubercle bacillus may be conveyed to food and so enter the alimentary canal; or infection may occur more directly in the act of kissing, or by consumptive and healthy persons using the same food utensils. As about 10 per cent. of the milk supplied to large cities contains tubercle bacilli derived from infected cows, this avenue of infection is particularly important in the case of children. The bovine tubercle bacillus is more commonly responsible for tuberculosis in young children than in adults, but the proportion of cases due to it varies very much in different localities.

(d) There is no evidence that tuberculosis can be conveyed to others either by the breath alone, or by emanations from patients, or by their garments, unless soiled by dried sputum or discharges.

(5). The spread of tuberculosis is favored by uncleanness, overcrowding, and imperfect ventilation, and is hindered by the opposite conditions. Experience in hospitals and other institutions where the following precautionary measures have been thoroughly carried out indicates that by such measures the risk of infection is reduced to a minimum, namely:

(a) The careful disposal and disinfection of the sputum and other discharges.

(b) The disinfection or destruction of soiled handkerchiefs, clothes, and linen.

(c) The removal of dust by frequent moist cleansing of the floors, walls, etc., of the rooms.

(d) The supply of abundant air space and free ventilation with fresh air.

No risk is incurred by living in the immediate neighborhood of institutions for the treatment of tuberculosis which are properly conducted.—*British Medical Journal*.

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#### THE RELIEF OF PRURITUS ANI.

Physicians who have had their patience exhausted by repeated failure to relieve the maddening symptom of pruritus ani may be glad

to hear of the experience of Dr. J. Cropper, of Chepstow, England, who communicates to the *British Medical Journal* for May 2, 1914, the good news that he has found two trustworthy remedies for the condition. After having tried in vain to heal the tiny circumanal cracks which are apparently the cause of the itching, with conium ointment, the ointment of galls and opium of the British Pharmacopœia, boric acid and starch powder, carbolic acid, mercury bichloride, zinc sulphate, and three well-known proprietary preparations, Dr. Cropper found that the British tincture of iodine did the work. This is not irritating, it appears, to the mucous membranes, and slight pain, if it occurs, is quickly over; it should be used about three times a week with a little care so as not to excoriate the skin. Even better, however, is the compound tincture of benzoin; whether it acts merely as a mild styptic and antiseptic or has a mechanical action, giving rest to the parts, its effect is described as little less than marvelous. Within two minutes the alcohol evaporates and all temptation to scratch is over. Dr. Cropper has found that samples of Friar's balsam vary in appearance from light to dark brown; the dark ointment is the best. Where the water is hard, the balsam should be used before bathing, as prolonged hot baths in hard water are particularly injurious in cases of pruritus ani. It is not necessary either to cauterize or excise small fissures, as the balsam will cause them to close up; as to large fissures, remarks Dr. Cropper, they are another matter.—*New York Med. Jour.*

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#### THE MANAGEMENT OF MUCOUS COLIC.

W. A. Edwards notes that Mummery uses belladonna to prevent spasm of the colon, in the following:

℞ Tincture of hyoscyamus .....	1/2 dram
Tincture of belladonna .....	6 minims
Sodium bicarbonate .....	20 grains
Tincture of ginger .....	15 minims
Spirit of chloroform .....	20 minims
Peppermint water .....	ad 1 ounce

This dose should be given three times daily. A laxative should be administered at the same time.

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#### TREATMENT OF DEPILATING FOLLICULITIS.

G. T. Jackson and C. W. McMurtry state that Brocq advises epilation of all loose hair and the application of either mercury or sulphur,

the latter usually being the more useful. The scalp is to be washed with soap and water in the evening and when dried the following solution should be applied:

R	Acetic acid crystals	75 grains
	Corrosive sublimate	7½ grains
	Glycerine	6 drams
	Alcohol (85 per cent.)	2½ ounces
	Distilled water	5 ounces

### IN MEMORY OF WILLIAM HENRY DRUMMOND.

By late Dr. S. Weir Mitchell.

Peace to his poet soul. Full well he knew  
 To sing for those who know not how to praise  
 The woodsman's life, the farmer's patient toil,  
 The peaceful drama of laborious days.

He made his own the thoughts of simple men,  
 And with the touch that makes the world akin,  
 A welcome guest of lonely cabin homes,  
 Found, too no heart he could not enter in.

The toil-worn doctor, women, children, men,  
 The humble heroes of the lumber drives,  
 Love, laugh, or weep along his peopled verse,  
 Blithe mid the pathos of their meagre lives.

While thus the poet-love interpreted,  
 He left us pictures no one may forget—  
 Courteap, Baptiste, Camille mon frère, and, best,  
 The good, brave curè, he of Calumette.

With nature as with man at home, he loved  
 The silent forest and the birches' flight  
 Down the white peril of the rapids' rush,  
 And the cold glamour of the Northern night.

Some mystery of genius haunts his page,  
 Some wonder-secret of the poet's spell  
 Died with this master of the peasant thought.  
 Peace to this Northland singer, and farewell!