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# The Canadian Practitioner and Review.

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## Original Communications.

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### A CASE OF CERVICAL HYPERTROPHIC PACHYME- NINGITIS WITH EXPLORATORY LAMINECTOMY.

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WM. GOLDIE, M.B., TOR.  
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R. P., male, laborer, single, aged 30, was admitted July 30th, 1908, to Dr. McPhedran's service at the Toronto General Hospital, complaining of pain and stiffness in the back of neck, extending across the shoulders and down the arms to the finger-tips; and also of great weakness in the legs.

There is nothing of note in the family history: he was born in Scotland and there worked as a clerk, coming to Canada five years ago. He has worked at odd laboring jobs. About nine years ago he had a soft sore for which he took no internal medication.

Two years ago, while engaged at work that required almost continuous immersion of his hands in cold water and frequently having his feet wet from morning to night, he began to suffer from what he called "rheumatism" in the back of the neck, from which he would be free only for a few days at a time. It was dull in character, "As if I had been hit on the back of the neck with a hammer." It was so severe that during the first year he was laid off work for five weeks. From the first he also had some pain in the small of the back. During this time, he noticed:

First—That his appetite was failing.

Second—That he did not sleep as well.

Third—That he spat more than other chewers of tobacco, and that he was troubled at night by the saliva running from his mouth on to the pillow.

Fourth—That he had an excessive thirst.

In four or five months after the beginning of the pain he found that he could not raise himself in bed without the aid of his hands, and after six months, that the pain was extending to the right shoulder.

At the end of eight months he returned to trucking in the express sheds, and continued at work till the end of June, 1908. After he had been working a few months the pain grew less in the right arm, but soon began in the left shoulder with gradually increasing weakness of it and the whole left arm and hand. At last he had to give up work because of rapidly-increasing weakness in both of his legs. This, with sense of numbness, gradually increased until he entered the hospital, a month later, when he could only walk in a weak and shuffling manner.

Examination Aug. 1st, 1908. The patient lies stiffly in bed with all joints slightly flexed, except in the case of the neck, which is held rather fixedly with the head retracted. Nourishment seems fair, but there is general wasting of all the muscles of the trunk and limbs, most marked on the left side, and especially seen in the left peroneal group, the left supraspinatus and deltoid muscles, and in the thenar, the hypothenar, and the interossei muscles of both hands.

There is no wasting or weakness of the sterno-mastoid or the upper trapezius of either side; the left arm is very powerless in all its movements; all the muscles of the right arm are very weak. He is unable to sit up without the use of the right arm. The gait is weak and shuffling; the left leg will no more than allow him to move about; the right is weak throughout.

There is no apparent loss of power in the muscles supplied by the cranial nerves or the upper four cervical nerves.

Spasm is evident in the right arm and leg, and slight but definite in the left leg, while the left arm shows no evidence of any spasm, being flaccid.

All deep reflexes from the neck down are increased, except in the left arm.

There is constant pain deep-seated in the region from the fourth cervical to the third dorsal spines, made worse by active or passive movement. Percussion over these spines and those of the eleventh and twelfth dorsal and the first lumbar vertebrae causes sudden, dull pain.

Tactile sensation is dulled and delayed in both legs, and up as far as the umbilicus, where there is an ill-defined band of relative hyperaesthesia, then again dulling up to the clavicle, where there is hyperaesthesia over the distribution of the third cervical, above which all the sensations are normal.

Heat and cold are well distinguished from the knees down, while in the thighs, cold gives the sensation of burning, and heat can hardly be felt. On the left forearm he cannot distinguish between heat and cold; incorrectly on the arm on the inside and posteriorly, but correctly on the outside. The right arm and forearm yield a more prompt response than the left. Above the clavicle the sensation seems to be normal; below and over the trunk the interpretation is incorrect.

Sensation to pain is dulled in areas of dulling of tactile sensation.

Muscle sense is absent in the left arm and greatly dulled over the rest of the body, as far up as the upper trapezii and the sterno-mastoids.

Chest is not well expanded, respirations 20 to 24, otherwise respiratory system is normal.

Capillary circulation is sluggish; pulse of fair volume; tension low, and slightly irregular; rate 60 to 80; vessels are palpable. Apex beat is  $4\frac{7}{8}$  inches from the middle line in the 5th left intercostal space. There is a soft, systolic murmur heard at the apex not transmitted.

At the junction of the manubrium and the gladiolus there is a tumor two inches in diameter, raised one-half an inch above the level of the sternum, to which it is firmly attached. It is firm, but not hard, and has been growing about a month, being preceded by a slight pain.

The teeth are carious, the gums inflamed. The tongue is moist and coated. The greater curvature of the stomach is at the umbilicus; the liver, spleen and kidneys are apparently normal. Bowels are regular; urination slow, and for the last two weeks he has had some difficulty having to stoop or sit down.

August the 7th, lumbar puncture revealed no increase of pressure, nor could any information be obtained from the cellular elements. No test was made for globulins.

August the 12th, Calmette test was negative. Sections of tissue from the sternal tumor show fibrous tissue with marked perivascular infiltration.

He has had thirty grains of potassium iodide three times a

day for the last four days, and now shows marked signs of iodism, being very depressed, and begs that the medication be stopped. Since Aug. 10th he has had to be catheterized because of retention. He is failing rapidly and the paralysis is becoming more complete; there is almost complete flaccid paralysis of the left arm and leg, while the right arm and leg are much weaker.

August the 17th. He complains more of the pain in his neck and back, and of soreness and pain in the arms if they are moved. The left forearm and hand are quite powerless, but the arm can be adducted slightly. The legs can be drawn up and rotated weakly, the left being weaker than the right. The area of the third cervical nerve remains hyperaesthetic; about the nipples there is a small area which, if pricked, produces no sensation, but causes the patient to start and catch a short, quick breath; otherwise anaesthesia is nearly complete, the hyperaesthetic area about the umbilicus having been replaced by almost complete anaesthesia. The response to heat and cold remains the same as found at the first examination. There is practically no perception of pain from the distribution of the third cervical down.

The case was one evidently in which the main lesion ended abruptly at the level of the third cervical segment, involving the whole width of the cord, as might be inferred from the marked hyperaesthesia of the skin supplied by these nerves and definite beginning of the paralysis at the region of the distribution of the nerves from the fifth cervical segments. The history of the marked salivation in the early stages may be taken as evidence that the upper limits of the lesion may extend or may have extended much higher, or it might be taken as an indication that his work as mirror cleaner had caused him to suffer from mercury poisoning.

The lower limits of the lesion are hard to determine, as the wasting of the muscles throughout is more marked than one would expect from a simple transverse lesion of the cord; in fact this extreme wasting, together with the shooting pains in the arms, made worse on movement, and the disappearing hyperaesthesia at the region of the umbilicus, would be suggestive of nerve root involvement, that is, a wide-spread meningeal irritation.

The ability to distinguish between heat and cold below the knees, and not above until the area of distribution of the third cervical was reached, would go to show that the whole thickness

of the cord was not affected in the cervical region, where the injury seemed to be the worst.

The nature of the lesion could be judged of by the duration of the symptoms, the absence of deformity, the character of the sternal growth, and the apparent multiplicity of the lesions, so that in spite of not getting a definite history, it was thought to be due to syphilis.

The patient was rapidly failing in general health and the paralysis becoming almost complete, so that after consultation it was determined to operate at once in case a tumor mass might be present, the pressure of which might destroy the cord before specific treatment would bring about absorption. Moreover, if there was a gumma there was a chance that the absorption would not be complete, a fibrous mass being left that would still produce symptoms.

August 20. The patient was anaesthetized and placed in a semi-prone position on the left side. An incision was made in the middle line over the lower cervical and upper dorsal spines, and the operation of laminectomy proceeded with in the usual way. The laminae of the fifth, sixth and seventh cervical vertebrae were removed and the contents of the neuro canal inspected. Lying upon dura mater was a very vascular membrane, two mm. in thickness, and extending upwards and downwards on the surface of the dura for five or six cm. This membrane lay in close contact with the dura, but was readily separated from it, leaving an apparently healthy membrane beneath. The dura mater was now carefully inspected; it presented a perfectly normal appearance and there was obviously no tension within. One could find no evidence of pressure at this level upon the spinal cord.

Under these conditions it was deemed advisable to close the wound without opening the dura mater. A number of interrupted silkworm gut sutures were introduced and a temporary drain provided by means of a rubber drainage tube.

August 22. Two days after the operation there was very little change noted in the patient's condition. There was, perhaps, a slight increased weakness in the right arm. The bicipital reflex of both arms has diminished somewhat, but the tricep reflexes are increased since the operation. Knee-jerks are still increased. The ankle clonus of each foot is more easily elicited. The Babinski reflex present in the right foot before operation has disappeared, though it has remained in the left foot. Sensation is somewhat dulled, but otherwise does not vary from the condition before the operation. The pain in

the neck has gone, so much so that in spite of the wound he is in great comfort and moves the neck freely.

August 24. Movement is slightly better in the legs, which can be moved fairly readily, and in the right arm, so that the hand can now be approximated to the mouth. The left hand is quite powerless. Sensation about the same.

August 26. He has more power to-day than he has had since August the 9th, before the iodides were first started. For the past two days he has been heavily dosed with potassium iodide. His sensations for touch and pain are better to-day than since his admission to the hospital. He is able to distinguish between the head of a pin and the point, but the areas which were most nearly anaesthetic before, are still rather dull of perception.

Sept. 1. Improvement has been gradual, but constant. Both sensation and movement are better. He is able to move both legs quite freely, but not with great force.

Sept. 5. Improvement still continues. He cannot move the fingers freely, but he is now able to grip with some force. Patient looks better and feels stronger, and is in every way improved.

Sept. 15. His sensation is now normal and motor power is gradually increasing. Arms and legs can be freely moved, but he has not much power. He cannot carry out these movements with much force. While attempting to stand he found his legs too weak. The iodides are still continued.

October 16. Since the last note the patient has gradually improved, and has now returned to what is practically a normal condition as to sensation, reflexes and motor power. He is able to walk freely and has complete control of the various movements in the arms and hands. To-day he was discharged from the hospital.

The interest in this case is not only that it was a typical example of that rare affection, Cervical Hypertrophic Pachymeningitis, and that there was the usual difficulty in determining whether there was a tumor present, but also that the operation with the removal of such a small amount of tissue from the surface of the dura seemed to produce a definite improvement in the symptoms, especially in relieving the deep-seated pain in the neck before the administration of the iodide.

However, the value of the operation lies not in the seeming result of the relief of the pain, but in the determination of the absence of any tumor, for this was the point that we were not

able to determine beforehand. If a tumor had been present and medicinal treatment persisted in, much valuable time would have been lost, during which irreparable damage might have been done to the cord, or in case of it being a gumma, such improvement might have occurred from partial absorption of the mass that we would not have felt justified in operating to explore for the fibrous mass that so often remains after the bulk of gumma has disappeared, and which would prevent complete recovery by reason of the pressure it would exert.



## OBSERVATIONS AND REMARKS ON GLYCOSURIA.

By GRAHAM CHAMBERS, M.D.

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By glycosuria I mean the presence of glucose in the urine and detectable by the ordinary clinical tests. I shall therefore apply the term to a permanent as well as to a temporary appearance of glucose in the urine. I make mention of this inasmuch as many writers restrict the term glycosuria to a temporary appearance of glucose in the urine and designate permanent diabetes mellitus.

Although a great deal of work has been done in studying glycosuria, both in animals and in man, the pathogenesis of the malady is not well known. We do, indeed, know many facts concerning the causation and nature of the morbid affection, but so far no one has been able to formulate a theory of glycosuria in keeping with all known facts. All are agreed that the condition is a perverted physiological process, involving the capacity of the organism to care for sugar; but the exact manner in which this perversion is produced and the sequence of pathological events which lead to it, have not been determined. This defect in our knowledge is, no doubt, due to the great complexity of the metabolism of carbohydrates. We know that the nervous system, liver and pancreas take part in the work, and also probably muscle and other tissues of the body; but we do not know how their functions, involving carbohydrate metabolism, are correlated. For the present, therefore, we must make the best of the situation, making use of all known physiological and pathological, as well as clinical observations bearing on the subject. These should, I think, be our guides in the diagnosis and treatment of the disease. Some of the more important of these observations are the following:

1. The normal quantity of sugar in the blood is about one in a thousand. The sugar gives all the reactions for glucose; but whether it is free or loosely combined with another substance has not been decided.

2. Hyperglycemia is present in all cases of glycosuria, temporary as well as permanent, except in those due to undue permeability of the kidneys to glucose (renal glycosuria). This has been shown by Naunyn, Seegen, Pavy and other investigators.

3. Von Mering discovered that a transient glycosuria may be produced by the administration of phloridzin. This glycosuria is believed to be due to undue permeability of the kidney to glucose.

4. Minkowski and von Mering showed that in a dog complete ablation of the pancreas produces permanent glycosuria. If about one-fifth of the pancreas is left, glycosuria does not supervene. If the residual pancreas is less than one-fifth, diminished capacity for the utilization of carbohydrates ensues. This last condition is similar to that observed in the milder forms of diabetes mellitus in man.

5. Necropsies of diabetic patients have shown the presence of disease of the pancreas in a considerable number of cases. However, the morbid findings have been somewhat variable, arterio-sclerosis, hyaline degeneration of the islands of Langerhans, etc., and these have not been shown to have been the cause of the perversion of carbohydrate metabolism. On the other hand, no morbid condition of the pancreas has been found in many cases.

6. Claude Bernard demonstrated that, in a dog, puncture of the apex of the calamus scriptorius in the fourth ventricle produces a temporary glycosuria, which is believed to be due to a hyperglycemia from over-conversion of the glycogen of the liver into glucose.

7. Temporary glycosuria is common in many diseases of the nervous system, such as cerebral tumor, meningitis, epilepsy and multiple neuritis.

8. Carbon monoxide, carbon bisulphide, curare, morphine, amylnitrite and a great number of other poisons, administered to animals, may produce a temporary glycosuria.

9. In some patients suffering from Graves' disease, traumatic neurosis, alcoholism and high fevers, and also in some persons apparently healthy, the administration of a meal very rich in sugar—say 100 grammes of cane sugar—produces glycosuria. This condition is usually called alimentary glycosuria. It is also called glycosuria e saccharo.

10. A dog with Eck's fistula is in the condition of glycosuria e saccharo. This has been observed by Popelski and de Fillipi.

11. Cases of permanent glycosuria exhibit great variability in their ability to utilize sugar. In the mild forms glucose only appears in the urine when carbohydrate is taken in considerable amount by the mouth; in the severe glucose continues to be excreted in the absence of carbohydrate in the food. Between these two extremes there are cases of medium severity.

12. In the severer forms of permanent glycosuria the disturbance of katabolism frequently becomes aggravated. B-oxybutyric acid, and diacetic acid, and probably other acids, appear in the blood. This condition is known as acidosis, and has an etiological relationship to diabetic coma.

13. In the acidosis condition, acetone, diacetic acid, and B-oxybutyric appear in the urine.

These are some of the more important facts bearing on the subject of glycosuria. When one studies them one is not surprised that no acceptable theory for diabetes has been propounded. Some have suggested that it may be a functional disease of the pancreas; and I feel that there is much to be said in favor of this suggestion. If I were asked to formulate a theory of diabetes mellitus I would say that probably most cases were due to a functional disease of the pancreas caused by hereditary weakness, nervous disturbance, or hyperalimentation. The small minority of cases are probably due to organic disease of the pancreas.

I shall now report some observations and make a few remarks on subjects bearing on the etiology and treatment of glycosuria.

#### THE CAUSE OF THE COMPLICATIONS OF DIABETES MELLITUS.

Diabetes is a disease characterized by many complications. Of these, some of the most important are, coma, neuritis, cataract, retinitis, gangrene, eczema and diminished immunity, as illustrated by the frequency of boils, carbuncles, and pulmonary tuberculosis.

The coma of diabetes is, no doubt, principally due to the acidosis condition of the blood.

Of most of the complications one thinks of two etiological factors, namely, hyperglycemia and the condition of the tissues which gives rise to the hyperglycemia.

Excess of sugar in the blood is probably present in all cases of glycosuria in man—glycosuria from increased permeability of the kidneys alone, similar to that produced by phloridzin, has not been definitely recognized. Indeed the glycosuria supervenes as a consequence of the hyperglycemia. In a series of twelve cases Naunyn found excess of sugar in the blood in all. He also found a slight degree of hyperglycemia in patients in whom, through restricting the quantity of carbohydrate in the food, the sugar had disappeared from the urine. This is, I think, a very important observation, as it suggests

the possibility of slight hyperglycemia in apparently healthy persons, who, however, may not be actually healthy but predisposed to infections, eczema, neuritis and other affections, which are common complications of diabetes mellitus. Of course, this suggestion is based on the theory that excess of sugar in the blood and lymph is an important etiological factor of many of the complications of diabetes mellitus, which, I believe, is the opinion of all physicians. There is much evidence in favor of this view. One has only to observe the rapid improvement in this condition, particularly the mental state, of many diabetics when placed on a dietary which causes the glycosuria to disappear, to be convinced. However, there are, no doubt, other causes of the complications of diabetes mellitus. One of these is, no doubt, the condition of the pancreas and other tissues which give rise to the glycosuria. If their functions involving metabolism of carbohydrates are depressed, then surely their other functions, such as those involving immunity, are also diminished. Moreover, it is possible for this functional asthenia of cells to exist before glycosuria becomes a manifestation of the condition, and even before the appearance of hyperglycemia. To me this is a plausible theory and affords an explanation of some clinical observation which I have observed, particularly in persons who are intemperate in eating.

#### HYPERALIMENTATION AS A CAUSE OF GLYCOSURIA AND OTHER DISEASES.

The relationship of hyperalimentation to disease has not received the attention it deserves. When a person is subject to forced feeding there is usually an increase of the protein and probably also of the fat and glycogen of the body. This in some debilitated states has, no doubt, a beneficial effect on the health of the patient. In other cases I should think that the result would be injurious, especially when the overalimentation is associated with little physical exercise. The clogging of tissues with foodstuffs must necessarily interfere with the functions of the cells, both as regards metabolism and their defensive action in the body. This view is in accord with my clinical observations, as my experience in practice teaches me that overeating is frequently an important etiological factor of glycosuria, boils, eczema and many other diseases. This cannot be, as a rule, proved by scientific methods, because one does not know the normal capacity of each individual. For example, a man at forty years of age may be able to take care

of 250 grammes of cane sugar in one meal, and at forty-five only 150 grammes. If we should examine him at the latter age, without any knowledge of his previous capacity for sugar, we could not say that he is unhealthy, although his capacity to utilize sugar had diminished forty per cent. in five years. This patient, I submit, is in a condition which cannot be determined by our clinical methods. He has a sluggishness of metabolism which I believe is a common cause of disease. The only way to overcome the difficulty in diagnosis is for an examination of the metabolism of a person from time to time during life. This, I believe, will in the near future be one of the duties of the physician.

Diabetes in patients above the middle of life, and especially between fifty and sixty years of age, is frequently due, I believe, to hyperalimentation. I am unable to say or even to suggest, whether the disturbance is due to excessive eating of carbohydrate, fat, or protein, or a combination of foodstuffs. The fact that diabetes is very frequently associated with gout and obesity is evidence that there is a common cause. I may also add as evidence the occurrence of diabetes at this period of life almost exclusively among the well-to-do.

According to my experience, chronic furunculosis is another disease in which hyperalimentation is probably an etiological factor. In many cases a history of overeating combined with diminished loss of energy is obtained. In five cases which I tested for glycosuria *e saccharo* according to the usual manner, glucose appeared in the urine in two. This is all the more interesting inasmuch as furunculosis is a common complication of diabetes. I may add, as further evidence of the etiological relationships of overeating to furunculosis, that I have found hypoalimentation for a few days, followed by a normal dietary, a most useful measure in the treatment of furunculosis.

#### PSYCHIC DISTURBANCES AS AN ETIOLOGICAL FACTOR OF GLYCOSURIA, AND PSYCHOTHERAPY IN ITS TREATMENT.

Since 1855, the date when Claude Bernard demonstrated that a puncture of the floor of the fourth ventricle in a limited space produced a transient glycosuria in animals, very many observations have been made showing that a similar disturbance of metabolism may result from many other injuries and diseases of the nervous system, such as cerebral concussion and hemorrhage, epilepsy, tumors of the pituitary body, cerebral tumors in general, disseminated sclerosis, traumatic neuroses,

neuralgia, cerebro-spinal meningitis, and peripheral neuritis. The number of these maladies is so great and the nature of the injury so varied that one might expect a transient glycosuria from any acute injury or disease of the nervous system.

The appearance of glucose in the urine in these cases is generally believed to be due to loss of power of the liver to retain glycogen, so that the blood becomes flooded with sugar, which is manifested by glycosuria; and there is much to be said in favor of this which from want of time I shall not mention. I may add that some physicians have such unbounded faith in the theory that they place all the temporary glycosurias following convulsions, cerebral concussion and hemorrhage, and other morbid conditions of the nervous system, in a class by themselves, and designate the type hepatogenous glycosuria.

To me there does not appear to be sufficient evidence for this belief. There is no doubt that the liver cells, from some cause, do lose their power to retain glycogen, but it has not been shown that the carbohydrate metabolism of other cells, such as those of muscle, is not similarly perverted. When we consider the great variety of injuries and diseases of the nervous system in which glycosuria may be a symptom, why should the liver alone, of all the organs taking part in the metabolism of carbohydrates, be blamed for the perversion? To me a much more acceptable theory would be that not only the cells of the liver, but also those of muscle and other tissues taking part in carbohydrate metabolism, are in some way temporarily disturbed in their functions. If this theory were accepted, then it is probable that a functional disturbance of pancreatic secretion is the primary affection following the morbid condition in the nervous system.

Psychic disturbances, such as shock, mental worry, etc., have long since been recognized as capable of aggravating the course of diabetes mellitus. Any one who has had experience in the management of patients with this disease must have observed the baneful effects of these disorders of the mental condition. Indeed, with the exception of wrong eating and drinking, there is nothing more harmful to a diabetic than worry. In my practice this has been frequently illustrated. Excessive mental work and worry are invariably followed by an increase in the quantity of sugar excreted, and by aggravation of the complaints of the patient.

In one case of temporary glycosuria mental disturbance

appeared to be the cause of the condition. The following are my notes of the case:

J. C., male, aged 40, teacher of stenography, consulted me on September 10th, on account of frequent urination. Family history is good. With the exception of diseases of childhood patient has always had good health. Has been temperate in eating and drinking. During the last month patient has worried a good deal on account of the death of a friend. At the present feels depressed and does not sleep well. The disturbance of urination began about a week ago. Appetite and thirst normal. Bowels regular. Slight sclerosis of radials.

The examination of urine revealed the presence of sugar. Quantitative determination gave .6 glucose.

Sept. 11th.—Urine contains glucose.

Sept. 12th.—Urine free from sugar.

Sept. 15th.—Urine free from sugar.

Sept. 18th.—Patient was tested for alimentary glycosuria in the ordinary manner. No sugar in urine.

An interesting feature about this case is marked change in the capacity to utilize carbohydrates which took place in a week.

In the treatment of glycosuria I have frequently observed that a change of scene, with relief from worry, has had a most beneficial influence on the course of the disease. This is, I think, evidence that mental worry is an etiological factor. In the case of one patient who had been passing 2,000 c.c. of urine containing 3.7 per cent. of sugar, the urine became free from sugar after a vacation of about two months.

The beneficial influence of psychotherapy in glycosuria appears to me to be very important. Probably it is all the more important because mental depression is looked upon not only as a symptom of the disease, but also as a causative agent of glycosuria. It is well, therefore, I think, to try to maintain the psychic state as nearly normal as possible. One should always try to develop a hopeful frame of mind in the patient. In the cases appearing after the age of forty, I think it is well to explain the nature of the complaint. I usually tell my patients that their capacity to utilize sugar and starches is diminished, not lost; and with a little care in eating and living for one or two years they will probably have greater freedom in eating.

#### SECRETIN IN THE TREATMENT OF GLYCOSURIA.

From the mucous membrane of the upper part of the intestine of any vertebrate one can prepare a solution of a substance

which, injected intravenously, produces a transient flow of pancreatic juice. To this pancreatic stimulant the name secretin is given. When given by the mouth it appears to be inert.

The fact that it has such marked stimulating action in the cells which secrete the pancreatic juice suggested to some physicians the possibility of the use of secretin as a stimulant of the cells which secrete the internal secretion of the pancreas, and as a remedial agent in glycosuria. This last proposition was tested by several physicians. Some reported favorable results; others unfavorable. In two cases of diabetes which I treated with secretin, given per rectum, no beneficial result was observed. The secretin was prepared from duodena of pigs. Possibly if the secretin had been given intravenously there might have been an improvement in the condition. This is, however, almost impracticable, as in order to keep up a prolonged action on the pancreas one must give injections every few minutes.

#### THE DIETETIC TREATMENT OF DIABETES MELLITUS.

In connection with this subject I wish only to refer to one point, and that is the importance of relieving the tissues of the excess of sugar. We should always keep in mind that the presence of sugar in the urine is the result of excess of sugar in the blood; and that it has been the experience of all physicians that the latter condition militates against improvement in the capacity of the tissues to utilize sugar. How it interferes with metabolism one cannot say. Possibly by its mass it modifies chemical change.

The first step, therefore, in the dietetic therapy of mild cases and of some of medium severity should be, after determining the capacity of the patient to assimilate sugar, to reduce the carbohydrate in the dietary until at least the sugar disappears from the urine. Moreover, one should not be in a hurry to increase the carbohydrate content of the food, as in many cases an improvement in assimilative power of the tissues returns slowly. Of course while the diabetic is on this dietary, or in fact any other, the urine should be examined at short intervals for the presence of diacetic acid. The presence of considerable diacetic acid is an indication for a change in dietary. The carbohydrate should be increased while the fat and possibly also the protein diminished.



## THE SURGICAL ASPECTS OF HEMOPHILIA, WITH SPECIAL REFERENCE TO HEMARTHROSIS.

BY BEVERLEY MILNER, M.D., C.M.

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Two cases of this uncommon disease having been under my constant observation for the past twelve years, I have thought it would be interesting to the profession to learn my experience, especially as I have often been sorely perplexed and unable to receive any aid from medical literature. Owing to the rarity of the disease there must be cases of hemarthrosis resulting in deformity which might have been avoided had the true condition been diagnosed. One such case came under my notice a few months ago.

Our present knowledge of hemophilia is summed up in the definition: A congenital and hereditary disease of the vascular system, characterized by the occurrence of obstinate hemorrhages of traumatic origin.

Time does not permit of an historical survey of this disease; suffice it to say that it was recognized as early as the twelfth century. Hemophilia is probably the most hereditary of all diseases, and is peculiarly unique in the manner of transmission in that, while it is usually transmitted through the females to the male offspring, the former rarely, if ever, have the disease themselves. The sons of a bleeder and his brother's sons are, as a general rule, free from the disease, but his sisters and daughters transmit the disorder to their male offspring, and in the latter the disease is often of a very severe type. It occurs among all races and in all climates, and though climate is a negative factor in the etiology of this disease, it certainly influences the symptoms, as hemophilic joints are often tender and painful in cold, wet weather, thus very closely simulating rheumatism.

There have been many classifications made of hemophilia, viz., spontaneous, traumatic, acquired, etc., but that made by Weil is the simplest and most reasonable. He speaks of two types: (1) the hereditary, and (2) the sporadic. The hemorrhages are always traumatic in origin. Many authors speak of hemorrhages occurring spontaneously, but it is extremely doubtful if such is the case. If it were the case internal hemorrhages would not be so rare. In the three cases of hematuria that I have seen the cause was quite apparent in two of them,

while in the other there was doubtless a renal congestion preceding the hemorrhage, the patient being ill with grip at the time. An epistaxis may result from blowing the nose, but if the nares be examined congestion of the mucous membrane will be found. A few years ago I tamponed the nares of a patient, a boy 8 or 9 years of age, who was supposed to have hemorrhage from the stomach, having vomited a large quantity of blood just before I saw him, being awakened from a quiet sleep by nausea. On examining the nares the source of bleeding was discovered, the blood being swallowed during the sleep. The patient had a habit of rubbing his nose and doubtless caused the hemorrhage in this way. He was a typical hemophil, with joint lesions, and soon after left the city and was lost track of, though I have since heard that he has died from hemorrhages.

A hemophil of the severe type will sometimes bleed from the most trivial cause, and the tendency to bleed, the severity and obstinacy of a hemorrhage varies at different times in the same patient. The disease does not display equal severity in all cases. One member of a family may be affected only in a slight degree, while another may suffer from the severest type of the disease. The mild cases usually escape joint affections, while the severe types are sure to be so affected. The existence of mild cases accounts for the absence of symptoms in some cases until after puberty, and the tendency to hemorrhages in these cases usually lessens after adolescence. The severe types usually die before reaching manhood; the few, if any, who live, must be invalids always on the watch, fearful lest they meet with an injury resulting in the dreaded hemorrhage.

*Pathology.*—Though the efforts of investigators during the past have not thrown much light on the pathology of hemophilia, it cannot be said that no progress has been made. Of the various theories as to its cause, but two have received much attention: (1) That there is some morbid condition of the vascular walls. (2) That the blood of hemophils is abnormally low in clotting power. The former appears to be the condition existing in hereditary hemophilia, while the latter applies to the sporadic form. The clotting power of the blood varies greatly in the same patient. I have observed both extremes, and have seen hemorrhages persist stubbornly though coagulation took place quickly.

Labbe,\* in a recent review of the pathology of hemophilia, divides the theories into four groups: (1) The vascular. (2)

\* *Revue de Médecine*, February, 1908.

The circulatory. (3) The nervous. (4) The blood theory; and quotes the results of the work of various authorities, viz., Virchow, Grandidier, Sahli, Kidd, Wright, Weil and others, and after a careful consideration of the results of the work of these investigators, concludes that the only theories to be considered are (1) the vascular, and (2) the blood.

Wright, Sahli and Weil have studied the coagulation of the blood most thoroughly. According to Wright, the blood of hemophils is low in clotting power, being deficient in calcium salts, thus causing the persistence of the hemorrhages. Sahli and Weil differ considerably in their views. Weil holds that there are two distinct types of hemophilia: (1) the hereditary, and (2) the sporadic; and states that while the blood in both types is deficient in plasma, owing to the lack of salts of calcium, there is in the hereditary type an anti-coagulation substance present. He has demonstrated by intravenous injections of human blood serum that the hemorrhage from the sporadic or occasional bleeder is readily controlled, while the same procedure has no effect on the hereditary type. Animal serum is less efficacious than human serum. Sahli attributes the deficiency of the plasma to some derangement of the vascular walls, whilst physiologically the cells of the vascular walls secrete special substances (Trombo kinase or zymoplastic substances), destined to set the plasma actively in motion. In hemophils this substance is lacking.

Labie suggests a type of hemophilia due to lack of contractile power of the capillaries—a very old theory, and one of which much may be said in its favor.

*Morbid Anatomy.*—Various changes have been reported.

*In the heart.*—Virchow and others have found a thinness of the walls of the ventricles and interventricular septum, also fatty degeneration.

*In the blood vessels.*—Blagden, as far back as 1817, reported an extreme thinness of the walls of the blood vessels. In some of the vessels there were very few muscular fibres.

Dr. Percy Kidd reported observing abnormally thin blood vessels and fatty degeneration of the heart.

*In the joints.*—Legge very fully describes the changes found in joints. In a joint that had been recently affected and for the first time, apart from the presence of a small amount of blood, there was nothing abnormal. In later or more chronic cases, where there had been repeated hemorrhages, the synovial lining was thickened and discolored. The cartilages were thin, roughened and worn out, especially where there had

been greatest pressure. The edges of the cartilages were ragged and split into layers. Microscopically the cartilages showed fibroid degeneration with cell multiplication. The thymus gland, according to Virchow and Legge, often persists until late in life. Other observers have failed in some cases to find anything abnormal other than the joint changes.

*Symptoms and Diagnosis.*—One well-known author,\* in his work on diseases of children, states that hemophilia does not manifest its presence until the patient is about two years of age. While this may be true in some cases, it may be explained by the fact that as the symptoms are of traumatic origin an infant in arms is well protected from traumatism. The disease is present at birth, even during fetal life, and will become apparent if the child be injured or should unfortunately be circumcised. There have been cases reported in which the first hemorrhage has not occurred until as late as the twenty-first or twenty-second year, but these are cases of a mild type, and it would be very difficult to prove that there had never been any earlier manifestations. There is nothing peculiar or characteristic in the appearance of a hemophil, nor in the mental development, as has been stated by some writers.

The diagnosis in cases of bruises, cuts or abrasions of the skin or mucous membranes is simple. If the hemorrhage persists in spite of treatment, the family history should be carefully enquired into. A blow on the fleshy part of the body or limbs will cause a pronounced hematoma. I have seen an arm enormously swollen and greatly discolored from the shoulder to the hand, resulting from an insignificant blow on the region of the biceps. Very often a hematoma simulates an abscess. Instead of there being the characteristic "black and blue" discoloration it is intensely red and painful, the resemblance to an abscess being so great that a very serious, if not fatal, mistake might easily be made. The previous history in such a case is very important. In joint affections the diagnosis is particularly difficult in some cases, and as the knee-joint is most frequently implicated, I will devote my remarks to that particular joint. The synovial membrane of the knee-joint is the largest synovial membrane in the body, and owing to its being highly vascular and intricately distributed about the ligaments, and also there being three ligaments given off from it, viz., the ligamentum mucosum and the alar, it can readily be understood how easily it may be injured.

Hemarthrosis may be divided into three stages:

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\* Holt--Diseases of Children.

(1) The primary stage—where a joint is affected for the first time.

(2) The secondary or inflammatory stage.

(3) The stage of deformity and ankylosis.

In hemorrhage into a joint the onset is always sudden. Immediately after an injury the joint commences to swell and in a few hours is noticeably enlarged. The patient may not be greatly inconvenienced for the first few hours, especially if it be a primary affection, unless the traumatism has been of a very severe nature, but usually commences to limp in from four to six hours after the injury. The joint now has the characteristic appearance of an acute synovitis. In a primary affection the course may be of a very mild nature, the swelling subsiding and the joint becoming apparently normal within two weeks if given rest. In secondary affections, or in case of a primary lesion being neglected, the symptoms and course of the attack are entirely different, the heat, pain and tenderness accompanying the swelling indicating an inflammation. The pain usually is severe for the first three or four days, being greatest over the site of the injury. Palpation reveals a tense fluctuating swelling. The least movement causes pain and a grating sensation is felt and sometimes heard. The temperature is usually increased. The knee is slightly flexed and in appearance exactly resembles a tuberculous joint. The pain and tenderness are influenced by the weather, being much worse in cold, wet days. When the swelling subsides, the joint remains enlarged, the capsule being greatly thickened, on palpation a doughy resistance being felt over the bony prominences. This thickening may never entirely disappear. If the limb be measured it may be found to be from one-quarter to three-quarters of an inch longer than the sound limb, due to the increased blood supply to the epiphyses owing to the injury. The joint is noticeably enlarged; the patellar eminence more prominent and rounded than in the normal knee, and the movement of the patella markedly limited.

The third stage, that of deformity, is the result either of neglect or lack of proper treatment, or of repeated hemorrhages, causing degeneration of the cartilages and contraction of the ligaments and ankylosis more or less complete. Regarding the differential diagnosis between hemarthrosis and tuberculous disease one cannot lay down any hard and fast rules. In the absence of a hemophilic history, a mistake may readily occur. The greatest clinical difference probably is in the mode of onset. In hemarthrosis there is the sudden onset following

an injury, while in tuberculosis there is usually a period of indefinite symptoms preceding the swelling. If the question of operation arises, Calmette's tuberculin test should be tried and the knee aspirated with a hypodermic needle. The needle should be avoided, if possible, as in some cases, those of a severe type, there is great danger of increasing the trouble by such a seemingly small thing as a needle puncture.

Mistakes have unfortunately been made in opening a hemophilic knee for tuberculosis with fatal results. One of the most celebrated European surgeons twice within a few months made such an error, both patients dying from hemorrhage.\* Three similar fatalities have been reported in the United States within the last few years. Consequently, too great care cannot be exercised in making a diagnosis in this condition.

The following clinical histories will illustrate the nature and course of the disease in a typical hemophil:

H., aged 14. Was a well-developed male child at birth. He has two brothers and one sister, the younger brother also a hemophil, the elder being free from all suspicion of the disease. One maternal uncle had the disease, dying from the effects of repeated hemorrhages and joint affections, the nature of his trouble never being recognized, being called "rheumatism with complications." This is all the family history obtainable. The first indication of bleeding was when the patient was circumcised when he was five or six months of age, at which time he nearly bled to death, notwithstanding a liberal application of artery forceps and various styptics. My first experience with this patient was a few months later, when he cut his lip, the hemorrhage persisting in spite of all treatment. Calcium chloride was given without the slightest improvement, pressure being the only efficient remedy. The lip was again cut a few weeks later, this time the wound being much larger and the hemorrhage much greater, necessitating constant pressure between the fingers for a period of nearly three weeks. The next time the lip was cut I devised a small clamp, which was kept in place until the wound healed. A few weeks later I first used a solution of adrenalin extract and was relieved to find something that would control the bleeding. The patient's history from that time (1896) to the present has been a succession of cuts, bruises and joint affections, a blow on the soft tissues resulting in a large hematoma, the gums bleeding every time a tooth became loose, frequent attacks of epistaxes, etc. The first joint affection was in the summer of 1903, and, con-

\* Koenig—*L'Encéphale*, June 25, 1892.

trary to the general rule, it was the hip-joint, the cause being a blow resulting in a large hematoma of the soft parts, accompanied by a severe pain in the knee. The trouble was of short duration, and that joint has never been affected since. The knee was next affected, a little over three years ago. The injury was a slight one, but resulted in great distension of the capsule, with very little pain or discomfort, and subsided in less than three weeks, when the patient again injured the same knee, giving rise to much more serious trouble, necessitating his being confined to bed from May until September, when he was allowed up, wearing a modified Thomas knee-splint. This attack was accompanied by pain and increase of temperature, and the leg increased in length three-quarters of an inch. A few months later he injured the other knee. Each knee has since been injured, the second knee to be injured increasing in length half an inch the second time it was affected.

Last winter, during an attack of grip, he developed a severe hematuria, due to some congestive disturbance in the kidneys. Dr. G. W. Ross at this time estimated the clotting power of the blood, and, finding it low, all acids were eliminated from the diet, and calcium lactate given, but without the least benefit. Thyroid extract was substituted and the hemorrhage began to diminish, entirely disappearing in a few days. Last month (April) he injured his right elbow, causing hemorrhage into the joint, but no inconvenience whatever.

C.'s history is practically a repetition of the former. He has had two attacks of hematuria, one following a chill from being in bathing too long, and the other developing during an attack of whooping cough, both attacks responding readily to thyroid extract. During these attacks he suffered from severe pain at times, owing to blood clots in the ureters. It was impossible to estimate the amount of blood in the urine, the fluid passed having the appearance of pure blood. No casts were found microscopically. His knee-joint affections have resulted in increased growth—three-quarters of an inch in one leg and five-eighths of an inch in the other.

R. B., aged 6 years. This boy I operated upon at the Hospital for Sick Children a few months ago, for a large abscess in the abdominal wall, and found that he was a bleeder. There was profuse hemorrhage from the walls of the abscess cavity, which was firmly packed with gauze, saturated with a solution of adrenalin chloride. Calcium lactate was given, and each time the wound was dressed it was treated with adrenalin chloride, the tendency to hemorrhage ceasing on the sixth or

seventh day. We were unable to get any history of hemophilia in the family or of any previous trouble. The boy's mother died a few months previously from pernicious anemia. This boy probably belongs to the sporadic type of bleeders.

*Treatment.*—The desired object in all the methods of treatment employed to arrest the hemorrhage in hemophilia has been either to promote the coagulation of the blood or to cause capillary contraction. Many methods have been advocated to induce coagulation, viz., the use of gelatin locally, internally, and subcutaneously; calcium salts, locally and internally; animal extracts and blood serum.

Gelatin has proved a failure. It has been proved by Gley and Carnus that it is not absorbed when injected subcutaneously, and that any effect it has is due to its acid reaction and the calcium salts it contains.

Calcium salts are very uncertain. Wright and other English authorities strongly advocate the use of calcium, while the continental authorities as strongly hold the opposite opinion. Labbe has been for some time, and is at present, experimenting with calcium, but has had only negative results. Of the many animal extracts tried but two have proved useful—thyroid and adrenalin. Human and animal serums have given good results and have been used by several authorities, but their value appears to be chiefly in the sporadic form, not in the hereditary. Serum should be used when fresh, fifteen days being the limit, and human serum is more efficacious than animal serum. Antidiphtheric serum may be employed. The dose employed intravenously is from 10 c.c. to 20 c.c., and the effects are said to last for one month. Subcutaneously the dose is double that given intravenously. Weil also uses it locally in the nose and on the gums by means of tampons. I have not had any experience with serum in hemophilia. My method of treatment has been satisfactory and is much more simple than serum therapy, and will be outlined briefly in treating of individual hemorrhages. Were I face to face with the necessity of an operation on a bleeder, I certainly would employ the intravenous injection of serum as described by Weil. The difficulties in the way of serum therapy outside of hospital practice are obvious. What the general practitioner needs is an ever-ready remedy, one that may safely be left in the hands of a patient's family when necessary, for use in emergency, and such a one we have in adrenalin.

In the treatment of cuts and abrasions, all one can do is carefully to observe the rules of aseptic surgery and apply ad-



renalin chloride from time to time, being careful not to bandage too firmly. Before the advent of adrenalin I tried every styptic and astringent in the pharmacopeia, and found them of little or no value in this disease, the preparations of iron proving injurious by causing necrosis and consequently enlarging the bleeding area. The actual cauterization was on one occasion used and succeeded in making matters worse. Now, however, it is different, as adrenalin readily controls the hemorrhage when applied locally. A wound of the gums or mucous membrane needs very close attention. Here adrenalin is applied by a small compress and held firmly in place until the bleeding ceases, the process being repeated when the bleeding again commences. The adrenalin acts much better when the wound is first irrigated with hot water. The effect lasts for some hours. I have used adrenalin in its various forms ever since it was placed on the market and have never had it fail me.

In a recent article in the *British Medical Journal*,\* the writer states that "no remedies, local or general, have any effect on the hemorrhage," a rather sweeping statement, and, as far as my experience is concerned, absolutely wrong. Adrenalin has passed the experimental stage; its action is too well known to require any further reference here. With reference to internal remedies, thyroid extract has a beneficial action in hematuria, though in other hemorrhages I have never been able to see any good result from its use. Delace\* and Fuller report cases of hematuria relieved by the administration of thyroid.

In epistaxis, plugging the nares both anteriorly and posteriorly should be avoided on account of the danger of causing serious trouble in the frontal sinus. An efficient method of controlling the hemorrhage is to insert a small tampon saturated with adrenalin chloride, leaving it in place until the bleeding ceases, when it may be removed gently and one smeared with adrenalin ointment inserted. Should bleeding recur the adrenalin solution is again resorted to. The nares should be gently irrigated every day with some bland solution and the adrenalin ointment applied. This prevents dry crusts forming, which irritate the nose and tempt the patient to remove them with the finger, causing further hemorrhages.

Large hematomata of the soft parts are sometimes very painful and accompanied by inflammation. If it be a limb that is affected it should never be bandaged tightly, as the pressure on the muscles might, by depriving them of their blood supply,

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\* Groves—*B. M. J.*, May 16, 1907.

† Delace—*Journal de Médecine de Paris*, January 23, 1898.

cause paralysis, as pointed out by Groves. It is quite possible for such a deformity to result without the injurious effect of bandage or splint. The proper treatment in such conditions is absolute rest and the application of hot boracic compresses, which relieve the pain and promote absorption.

*Joint Affections.*—A primary affection of the knee joint may get well in from ten days to two weeks, with no other treatment than absolute rest, but secondary affections are much more serious. It is important to carefully enquire into the nature of the injury, whether caused by a direct trauma to some portion of the capsule, or by a wrench or hyper-extension, in the latter case causing a hemorrhage probably from the synovial covering of the anterior crucial ligament. In hemorrhage into the capsule, caused by over-extension, the pain is usually severe and involves the whole joint, and the tendency to greater flexion of the leg is greater than in hemorrhage caused by a blow, the pain in this case being referred to the site of injury.

The pathological changes are practically the same in both cases, but are apparently more severe in the case of hyper-extension, consequently there is a greater tendency to fixation.

Absolute rest is the first indication in the treatment, and this can only be obtained by placing the patient in bed and applying a splint. A very suitable splint is a posterior splint, with a lock-joint that may be adjusted to any angle desired. The leg is bandaged to this splint above and below the knee, leaving the knee exposed in order that local applications may be made, and also that the progress of the swelling may be watched. Great care should be exercised in applying the bandages that the circulation be not interfered with. I have observed that in injuries due to wrenching or hyper-extension the application of hot fomentations gives the greatest relief, while in the case of a bruise or blow when the site of injury could be determined the early application of ice has proved beneficial.

Just as soon as the swelling has reached its maximum, usually in four or five days, an extension apparatus should be applied. This should not be delayed, for two reasons: (1) on account of the tendency to ligamentous contraction, and (2) to prevent erosion of the joint surfaces. The extension gradually straightens the limb and gives great comfort to the patient, and should be kept on for two or three weeks after the disappearance of the fluid, when the weight may be gradually decreased and in another week entirely removed. A modified Thomas knee-splint is now applied, the joint being bandaged

with flannel and a posterior bed splint worn at night in order to resist the tendency to flexion. The Thomas splint should be worn until the tenderness has disappeared, usually from six to twelve weeks, or even longer, according to the severity of the case. When the flannel bandage is removed an elastic knee support should be substituted and worn continuously.

In cases that have reached the stage of deformity with ankylosis, nothing, unfortunately, can be done. General tonic treatment, good food and plenty of fresh air should, of course, not be neglected. If it be possible for the patient to live in a dry climate, it will be to his advantage.

Fortunately this disease is comparatively rare, at least in this country, as compared with Europe, but with the increase of population and immigration it will become much more common here in a very few years. There is only one remedy, and that is for the female members of hemophilic families, as well as those afflicted with the disease, not to marry. Fagge reports that in 1859 the female members of two hemophilic families in which the disease had existed for over a century resolved not to marry, and in 1879, twenty years later, there were no new cases. Afflicted families should be educated along these lines. They are directly concerned and the cure is in their own hands.

## PULMONARY TUBERCULOSIS.

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*Gentlemen*,—The subject for consideration this morning is suffering from a disease common to persons between the ages of twenty and thirty years. In order that you may properly understand this case, we will give you a full account of his history.

He is twenty years old; nativity, American; occupation, clerk.

*Family History*—His father died of tuberculosis at the age of twenty-eight, while his mother died of the same disease at the age of twenty-two. He has no knowledge of his grandparents since he has been living with his aunt, as far back as he can remember. He has no sisters and no brothers.

*Previous Personal History*—Patient, when a child, had some of the common diseases of childhood. He had whooping cough at the age of ten and measles at the age of twelve. Otherwise he was healthy. He never had diphtheria or any other acute contagious disease.

*Present Illness*—The onset of this disease in this patient was by no means uniform. About three months ago he contracted a slight hacking cough while being exposed to a slight draught. This cough persisted for some time in spite of treatment. He states that this cough was worse in the morning as compared with his cough in the evening. This cough was followed by fever, which abated, but it soon returned again, and he also complains of a pain in his side. Soon there was evident emaciation, followed by a gradual loss in weight and hemorrhage from the lungs made its appearance. Sometimes this hemorrhage lasted one or two days, and considerable quantities of blood were ejected. He was compelled to expectorate quite freely and the expectoration was mucoid at first, but it soon became rusty-colored. Upon examination this sputum contained tubercle bacilli. One of the most prominent symptoms of the respiratory tract is dyspnea. When this dyspnea becomes pronounced his respirations become rapid and his face assumes a pronounced cyanotic color. He complains of shortness of breath upon the slightest exertion.

At the present time, in addition to the symptoms mentioned, he has a fever which ranges between 103 F. and 104 F., and sweats excessively at night. His countenance is dusky; the pulse is of good volume and regular rhythm, but it has a very low tension.

*Physical Signs*—Upon physical examination we find that he is emaciated, shown especially by the hollow cheeks and temples, pinched nose and thin hands. His clavicles are very prominent and there is a diminished expansion in the right infra-clavicular space as compared with the other side. The heart beat is slightly accelerated and the respirations are more frequent than normally.

The face is flushed and the superficial veins over the upper part of the right lung are marked, due to the obstructed circulation and the emaciation. Upon palpation, the skin is hot and dry and the vocal fremitus is increased. Dulness on percussion is positive and easily elicited. To auscultation there is increased vocal resonance, breathing more harsh and a prolongation of the expiratory murmur.

The expectoration is tinged with blood and has not an offensive odor. Under the microscope the expectoration contains chiefly pus corpuscles, epithelial cells, tubercle bacilli, elastic tissue from the alveolar epithelium and fat globules.

*Diagnosis*—From the presence of tubercle bacilli in his sputum, physical signs and symptoms, we can undoubtedly diagnose this case as that of incipient pulmonary tuberculosis. Other symptoms of great diagnostic value are fever, hacking cough, expectoration, progressive emaciation and the dulness on percussion.

To give you a clear insight of this disease, permit me to refresh your memory on the pathology of this affection.

*Pathology*—Tuberculosis is characterized by the eruption of small nodules varying in size from one or two millimeters to that of a small pea. These are known as miliary tubercles, which is the beginning of all tubercular deposits. It is itself a compound, being composed of smaller submiliary tubercles, of which from ten to fifty unite to form a miliary tubercle. They are of a transparent, gray color, and are especially characterized by evascularity.

When the tubercle bacillus first enters the tissue, the first effect is to stimulate or irritate the fixed connective tissue elements and endothelial cells and cause a proliferation of round cells, which resemble in their abundance of protoplasm the epithelial cells, and are therefore known as epitheloid cells.

These epitheloid cells assume various shapes, chiefly rounded and polygonal. They have a vesicular nucleus and in their interiors are found varying numbers of tubercle bacilli. The wandering leucocytes flow from the adjacent vessels and form the lymphoid cells, which constitute the bulk of the tubercle. Soon giant cells appear which arise from the fusion of individual cells and from the epitheloid cells. These giant cells commonly contain twenty to forty nuclei arranged at the periphery of the cell. The tubercle bacilli are also present in these large cells, but they are scanty. It has been asserted that the giant cell is a living defensive agent and they display phagocytic action.

After these tubercles have attained their full size, they invariably undergo degenerative changes: 1. Caseation. 2. Sclerosis.

The degenerative changes which take place are hyaline degeneration, coagulation necrosis, fatty change, and eventually a transformation into a cheesy material, the so-called caseous necrosis. These changes occur from the vascular condition of the tissue and from the specific action of the tubercle bacillus. First, the protoplasm of the cell becomes granular and opaque, and this is followed by a complete disintegration of the entire cell. The cells usually begin at the centre to display the necrotic changes. Their outline becomes less distinct, and as the necrotic process advances the cells break down into small particles or debris. The giant cells also undergo similar changes. Finally, the tubercle undergoes complete necrosis and is transformed into a cheesy mass, which frequently undergoes softening.

More rarely caseated tubercles become infiltrated with lime salts and undergo a calcareous change, which change happens rarely in the lungs, but is especially prone to occur in the lymphatic glands.

The surrounding connective tissue shows proliferative changes, which may eventually cause encapsulation of the tubercle. Such masses remain indefinitely and are practically harmless.

Finally, a tubercle may undergo a fibroid change and the tubercle is transformed into fibroid tissue. This fibroid change in its completest development is observed in tuberculosis of the serous membranes, especially the peritoneum.

When the tissue forms a favorable soil for the tubercle bacillus, secondary tubercles make their appearance in the adjacent organs. This dissemination of the tubercles is effected

principally through the blood vessels, lymph channels, and also by the phagocytic leucocytes. Through the lymphatic system tuberculosis spreads to the lymphatic glands, and thence to the adjacent serous membranes. Tuberculosis also spreads by contiguity.

The tubercles tend to coalesce, forming larger tubercular masses, and sometimes distinct tubercular tumors are produced. The condition which results from general infection and formation of tubercles in various situations is known as miliary tuberculosis. In such cases the progress is very rapid and death is not long delayed. Besides the tubercle, there are inflammatory lesions occurring between the tubercles and varying with the anatomic character of the organ affected. These inflammatory changes in the lungs may show changes similar to those of catarrhal or croupous pneumonia. In other instances an overgrowth of interstitial tissue ensues. Sometimes it is excessive and results in the so-called fibroid phthisis.

Associated with tuberculosis there are constitutional features which are dependent chiefly upon secondary infection, such as the streptococci. It is held by some that tuberculosis is also capable of exciting suppuration in the absence of other pus-producing organisms.

The favorable seats of tuberculosis are lungs, liver, kidneys, spleen, intestinal canal, brain, bones and joints. The salivary glands and pancreas are least frequently involved.

*Etiology*—Tuberculosis is caused by the tubercle bacillus, which was discovered by Koch, in 1861. This bacillus is a slender, rod-shaped, straight, somewhat bent bacillus, and is non-motile and non-sporogenous. The best culture media for the bacillus is blood serum previously coagulated by heating. From the cultures of this bacillus a nuclear proteid and a ptomain have been isolated. When stained it may appear uniformly colored or may present a beaded appearance.

The tubercle bacillus is found in man and in cattle, but they exhibit structural and cultural differences, though they are probably the same bacillus exhibiting different characteristics, caused by their growth in different environments. However, the bovine bacillus possesses greater virulence.

The bacillus of tuberculosis is probably always present in the atmosphere, being derived from the drying and pulverization of the expectorated sputum from tubercular patients. They are also found in the lesions of all parts of the body. Their vitality outside of the body is extraordinary, having great resisting powers. However, multiplication of the organism

rarely occurs outside of the body. The constitutional features of the disease may be ascribed, in part, to the circulation of the poisons produced by the tubercle bacilli in the blood, but principally to the pus-producing organisms.

*Modes of Infection*—The bacilli may gain access to the body:

1. By inhalation.
2. By swallowing.
3. By direct inoculation.
4. By direct hereditary transmission.

The most common entrance for this bacillus is through the respiratory tract. Although the breath of the patient suffering with tuberculosis does not ordinarily contain the bacilli, nevertheless the rooms in which the patients live contain numerous bacilli in the dry state, and these readily become mixed with the air and are thus inhaled. Hence the greatest frequency of tuberculosis of the lungs and bronchial glands, which is the first tissue open to the approach of the bacilli. It is also possible for this bacillus to enter by the skin, thereby causing lupus vulgaris of the skin. The infection may also take place through slight cutaneous lesions, although this is rare.

Sometimes the bacilli are swallowed with milk or meat, or they may gain access to the mouth in the form of dust or particles of various kinds and be swallowed with the saliva. It is a well established fact that such contaminated milk may infect the human subject.

In exceptional cases the bacillus is found in the fetus *in utero*. It is transferred from the mother to the offspring through the placenta. Some authorities state that the few bacilli which are transferred to the fetus and child may later cause active infection.

*Predisposing Causes*—

1. Race and nationality.
2. Hereditary predisposition.
3. Previous infectious diseases.
4. Age.
5. Sex.
6. Climate and soil.

*Local Causes*—

1. Occupation.
2. Bronchial catarrh.
3. Tubercular pneumonia.
4. Hemoptysis.
5. Pleurisy.



6. Intrathoracic tumor.
7. Congenital or acquired contraction of the orifice of the pulmonary artery.
8. Trauma.

No race is exempt from this disease, but the negroes and Indians are especially predisposed to it. The Russian Polish Jews are remarkably exempt, and next to them are the native American whites.

Children born of tuberculous parents and persons living in the infected house are very liable to become affected.

Persons having catarrhal affections, especially of the respiratory organs, are prone to this disease. Many infectious diseases form a good tissue soil by diminishing the vitality and thus favoring the growth of the tubercle bacillus. Cases are reported where tuberculousness has developed after the acute and infectious diseases, such as influenza, measles, whooping cough, typhoid fever, cirrhosis of the lungs, and diabetes mellitus.

The susceptible period of pulmonary tuberculosis begins between twenty to thirty-five years, and it may also occur at any age. Meningeal, mesenteric and lymphatic tuberculosis are especially common in children.

Females are more predisposed than males, because they are confined indoors more, and during the pregnant stage the progress of the affliction is accelerated.

No climate is exempt from tuberculosis, but the development of the disease is favored in those localities where there are frequent and rapid changes of temperature, and where the soil is damp. It is more common, however, in the temperate and torrid zones than in the frigid zones.

Persons whose occupations necessitate the inhalation of irritating substances are very liable to this disease. Another frequent cause is bronchial catarrh, which prepares a favorable soil for the tubercle bacilli. Some of the other causes, as I have mentioned before, are hemoptysis, pleurisy, intrathoracic tumor and congenital or acquired contraction of the orifice of the pulmonary artery.

Traumatism favors the lodgment of the tubercle bacilli. Injuries to the chest wall are frequently followed by pulmonary tuberculosis. This is particularly seen in the development of tuberculosis of the joints succeeding injury.

In this patient particularly, I believe that he acquired an hereditary diathesis from his parents and that he undoubtedly sooner or later was exposed to the germs and became infected. I believe if this man's environment had been right and he had

taken the proper precautions, he would never have acquired this disease.

*Treatment*—This patient, of course, must make a change in his occupation. He needs the open air and sunlight as well as food and medicine. His age is in his favor for his recovery, and in the course of six months to a year he should be entirely well and his sputum free from the bacillus. His assimilation is at fault, which we must first correct if we wish to obtain results. For this we will give him:

R Tincture nucis vomice . . . . . fʒss  
 Acidi hydrochlorici diluti . . . . . fʒvi  
 Tincture gentiane composite . . . . . q.s. fʒiii

Misce. Sigma.—One teaspoonful in a little water a half hour after each meal.

When his digestive organs are in a good condition, we will begin to give him such drugs as will assist in the amelioration of his diseased lungs. Of the many antiseptic expectorants the one most suitable in all of these cases is beechwood creosote, which should be given in ascending doses. It is well to begin with one minim three times daily and increase the dose one minim every second day, until at least ten minims are taken at a dose. Of course medicine alone will not cure these patients. Plenty of good food and fresh air will do more than medicine. However, medication should not be neglected.

At present the weather is cold, hence the patient can take cod-liver oil with less disturbance to the stomach than during the hot summer months. Cod-liver oil will not only serve as an alterative, but at the same time is a valuable food to produce heat and energy in the body. Our aim in all cases of tuberculosis should be to build up the nutrition of the body by giving well-prepared nutritive foods.

Milk and eggs is the preferable diet for consumptives. However, the eggs should be slightly cooked, because most patients cannot digest the uncooked albumin, as is shown by their stools. We will instruct this patient to eat plenty of well-cooked meats and some vegetables, together with his milk and eggs. The more concentrated foods are preferable. Fresh air, with plenty of sunlight, is as essential as food and medicine. The patient should sleep with open windows and spend all day in the open air, regardless of the weather. Of course, when the weather is cold and inclement, the patient must be clad accordingly.

## Selected Articles.

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### THE TEACHING OF HYGIENE IN SCHOOLS.\*

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BY J. FOSTER PALMER, M.R.C.S., L.R.C.P., F.R.HIST.S.,  
ETC.

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*Quis custodiet ipsos custodes?* or, rather, I should say *Quis præcipiet ipsos præceptores?* I am here, it seems, to teach the teachers; teachers who know, perhaps, on some points, certainly in technical matters, more than I do. With others, also perhaps, I may be more familiar. Still, it may be a relief to the tension of your minds to put yourselves occasionally in the position of learners for a time, even if you gain nothing more by it than a little moral support from an outsider. If I were to say that the best method of teaching hygiene in schools is not to teach it at all, you would think I was making an Irish bull, so I will not say so, but leave you to deduce it from my remarks, if you find they bear that construction. Did you ever feel despair? Despair of making any impression on those you teach? Despair of any possible result from sowing good seed on what appears to be absolutely sterile soil? Your pupils' thoughts were evidently far away. Were they? You do not know. You were speaking to human beings at the most receptive age, when the brain is growing and active, when it easily receives impressions and is wont to retain them perhaps through life. I know from experience that they often receive strong and permanent impressions when you least expect it.

The subject before us is a very large one, and I can do no more than give suggestions on certain points, following, partly, in the line of the excellent instructions given by the London County Council, with which, no doubt, you are perfectly familiar.

(1) The importance of ventilation, especially for children, I need not dwell on. It has been so impressed on us that it has become a fashion, a vogue, like baths. We all know that expired air contains 4 per cent. of carbonic acid, and how long it would take to fill a room with such air. We know, too, the effect of plants in purifying the air (in the day time). With

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\* Given to a branch of the "Teachers' Guild of Great Britain and Ireland," at the Froebel Institute, on November 12th, 1908.

regard to open windows, as Byron would say, "I know we're crammed with the best doctrines till we quite o'erflow." The open-air treatment of all things in general and consumption in particular, we have at our fingers' ends. I can only touch on this point. In fact, ventilation is so much "in the air" that you will have little need to teach it. The rising generation can hardly escape this branch of education.

(2) There are moral as well as physical foes of hygiene and sources of hygiene. Of course I must not speak of "sin." That would be unscientific. Besides, it would be poaching on the preserves of the parsons. I am aware that now, even among them, *i.e.*, those of the "higher critic" type, there is no such thing as "sin." It is now the "contrariant influence of evil," a distinction without a difference, as I conceive it. But that I pass over. I prefer the old word, though I do not use it. I call it "perverted mental and moral energy," but it means just the same, only sometimes it consists in the absence of "moral energy," or any other energy, altogether. Negative evil, however, leads to positive. Sloth is a negative evil, but it results in very positive evils in the form of dirt, overcrowding, and starvation—all potent allies of disease. Where there is dirt there is concentration of microbes. Where there is overcrowding this concentration is still further increased, and the crowded ones are more susceptible. Where there is also starvation this susceptibility has reached its climax. Sloth leads to ignorance and the neglect of all sanitary precautions and the defiance of nature's laws. It is the direct cause of conditions of ill-health, or what we call auto-intoxication, and the indirect cause of licentiousness and intemperance—all potent causes of susceptibility to disease. If, therefore, by precept and example, you can exorcise this evil demon, you will have taught one of the first and most important lessons in the practice of hygiene. For the essential mode of protection against disease is not the running away from real or imaginary microbes, but maintaining a sound standard of individual health. It is our own resisting power that we must cultivate, *mens sana in corpore sano*. Pathogenic microbes, as a rule, do not flourish in a perfectly healthy organism, and, independent of its accessory advantages, such as personal cleanliness and sanitary intelligence, activity of mind and body is the first essential to such a condition. But body first. Children, I believe, go to school far too young. The undeveloped brain is roused into artificial activity at the expense of nerve stability and physical soundness (often of brain power, too) for the rest of life. Physical

training and the acquisition of physical stamina must come first. But when the mind and body are fully developed, then activity of both is essential. And of mind chiefly. Mental activity is the most important, will last the longest, and is, in the long run, the most sanitary. Physical activity is, after all, chiefly useful as a training for mental. We want the sound body, more especially that we may be able to use the sound mind. I must quote on this subject a great observer of boys and men, the late High Master of St. Paul's School. "I do not hesitate to say," he says, "that if two boys start life together equally sound in constitution, and circumstances lead one to choose an open-air career of muscular exertion, and the other the life of the study and the cultivation of the brain, the student has the better chance of health and long life." This, too, you see, is in spite of disadvantages in the matter of pure air, etc. The red-faced, muscular, fox-hunting squire is a reversion to an earlier and lower type, and is further from the ideally healthy type than the pale student and brain-worker. Meanwhile we should get along much faster if we were to recognize the fact that, in nine cases out of ten, the theologian and the scientist are just saying the same thing in different words, and then quarrelling about it instead of working together. The former speaks of "sin," while the latter discusses "perverted mental and moral energy," both referring to the same psychical condition. The priest denounces "sins of omission," while the doctor denounces "sloth," both meaning the same "Original sin!" "Oh, no! there is no such thing," says the scientist, with an air of superiority; "it is an exploded myth." But call it "Hereditary evil tendencies," and he will cease to deny its existence; while the difference between what the theologian calls "Temptations of the devil" and what the scientist calls "Personal or acquired evil tendencies" requires for its perception a more potent mental microscope than has yet been discovered. For, of course, the old-world dispute about the devil and demoniacal influence is entirely verbal and utterly futile. We know that evil exists, and that we must oppose its influence, but to know whence it arises is no help in guiding our conduct. We are constantly told that the devil is dead. If it be so, it is well to remember that his business is still being carried on; that, as tersely stated by a recent writer, it has been turned into an unlimited company, with increased powers and capital.

(3) The next subject on the syllabus is teeth. This seems rather a bathos after climbing to metaphysical heights: but even they have a moral bearing. Teeth, I consider—*i.e.*,

carious teeth—are a product of civilization, and partly, I think, of brain activity. Savage races, as a rule, have perfect teeth. Some will tell you it is our artificial methods of feeding. Not entirely, I think: the latter is partly a necessity owing to defective teeth. I doubt if perfect teeth are, generally speaking, consistent with active and highly developed brains. As a result of some forty years' personal experience, I know that in my own case a decaying tooth is usually the sequel of any special mental effort. Meanwhile we have, most of us, defective teeth, and we must do our best to preserve them. Future generations may be born without teeth, and have to live on bread and milk, but that time has not yet come. Carious teeth are manufacturing splendid material for the cultivation of pathogenic microbes, and should be attended to at the earliest moment. But prevention is better, when possible, and much may be done by care and cleanness (not, I may say, in the sense in which the word is used by the old Hebrew prophets, where "cleanness of teeth" is a kind of euphemism for *starvation*.)

(4) The anti-hygienic effect of drink you will hardly need to teach your pupils. They have probably seen it themselves. Temperance, like ventilation, is in the air. They have heard about it. By consistent example you can, however, intensify the impressions made. But there are worse evils than drunkenness. An English bishop once said, "I would rather see England free than sober." I can hardly endorse this. Indeed, I would not. But, if the choice arose, I know that I would rather see England "pure" than "sober." And I am equally sure that I would rather see England "honest" than "sober." I said, some 20 years ago, that if drink had slain its thousands, licentiousness had slain its tens of thousands, and I see the Bishop of London has lately quoted the remark. Apart from visible consequences in special diseases, it has a more depressing effect on the human organism, and renders it more readily a prey to disease. This is a fact which may surely be impressed on the young without going into unnecessary details. Shakespeare gives both as the great shorteners of life in his account of a healthy old age:

For in my youth I never did apply  
Hot and rebellious liquors in my blood;  
Nor did not, with unbashful forehead, woo  
The means of weakness and debility.

The Jews are a survival of the fittest. They are still, mentally and physically, the finest race on earth. And there can be no doubt that their superior vitality and longevity are the result

of their greater purity than the surrounding nations, and their long training under the religious and hygienic code established by Moses.

(5) One practical conclusion, I think, is this. If we want a strong, healthy, and intellectual race we must have religious teaching in all our schools. I have pointed out its bearing on hygiene. But children will often listen to and follow dogmatic instruction when they will not understand, or will not attend to, vague scientific generalizations. To take one example only. If children were all trained by their teachers to acquire habits of strict honesty (not because honesty is the best policy, not as a matter of expediency, not for long drawn-out scientific reasons, but as a stern, inflexible moral duty) many of our sanitary difficulties would vanish into thin air. For example, if men did their duty honestly to their employers we should have no defective drains. If vendors were honest, milk would not be adulterated with contaminated water, and would not be supplied from tuberculous cows. The test for tubercle is perfectly easy, and but for the lack of this plain moral duty bovine tuberculosis might be exterminated throughout the country. If landlords, builders, and workmen all agreed to do their duty honestly there would be no damp, unhealthy, ill-built, and ill-ventilated houses. "A king," Burns says, "cannot mak' an honest man"; that is "aboon his might"; but a teacher can do much towards cultivating the material for one.

(6) But we must come down from the clouds again, and teach children to wash their hands. Moses taught this as a religious duty. You will say, of course, that it was the only way of teaching anything to a nation in an early stage of moral and intellectual development. Hygienic principles would be unintelligible to them, so he commanded them simply to wash their hands before meals, and they did so. He did not trouble them with complicated scientific reasons. And remember that children are much in the same position. They are individually what the Hebrews were nationally, in a low state of development. Men, like nations, do not spring into full perfection ready-made. It is "line upon line, precept upon precept; here a little, and there a little"; or, to use the more modern and high-sounding words of Browning, we cannot hope to dispense—

With infancy's probation, straight begin

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To stand full-statured in magnificence.

If this one habit of hand-washing were acquired we should not hear very much of lead-poisoning. If you were to see the

hands of men working in potteries and at painting houses, you would not wonder at their being poisoned if they eat their meals (as they constantly do) without washing them. Why do you and I wash our hands before meals? Not as a religious duty. Not, speaking generally, because we are afraid of swallowing certain poisonous microbes. We don't go through that process of reasoning every time. We do it simply because we should not feel comfortable without; in other words, because we have acquired a habit, a habit we were taught in our youth (it matters not how, but certainly not on scientific grounds, most of us), a habit which the lead-workers, the working painters and potters, have not been taught. Habits, mental, moral, and physical, acquired during the educational period are usually, if well established, retained through life. "The object of all education," Bacon says, "is to obtain good customs." This is all that schools are good for. Habit formation is their sole *raison d'être*. Habit is an essential part of our growth, or, in the sesquipedalian language of our modern scientists, "of the ontogenetic development of the human unit." "Habit," Dr. Darwin says, "is the capacity, acquired by repetition, of reacting to a fraction of the original environment." This means just the same as Bacon's statement, that custom is stronger than intention. I prefer Bacon. Indeed, Bacon's aphorism as to the object of education sums up the whole matter, and is of more real value than all the wordy rhetoric of Herbert Spencer put together. Spencer judged other minds by his own. He found that in his own case a principle was of more value as a guide than a rule. I believe a more extended experience would show the opposite to be more often the case. I know it is "a perilous shot out of an elder-gun that a poor and private displeasure can do against" so great "a monarch" of literature as Herbert Spencer. But I have had two advantages that Spencer had not, a scientific training and a large family of children. Spencer's philosophical conclusions are often stultified by the lack of a sound, scientific basis, and his theories of education are often similarly defective for want of constant observation and personal contact with a growing family.

(7) Consumption (tuberculosis) destroys about one-tenth of the inhabitants of these islands. Besides this, I am convinced, from the examination of *post-mortem* records, that nearly half the population of the country is attacked sooner or later by his disease. To put it more plainly, the chances are almost even that you and I either have, or have had, or will have, consumption in one of its forms. This statement, al-



though it sounds appalling, is, in another point of view, rather encouraging, for it points to a large percentage of recoveries. That is to say, if the incidence of tubercle is, as I believe it to be, about 40 per cent., and the death-rate 10 per cent., this means 30 per cent. of recoveries. The incidence of consumption, it is true, is lessening; but it still carries off more than all the acute infectious diseases put together. Its magnitude, therefore, makes it a subject of intense importance in relation to hygiene, which consists, essentially, in the prevention of diseased conditions. I have no wish, as I have no need, to be an alarmist, for I should say that tuberculophobia is about the most prevalent disease of the day. But prevention is better than cure; and, more than this, sensible precaution based on knowledge is better than senseless fear based on ignorance, as it usually is. In the first place, in view of the observations made on human beings and cattle, the hereditary character of tubercle may be practically disregarded. If you catch consumption it is in most cases from the actual expectoration of a consumptive patient, and, generally speaking, when it becomes dry. It is not taken from his breath except during an actual fit of coughing, and that is unlikely. Expectoration, therefore, must be studied like a fine art, or like any other subject of instruction: not only by recognized consumptives, but by all who are suffering from coughs; for in view of the large incidence of tubercle, and the number of recoveries, it is always possible that such coughs may be the result of slight temporary attacks of tubercle. A bacteriological examination is the only certain test. There are only two safe ways of spitting. One is to spit on the fire, the other is to spit on the ground in the open air. In the first case the bacillus is burnt up. In the second, provided there is sufficient space, it is disinfected by the oxygen of the atmosphere, but even this must not be too full of human beings. I am urging, of course, a counsel of perfection, but if a patient spits in his pocket-handkerchief, he ought to put it on the fire the first opportunity. By allowing it to dry he is liable to infect others, and to shorten or destroy his own life. The great thing is not to allow the expectoration to dry, but to burn or disinfect it first. Cheap fibre handkerchiefs are now made for this especial purpose. If a patient spits on the floor—well, he ought to be locked up. Day-light and fresh air are fatal to the bacilli, and, although a patient cannot get this combination actually in his lungs, he can do his best towards it. We have referred to the dangers of over-crowding, of damp and ill-ventilated houses, of contaminated milk,

of breathing foul and dust-laden air, and of accumulations of dirt, sewage, and decomposing material. Breathing through the nostril is an important precautionary factor. The nose is the natural protector of the lungs, and, when obstructed, may usually be relieved by operation. And a consumptive patient in a house should always have a well-ventilated room to himself, with windows open and a fire if necessary, and precautions should be taken to ensure disinfection. But there are personal as well as outside precautions. The bacillus requires a favorable soil for cultivation. People with healthy appetites and wherewith to satisfy them, devoid of fancies, eaters of fat, oil, and butter in good quantity, living regular, active lives, and exceeding in nothing, are not very likely to take consumption. But where there are intemperance, starvation, debility, exhaustion, immoral lives, bad habits of any kind, overcrowding, want of ventilation, irritation of the lungs by the constant inhalation of dust, etc., the bacillus of tubercle will probably find a local habitation and a name. It is not necessary for children to know much about tubercle bacilli. A little knowledge is a dangerous thing. The less they know or think about such things the better. We do not want children to grow up morbid, neurotic, hypochondriacal, valetudinarian tuberculophobes. But they should know that there is such a disease as tubercle; that it affects cattle, and consequently meat and milk, and that it can be readily detected by the tuberculin test; that they may insist, when, later on, they have the power, by their exercise of the franchise, to influence the policy of their rulers, that this test should be compulsorily applied and acted on, for the health of the country largely depends on it.

You have asked for my views: I have given them. You will probably find them unpopular. But I am sure that within twenty years, probably less, they will be accepted by those best able to judge.—*The Medical Magazine.*

## ON THE TREATMENT OF SYPHILIS.

By MEDICAL COUNCILLOR W. WECHSELMANN, M.D.,  
Directing Physician of the Dermatological Section in the Rudolph Virchow Hospital,  
Berlin.

For many years the investigation of syphilis has been unproductive of results, but the last few years have witnessed a large measure of very important progress. By the discovery of the *Spirochaeta pallida*, and by experimental investigation, the nature of syphilis has been elucidated in the most varied directions, and it appears that even the finer effects on the system have been brought more within our comprehension by the sero-diagnostic method of "complement separation." It is natural, therefore, that at the present time we should endeavor to give a scientific explanation of the therapy, which has hitherto rested upon a purely empiric basis. All endeavors, however, to produce, in accordance with modern theories, a scientifically established therapy by the incorporation of toxin or vaccine with syphilitic serum, have afforded no certain results either in the sense of immunization or cure. Perhaps success will only be attained in this direction, when cultivation of the *causâ causans* of syphilis has been successfully accomplished.

If now we must have recourse to the time-honored method of treating syphilis by mercury and iodine, the mode of administration has been placed on a sure foundation by scientific investigation, just as practice has been enriched by newer methods and preparations. Various investigations seem to prove that mercury acts directly, injuriously or destructively, on the syphilitic virus; because Neisser was able to diminish the eruption of the disease in apes inoculated with syphilis, if, simultaneously with, or soon after the inoculation experiment, he introduced mercury into the animal. Atoxyl seems also to be able to act in the same way, but its employment in man is only permissible in rare cases, as the doses needful for this purpose are so high, that there is a certain danger of intoxication, especially for the bowel, kidney and optic nerves, associated with such large doses. Moreover, it is certain that the action of atoxyl on the usual manifestations of syphilis does not approach in efficacy the action of mercury, and, of course, the effect of atoxyl on the later stages of the disease is still quite unknown. Iodine appears to act on the tissues really in

the sense of an absorbing agent, and only slightly on the virus of syphilis. Thus, mercury is particularly useful, as is well known, as a remedial agency in the early infectious severe lesions of syphilis, while iodine finds its special rôle in the later gummatous stages. But, as the presence of small numbers of spirochetes in gummata, and even the infectious character of the latter, have been established by recent researches, the use of mercury in the tertiary stage of syphilis, which was formerly rather objected to by some clinicians, is justified, and particularly in association with iodine, seeing that "mixed treatment" has afforded excellent results in cases where the use of one or other of the two drugs by itself has not been attended with success.

It is a matter of common knowledge that mercury can be introduced into the body in the most diverse ways, but there are apparently real distinctions to be drawn both with respect to action and toxicity. While, for example, the use of soluble salts and internal administration in general overcomes a special idiosyncrasy, and is at the same time comparatively free from danger, it is also weak in action, while the injection of insoluble salts is attended by a much more energetic healing effect, though at the same time it appears to cause with far greater frequency severe toxic symptoms and unexpectedly fatal results, even when handled with the greatest care and exactitude. Resembling these salts in potency, but, when correctly employed, less dangerous, is the time-honored and reliable inunction method.

Seeing that the thorough treatment of the first appearance of syphilis is of momentous importance for the whole future course of the disease, a six weeks' inunction treatment of 3 to 5 grammes ung. hydrarg. is recommended in the first instance, while in the milder recurrences thirty inunctions suffice. During this procedure part of the mercury is taken up into the system by inhalation—for which reason patients ought to rest in a warm bed after the inunction—and another part is taken up and absorbed by the skin, thereby meeting with and acting upon the spirochetes lodging in the skin, and promptly rendering them *hors de combat*. In this respect lies the chief advantage of the inunction method. When on account of the presence of many sores on the skin, or from other reasons, a disproportionately large amount of mercury would be taken up and a liability to poisoning induced, the inunction method is inapplicable. In such cases the injection of the insoluble mercury salts, especially for early treatment, is indicated. The

most suitable salts for use, on account of their slight degree of smarting, are mercury salicylate and thymolacet, which act energetically when injected in doses of 1 decigramme every eighth day. The still more vigorous grey oil produces with greater readiness painful infiltrations and a greater tendency to toxicity, so that its use is reserved for the rarer cases, which resist ordinary treatment. As suitable suspension media, sterilized liquid paraffin or olive oil can be employed, or the more recently introduced vasenol, which is in itself of a very uniform consistency, and therefore permits of a more exact dosage for each individual injection, than is the case with other media. Vasenol is placed on the market in a very convenient spherical flask, in which there does not remain, after shaking up, even an insignificant amount of the salt clinging to the sides and bottom of the receptacle. Paraffin or fat emboli of the lung do not occur if the injections are made into the upper and outer quadrant of the buttock, where few veins course, and care must be taken to prevent blood flowing out of the needle when introduced. Soluble salts and internal administration of mercury salts are only suitable for the milder appearances of syphilis or for intermittent treatment. The most useful form is 1 per cent. solution of hydrarg. perchlor. with salt solution, giving a Pravaz syringeful daily for one month. But many patients find this intolerably painful, and for them we recommend Hirsch's solution of 1 per cent. mercury oxycyanat. solution with acoin.

As internal remedies, hydrarg. oxydrat. tannat. (0.1 gramme thrice daily in pill form) or hydrarg. iod. flav. (0.01 gramme to 0.02 gramme thrice daily in pill form), with addition of opium, is to be recommended; and more recently mergal (hydrarg. cholate with tannin albuminate), in doses of three to six capsules daily. The last-mentioned remedy appears to have no disagreeable by-effects, especially on the alimentary canal, and colic, renal irritation or debility do not occur, even when the preparation is continuously administered over a prolonged period. It might be recommended as a mildly acting antisyphilitic remedy, particularly in the slight manifestations, where vigorous treatment does not appear essential. Recent experience is much in its favor.

While these methods suffice for the majority of cases, calomel in six to eight injections of 0.1 gramme, is the sovereign remedy in those malignant cases of syphilis which tend to cause rapidly destructive lesions and resist the ordinary modes of treatment. And in these severe cases one must take the risk

of the toxicity of the drug. If this is not borne well, then we sometimes are surprisingly successful with Zittmann's decoction; the patient takes 300 to 500 grammes of the warm decoct. fortius on an empty stomach each morning and a similar amount of the cold decoct. medium in the afternoon. In particular instances of these desponding cases we have seen certain advantage from atoxyl, in so far as it has induced a marked raising of the patient's well-being and body-weight, and has increased his power of resistance, so that he could tolerate a course of mercury treatment, which previously he could not endure. Of the disagreeable iodine salts, potassium iodide and sodium iodide, we may give three to four teaspoonfuls daily of a 3 to 5 to 10 per cent. solution. If it is desired to establish quickly in the patient an "iodine depôt" which will act for a longer time, then the preferable drug is iodipin. We inject for several days 10 to 20 grammes of warmed 25 per cent. iodipin under the skin of the back or nates. In this way a depôt of iodine is placed in the body, and a continuous iodine action is rendered possible without the appearance of any signs of iodism.—*Folia Therapeutica.*

## Editorials

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### RADIUM IN SURGERY.

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Probably the most important question of the day in surgery is the healing virtue of radium. In an interesting article on the subject, which appeared in the *British Medical Journal*, Sir Frederick Treves makes the following statements:

“Radium will cure every form of naevus, including the port wine stain. It can rid a patient of a pigmented mole or a hairy mole, two troubles practically incurable if the size be beyond certain limits.

“Radium immediately cures, and apparently permanently cures, itching associated with chronic eczema, etc., when placed on the surface on a piece of varnished silk.

“Radium can cause keloid to vanish, whether the keloid be left by wound or by tuberculous glands, or whether it be the obstinate acne keloid.

“Radium will cure rodent ulcers, which have existed for many years, in which there is ulceration, which Finsen light, X-rays and cataphoresis have all failed to cure.

“Radium cures in many instances ulcerating epithelioma of the tongue and lip.”

These statements are made from a study of cases in the Paris Institute, the patients being under the care of Dr. Louis Wickham. We quote them, not because they are new, but simply as fresh proof of the great value of the magnificent work that is being done by Dr. Louis Wickham. THE CANADIAN PRACTITIONER AND REVIEW has endeavored to impress the profession of Canada with the vast importance of radium in the cure of the diseases mentioned by Treves, but the receptivity of our surgeons has been marvelously slow.

Through the courtesy of Dr. Wickham, we published in our September issue, 1907, his very able and interesting article on the “Treatment of Vascular Birth-spots (Angiomata) by Radium,” which was communicated to the Academy of Medi-

cine at Paris, October 8th, 1907. In that article he referred especially to the good results of the use of radium in the treatment of cutaneous epithelioma, obstinate eczema, prurigo, nervodermites and psoriasis.

Again, in our issue of December, 1908, we published a second article by Dr. Wickham, communicated to the Tenth Medical Congress, Geneva, September 3rd, 1908, in which he gave particulars as to technique, etc. He also referred to the excellent results of the treatment of cancer of the breast by radium.

At a recent meeting of the "League Against Cancer," Paris, Drs. Wickham and Degrais, as well as several others, described some striking cures of cancers. They treated sixty-two patients suffering from cancer in three and a half years, and all but six were cured. They found, however, that in some very deep tumors radium is incapable of producing a cure. (Dr. Louis Wickham is Doctor at Saint Lazare, and ex-Chief of the Clinic of the Faculty at the St. Louis Hospital; Dr. Degrais is Chief of the Laboratory at the St. Louis Hospital.)

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### THE CONSTRUCTIVE CRITIC.

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We are suffering in Canada for the want of the Constructive Critic. His half-brother, the Destructive Critic, is everywhere in evidence, and his voice is loud and long in the land. He is in a condition of deep dissatisfaction with everything, including himself. And he is a useful person. Of such stuff reformers are made. But he is working overtime at present in Canada, and he talks so much that the rest of the family have no chance to join in the national conversation at all. It is supposed that we have some Constructive Critics, but they are not well-developed yet. They are in the stage of incubation, and they need careful attention and a sympathetic nurse. For example, a new man is appointed to office. For one man that can appreciate what he has already done, we have ten



men who can belittle him and get in his way when he wants to work, and even aim brickbats somewhere near his office windows. By and by he does some work. It is published in the press. It's a good piece of work. Who says it is a good piece of work? Nobody. Who knows it is a good piece of work? Everybody. Who suffers because of the lack of constructive criticism of the Report? We all do. And the transplanted Canadians about the world do better where they have gone to, a great many of them, than they would have done at home, just for this reason. The intellectual and scientific atmosphere of Canada is far too destructively critical. Light the fire of good fellowship on every occasion, and let us all sit around it. It will do us good. If any fellow-citizen is striking out on a new line, give him your hand and help him along. Canada for the Canadians, and the Canadians for Canada, but in no narrow sense. Constructive Criticism is generally better than Destructive Criticism.

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### THE CANADIAN MEDICAL ASSOCIATION.

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We are glad to learn that the prospects for the success of the next meeting of the Canadian Medical Association, which will be held in Winnipeg, August 23-4-5, are very bright. The President, Dr. Blanchard, is putting tremendous energy into the work of preparation. He visited Toronto early in February, and saw a great many physicians and surgeons of the city. His request to all was, "Come to Winnipeg, and help to make our meeting a good one." It is very unfortunate that some who would gladly visit Winnipeg have made their arrangements to attend the International Medical Congress at Budapest. However, some of those who intended to go there have changed their minds, and have decided that the Canadian Medical Association Meeting is good enough for this year, and they will attend the Winnipeg meeting.

Dr. Blanchard, after leaving Toronto, went to Montreal, and was received by the profession of that city with much

cordiality. That is to be expected, because upon the whole Montreal has been the strongest supporter of the Association among the cities of Canada from the East to the West.

We are really only describing a very small part of the work which Dr. Blanchard is doing. We are glad to be able to state that the local committees of Winnipeg are doing excellent work. We are informed that the Executive Committee, under the Chairmanship of Dr. Chown (a man known almost as well in the East as in the West), has done much work of a good sort, and expects to stick to it until the afternoon of August 25th next.

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### INTERNATIONAL MEDICAL CONGRESS.

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The two committees in Canada and the United States who are making arrangements for the trip to Budapest next August have made various reports. A large proportion of those who go to the Congress will make their own private arrangements as to their routes of going and coming. Some will go by the Mediterranean, some will go first to Great Britain, others will go directly to France or Germany, and then across to Vienna and Budapest. Messrs. Thomas Cook and Son, the well-known touring agents, with headquarters in London, England (local office, 35 Adelaide Street East, Toronto), have arranged certain itineraries. In accordance with one of these, known as Tour "A," the travellers will leave New York by the North German Lloyd S.S. *Bremen*, August 12th, for Cherbourg, and thence by special train to Paris. After spending four days in Paris, one in Munich and one in Vienna, they will reach Budapest on the evening of August 28th; then, leaving Budapest, September 4th, for Vienna, where three days will be spent, one in Dresden, and three days in Berlin, they will go to Hamburg, and sail from that city, on September 12th, on the Hamburg-American Line S.S. *Bleucher*, arriving in New York Sept. 21st. A tour of forty-one days; fare, \$395. This fare includes first-class travel on ocean steamers, stateroom

berth at \$97 on outward journey, and \$100 on the return; second-class railroad travel on the Continent; accommodation at first-class hotels, and meals as follows: meat breakfast, and table d'hote lunch and dinner, according to custom of hotel; transfer between railroad stations, steamship piers and hotels; conveyance of 66 lbs. of baggage in Europe, usual allowance on Atlantic steamers; carriage drives for sight-seeing; fees to hotel servants, railroad porters and guards; and the services of a competent conductor from arrival at Cherbourg to departure from Hamburg.

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### A SURGEON'S COURAGE.

An interesting story comes from France respecting the heroic devotion of a medical student who was assisting a surgeon at an operation for empyema. The particulars as we learn them from the *Toronto World* are somewhat as follows: During the operation a quantity of the pus flew into the eye of the student, M. Louis Bazy. He was aware that only instant disinfection could save him from partial blindness, but there was no one present to replace him, and suspension of the operation meant death to the patient; so he remained steadily at his post. He suffered extremely from pain for seven months, when he was relieved by excision of the affected eye. For this act the student received the Cross of the Legion of Honor. The President is reported to have spoken as follows: "Magnificent, sublime! In my position as Grand Master of the Legion of Honor, I reserve a New Year's Cross for Bazy." "My son only did his duty," said the young man's father, himself a well-known surgeon.

The *World* makes the following comment: "This, fortunately for suffering humanity, is the spirit which characterizes the medical profession generally, and Louis Bazy's act of self-sacrifice will be an ever-inspiring example to all who enter upon this study. The coveted cross was never given for better cause. Far greater than valor on the battlefield is the

quiet heroism of the man who risks certain suffering, an irremediable injury, even death itself, for the benefit of a brother man."

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### NOTES.

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Sir Barrington Simeon has started a movement with the object of providing a County Public Memorial to the late Dr. J. Groves, who was for many years medical officer of the rural district of the Isle of Wight. Dr. Groves was a nephew of the late Mr. Roach, ex-Mayor of Hamilton, and was well known to many physicians of Ontario, and attended the meeting of the British Medical Association in Toronto in 1906.

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Dr. Geo. W. Badgerow, formerly of Toronto, has been appointed Surgeon to the Hospital for Diseases of the Throat, Golden Square, London, England. He previously held the post of Resident Medical Officer and Surgical Registrar in this throat hospital, which was founded in 1863, by the late Sir Morell Mackenzie. Dr. Badgerow assures us that he will be pleased to see Canadian students, and give them any information he can in regard to the work in the hospitals of London.

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We have much pleasure in acknowledging the receipt of the first number of the *Saskatchewan Medical Journal*. The primary object is to publish the transactions of the Saskatchewan Medical Association. It has not yet been decided whether it will be continued as a monthly or quarterly, or simply as to the annual transactions. It presents a very neat appearance, and is in all respects an admirable number. Among the papers included is a very excellent one on Acute Septic Peritonitis, by Dr. George Bingham, of Toronto.

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The banquet of the Graduating Class of Medicine in the University of Toronto, February 19th, in the Arlington Hotel, was highly successful and enjoyable. Among the guests, in addition to the Dean and some members of the Faculty, were Hon. Mr. McIntyre, Deputy Speaker of the House of Commons; Dr. T. K. Holmes, of Chatham; Dr. John M. Elder, McGill Medical Faculty, Montreal; Dr. H. T. Williams, Western University Medical Faculty, London; Dr. R. W. Bruce Smith, Inspector of Hospitals for Ontario.

The Academy of Medicine has recently received, through the generosity of Mr. E. B. Osler, an interesting collection of portraits and other engravings, selected by his brother, Dr. William Osler, while in Paris lately. Among them is an engraving of Holbein's celebrated painting, "Henry VIII. granting the charter of the Barbers-Surgeons, London, 1547." The original painting is valued at \$400,000. The engraving of another painting, perhaps better known to the profession, is "Une leçon du Docteur Charcot à la Salpêtrière." There are in the collection many portraits of men whose names are familiar to all students of medicine—Abernethy, Bichat, Lavater, Borelli, Cromel, etc.

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An unusual feature of medical journalism will be presented in the March issue of the *American Journal of Surgery*. The entire original subject matter in this issue will be contributed by New York City surgeons of note, and a number of new operations will be first presented therein. Among the contributors to appear are:

Doctors Howard Lilienthal, James P. Tuttle, James Van Doren Young, Willy Meyer, Albert E. Sellenings, Walter M. Brickner, John A. Hartwell, T. F. Hopkins, James P. Warbasse, H. Beeckman De Latour, S. W. Bandler, and William K. Simpson.

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We are indebted to Dr. Lucy Waite, of Chicago, a member of the Nicholas Senn Club, for a charming little book, entitled, "Gems from the Literary Works of Dr. Nicholas Senn." The following are some of the Gems: Labor's greatest reward is rest. What is rest? Rest for one is toil for another. The laborer requires physical rest. The weary brain must have change of occupation: travel, physical exercises, walking and driving; the solitude of the wilderness, combined with fishing, boating—sports that fatigue the body and rest the brain.

I know of nothing more soothing to a tired brain than the study of the wonderful mysteries revealed by Nature.

The babbling of rivulets, the hum of busy insects, the music in the tree-tops, quiets the excited, irritable nerves better than drugs.

Combined with Science, Medicine is the noblest of all professions; without Science, it is the meanest of all Trades.

Honesty in Medicine, as elsewhere, is the best policy, and will be amply rewarded at the proper time.

Science is an exacting and jealous mistress.

### The French Scientists in Canada.

Prof. Leon Bernard, of Paris, who, with other distinguished physicians, accompanied Prof. Landouzy to Washington, to attend the meeting of the Tuberculosis Congress last fall, has published a most interesting brochure, giving his impressions of the trip and the Congress, from the French point of view. He expresses himself in a complimentary manner regarding the flying visit to Canada as follows: Before touching the soil of the United States, we made a pilgrimage in Canada, and although this tour was out of our direct course to the Washington Congress, we would reproach ourselves if we had passed it by in silence, and it would mark us as being ungrateful had we done so. It would be idle to repeat once more how our race, our people of the different French provinces, with their local accents, are found on the splendid banks of the St Lawrence, but we doctors must proclaim that on British ground we met at Montreal, as well as Quebec, fraternal colleagues educated in French medicines who have founded—thanks to the initiative and tenacity of Dr. Brochu—an association of physicians who speak the French language in North America. That in Toronto, associated with all the grace of English hospitality, we were shown a university admirably arranged and equipped, which cannot help being influenced by its courteous rivalry with the French universities of the two neighboring cities. Everywhere we were received with the same assiduous attention, the same overflowing sympathy, which went beyond us personally, to the nation we represented. This was the purest joy of the trip, to have sometimes felt floating around us the spirit of France.

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Dr. Charles D. Parfitt, who recently severed his connection with the National Sanitarium Association, has entered on private practice in Gravenhurst, and has made arrangements by which his patients will reside at the Minnewaska, under the charge of Mrs. Fournier, who has been for the last ten years Superintendent of Hope Hospital, Fort Wayne, Indiana, and Principal of the Training School for Nurses in the same hospital. Mrs. Fournier is a graduate of Harper Hospital, Detroit, but is a Canadian by birth. Her home is in St. Thomas. Dr. Parfitt is to be congratulated on this excellent arrangement, and the profession will be glad to know of it.

## Personals.

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Dr. John Caven, of Toronto, is enjoying a pleasant holiday in Florida.

After a somewhat extensive tour through the United States, Dr. Bruce Riordan returned to Toronto, February 6th.

Dr. Jas. A. Robertson, of Stratford, sailed from New York for Italy and Egypt, February 27th.

Dr. S. H. Glasgow, of Welland, President of the Ontario Medical Council, has been somewhat seriously ill, and had a great toe amputated, February 14th.

Dr. W. W. Ogden, of Toronto, was seriously ill about the middle of February, from an attack of la grippe. At the time of writing he is said to be recovering.

We wish to draw our readers attention to the two advertisements in this issue offering for sale some valuable surgical instruments and medical library; also a fine doctor's residence in the city.

Dr. Jas. H. Richardson, of Toronto, has resigned his position as Surgeon of the Toronto Jail. He had been surgeon of that institution for more than fifty years. Dr. Richardson was born October 16th, 1823, and is therefore now in his 86th year.

Dr. Geo. M. McLaren, late Resident Surgical Officer, Birmingham Eye Hospital, and Inspector of Ophthalmic Hospitals for the Egyptian Government, desires to announce that he will confine his practice entirely to diseases of the eye, at 129 Bloor Street East, Toronto.

Dr. Wm. Hackney, formerly of Ottawa, was appointed House Surgeon and Surgical Registrar at the Central London Ear, Nose and Throat Hospital, Gray's Inn Road, London. In addition, Dr. Hackney holds the position of Clinical Assistant at the Royal Eye Hospital, Moorefields.

Dr. Wm. T. Parry was appointed Surgeon of the Toronto Jail in the place of Dr. Richardson, resigned. Dr. Parry, after graduating from Victoria University in 1885, went to London, where he received the double qualifications of that city. He has practiced in Toronto since 1887.

## Obituary.

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### JOHN EASTON, M.D.

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Dr. Easton, of Brockville, died of tuberculosis, January 10th, aged 88. He graduated from McGill in 1852, and was engaged in active practice up to a short time before his death. At one time he practised in partnership with the late Senator Dr. Brouse.

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### CHARLES ED. BARNHART, M.B.

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Dr. Charles Barnhart, whose death we announce with deep regret, died at Owen Sound, February 10th, in his 77th year. Dr. Barnhart graduated M.B. from the University of Toronto in 1859, and had been in active practice in Owen Sound for about fifty years. During all these years he was known to his friends as Charlie Barnhart of Owen Sound. He was a genial, kindly and able man, beloved and respected by all who knew him.

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### DR. ARGYLL ROBERTSON.

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According to newspaper reports which have arrived from India, the body of the late Dr. Argyll Robertson was cremated, in accordance with his expressed desire. The ceremony was deeply impressive. The funeral service was read by the Rev. G. F. Stevenson, and the pyre on the banks of the River Gondli was lit by the Makore Sahib of Gondal, himself a medical man, an Edinburgh graduate, and a Fellow of the Royal College of Physicians of Edinburgh. In performing this last tribute of respect to the dead, the Makore Sahib broke through the ancient customs of his race, for it is contrary to all usage for a Hindu Rajah to take part in a funeral procession, or to wear a white or black turban as mourning. Hindus and Mussulmans united in closing their shops out of respect to the deceased, and sent a message of condolence to Mrs. Robertson.—*Medical Press and Circular.*



## Book Reviews.

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WYNTER'S MINOR MEDICINE. By W. E. Wynter, M.D., B.S., F.R.C.P., F.R.C.S., Physician to the Middlesex Hospital, London, and Lecturer on Medicine in the Medical School; Examiner in Medicine and Pharmacy to the Royal College of Physicians. 275 pages. Cloth, \$1.75. D. T. McAinsh & Co., 123 Bay Street, Toronto, Ont.

This new book on the nature, treatment and prevention of the many minor disorders which come under the physician's notice will be received with much satisfaction by the profession.

"In his book on 'Minor Medicine' Dr. W. E. Wynter touches a great deal of fresh ground, and provides the general practitioner with a work of the utmost value in his daily routine."—*British Medical Journal*.

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APPLIED PHYSIOLOGY. By Robert Hutchinson, M.D., F.R.C.P., Physician to London Hospital. Cloth. Pp. 298. Price, \$2. New York: Longmans, Green & Co., 1908.

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SEVEN HUNDRED SURGICAL SUGGESTIONS. Practical Brevities in Surgical Diagnosis and Treatment. By Walter M. Brickner, B.S., M.D., Assistant Adjunct Surgeon, Mount Sinai Hospital, New York, Editor-in-Chief *American Journal of Surgery*; Eli Moschowitz, A.B., M.D., Assistant Physician, Mount Sinai Hospital Dispensary, New York, and Harold M. Hays, M.A., M.D. Third series. Duodecimo; 153 pages. New York: Surgery Publishing Co., 92 William Street. Price, semi-de-luxe, \$1.00; full library de luxe, ooze leather, gold edges, \$2.25.

This volume is literally "packed full" of useful and valuable information for the general practitioner or surgeon. Written in short, terse epigrammatic paragraphs, it puts its hints up to the eye of the reader in a manner which makes a lasting impression. In its present and enlarged form, it is a gem both as to its contents and as an example of the printer's and bookbinder's art.

Any work which would call for three editions in two years, each larger and better than the previous one, is an indication

of its usefulness and popularity; and "Seven Hundred Surgical Suggestions" surpasses them all. The originality of its contents is in keeping with its elaborate and attractive mechanical make-up, and every doctor should have a copy in his library.

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BLOOD EXAMINATION IN SURGICAL DIAGNOSIS. A Practical Study of Its Scope and Technic. By Ira S. Wile, M.D., New York. Duodecimo; 161 pages; 35 illustrations and one double-page colored plate. New York: Surgery Publishing Company, 1908. Cloth, price, \$2.00; oil-cloth, for laboratory use, \$2.50; de luxe, ooze leather, price, \$3.00.

This is a pioneer book in a wide and useful field, especially so as the diagnostic and prognostic value of blood examinations in surgical as well as medical conditions have been definitely established.

Although written especially as a guide in the diagnosis of surgical conditions, the blood findings in "medical" affections are also described seriatim, in order to present the differing data; therefore, the general practitioner will find much that is valuable and new clearly stated in the book.

The classification of anemia is decidedly original. Basing anemias upon a hematological rather than a clinical basis is a marked step in advance. Particularly startling is the casting out of Hodgkin's diseases, but it appears rational.

The chapter dealing with the surgical interpretation of the total leucocyte count and the differential count is absolutely new, both in material and mode of treatment. "The index of bodily resistance and the index of toxic absorption" are far more important in surgery than one would imagine, and this excellent chapter has no counterpart in text-books on hematology. It is the clearest and fullest discussion of the topic that has appeared.

Lacking in hematological dogmatism, it abounds in a surgical conservatism that makes it a safe authority to follow. The consideration of anti-operative, operative and post-operative conditions affecting the blood is logical and well arranged. The book is a splendid example of the printer's art and the book-binder's ability. The typography is clear and attractive, and the marginal notes in red are as neat as they are useful. The double-page colored plate shows six blood pictures, and in addition twenty-nine illustrations of the various types of cells as they appear with the Jenner stain.

**THE SURGERY OF THE EAR.** By Samuel J. Kopetzky, M.D., Attending Otologist, New York City Children's Hospitals and Schools; Attending Otologist to the New York Red Cross Hospital; Assistant Surgeon and Instructor in Operative Surgery of the Ear, Manhattan Eye, Ear and Throat Hospital; Pathologist and Surgeon, New York Throat, Nose and Lung Hospital. Illustrated with sixty-three half-tone and line drawings, eight charts and four colored plates. Published by Rebman Company, 1123 Broadway, New York.

This is a 360 page cloth-bound book, with good large print, excellent drawings and plates, dealing with the treatment of surgical diseases of the ear, and those diseases associated with the ear which usually fall to the lot of the specialist. Each chapter contains brief historical notes of operations, and gives concisely the surgical anatomy of the parts, preceding the description of the surgical treatment, including indications for operation and results. The chapters on the simple and the radical mastoid operation are complete and up-to-date. The author takes up the surgery of the labyrinth, operations on the sinuses and internal jugular vein, the surgery of the facial nerve, and the surgery of the meninges, cerebrum and cerebellum, from the point of view of the specialist. There is quite a long chapter on lumbar puncture. There is at the end of the book an extensive bibliographical reference, and one would find it a useful and up-to-date book on the subject. Price, \$4.00.

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**INTESTINAL AUTO-INTOXICATION.** By A. Combe, M.D., Professor of Clinical Pediatrics at the University of Lausanne (Switzerland); Chief of Clinic for Children's Diseases; President of the Swiss Pediatric Society, together with an appendix on the lactic ferments, with particular reference to their application in intestinal therapeutics, by Albert Fournier, formerly Demonstrator at La Sorbonne, Paris. Only authorized English adaptation, by Wm. Gaynor States, M.D., Clinical Assistant, Rectal and Intestinal Diseases, New York Polyclinic. New York: Rebman Company, 1123 Broadway.

There has been a great deal of nonsense written on auto-intoxication, and the term is now used by loose thinkers to cover up their ignorance of the real condition of the patient.

But Combe has undertaken to show that intestinal auto-intoxication does actually occur, and may be recognized by well-marked symptoms. The work seems to be scientific, and will supply the reader with plenty of food for thought.

Boas, in the Berlin Medical Clinic, No. 39, says that he has never observed a case of what is usually called "spastic obstipation," although he has been on the lookout for fifteen years. He finds spasm of the colon in neurotic persons with healthy bowels; in intestinal disturbances, with either diarrhœa or constipation; in chronic colitis or sigmoiditis, and in carcinoma of the rectum. The spastic condition of the colon frequently accompanies general neurasthenia, occurring at intervals, without any special type of stool. He makes extensive use of oil enemas when relief is not obtained from habitual constipation by first trying dietetic measures. The efficacy of the oil, considered by some to be specific for "spastic obstipation," does not depend at all upon the nature of the obstipation or on the shape of the stools. Oil injections, a diet rich in cellulose, and the sedative action of belladonna, are useful in many cases of habitual constipation, but are not curative. In conclusion, he states that the whole structure of spastic obstipation is built on sinking sand.

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LEHRBUCH DER HEBAMMENKUNST. Von Dr. Bernhard Sigmund Schultze. Wirtl. Geheimer Rat, off. ord. Prof. der Geburtshilfe zu Jena, Mitglied der Medizinalkommission des Grossherzogtums Sachsen. Vierzehnte, verbesserte Auflage. Mit 103 Abbildungen. Leipzig: Verlag von Wilhelm Englemann, 1908.

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APPLIED SURGICAL ANATOMY. Regionally presented, for the Use of Students and Practitioners of Medicine. By George Woolsey, A.B., M.D., Professor of Anatomy and Clinical Surgery in the Cornell University Medical College; Surgeon to Bellevue Hospital; Associate Surgeon to the Presbyterian Hospital; Fellow of the American Surgical Association and of the New York Academy of Medicine. Second Edition. Enlarged and thoroughly revised, with 200 illustrations, including 59 plates, mostly colored. Lea & Febiger, New York and Philadelphia. 1908.

In the preface to the original issue of this work it was pointed out that the study of anatomy is relieved of much of its difficulty when it is approached on the practical side. Isolated details do not appeal to the faculty of interest, but when they are set forth in their natural relationship, and their practical application is shown, the mind grasps and recollects them with facility. As anatomy is the most basic of all the medical sciences, a working knowledge of its data is indispensable for the study and practice of scientific medicine and surgery. The author has endeavored to embody these principles in this work, and to do it in such a manner as to answer the needs of both students and practitioners.

The plan of this volume has been developed from eighteen years' experience in teaching anatomy. The author believes the form of presentation he has followed to be the best for didactic lectures, and furthermore that descriptive anatomy is most advantageously learned from text-books, and in the dissecting-room. The regional and topographical method of treating applied anatomy is likewise the most convenient for clinical purposes.

It is scarcely necessary to state that in order not to exceed the proper limits of a book designed for clinical and didactic use, a most careful selection has to be made from the vast aggregate of knowledge constituting the modern science of anatomy. If in parts the text may appear quite as much like an anatomical surgery as surgical anatomy, it is because of the author's belief that this is the best way to complete the study of anatomy, and to begin the study of surgery.

The number of excellent works on applied anatomy is large enough to render the exhaustion of an edition of any one a fair presumption of its fitness to survive. An author can respond only in one way, namely, by striving to improve his work in revising it. This effort has been faithfully made in the new edition, and it may impartially be said to excel its predecessor in many particulars. The sections on Cerebral Localization, Craniocerebral Topography, the Abdominal Viscera, or some of the Pelvic Viscera, and on the Spinal Cord have been re-written or largely amplified. Every page has been carefully revised, and its subject-matter elaborated wherever it seemed desirable. The volume has thus been enlarged by about eighty pages, and its illustrations increased by seventy-five engravings. This work is to be greatly commended.

## Selections.

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### Diuretics.

Up to a few years ago two conditions demanded the use of diuretics, i. e., accumulations of fluid within the body in the form of edema, ascites, etc., and renal disease without such edema. At present, diuretics are no longer employed for the latter condition and they are given only with the greatest caution in acute nephritis and pyelonephritis, as the kidneys demand rest like any other inflamed organ. In uncomplicated bacteriuria it is often desirable to wash out the kidneys, in order to remove, as much as possible, the bacteria, and in renal calculi it is decidedly proper to increase the flow of urine. In the majority of instances, however, diuretics will be prescribed to remove pathological accumulations of fluid in the cellular tissue and the serous cavities of the body.

Increased diuresis may be brought about by improving the circulation and by acting upon the kidneys directly. If the heart is stimulated, more blood will flow through the kidneys and more fluid will be removed. Diuretics of this class are especially indicated in primary heart-weakness, but since renal disease is often accompanied by cardiac decompensation, they are usually also of service here. In amyloid disease of the kidneys, pyelonephritis, and hydronephrosis, there frequently is no insufficiency of the heart, and hence these diuretics will do no good. The same may be said of cachectic edema and in uncomplicated effusions into the various cavities owing to tuberculosis or malignant disease.

It was formerly argued that cardiac remedies are dangerous in nephritis, owing to the increase in blood-pressure which follows. It is now known that the danger of apoplexy is very remote, since the blood-pressure will often fall owing to the removal of fluid and toxic products.

The most important drug of this class still is digitalis. It is most frequently employed in powder form or as digalen, which is more rapidly absorbed but also more quickly excreted. Both the fluid-extract of digitalis and the digalen can be used subcutaneously where a more rapid action is desired or where the stomach is to be spared.

The most valuable substitute of digitalis is strophanthus, which also acts rapidly and is rapidly excreted. Five drops of a good tincture correspond to about 2 decigrams of digitalis

powder. When a very quick action is necessary,  $\frac{3}{4}$  milligram of strophanthin may be injected.

After these remedies, the pulse will very often improve, yet the amount of urine remain the same. It may then be necessary to remove the fluid by mechanical means, in order to relieve the pressure upon the venous system. The importance of sufficient sleep cannot be overestimated, since in pathological conditions, more urine is excreted when the patient is asleep than when he is awake.

Most modern diuretics that act directly upon the kidneys, belong to the purin group. They are generally free from direct actions upon the heart; they increase the flow of blood through the kidneys and stimulate particularly the excretion of water and salt. If an increased renal circulation is impossible, owing to severe lesions in the renal vessels and the glomeruli, a diuretic effect will usually not occur.

According to Romberg, the most valuable member of the group is theocin. In order to obviate gastric disturbance, it must be given carefully, as follows: 0.1 Gm. twice a day; if the diuresis is insufficient, 0.2 Gm. twice a day. The administration is continued on alternating days or less often, and if necessary, the dose may be cautiously increased to 0.2 Gm. three to four times a day. Most brilliant results may thus be obtained without after-effects. If necessary, the drug may be given per rectum.

Diuretin is perhaps the best known diuretic, but is not so potent. Large doses (1 Gm. three to four times daily) can be given only for short periods; smaller ones (0.5 Gm. three to four times daily) for a longer time.

Pure caffeine is much weaker in action and is only rarely employed. Agurin closely resembles diuretin and is given in the same dose.

The various vegetable diuretics are only rarely used at the present time, as they are much inferior to the purin derivatives. Among them are *baccæ guniperi*, *herba equiseti*, *radix ononidis*, *asparagus*, and *folia betulæ*. A dialyzed preparation of the diuretic tea, official in the German Pharmacopœia, is frequently employed with good results abroad, even where theocin has failed.

Calomel and sodium salicylate are good diuretics, but frequently injure the renal epithelium. The epithelial desquamation following the use of sodium salicylate and its derivatives, such as aspirin, is usually, however, of short duration, even where the medication is continued.

The general management of the cases often calls for a combination of several diuretics, usually digitalis with one of the members of the purin group. The amount of fluid given the patient should be restricted to  $1\frac{1}{2}$  to 2 quarts in twenty-four hours. The salt in the food should be reduced in hydropic and uremic renal disease, but not to such an extent that the appetite suffers. Excellent results with salt-free diet have also been observed in ascites due to peritoneal tuberculosis.—*Merck's Archives.*

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### Serum Reaction of Syphilis.

During recent times the clinical value of the Wassermann-Neisser-Bruck reaction in syphilis has been shown to be considerable, and it was therefore of importance when Much and Eichelberg reported early in 1908 that in a series of scarlatina patients, to which they had applied the reaction, complement was deflected in 40 per cent. These authors considered themselves justified in warning clinicians against attaching too great importance on a positive reaction. Buck and L. Cohn (*Berl. klin. Woch.*, December 21st, 1908) considered that the clinical value of the reaction would only be lessened by this find, if confirmed, if it could be shown that the scarlatinal reaction persisted after convalescence. Several observers tested the serum of non-syphilitic children during an attack of scarlet fever and obtained negative results. While the authors do not question the correctness of Much and Eichelberg's results, they came to the conclusion that a positive reaction in scarlatina is not the rule but an exception, which is produced by some altered conditions, the nature of which is still unknown. Seligmann and Klopstock accidentally came across an interesting find. They obtained negative results in 13 scarlatina cases. After a longish interval they used the same extract and obtained positive reactions not only with scarlatinal serums but also with the serum of persons who were not suffering from scarlatina or syphilis. The antigen had obviously undergone some change. Others found that different antigens were capable of yielding positive reactions in scarlatina and syphilis. This would suggest that the reaction in scarlet fever is not identical with that in syphilis. In repeating the experiments with various antigens, the authors found that while all the antigens which they used gave uniform positive reaction with syphilitic serum, some scarlatinal serums gave positive reactions with one antigen and negative reactions with the others. It is therefore not correct



to state that the syphilis reaction occurs in scarlatina, since it has been shown that the substance giving rise to complement deflection in scarlatinal serum is not identical with that giving rise to the reaction in syphilitic serum. They therefore claim that the clinical value of the syphilis reaction is not lessened by the find that scarlatinal serums may react positively with one antigen but not with others. Much himself has more recently admitted that this is so.—*British Medical Journal*.

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### **General Anesthesia per Rectum.**

I have witnessed this method of narcosis by my colleagues in Boston and New York, at meetings of the Clinical Society of Surgery. There is very little recent literature on this subject. The first foreign reference that I have seen is reviewed in the *Centralblatt f. Chirurgie*, 1907, Vol. XXXIV., p. 152. The contribution is by Vidal, a French surgeon. The principles of the method are as follows: The alimentary tract must be cleaned first by a cathartic and then by an enema of 2 litres of fluid containing 2 gm. (gr. 30) of carbonate of soda. The latter is employed to clear the mucous membrane of fat. Half an hour before the anesthesia morphine is given hypodermically, the patient is placed in the middle Trendelenburg position, and a rectal tube introduced. The ether, forced by bellows into the tube, should pass through an empty flask which rests in a hot-water bath at 39 deg. C., so that the ether vapor is warm. According to Vidal this method is indicated when respiratory complications are threatened. I mention this method because, perhaps, in the development of surgery of the chest it may find larger application, and the mouth can be used entirely for the maintenance of overpressure in the lungs.

That the extreme cyanosis is not necessarily due to any obstruction in the respiratory tract, but to an overdose of the anesthetic, was demonstrated in one of the cases I witnessed. The complication appeared as critical as any I have ever observed in narcosis by ether in the ordinary method. In many operations upon the head and neck it would be very convenient to get rid of the anesthetic paraphernalia in that region, but up to the present time the technique and art of rectal anesthesia have not been sufficiently developed to justify substitution.—*Progressive Medicine*, Dec., 1908.