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ADDRESS ON SURGERY.

BY

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Mr. President and Members of the Nova Scotia Medical Society :—

My first duty is to thank you for the great honour—for so I esteem it—extended to me in inviting me to read before you at this Annual Meeting, the address in Surgery.

My second duty is most painful; would that a readier pen could undertake the task. My invitation came from your then Secretary, the late Dr. Muir, a dear friend to, not only the speaker, but to every medical man in our great Dominion, and to everything good and noble in our profession; a man with a great heart, who for years wielded a tremendous influence in the Maritime Provinces and throughout Canada, in fact, wherever he was known. I venture to say that not only in your local associations but at the meetings of the Canada Medical Association, no face was more welcome, no member more warmly received, from Charlottetown to Banff, than the late Dr. Muir of Truro. Brim full of strength and good fellowship, he always stood for what was honourable and just. But alas, he is gone all too soon. May his influence long live after him!

My third duty is indeed a difficult one. I take it that the reader of an address in Surgery at an annual meeting, should not take the opportunity of reading a paper, but that he should, as far as possible, give a resumé of the work done during the year and perhaps give a forecast of the most promising lines for fruitful labour in the years to come.

I am rather unfortunately placed. The readers of addresses two years ago were allowed the liberty of reviewing a century of progress, and one year ago the same gentlemen were allowed to speculate on what our new century might reasonably be expected to accomplish. This year neither the historian nor the imaginative speculator have place. I find myself more in the position of the business man—required to take stock, as it were, and to estimate the position of Surgery to-day as compared with that of twelve months ago.

During this time Surgery has not stood still. Progress has been made in many directions and the future never looked more promising. Our relations with the physicians continue to be friendly. We are able to render them aid in the treatment of some of their cases of epilepsy, and even in exophthalmic goitre.

The Surgery of pulmonary abscesses and pulmonary gangrene is, with improved technique and increased experience, accomplishing results most satisfactory to both the physician and the patient, although to this subject Hippocrates' first aphorism is particularly applicable. "Life is short, and the art long; the occasion fleeting; experience fallacious, and judgment difficult. The physician must not only be prepared to do what is right himself, but also to make the patient, the attendants, and externals co-operate." Eisendrath in a recent monograph has shown the results obtained in recent years to be most encouraging, and also the slow development of the idea of treating these cases surgically. Although it was first attempted in the days of Hippocrates, and was a live question 200 years ago, it is only during the past 30 years that Surgery has really established a position in this field.

It may be said that abscess follows croupous pneumonia in 1.2 to 1.5 per cent., and that gangrene is a more frequent sequel of influenza pneumonia, occurring according to Fränkel in 7.5 per cent. of all cases. It must be admitted that the medical treatment of these cases is often most unsatisfactory to all concerned. It is the more pleasing then to find Eisendrath has been "able to demonstrate the value of surgical interference in pulmonary lesions following pneumonia" in 93 cases. In detail, there were—25 cases of acute simple abscess, 24 recovered, one improved and no deaths; 28 cases of acute gangrene, 20 recovered, 2 improved, 6 died; 14 cases of chronic simple abscess with bronchiectasis, 6 recovered, 3 improved and 5 died; 26 cases of chronic putrid abscess with bronchiectasis, 13 recovered, 4 improved and 9 died.

The results of surgical interference in acute cases have been so much better than in chronic that it suggests a very careful enquiry into the

question of when to operate? Many cases of pulmonary abscess have healed spontaneously under medical treatment. How long one should wait for such a happy result without imperiling the future prospects of the patient or seriously lessening the chances of the surgeon to bring about a satisfactory result is a very important enquiry to be made.

In cases of long standing the thickened walls of the abscess cavity retard seriously the closing after evacuation and drainage. I have found in some cases I have operated on, that the bronchus opened into the very top of the abscess cavity. The erect position of the patient favours by gravity the development and accentuation of this relation of cavity to opening. Bronchiectasis is another very undesirable sequel.

Before opening an abscess of the lung it is most important to make sure that the visceral and parietal layers of the pleura are adherent at the point selected for the puncture. The presence or absence of these adhesions cannot be determined by the duration of the disease. Eisendrath, from statistics and personal observation, came to the conclusion that they are present in 90 per cent. of cases, but that all tests to determine the point in an individual case are fallacious. Several devices have been resorted to to develop these adhesions. In two cases I adopted the method first suggested by Roux in 1892, viz.: To remove a section of rib and then with a round curved needle to suture the two layers together. If pneumothorax should occur with collapse of the lung, it would probably disappear in a few weeks. If, however, the septic contents of a simple or gangrenous abscess cavity should gain entrance into the pleural cavity, the result might be disastrous.

Intra-cranial surgery gives promise of increased usefulness in the near future. Surgical technique is now such that the opening of the skull may be undertaken with confidence when conditions demand it. It is now not only justifiable but a duty to remove a localised subdural clot from the middle meningeal fornx, also to elevate simple depressed fracture, to remove spicules of bone from the brain and to empty cysts.

Page, in his Presidential address before the Neurological Society, has given instances of great relief following each of these operations, in some instances restoring to a life of usefulness.

One cannot consider the closer relation of Surgery to Medicine without pointing to the increasingly good results attained in typhoid perforation.

There are many complications and sequela of enteric fever requiring the aid of Surgery. I may mention the occasionally widespread infec-

tions of bones, and joints, and infection of the bile passages, but it is in that dreaded and fatal perforation of the intestine that the physician and surgeon together have already accomplished much, and I think are likely to accomplish more.

We have had in the Montreal General Hospital during the past six years, 34 cases of typhoid perforation of the small intestine. Of these we have been able to save 18.18 per cent.

The diagnosis of this lesion presents only too often the greatest difficulty. We have not found the blood count to be a reliable guide as a diagnostic sign. It may be present to the extent of ten or more thousand leucocytes without the presence of perforation and it was absent in one case twelve hours after the occurrence of symptoms of perforation, although when the abdomen was opened a perforation was found.

One very important point to remember in dealing with these cases is that in the majority the occurrence of a typhoid perforation is not at all clearly indicated by any well marked group of symptoms. On the contrary, one must be on the alert to notice the first indication. The onset is so insidious that in some cases the House Physician has not thought it necessary to report to his chief, who has discovered the serious condition only when making his ordinary ward visit.

We place reliance upon the occurrence of pain, when persistent and accompanied by persistent local tenderness, change in the character of the respirations, from abdominal to thoracic, and abdominal rigidity. There may or may not be vomiting. The temperature may fall or rise or remain stationary, and the pulse may for some hours show wonderfully little alteration. The diagnosis is exceedingly difficult and sometimes impossible in patients who are suffering from typhoid toxæmia, and distended tympanitic abdomen.

The experienced and observant physician and surgeon can generally, however, arrive at a pretty accurate diagnosis, but there are a group of cases which in spite of the greatest care and the use of every known test, may yet remain in doubt. It is in these cases that, I believe, proper facilities being available, the more truly conservative procedure is to make an exploratory incision. In some cases this may be done under local anæsthesia, a little ether being given later if found necessary.

Although the success so far obtained is encouraging and many lives have been saved, I believe a much larger percentage of recoveries will follow in the near future as the result of a greater experience in diagnosing. Surgeons are not all agreed as to the time to operate, some advocating delay until shock has passed away, and others, very

early interference. In the Montreal General Hospital, of the cases operated on during the first 12 hours, 40 per cent. recovered, and of those operated on during the second 12 hours, only 10 per cent. recovered. It is therefore quite natural for me to advocate the early operation—operate before shock has time to develop—and while the infection is localised. Operations for general diffuse septic peritonitis are not likely to give better results here than elsewhere.

Surgery is coming to the aid of the physician in one field which is distinctly new, viz.: in the treatment of certain conditions of the kidney. Reginald Harrison and Edebohls are the pioneers of this new departure. The work of these two men must not, however, be confounded. Harrison has done service in two distinct conditions, first, in separating adhesions around the kidney he has relieved painful conditions, and secondly, by incising the capsule of the kidney he claims to have relieved a pressure amounting to almost strangulation, in acute inflammatory conditions, and by so doing saved the life of the patients.

Edebohls' work is in a totally different class and on an entirely new theory. In certain chronic conditions, by stripping off the capsule and anchoring the kidney, he claims to force the establishment of a new forced circulation with a resuming of the normal secreting and excreting functions of the kidneys.

It is too soon to pass judgment either on Harrison's incision of the capsule in acute congestive conditions of the kidney, or on Edebohls' decapsulation in chronic Bright's disease, but both suggestions are worthy of consideration and may bear good fruit in the future. They at any rate established a new borderland subject for the mutual study of the physician and surgeon, and form a new link for the closer drawing together of these two great departments, Medicine and Surgery.

The relation of general surgery to gynaecology in Canada is still friendly and likely to remain so as long as the Canadian gynaecologists maintain their present high character and scientific excellence. In the great republic to the south of us it would almost seem as if gynaecology was being slowly but surely absorbed by the general surgeon.

Although it is 140 years since Lambert, of Newcastle, first sutured successfully a wound of the common carotid artery, the practice has only recently been brought prominently before the profession. A. E. Halstead, of Chicago, in a recent article of great interest, has put before us a record of the work done on arteries. It is clearly established that large arteries may be successfully sutured. After a wound, involving half the circumference of the vessel, the sutured vessel remains perfectly patent. If the wound involves the whole circumference, the vessel gradually contracts, as the result of endothelial proliferation,

the lumen in most cases finally becomes obliterated, but so slowly that the collateral circulation has time to become established before the blood stream, through the main vessel, is stopped. It is not likely that the surgeon will often find it necessary to resort to suture, but such instances do arise, as in Halstead's case. In removing a current malignant nodule, the axillary artery was wounded. At the previous operation the vessels which should carry on the collateral circulation had been divided. He therefore sutured the wound in the artery and two months afterwards "there was still a radial pulse on the left side of a volume equal to that on the right." Any increased power to control hæmorrhage and to conserve important vessels is welcome—and there may arise contingencies in which this last resource may prove of value.

Most interesting is the work on the pancreas accomplished recently. The surgical advances have been most clearly put before the profession by Mayo Robson, of Leeds.

I think one may say that progress has been made in the treatment of malignant disease. The mortality rate is being lowered year by year. Two important principles now unanimously conceded give us a grasp of the subject and courage as well. That cancer is primarily a local disease, and that, in many cases at any rate, there is a precancerous stage, are now two well established facts, which it would seem at first sight should enable us to completely subjugate this terrible disease. We also know by what channels it spreads. Unfortunately the onset of carcinoma is often very insidious. It gives rise to so little pain or discomfort and increases so slowly that often, before the victim is aware, the conditions permitting complete eradication have passed. Not only is this true of the rectum, stomach and uterus, but it is astonishing how great advance may be made in the breast or even the tongue before suspicions of its existence are aroused. Nevertheless by a greater watchfulness on the part of the patient and of the family physician and our improved methods of diagnosis, we can say that in cancer of the breast over 50 per cent. are cured.

Butlin in a carefully worded paragraph says, "If patients suffering from cancer of the breast and their medical men can be educated to hope for good results from early operations, and if the latter can be trained to detect cancer of the breast before it is adherent to the skin and associated with enlargement of the lymphatic glands, there is every reason to believe that a higher percentage than fifty would be reached by the routine employment of extensive operations properly adapted to the conditions and course of the disease."

With our present knowledge we may say that no one should die of cancer of the breast, or tongue, or stomach, or rectum. But this

Utopian condition can only be approached by a careful study of this process in its very earliest manifestations and thorough extirpation the moment it is recognized, or seriously suspected. This idea of a pre-cancerous stage should enter more largely into the thoughts of the family medical adviser. Advice regarding the care of the mouth and teeth, the insistence upon absence from smoking during the secondary manifestations of syphilis—the care of the breast during gestation and lactation, may sometimes prevent the development of a *locus minoris resistentiæ*, and later on the pathological process called cancer. While we wait for the discovery of the cause of cancer and dream of an anti-toxin that will prove curative, let us make the most of present knowledge, and by removing as far as possible all suspicious influences, by zeal in striving to recognize the earliest indication of malignant growth, and by thorough removal as early as possible, to lessen the death rate from malignant disease.

There has developed recently a disposition on the part of both the physician and the surgeon to resort more frequently to surgery in dealing with non-malignant conditions of the stomach. There are cases of persistent ulcer of the stomach, persistent from deficient reparative power on the part of the patient and often, I suspect, persistent because of the unfaithfulness of the patient in carrying out conscientiously the directions of the physician, that are best treated by surgical methods. Here again we are greatly indebted to Mayo Robson. He has shown clearly the satisfactory results to be obtained by open incision, curetting of the base, followed by pyloroplasty, or better still by gastro-enterostomy. I can personally speak highly of the results of gastro-enterostomy, performed in suitable cases of persistent chronic gastric ulcer. These people are quickly transformed from a life of chronic invalidism to comparatively good health, and of usefulness. In the presence of an ulcerative perforation of the stomach wall or of uncontrollable hæmorrhage, surgery is doing splendid work in the saving of life. Death should but rarely result to-day from either gastric perforation or gastric hæmorrhage.

The reader of an address in surgery can hardly pass over without mentioning some of the more recent suggestions which, while as yet more or less visionary, may bear fruit in the near future.

It is suggested, for example, that internal hydrocephalus may be successfully treated surgically by establishing a communication between the ventricle and the subarachnoid space. This communication is to be brought about by placing a horse hair drain between these spaces. It is also proposed by the same means to drain a meningocele into the peritoneal cavity. You probably also have read the bold suggestion of

Lauder Brunton, to incise a narrowed mitral orifice. These ideas seem to us wild and impracticable, but in this age one cannot afford to put aside these proposals without careful thought. One may, however, probably with a saving of any little reputation he may have, adopt Oliver Wendell Holmes' advice when he said, "And with new notions—let me change the rule—don't strike the iron till it's slightly cool."

Electricity is becoming more and more useful. In the diagnosis and treatment of fracture the X-ray machine is certainly most helpful. It shows us the relation of the fragments to each other and later on it shows us whether or not we have been successful in getting them into correct apposition. This is so far so good. It serves in addition a most useful purpose in enabling us to decide what fractures may be properly treated by the open method. My plan is to take a radiograph of all simple fractures before any attempt is made at reduction. A second picture shows how far we have been successful in effecting reduction. If this second radiograph shows the fragments to be in satisfactory apposition, well and good. If they are not, the radiograph is shown to the patient and he is told that we cannot do better unless he permits us to make an incision and bring them together. The dangers of incision are fully explained as well as the deformity and limitation of movement likely to result if the fragments are left as they are. The patient may then elect to remain as he is, to submit to treatment by the open method, or to go elsewhere if he thinks someone else can do better for him. This plan I have found most satisfactory in preventing the development of strained relations between himself and his surgeon. It also prevents what otherwise might occur—one of those worrying and unseemly suits for malpractice, which fortunately are rare in our Dominion.

My experience in reducing fractures by the open method has taught me that in many instances it is impossible to reduce them otherwise satisfactorily. I have often after exposing the fragments asked students to make extension, using as much force as seemed justifiable and yet the overlapping or riding was not altogether overcome, the ends only being brought accurately together by the use of levers or by bending the limb and then straightening it, and all this time the patients were under the influence of a general anæsthetic. I have the most profound sympathy for the man who fails to perfectly reduce a simple fracture. In many instances he simply fails to accomplish the impossible under the circumstances and with the means at his command.

But electricity in the form of the X-ray machine or in the form of high tension currents is, I believe, destined to become of great therapeutic value, particularly in lupus, cutaneous epitheliomas and pro-

ably in many other pathological conditions. It may also prove serviceable in relieving pain in intractable neuralgias.

The use of cocaine as a local anæsthetic is becoming more frequent and safer. The introduction of cocaine into the spinal cord has been tried in most countries. In its present form it does not seem destined to come into very general use. I have used it in twelve cases. By its use I have in one case resected six inches of small intestine, in two cases removed the appendix vermiformis, in one case performed a radical cure for inguinal hernia, in one case removed hæmorrhoids, in one case extracted a vesical calculus, in one case circumcision, and the other cases were amputation of the foot, amputation of toe, circumcision and osteotomy for hallux valgus. In all the above cases the analgesia was perfect and extended as high as the margin of the ribs in some instances, and in others as high as the forehead. In another case, that of a young dentist suffering from acute appendicitis, it was a complete failure and I was obliged to administer ether. This was the only failure in twelve cases.

In these twelve cases vomiting occurred soon after the injection in six or 50 per cent.; profuse sweating in nine; in all of them the pulse became rapid and of poor quality during the first ten minutes, and the expression of the patient was such as to cause a feeling of uneasiness in the minds of the onlookers; the face became pale and the features drawn. These unpleasant symptoms generally passed off before the operation was completed and the patients became talkative, were quite pleased with themselves and their surroundings and returned to the ward enthusiastic advocates of the new pain reliever. In none of these cases were there any unpleasant after effects; none of them suffered from more than a very slight headache, and no vomiting occurred in any case after returning to the wards. The after care gave the nurses no trouble and many patients asked that when they were operated upon it should be under spinal cocainization.

Notwithstanding these favorable results I have not used it for several months. Although I have had no accident with it others have, and I confess I am afraid of it. I find that mine is not an unusual experience, a few days ago during a short visit to some of the great surgical centres to the south of us, I made it a point to enquire from surgeons what their experience had been, and they generally made answer that they had used it, had had no accident, had found the analgesia satisfactory, but had not used it lately. They seemed afraid of it. One and all, however, agreed that there was something in it and that probably in the future some modification would be found to render it safer than at present. The kidneys did not in any of my cases appear to have been at all affected by its use.

Important advances are being made in the pathology of the blood. Although the value of the leucocyte count as a diagnostic sign has possibly been overestimated, yet that it has a distinct value none can deny. The estimation of the percentage of hæmoglobin I have found to be of distinct value in deciding that question sometimes of paramount importance—is the patient in a fit condition for operation? Operations should be undertaken only after serious consideration if the percentage of hæmoglobin present is under 50 per cent., and if less than 25 per cent. one should hesitate unless the conditions are most urgent.

The value of a knowledge of the freezing point of blood and urine is perhaps not yet correctly estimated. It is a time-consuming process. I have had the freezing point of urine determined in about 50 cases at the Montreal General Hospital, but am not yet fully convinced that great dependence can be placed upon it. Ogsten has found it of value.

Gentlemen, I have taken up so much of your time in retrospect that no room is left for prophecy. It must be evident, however, to you all that we are living in a time of great activity. There are no indications of a halt. The future never seemed to hold in hand greater promise of reward to the earnest worker. Bacteriology, Embryological Pathology, Physiological Chemistry and Serum Therapy are terms representing a few of the fields of richest promise.

I thank you, gentlemen, for your kind attention.

# RESUME OF THE MORE RECENT ADVANCES IN THE ARTIFICIAL FEEDING OF INFANTS.\*

BY

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The artificial feeding of young infants, difficult as it often is during the cooler months of the year, becomes a still more serious problem as the hot season approaches and we are confronted, not only with defective nutrition in its protean shapes, but also with the many forms of infantile diarrhoea. When pressed, therefore, for a paper by your ever-zealous secretary, I have fallen back on this somewhat trite, but always important subject, thinking that a short *résumé* of some of the more recent contributions to our knowledge of this subject might elicit discussion which would not be without general interest.

Most of us are convinced that fresh uncontaminated cow's milk, when properly modified, forms our best substitute for mother's milk, but its exact adaptation to the individual infant is in many instances a matter of great difficulty. Especially is this the case in very young infants, and in those whose stomachs have been already deranged by injudicious feeding.

Cow's milk differs from woman's milk chiefly in the amount and character of its proteids and in the fact that commercial cow's milk is never sterile, but is always contaminated by many forms of bacteria. The sugar constituent is always present in smaller amount, and we are told that both it and the fat constituent differ in some respects from these ingredients as found in mother's milk.

Of these differences, that between the proteids of the two milks has long been regarded as by far the most important for us as physicians. The milk of all ruminants curdles on the addition of rennet into a firm and tenacious mass more or less indigestible; in this respect it differs from the milk of animals which chew their food before swallowing it, the curd of which is much more flocculent and soft. Theoretically, therefore, the milk of the mare and the ass would supply a milk more easily adapted to the infant's wants. At the present, however, it is impossible to obtain a supply of such milk in regular and sufficient amount.

The proteid element of milk consists of albumins, globulins, and nucleo-albumins, and although chemists tell us that there are several

\* Read before the Montreal Medico-Chirurgical Society, June, 1902.

kinds of each of these nitrogenous compounds, and that the milks of various animals differ from one another in containing different kinds, they have not as yet thrown much practical light on their differences. For us as physicians the important point to be noted is that the albumins and globulins are absorbed with little digestive effort, while the nucleo-albumins or caseinogens, are curdled by the rennet and must be digested before they can be absorbed. The curdling process in cow's milk consists essentially of a separation of the fat and the casein from the easily absorbable proteids and sugars.

Now, if we enquire more carefully into the relative amounts of these several proteids in mother's and cow's milks, we shall find that while in cow's milk the proteids consist of coagulable albumin or caseinogen, 80 per cent., and of soluble albumins sometimes spoken of as lactalbumin, 20 per cent., in human milk there is of the caseinogen only 30 per cent., while of the soluble albumins there is from 60 to 70 per cent. In other words human milk contains two-thirds of its proteids in a soluble and easily absorbable condition, while of cow's milk the greater amount is, after passing through the stomach, in an insoluble state requiring prolonged digestion in the intestine before it can be absorbed. Hence in our attempts to adapt cow's milk to the digestive capacity of the infant stomach, we must remember that merely changing the several percentages does not change cow's milk into woman's milk. So long as the insoluble albumin remains in large excess, so long will infants have difficulty and often fail altogether in the digestion of such modified milk.

To overcome this difficulty with the proteids several plans have been proposed. The simplest plan perhaps is to dilute the milk with water till the percentage of proteids, although much below that of mother's milk, is *within the digestive capacity of the infant*, and then, by the addition of cream and sugar of milk, to approximate the proportion of fats and sugars to that existing in normal human milk. After the amount of dilution demanded by the infant has been ascertained, an effort should be made by slowly but steadily increasing the amount of milk in the mixture, to educate the stomach to digest the caseinogen in larger amounts, much in the same way as a gymnast trains his muscles to lift heavier weights. In this way cream or milk may, for a few days, be diluted with twelve or sixteen parts of water, reducing the proteids to 50 or even 25 per cent., but making good the deficiency in the milk sugar. Then, the amount of milk may be gradually increased by small additions every few days, till, at the end of six or eight weeks, the young infant will be found to be able to digest milk diluted with only two or three parts of water, and containing 1

to 1.5 per cent. of proteids. It is a mistake to commence with a too large percentage of proteid, then after gastric derangement has occurred to continue for too long a period with too low a percentage. In this connection it is to be remembered that observations have shown that the addition of carbohydrates to milk dilutions is necessary to conserve nitrogenous metabolism and to enable the infant to gain even with a great reduction in the amount of nitrogenous element ingested.

Keller, in a recent paper in the *Centralblatt für Innere Medicin*, on the influence of the carbohydrates on the destruction of proteids in the infantile organism, states that the addition of a maltose to diluted cow's milk, 'decreases nitrogenous elimination in the infant. He first determined the amount of nitrogen in the urine of infants when fed upon diluted cows' milk alone, and then when maltose was added to the milk. When the dietary was cows' milk only the elimination of nitrogen was from 1000 to 1150 milligrammes, but when 60 grammes of a maltose were added to the dietary, the amount of nitrogen eliminated gradually fell to 500 milligrammes. When 100 grammes of maltose were given daily, the nitrogens eliminated fell to 380. On omitting the maltose, the nitrogen eliminated at once rose to the 1000 milligrammes again.

In infants nourished at the breast, nitrogen retention is very high, in one instance 85.5 per cent., but in infants to whom cow's milk was given without the addition of any carbohydrate, a very low retention percentage of nitrogen was obtained, while those to whom various carbohydrates were given showed retention of a distinctly greater percentage. The actual absorption of nitrogen in almost every instance was less when carbohydrates were employed than when milk was given alone, but the percentage of absorbed nitrogen retained in the system was much greater when the carbohydrates were added to the dietary. In the case of a sick infant, nine months old, suffering from a persistent gastro-enteritis, 750 cc. of cows' milk diluted with water were given daily; afterwards 500 cc., diluted similarly, but with the addition of 40 grammes of maltose. The infant lost much more under the first dietary than under the second.

2. A second method of overcoming the indigestibility of the proteids in cow's milk is by the addition of cereal gruels, which may or may not be previously digested. The value of this method has been denied by some writers, but more recent investigations have proved their mistake, and it is now acknowledged by all that milk curdled in a cereal diluent does form a distinctly softer and more flocculent curd than in a diluent of simple water. The method is an old one and was

employed by Van Swieten in the 15th Century; recently its utility has been strongly urged by both Dr. Jacobi and Dr. Chapin.

The disadvantage of the method for very young infants is that it introduces a material quite foreign to milk, and one with which their digestive powers are unfit to grapple until their salivary and pancreatic secretions have become somewhat developed. On this point, however, Dr. Jacobi, considers that a small amount of starch may be digested at the very earliest age, and my own observations lead me to think that in some cases this is so.

It is to be noted also that Rachford, in an address before the American Pediatric Society, stated that as a result of numerous experiments he found that the proteolysis of casein by the pancreatic juice was favored by the presence of a maltose or sugar solution. Commenting on the result of his experiment, he says: "We may infer from the above that the favorable influence of the cereal decoctions on casein digestion is continued even after the milk leaves the stomach and comes under the influence of the various digestive enzymes of the pancreatic juice in the intestinal canal."

The effect of the addition of an alkali in rendering the curd of cow's milk less dense was pointed out many years ago by Lehmann, who stated that human milk, when acid, yielded a much firmer coagulum than when alkaline, and cows' milk when alkaline a much looser coagulum than when acid. We know that caseinogen is precipitated from its solution by acids, and, on the other hand, that its precipitation is retarded by the presence of neutral salts. Chemists have told us that the rennet action of the stomach is facilitated by the presence of salts of lime. It appears, therefore, to be always desirable to neutralize fully the acidity of cow's milk by the addition of lime water. Harrington tells us that ordinary milk 24 hours old requires the addition of 1-16th of its volume of lime water to make its alkalinity correspond with that of breast milk, but a slight excess is in most cases of advantage, and in warm weather the addition of 10 per cent. of lime water to the milk will be found to render the coagulum distinctly less firm and more digestible.

The most recent method of adapting cow's milk to the infantile digestion, is by the use of whey in which we get rid, more or less completely, of the indigestible caseinogen. Whey is prepared from fresh cow's milk by the use of rennet, or essence of pepsin. The casein is precipitated and afterwards separated by careful straining, leaving a fluid containing all the soluble albumin, sugar and mineral matters, but none of the caseinogen and almost none of the fat. Prepared thus from fresh milk its average composition is, .32 fat, 4.75 sugar and

.80 proteid. The amount of fat may be increased by the addition of cream. Sugar of milk may also be added to raise the sugar percentage. The objections to this method are its difficulty of preparation and its expense. Its preparation will demand a good deal of time from a more than ordinary careful and intelligent mother or nurse. For this reason I have thus far had it prepared for me in the milk laboratory, and thus obtained I have succeeded with it in securing excellent results in several very difficult cases.

In one or other of these ways the difficulty in connection with the proteids of cow's milk may almost always be overcome.

Supplementary to the difficulty in the digestion of the proteids in cow's milk, is an inability to digest a due percentage of the fats. Biedert many years ago taught that an increase in the proportion of the fat element in an infant's food conserved nitrogenous metabolism and to some extent made up for a deficiency in the proteids, and in accordance with this theory introduced his cream mixtures which many of us may remember. They often gave rise to persistent vomiting, and since then experience has taught us to be very cautious in our percentages of cream. This point was emphasized at the last meeting of the American Pediatric Society by Freeman, of New York, who attributed many of the failures in the adaptation of cow's milk to the infant's digestion to the persistent employment of too large percentages of fat. The reason for the use of these high percentages is generally an effort to overcome the constipated habit so frequent in these children. While the plan may succeed excellently in some cases, in others it sets up vomiting and greatly interferes with the digestion of the other elements. Freeman found that in many of his troublesome cases good results were promptly obtained by lessening the amount of the fat element, bringing it down to 1. or 1.5 per cent., and then, as digestion improved, gradually increasing it again. This reduction at the same time enabled a much larger percentage of the proteid and sugar elements to be assimilated. He suggested that perhaps one of the reasons why such foods as condensed milk, Nestle's food, &c. have succeeded when our milk modifications have failed, was due to the fact that they contained such a small percentage of fat.

In a recent paper before the Pediatric Society, Dr. Jacobi argued against the use of milk sugar and in favor of cane sugar in our milk modification. Commercial milk sugar is often in his experience very impure, and it very readily undergoes the lactic acid fermentation. He thinks that if there is any excess of it in the food, lactic acid is developed which favors the elimination of calcium phosphate and the development of rickets.

Vaughan, on the other hand, considers that milk sugar is more readily assimilated than cane sugar by infants, and Escherich considers that the presence of a moderate amount of lactic acid in the intestine is advantageous in that it tends to prevent the development of many noxious forms of bacteria.

It may be stated, however, that milk sugar is the form generally preferred by pediatricists. It should be obtained as pure as possible and should, before it is added to the milk, be dissolved in boiling water and the solution filtered through absorbent cotton. Should pure milk sugar, however, be difficult to obtain, cane sugar may be employed but in only half the quantity, owing to its greater sweetness.

It is extremely important that the milk employed in infant feeding be obtained with such careful precautions as to render it practically free from contaminating bacteria. It is not always our good fortune, however, to be able to obtain such with a regularity necessary for the daily preparation of an infant's food, and when the supply cannot be depended upon it appears the lesser of two evils to have the milk pasteurized at the lowest efficient temperature; viz. : from 150° F. to 157° F. Milk sterilised over 160° F, is altered to an extent varying according to the elevation of the temperature employed and the duration of the exposure, in the following respects:—The proteids are modified and rendered less digestible; the combination of the saline ingredients with the proteids appears to some extent to be broken up, and the salts assume a condition in which they are less readily absorbed; the natural ferments whose presence in milk may with much probability be inferred, and which may materially assist its digestion in the infant's stomach, are destroyed; and an alteration takes place in the emulsion normal to milk which may also have a distinct effect in lessening its digestibility by the infant.

Milk obtained in the country from healthy pasture-fed cow's milked in the open fields certainly is better not sterilized, but milk obtained in the city from more or less unknown sources, and under unknown conditions, should, in my opinion, be pasteurized, especially in summer weather.

The following practical points may be emphasized. An infant fed at the breast, who suffers persistent indigestion and at the same time fails to gain in weight, should be taken from that breast. If, however, the infant gains in weight it is better to try and correct the indigestion by treatment directed both to mother and child. To attempt artificial feeding in such a case often only adds to our troubles.

In commencing artificial feeding begin with a weak mixture, and work up by frequent but slight changes to a point of tolerance. By

still continuing a gradual but steady increase, never beyond the point of easy digestibility, we can in a few weeks attain to a food sufficiently nutritious in all its ingredients and yet fully digestible and assimilable. It is a serious mistake to begin on a mixture too strong, and work down after weeks of indigestion to the point of tolerance.

The question how long an infant should be kept on a modified milk diet is an important one. It is generally conceded that by the tenth or twelfth month a child should be able to digest almost pure milk. By this time, however, I prefer a mixed dietary. Milk is very deficient in iron. An infant comes into the world with a high percentage of hæmoglobin; this gradually diminishes so long as he is fed on milk alone. Only when a mixed diet is substituted for a pure milk diet does the percentage begin to rise again. Cereals and meat juice and broths are rich in iron.

Oatmeal is amongst the richest in iron of the cereals and properly cooked forms a useful addition to the infant's dietary. Shortly after the first twelve months eggs lightly cooked may be permitted at one of the meals in the day. The great richness of the yolk in fat, lime salts, and in the organic compounds of phosphorus and iron, makes it a valuable food for the rapidly developing child. At this period also, food involving somewhat long mastication, such as biscuits and crusts of bread, become necessary. The process of mastication develops the maxillary bones, and the associated muscles, while disuse of the jaws starves the area supplied by the maxillary arteries, leading to their imperfect development. The bone remains small, the teeth are crowded and imperfectly nourished, and dental caries, so disastrous to the growing child, becomes inevitable.

## MYASTHENIA GRAVIS.

BY

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This condition was first recorded by Wilks (Guys Hospital Reports, 1877), who published a brief report of a case of bulbar paralysis without anatomical lesions. The most important study of the disease published in English is that of Campbell and Bramwell, as a critical digest in *Brain*, 1900, and includes a synopsis of 60 cases. Oppenheim (Berlin, 1901) has recently published a complete monograph on the subject in which he has collected 79 cases, including most of those recorded in Campbell and Bramwell's article.

In America but few cases have been so far reported. In addition to those referred to in the above mentioned publications, cases have been published by Sanger Brown (*Med. Rec.*, Vol. 2, 1900), Jacoby (*Med. News*, 1901), by Down, and by H. T. Patrick (*Jn. Nerv. and Mental Dis.*, 1902), and by Buist and Wood (*Jn. Am. Med. Assoc.*, 1901).

As the disease is a comparatively rare one, and as it is not yet very generally recognized, it may be permissible to give a brief sketch of its more important features.

The onset of the malady is usually gradual. The muscles most frequently involved are those innervated by the bulbar nerves, and the external muscles of the eyes, in many instances both groups being affected. The muscles of the limbs and of the back of the neck are also frequently attacked.

In the eyes the first symptom noted is usually drooping of the lids, often more marked on one side than the other. Diplopia, resulting from paresis of the orbital muscles is also frequently present, and is characterized by the alterations of the relative positions of the images at different periods. The internal muscles of the eye almost invariably escape; in one or two doubtful instances their involvement has been noted. Eulenburg (*Deut. Med. Woch.*, 1898, 1. p. 6) records a case with dilation of the pupil and slow reaction to light, but the white colour of the optic disc throws some doubt on the nature of the case.

When the bulbar nerves are affected, the symptoms simulate those of bulbar paralysis. The lips are weak, the patient unable to whistle, and there may even be dribbling of saliva. In consequence of the weakness of the facial muscles the face has often an expressionless

\* Read before the Montreal Medico-Chirurgical Society, May 16, 1902.

aspect, especially about the mouth. The tongue is weak and occasionally shows a slight but not well-pronounced tremor. The soft palate shares in the weakness, and accompanying this, there is a nasal intonation with occasional regurgitation of fluids through the nose. Difficulty in swallowing is rarely absent, and fluids are more readily taken than solids.

The muscles of mastication very frequently, indeed, almost constantly, suffer early and to a marked degree, and as they escape or are only attacked late in true bulbar palsy, their involvement is of considerable significance in the diagnosis of the condition. Oppenheim suggests the term of *dysmasesia* to express the difficulty experienced in mastication.

The laryngeal muscles seldom show such a degree of paresis as to lead to serious disturbance of function, such as hoarseness, aphonia or stridor. Weakness of both abductors and adductors has been observed. One cord only may be paralyzed or present limitation of movement, and the defects in movement have been noticed to become more pronounced after use. Anæsthesia of the larynx and abolition of the pharyngeal reflex have been observed in a few instances.

The muscles of the limbs and of the back of the neck are frequently weak, and in occasional instances are the first to become involved. Inability to hold the head erect is a common manifestation, and it may require support by the hands. The respiratory muscles are occasionally involved, explaining the presence of dyspnoea which is often found on slight exertion. Inability to walk any distance is often present, and in extreme cases any muscular movement is performed with difficulty.

A very characteristic feature of the muscular weakness is that it is rapidly induced by exertion. The jaw muscles rapidly tire and become incapable of powerful contraction, and at the latter part of a meal much difficulty may be experienced in mastication.

The tired feeling and weakness are constantly better in the morning, after the night's rest, and the symptoms again become more marked in the afternoon and evening.

Remarkable variations in the degree of weakness is also a very characteristic feature of the disease. Marked changes, for instance, may be noticed in the power of swallowing, chewing or speaking from day to day. Periods of remission and exacerbation, constituting even recurring attacks, are sometimes observed at intervals of weeks or months.

The myasthenic reaction is a very characteristic symptom. It is, however, by no means always present. It may be transitory and is more readily obtained when the muscle is exhausted. To apply the

test a tetanizing faradic current is passed through the affected muscle, when the contraction becomes gradually feebler and eventually ceases to respond. To galvanism there is little or no diminution in the power of contraction after repeated passage of the current. The reaction of degeneration is never observed in cases of this category, and this fact gives us a valuable means of distinguishing the malady from organic bulbar paralysis.

The muscles preserve their nutrition and there is never any spasm. Sensation is unaffected and the sphincters are unimpaired. The reflexes also remain unaffected, although there is occasionally an increase in the knee jerk.

The course and duration of the disease vary considerably. Only seldom does it appear as an acute or subacute condition, proving fatal in a few weeks or months; much more commonly it extends over a period of from one to three years, and in rare instances it has lasted as much as ten years.

According to Campbell and Bramwell, twenty-three out of sixty cases terminated fatally. In the chronic form it is not steadily progressive, but there are frequent periods of remission or intermission of the symptoms. Death has resulted from attacks of dyspnoea due to involvement of the respiratory muscles. Sudden and fatal attacks of suffocation have set in as the result of passing a sound or on attempts to swallow.

The causes of the disease are obscure. Most cases occur between the ages of twenty and forty, whilst it is rare in children and over sixty. Oppenheim finds a slight preponderance in the female sex (3 to 2), and he remarks on the relative frequency of the affection in teachers. The malady has occasionally followed infections, and relapse has followed on such a slight infection as tonsillitis.

Pathological investigation has so far failed to reveal any special morbid changes in the nerve centres, nerves or affected muscles.

The following case was referred to me at the Montreal General Hospital by Dr. J. A. Hutchison.

*Case 268, 1902.* The patient, aet, 49, is an engine-driver, and being one of the smartest men on the road, is usually employed on a very fast run. He complains of difficulty in swallowing, weakness in the arms, legs and jaw, occasional regurgitation through the nose, and dribbling of saliva.

Up to the present illness he has always enjoyed good health. He had a scalp injury and a severe blow on the head eight or ten years ago in a railway accident, and from which he completely recovered. There is no history or evidence of syphilis, and he has always been very moderate in the use of alcohol.

Both parents lived to old age, two brothers died of lung disease, but all other members of the family are in good health.

His present illness began about September 1st, 1901, with weakness in the arms, followed shortly by weakness in the legs, and still later in the muscles of the jaw. Owing to this weakness he had to stop work, but has never taken to bed. Since the illness began the chief complaint has been of difficulty in swallowing, and liquids have been more readily swallowed than solids. Regurgitation of fluid through the nose occurs only occasionally and usually when swallowing rapidly. He has lost 60 lbs., which he attributes to the difficulty in taking sufficient nourishment. There has been a feeling of thickness in the tongue with thickness of speech, and saliva occasionally dribbles from the lips, a symptom which was noticed in the first month of his illness.

His symptoms are usually better in the morning and increase during the day, and they are subject to considerable variation in severity from time to time.

He has had several attacks of dizziness lasting half an hour at a time, and beginning in September last.

*Examination.* The patient is a man of 5 ft. 10 in., weighing 148 lbs.

His memory and intelligence are normal. On admission he experienced much difficulty in swallowing, which disappeared the following day. A large sized œsophageal sound passes rapidly into the stomach.

Although complaining of weakness in the arms and legs the motor power is not diminished. The muscles are medium sized and rather flabby. He makes a poor attempt at whistling owing to weakness of the lips. The tongue is protruded very slightly to the right, and there is a very fine tremor occasionally present; the soft palate hangs rather lower than usual, especially on the right side, and Dr. H. D. Hamilton reports slight weakness of the adductors of the vocal cords, and more on the right than on the left side. There is at times difficulty in swallowing, and on one occasion fluid was noticed to regurgitate through the nose.

The pupils react to light and accommodation. Dr. J. J. Gardner reports that there are no changes in the fundus, and no error of refraction. There is no defect in the movements of the ocular muscles.

The knee jerks are slightly increased, and the plantar reflexes are normal.

The thoracic and abdominal viscera are normal, the radial arteries are slightly thickened.

During the sixteen days he remained in hospital the temperature was subnormal, varying from 95.1-5 to 98.1-5. The pulse ranged from 64 to 84.

Marked changes in the degree of weakness were noticed from day to day in the bulbar muscles. There was at times an almost entire absence of signs of weakness, and no difficulty in swallowing or thickness of speech would be experienced. On other occasions the speech became thick, and much difficulty in swallowing was experienced. The symptoms were less marked in the mornings than at later periods of the day.

No electrical changes were noticed with the faradic current. The muscles responded readily, and after repeated stimulation no diminution in their irritability was present.

The diagnosis of myasthenia or pseudo-bulbar paralysis was based on the weakness of the bulbar muscles, and on the marked variation of power which they exhibited from day to day, with improvement after the night's rest. This variation was particularly noticed in the power of swallowing. The early involvement of the jaw muscles was again very suggestive of this condition, as they are seldom involved in true bulbar palsy, and then only in the advanced stages of the disease.

The degree of weakness was slightly greater on the right than the left side, as shown by the slight protrusion of the tongue to this side, the greater drooping of the palate, and the lessened degree of adduction of the right vocal cord. Slight degrees of asymmetry often occur in the degree of paresis of the two sides, although I have not found any reported case in which the muscles of the tongue, soft palate and vocal cord were more affected on one side than the other. Ptosis is, however, frequently more marked on one or other side, and Gowers has recently reported a case in which the masseter and face muscles were weaker on the right than on the left side. (*Brit. Med. Journ.*, May 31, 1902.)

## NOTE ON A RAPID BLOOD STAIN.

BY

F. M. FRY, B.A., M.D.

The blood stain I wish to draw your attention to is no new one, nor can I lay claim to sole ownership of it. It is one of the many modifications of Romanowsky's stain, which is a rapid means of permanently colouring blood films. Romanowsky's stain is, however, somewhat difficult of preparation and often proves unstable. Wright, of Harvard, is the last observer to modify this stain in order to increase its convenience of use and render it more permanent in keeping properties. He makes a half per cent. solution of sodium bicarbonate and to this adds one per cent. of methylene blue. This alkaline solution he steams for one hour in the Arnold sterilizer, thus imparting to it a polychromatic power. To 100 cc. of this solution, Wright adds 500 cc. of a 1 to 1,000 aqueous solution of eosine, thus rendering the solution a deep purple colour and producing a very fine precipitate. This precipitate is caught on a filter paper and when thoroughly dry, 3 grms. of it are added to 100 cc. of pure methylic alcohol making a saturated solution. This is once more filtered and to the filtrate is added 25 per cent. of methylic alcohol. This very dilute solution is the stain.

In preparing a blood film one merely exposes a coverslip to the air for a minute or less until dryness is complete and then adds several drops of the solution. This fixes the film. After the lapse of one minute several drops of distilled water are added until the solution becomes translucent and a yellow lustre appears on the surface. The staining proper now takes place, and after from two to five minutes the stain is washed off with distilled water until the thinner portions of the film appear salmon pink in colour. The film is now dried on blotting paper and in the air and immediately mounted in Canada balsam.

On examining the film one finds the red cells stained a rich orange or a yellow or yellowish pink, according to the taste of the observer. The nuclei of the polymorphonuclear cells are stained a deep blue, their protoplasm appearing pinkish, the nuclei of the mononuclears are stained a blue or a deep lilac, reddish-purple colour, while in many places the cytotblast, especially in the large mononuclears and splenocytes, appears a beautiful robin's egg, bluish-green colour. The eosin granules

\* Read before the Montreal Medico Chirurgical Society. May 2, 1902.

appear as deeply red in colour as they do in using other eosin solutions. Thus one has a stain at least as satisfactory as the older eosin and hæmatoxylin or the Ehrlich's triple stain, while the time required for fixing and hardening the film for these two stains is here reduced to three or four minutes instead of from several to twenty-four hours, as is ordinarily the case.

It is, then, on account of its rapidity of action and its applicability that I have thought it worth while to bring this stain to the notice of the Society. Furthermore, the stain brings out many varieties of granules in the mononuclear cells which are not ordinarily shown by the other stains. In order to find out whether these granules are normal and always present or pathological and of some diagnostic importance, I hope to make to you at some future date a further-report.

## HOLE IN THE MACULA LUTEA.

BY

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The case presented to you this evening, somewhat in the way of an innovation, is a typical example of a condition which has been variously designated. It has been called traumatic perforation of the macula (Haab), rarefying or atrophic central retinitis (Kuhut), and hole in the macula (Ogilvy).

The patient, a boy of 16 years, was struck on the eyebrow, towards the root of the nose, three years ago, by a small pebble thrown by a younger school companion. Previous to this, patient is quite sure that his eye was normal in every respect, but after the blow, which was very slight, he noticed at breakfast the next morning that objects seemed to float in front of his eye. When looking up at the wall there appeared to be a bird or insect there, or something like these in shape, when in reality there was nothing present.

These optical illusions were especially noted for a day or two, and even now, from time to time, he sees in front of his right eye a small round black ball, not very dark, which follows the movements of the globe (positive scotoma). No subjective symptoms, such as flashes of light, were noticed at the time of the injury, nor was the eye red or sensitive to light, so far as he remembers.

With the ophthalmoscope no difficulty will be experienced in seeing in the macular area the rounded, distinctly depressed and sharply defined hole with its deep red base. The depth of the depression is demonstrated with greater difficulty by the direct method and by faint parallax movements. It will be noted further that the macular depression is situated on a zone about half the size of the optic disc, of a slightly yellowish hue. Here and there are dots of organized exudate and over one or two, crystals of cholesterin. Vision of the right eye equals 6-60, not improved, and, contrary to what one might expect, the central vision for colours (three millimetres) is not lost.

Cases of this kind were first brought to my notice by Ogilvy, chief clinical assistant to Mr. Marcus Gunn, during my term of residence at Moorefield's eye hospital; but although constantly on the look-out since my return to Canada, for this condition, the present is the first example to come to my notice.

The condition was first described by Noyes of New York before the American Ophthalmological Society in 1871. His communication was apparently entirely overlooked, and interest in the subject has only recently been revived. Valuable articles by Kuhut of Königsberg and Maab of Zurich appeared in February, 1900, and Ogilvy presented to the Ophthalmological Society in the United Kingdom in July of the same year a further series of fifteen cases.

A history of traumatism on or about eye is present in nearly every case, but in two instances reported by Kuhut, no history of injury was present, and the author was led to believe that some predisposition in addition to the injury was necessary to account for the changes. Still more recently, Quebi of Vienna, has described in the September number of *Zeitschrift für Augenheilkunde*, of 1901, cystic changes as the results of an inflammatory œdema, which were confined entirely to the macular region, in an eyeball lost from trauma. He thinks that in this case, although the evidence of preoperative examination was wanting, on account of opacity of refractive media, that the changes present must have presented an ophthalmoscopic picture similar to those already portrayed, and that possibly the pathological explanation of these cases is to be found in cystoid degeneration of the macular region.

## ANGIO-NEUROTIC ŒDEMA.

BY

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The patient, Miss C., aged 83 years, has been suffering from asthmatic attacks for many years at various intervals, and otherwise a good deal from urticaria but for some time has been comparatively immune from both. She has also a chronic cardiac affection, both valvular and myocarditic with enlargement and hypertrophy.

Some time previous to this attack she had been enjoying fairly good health but was taking about six grains of supra renal extract daily because of threatening cardiac œdema which appeared on cessation of the extract and disappeared on its resumption.

On the morning of May 15th a small whitish swelling was noticed beneath one eye and was very itchy, evidentially urticarial in nature, as it shortly afterwards disappeared and the patient was in her usual health until she began her dinner at nearly one o'clock. She became then dyspnoic with constant irritable coughing and swelling of the face, when I was summoned.

On my arrival the following condition was noticed. The whole face including the ears was cyanotic and swollen, the eyes prominent, fairly bulging, speech almost inarticulate from the œdematous tongue which could not be protruded. The parotid and submaxillary glands were engorged, forming four large rounded prominences which increased her facial distortion to a marked degree, and it was from them she suffered most pain.

The pulse was unaffected to any extent but stethoscopic examination showed a general pulmonary asthmatic condition with the attendant sybilant and sonorous rales. There was no febrile disturbance and no engorgement of any of the larger veins in the neck.

I was at a loss for a diagnosis and thought at first of sudden thrombosis of the deep jugular veins associated with the cardiac affection. Thinking the patient *in extremis* I summoned another physician who looked upon the condition as very grave but not as absolutely hopeless, but who like myself was at a loss to give it a name. A hypodermic of morphine with atropine was decided upon to relieve the distressing condition of suffering and with the hope of relieving also any spasm which might be a factor in its causation. To our great satisfaction the patient experienced almost immediate relief, the cyanosis began

to disappear and in two hours the patient was quite comfortable except for her tongue and lips which were greatly swollen and which did not return to the normal for twenty-four hours. The asthma disappeared simultaneously.

The case is of interest because of its comparative rarity, of its locality, of its association with asthma and possibly urticaria (from which for some time previously the patient has suffered), of its extreme gravity and of the prompt relief attending the use of morphine with atropine. Undoubtedly it was a vasomotor neurosis of unknown origin as there seemed to be no previous dietetic error and no general constitutional disturbance febrile or otherwise.

It could not have been connected with the administration of suprarenal extract as the patient had taken it before in very much larger doses, and has taken it since without recurrence of the attack.

## ADDISON'S DISEASE CURED BY SUPRARENAL EXTRACT.

BY

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The patient, Mrs. W., aged 32 years, was admitted to the hospital, April 3rd, complaining of pain in the stomach, back and head, vomiting, diarrhoea, weakness and loss of appetite.

Her illness began in November 1901, with weakness, loss of appetite and diarrhoea, but she was able to continue about her usual household duties until January of this year when she was confined to bed. At this time the most aggravating symptoms were the diarrhoea, pain in the back and head and insomnia. About this time also she noticed her skin becoming abnormally brown. These symptoms gradually became worse up to her admission on April 3rd.

Her previous history is negative except for an attack of malaria seven years ago. She is married and has six healthy children.

Her father is alive aged 80 years, her mother, three sisters and one brother died of consumption. Two brothers aged 25 and 30 years are alive and well.

On her admission, April 3rd, the following condition was noted. Pulse 110, weak, small and compressible. Respirations 24, temperature 102°F. She was exceedingly weak and suffered from breathlessness, dizziness, headache, and palpitation. She manifested great lassitude and loss of physical and mental energy. It appeared a great effort to reply to ordinary questions, her speech was slow and incoherent. The most striking feature about her condition was the pigmentation which was universal, but deeper on those parts where pigment normally is present, on the exposed parts where the clothing bore most heavily as the neck, hips, shoulders. Pigment spots were also present on the mucous membranes of the lips and cheeks. Her extremities were cold and clammy and she fainted on the slightest exertion. Anorexia, nausea, and vomiting were present. The stools were liquid in character and from two to as many as nine daily. The tongue was dry, coated and very pale. Dull aching pains were referred to the epigastric, hypochondriac and lumbar regions. Examination of the lungs revealed in the right apex and along the antero internal edge of the lung slight dulness on percussion with a few dry crackling rales. There was slight cough and very little sputum in which no tubercle were found.

The blood examination showed 32 per cent. of hæmoglobin, 2,100,000 erythrocytes, with marked poikilocytosis and a relative leucocytosis. The average daily amount of urine was 30 ounces containing two-tenths per cent. of albumin and  $6\frac{1}{2}$  grains of urea to the ounce. No casts were present.

The patient was put on liquid diet and one-thirtieth of a grain of strychnine was ordered to be given hypodermically three times daily, and bismuth with cocaine was given to allay vomiting but without result. Hæmaboloids, drachms two, were ordered three times daily, after meals, and codeine one-eighth of a grain every four hours to control the cough. This method of treatment was continued to May 5th without any betterment, but on the contrary a gradual sinking of the patient's vitality when on consultation it was decided to try suprarenal extract three grains three times daily after meals. Improvement began immediately and within three days the vomiting and diarrhoea began to lessen and the patient to gain strength and to feel better. From this on the patient steadily improved and in two weeks from the beginning of the suprarenal extract treatment she was feeling very comfortable and enjoying her meals. On May 29th, the blood was again examined and gave 40 per cent. of hæmoglobin, 3,850,000 red cells, and a very great improvement in their appearance. The urine was also free from albumin.

On the 22nd of May she sat up for two hours and on the 25th most of the day. On the 31st she was able to leave the hospital feeling very well and with the pigmentation fast disappearing. The extract was continued at home and she reported at the hospital at intervals of two weeks, when she left for the country feeling well.

## CLINICAL NOTES.

BY

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to Western Hospital, etc.

### **Aortic Aneurism with Latent Symptoms.**

A. B. aged 56, a man of robust physical development, first complained of dyspnoea in January, 1900. There was a history of lues some 18 years previously, but without either secondary or tertiary sequelæ. For the past 25 years he lived very freely and consumed on an average more than a pint of alcoholic drinks daily; was a very active and assiduous worker in his business which necessitated much travelling in the railroad cars. He was unmarried. After a winter trip when the weather was particularly bad, he returned home with a troublesome cough. On climbing the stairs of the railway station exit, he was attacked with dyspnoea to such an extent as to call for assistance to get into a cab. This was the first occasion of severe restricted breathing and suffocative attacks from which he subsequently suffered at short intervals until his death, one year and a half later. These attacks lasted from five minutes to half an hour, sometimes though rarely longer, and the patient said that when they were severe he had a sense of impending death. Great cyanosis of face, neck and anterior portion of chest occurred with orthopnoea and great anxiety. Superficial veins in the head were distended and pulsated visibly. Heart beats 130, respirations 24 to 30 per minute, inspiration was harsh and stridulous while expiration was difficult and called on all the expiratory muscles forcing the air out in a jerky manner. Slight exertion, emotion or sudden effort would precipitate these attacks. The physical signs when free from suffering, were the following:—No perceptible pulsation or enlargement over the thoracic region, or other change from the normal on inspection. No impulse or thrill to be felt on palpation above the cardiac area, while the heart beat was felt to be weak even on deep pressure. Some slight tugging of the

trachea noticeable. Radial pulses were fairly equal. On percussion an area of dullness was found extending from the lower margin of second rib on left side down to and continuous with the cardiac dullness. This area extended for an inch to the right of sternum. No bruit, thrill or murmur was heard on auscultation over the front of chest, while the heart sounds were weak with some accentuation of the second sound. Examined posteriorly the chest signs were negative. In the larynx there was neither paralysis nor paresis, or other divergence from the normal function. No bulging into the trachea could be made out, or any impulse perceptible there. No angina pectoris or pain referred to any region. Considerable bronchial cough existed throughout the course of the disease with free expectoration. In the latter months of life it was tinged with blood. The treatment was mainly symptomatic, and the only measure that gave definite relief was when the median basilic vein was opened and seventeen ounces of blood was extracted. After the vessels filled up again this was repeated, but the same marked relief was not experienced.

At the autopsy the heart was found fatty and hypertrophied. Cardiac muscle friable and infiltrated with fibrous tissue. Nothing special regarding the valves. The aorta was dilated immediately above its origin to the transverse arch forming an aneurismal dilatation. On the upper and anterior part of the transverse arch of the aorta was a large aneurism, about  $2\frac{1}{2}$  inches in height by 2 inches in breadth, with a slight constriction at its upper part. It was almost completely filled with organized clot. From this aneurism a right subclavian and a right common carotid were given off. The aneurismal dilatation of the ascending part of the arch and the aneurism of the transverse part of the arch presented the picture of almost two distinct aneurisms. There was marked atheroma of the aorta. The trachea was pressed on anteriorly and to the right side of the aneurism, the lumen of the former being diminished to less than one half the normal size. The pressure was about two inches above the bifurcation of the trachea. Some slight pressure was exerted on the cesophagus indirectly.

This patient had been under the care of many physicians in New York, Chicago and Montreal and received a most remarkable variety of opinions regarding the nature of his disease, and he suffered many things superadded to the disease at the hands of these physicians in consequence of mistaken diagnoses. While it was true that many of the classical symptoms of aortic aneurism were latent, yet the positive evidence of extensive dullness over the aortic area, tracheal tugging,

suffocative spasms, due apparently to pressure, and that pressure intermittent and relieved by lowering arterial tension, and finally reasoning by analogy and exclusion, made aneurism the reasonable cause of the suffering. One physician, attached to the large hotel where the patient was temporarily located, decided after mature thought that he had a case of spinal caries, and clapped a plaster of Paris bandage round the sufferer's neck to hold his head fixed. I heard later that this man gave himself credit for having saved the patient's life, owing to temporary subsidence of the spasms of dyspnoea. Other physicians were guarded and avoided a positive opinion, while two or three only arrived at a correct diagnosis.

This case is an instructive one, owing to the fact that a large aortic aneurism existed without affecting the action or mobility of the larynx, or giving other laryngeal indication of its presence, and also that its existence was overlooked by many competent men owing to the suppression of typical chest signs. The organized clot obliterating the sac with exception of space for the blood current would account for the latest symptoms, while the condition of the recurrent laryngeal nerve, being as it were pushed aside from the maximum distension of the tumor would help to account for lack of laryngeal indications. On looking up the literature of this subject I have been surprised to find how little the condition described is alluded to in standard works.

#### **Polypoid Excrescence of Tonsils.**

G. E. T., aged 24, came in April, 1901, complaining of difficulty in swallowing. He was a well nourished man, rather pale but active, and said he felt well with exception of the trouble referred to. Throat examination showed both tonsils somewhat hypertrophied. From the upper and lateral part of the left tonsil there sprung an elongated mobile structure, having a worm-like appearance. It was smooth, soft and insensitive to touch, with a greyish color. It projected from the tonsil forming a kind of horseshoe curve, an inch in length by a quarter of an inch in diameter, the tip resting on the upper surface of the tongue and giving the sensation of discomfort for which relief was sought. It was removed by cutting and bringing away with it a portion of the tonsil, the result being quite satisfactory.

Microscopic examination showed the structure to be covered by squamous epithelium, having cylindrical cells in the deep layers, and thus it was similar in structure to tonsillar tissue. The bulk of growth proved to be lymphoid tissue.

Hajek says some masses of polypoid enlargement take their origin from the strangulation of a portion of adenoid tissue, while other

enlargements are an elongation of the point of insertion of an accessory tonsil. There would appear to be no reason why at any point in the ring of Waldeyer the lymphoid elements should not take on an unusually large development and if such excess of growth occurs at a point where the action of muscular structures would tend to stretch it, the mode of polypoid formation is easily understood. Its unfrequent occurrence in the tonsil in this shape induced me to report it.

# RETROSPECT OF CURRENT LITERATURE.

## Medicine.

UNDER THE CHARGE OF JAMES STEWART.

### Albuminous Expectoration.

David Riesman, M.D. "Albuminous Expectoration following Thoracocentesis." *American Journal of the Med. Sciences*, April, 1902.

The writer alludes to the rarity of this complication of thoracocentesis, which was first described by Pinault in 1853. Terrillon, in 1873, reviewed the literature and collected twenty-one observations with two fatalities. Pepper, in 1874, recorded the first case in America. Riesman states that he has found only three cases in German literature. In England, Fraser briefly reported an instance in 1876, and Gee gave a full description of a case in 1886. Following the short historical notice is an account of the case that occurred in the practice of the writer in 1901. There was an extensive right-sided pleurisy with effusion, due to a sarcomatous growth in the anterior mediastinum. A first aspiration of the pleural effusion, amounting to three pints, was followed by distressing cough and the expectoration of "about five ounces of a turbid, amber-coloured fluid, covered with a layer of froth half as thick as the fluid itself, containing a few streaks of blood and some flocculi." A second and a third aspiration performed subsequently at varying intervals, though followed by severe spasmodic coughing, did not give rise to albuminous expectoration.

The distressing symptoms accompanying albuminous expectoration usually occur not immediately after the tapping, but after an interval varying from a few minutes to half an hour, sometimes longer. They are cough, and dyspnoea gradually becoming more intense, and with the rapidly increasing and sometimes profuse expectoration, there is cyanosis and clamminess of the skin, and a weak and rapid pulse. Over the affected lung there are numerous fine and coarse moist râles. The quantity of fluid expectorated varies greatly, from a few ounces

to a quart or more. The symptoms, in case of a favourable issue, subside as a rule in one or two hours, but may be much prolonged. Analyses of the fluid expectorated vary much in different cases. In Riesman's case the fluid was gelatinous like white of egg, sp. gr., 1018, neutral, and gave a positive biuret test. The albumin amounted to 3.5 grammes, and the total solids were 5.84 per cent. Acetic acid gave a precipitate (mucin). Urea, hæmoglobin and sometimes urobilin are found. The fluid as a rule resembles that removed by aspiration. In the majority of instances albuminous expectoration has followed the rapid withdrawal of unusually large amounts of serum from the pleural sacs.

The writer then enumerates and discusses seriatim the various theories that have been advanced to explain the phenomenon. These are:—(1) Perforation of the lung by the instrument used. (2) Spontaneous rupture of the lung. (3) Absorption by the lung of fluid remaining after the tapping. (4) Pulmonary congestion with intense œdema.

The conclusions of the writer are as follows:—

(1) Albuminous expectoration is a very rare complication of thoraco-centesis. It is usually serious and sometimes fatal.

(2) It consists in the expectoration of viscid albuminous fluid closely resembling the fluid of serous effusion.

(3) The condition is best explained on the basis of an intense congestion and œdema of the lungs (congestion by recoil).

(4) The principal causes seem to be either too rapid or too great a withdrawal of fluid.

(5) Serious cardiac disease and morbid conditions of the opposite lung, hindering expansion, are predisposing causes.

(6) Under all circumstances, but particularly when these complications exist, aspiration should be performed slowly. If the effusion is large the amount withdrawn at any one time should be moderate.

(7) In some cases it may be wise to perform several tapplings, drawing off a small quantity each time.

(8) The treatment consists in counter irritation, venesection, and artificial respiration, together with the use of morphine if the cough is severe.

[It is probable that albuminous expectoration is not so excessively rare as the writer thinks. H. B. Cushing recently reported a number of cases at the a meeting of the Montreal Medico-Chirurgical Society and the reviewer has quite recently seen a typical case.]

# Pharmacology.

UNDER THE CHARGE OF A. D. BLACKADER.

## On the Uses and Abuses of Arsenic.

ON THE USES AND ABUSES OF ARSENIC. H. D. ROLLESTON, M.D.,  
F.R.C.P. *Treatment, April, 1901.*

Arsenic is one of the remedies that probably most of us would retain if the Pharmacopœia was reduced to a dozen drugs. It often acts with unexpected brilliancy and in a way that is not always easy to explain on scientific grounds. For the curious condition known as geographical tongue, arsenic may frequently be of much service. As an appetizer or 'pick-me-up' a dose before meals of a minim of Fowler's solution with gr. x. of sodium bicarbonate and gentian, is a useful and popular prescription. It is also strongly recommended in small doses in other forms of dyspepsia and especially in irritative dyspepsia and alcoholic vomiting. In the annoying form of morning diarrhœa where a large evacuation is passed shortly after breakfast, a minim of Fowler's solution before breakfast frequently acts like a charm. It is also of service in mucous colitis, that troublesome form of disease manifesting itself by the passage of casts of the bowel formed of coagulated mucus. In blood diseases such as pernicious anæmia, splenic anæmia and leukæmia, arsenic is in common use and probably does more good than anything else. It is an interesting problem as to how it affects this good. From the experiments of Stockman and Greig it would appear that it may act by stimulating the red marrow of bone and thus increasing the output of the red blood corpuscles. But if it acts thus it does not necessarily touch the real cause of the disease, and its employment must be regarded therefore as purely symptomatic treatment. On the other hand it may act as an antidote and disinfectant antagonising or destroying the cause of the disease. In this connection it is interesting to note that Weiner states that experiments would indicate that the blood serum of animals treated with increasing doses of arsenic becomes able to protect other animals against infection with the colon and typhoid bacilli.

The local application of arsenical paste as an escharotic has long been known and has recently been revived by orthodox practitioners for inoperable cases of carcinoma, a mixture of arsenic one part and

diluted alcohol from 50 to 150 parts is painted over the surface of the growth. Petrini reports cases where cutaneous sarcomata have disappeared under this treatment, but in which a fatal result afterwards ensued owing to the internal growths.

It has been observed that toxic symptoms arising during the medicinal administration of thyroid gland extract may be held in check by small doses of arsenic. On the theory that the symptoms of exophthalmic goitre are due to an excessive and probably abnormal secretion of the thyroid gland, benefit may be obtained, it seems reasonable to suppose in this disease from the administration of small doses of arsenic. Rolleston reports a case in which the patient improved wonderfully at first but afterwards relapsed.

How does arsenic benefit cases of chorea? Is it by so interfering with nerve of conduction that the patient is unable to manifest the original disease? This seems unlikely, as in ordinary practice the toxic effects of the drug are hardly likely to be developed from the doses administered. On the other hand it may be urged that arsenic is less successful in ordinary practice than in the hands of the successful quack who told Murray, of Newcastle, that the great success of his medicine was due to the large amount of arsenic it contained (15 to 20 minims in each dose).

Arsenic is recommended on empirical grounds by Dr. Murray for employment in diabetes, after the disease has been modified by diet and codeia. Murray gives 10 minims of the *Liquor Arsenici Hydrochloricus* three times a day combining it with hydrochloric acid and strychnine, and states that most lasting cures have been obtained in this way. It may be that it has a beneficial action by inhibiting the glycogenic function of the liver.

As to the administration of arsenic it is hardly necessary to state that in most cases it should be given after food; sometimes, however, given with all care it disturbs the stomach. It may then be given hypodermically, injected into the substance of muscles rather than into the subcutaneous tissue; large doses can thus be borne without any bad effects. In a case that Rolleston saw in consultation where small doses given by the mouth produced gastro-intestinal trouble, hypodermic injections of a solution of sodium arsenate 1 in 500 associated with a small amount of eucaïne acted so satisfactorily that 105 grains were given practically without toxic effects in 271 days. Strict antiseptic precautions are of course necessary and Rolleston states that less irritation results if solution is injected at blood heat. Sodium cacodylate Rolleston regards as less powerful for good or evil, than ordinary arsenic.

When prescribing drugs that have a powerful action on the system, it is important to be on the alert to detect any evidence of the toxic action of the remedy. In the mouth arsenic in excessive doses may give rise to a silvery appearance due to a proliferation of the epithelium a process analogous to that of keratosis. Ptyalism and gingivitis are also said to occur from excessive stimulation of the buccal mucous membrane; loss of appetite, gastric pain, nausea and vomiting are well recognized indications of a toxic action; diarrhoea may be the result of a gastro-enteritis. On the respiratory tract arsenic has comparatively few bad effects. Coryza it is true is frequent but very marked changes in the mucous membrane are seldom noticed. Very infrequently tracheitis and bronchitis may be set up by its action; spontaneous hæmorrhages have been attributed to its employment. Arsenic may also give rise to cardiac failure. In the recent epidemic of arsenical poisoning alcohol was the medium by which arsenic got into the system and in this case the effects produced may have been due to the two poisons but there seems no reason to doubt that arsenic alone may be the cause of cardiac failure. It has long been known that arsenic induces fatty degeneration of internal organs and probably it is in this way that cardiac failure is brought about. Degeneration of the peripheral nerves is a well known result from medicinal uses of arsenic. It is remarkable that although arsenic may be given freely and for long periods in skin diseases and in leukæmia without any development of this action, yet in chorea by no means large doses may produce severe paraplegia. Railton reports the development of paralysis in children who had not had more than 4 grains, and states that in one instance the first sign of the paralysis did not develop until two weeks after the medicine had been stopped. This interval is of interest in connection with the fact that the urine may contain arsenic a fortnight after its ingestion has been stopped.

If a patient is simultaneously exposed to the influence of other toxic agents such as alcohol, or the poisons produced by disease, its toxic effects may be more readily induced. In the recent epidemic due to arsenical beer the numerous cases of peripheral neuritis may have been due to the combined toxic effect of the two poisons or to the possible action of a third poison, selenious acid. Examples of an arsenical neuritis, apparently precipitated by a tonsillitis and by an attack of influenza have been recently recorded, and the liability of the arsenical treatment of chorea to be followed by a peripheral neuritis may be due to an associated action on the affected nerves by the toxins of acute rheumatism.

Arsenic in certain persons leads to pigmentation of the skin. This may occur in acute poisoning but is more frequently seen after long continued treatment. The pigmentation begins with brown spots which enlarge and coalesce; It resembles the pigmentation of Addison's disease in that the parts of the body that normally show pigment are the ones chiefly affected but differs from it in the fact that the exposed parts of the body are not much affected. The differential diagnosis, however, may be difficult since in arsenical pigmentation the visible mucous membranes may, although rarely, be affected. The occurrence of pigmentation apparently depends on the amount of pigment in the skin. Reynolds states that in an epidemic of peripheral neuritis pigmentation did not occur in fair complexions or only to a very slight degree. As to the prognosis of arsenical pigmentation it is stated that it usually disappears a few weeks or months after the treatment has been suspended, but it has been known to last for years.

Long continued courses of arsenic may lead to thickening of the skin, especially over the hands and feet. This may present itself as a diffuse thickening or as localised corns or scattered horny growths. This thickening has been attributed by some pharmacologists to the arsenic excreted by the glands acting locally and directly on the epidermis; by others the condition is regarded as a tropho-neurosis. The keratosis usually subsides on the withdrawal of the arsenic but it may require local treatment. Arsenic acts almost entirely on the epithelial parts of the body both in doing good and in producing bad results, and thus presents a contrast to iodides and salicylates which have a more direct effect on the connective tissues.

#### **On the Action of Urotropine.**

This new synthetic drug has during the last three years risen into considerable importance as an efficient urinary disinfectant. It is to be regretted that its cost for the present is so high.

Gotze and Gottlieb.—(*Prager Medicinische Wochenschrift, August 1st, 1901*) report a series of investigations on the properties of this drug and state that they have found it to act *in vitro* as a powerful antiseptic in a 5 per cent. solution, rapidly killing the micro-organisms met with in cases of ammoniacal urine resulting from cystitis. It was also found to be destructive to the bacillus coli and bacillus typhosus. In weaker solution the development of these organisms was greatly checked, and when added in small amount to normal urine, at ordinary temperatures it postponed ammoniacal decomposition for eleven days. When the temperature is raised, its antiseptic powers are much in-

creased, so that a 1 per cent. solution at 37°C. is as effective as a 2 per cent. solution at 17°C. The presence of albumen did not appear to interfere with its antiseptic action.

F. Suter in the *Lancet* of February 23rd, 1901, compared the antiseptic action of the following medicines administered in a case of cystitis at night:—Benzoic 10 gr., Boracic acid 15 gr., Salol 15 gr. and 45 gr., and Urotropine 15 gr., and found that the development of decomposition was retarded only by the strong doses of salol and by the urotropine.

Cambridge has also investigated the action of this drug on normal urine. For this purpose a healthy adult male was selected and the daily output of urine collected and measured for three weeks. Examination was made each day of the urea, uric acid, chlorides, phosphates and sulphates; the specific gravity, reaction and number of acts of micturition were also noted. The results obtained in the first and third weeks, during which no medicine was taken, were compared with those of the second week during which 10. gr. of urotropine, dissolved in an ounce of water, were taken three times a day. Cambridge states that he found the drug had no distinct diuretic action, nor did its administration lead to any appreciable change in the chemical constituents of the urine. Urotropine was found in the urine 10 minutes after the first dose was taken and continued to be excreted in small quantities for 26 hours after the administration had been discontinued. A curious effect produced by the drug was a sensation of formication which appeared on the fourth day and became most intense that night; it increased each day till on the 6th day a diffuse red rash resembling measles appeared. Both rash and irritation quickly subsided after the urotropine was discontinued.

Occasionally urotropine gives rise to blood and epithelial cells in the urine. Nicolaer records a case in which 90 grs. in the course of 24 hours induced this symptom, W. Langdon Brown reports two cases in which hæmaturia followed the administration to a typhoid fever patient of ten grains of urotropine three times daily. The hæmorrhage occurred in both cases upon the eighth day of urotropine medication, but in these cases was thought to have originated in the bladder. Dr. Brown thinks that the discomfort in micturition which precedes the hæmaturia should be a danger signal in such cases.

All investigators are agreed that much of the urotropine taken by the mouth passes unchanged through the kidneys, but it is uncertain whether the antiseptic properties of the urine are due to the drug itself or to some decomposition product arising from it. By many it has been supposed to be due to the liberation of formaldehyde, but

it is now evident, both from chemical and bacteriological evidences, that this is not so. It would appear, however, that decomposition of urotropine with liberation of an antiseptic product takes place more readily when the urine is distinctly acid and that in order to secure the full effect of urotropine, it is important to maintain the acidity of the urine as it leaves the kidney.

This does not, however, prevent its having an excellent effect in many cases of cystitis in which the urine though acid as it leaves the kidney becomes alkaline from the ammoniacal decomposition which takes place in the bladder. In suppurative pyelitis a similar condition of the urine obtains and good effects follow its employment.

Dreschfeld, writing in the *Lancet*, states that he has obtained satisfactory results from this drug in cases of cystitis arising from various causes. He also found it useful in pyelitis, four out of six cases in which he employed it doing well. The two unfavorable results occurred in tuberculous patients. As a solvent for uric acid its value is doubtful.

Reginald Harrison thinks that urotropine is of little service in the treatment of urethritis, as it seems to have lost its power by the time it reaches the urethra. The most striking manifestation of its therapeutic power occurs in cases of phosphaturia, in which the urine is full of pus and triple phosphates and is ammoniacal. In some of the more severe cases the drug may not be potent enough of itself to effect complete disinfection, but in such cases, as an adjunct to properly performed bladder lavage, it is extremely valuable. The best mode of administration is to give the drug in doses of from 5 to 10 gr. three times a day in powder form or in cachêt, and direct it taken with a drink of water. It would appear probable that a few grains of salicylic or benzoic acid added to each dose, by maintaining the acidity of the urine, may, favor its action.

### **Thiosinamine; Its Pharmacology and Therapeutic Uses.**

THIOSINAMINE: ITS PHARMACOLOGY AND THERAPEUTIC USES. W. J. ROBINSON, Ph.G., M.D.

Thiosinamine is prepared from oil of mustard and alcohol. It appears in the form of colorless crystals of a bitter taste and slight garlic-like odor. It is but moderately soluble in water, very soluble in alcohol and ether. It may be administered by the mouth in doses of from gr.  $\frac{1}{2}$  to gr. iii. or hypodermically in the form of a 10 to 15 per cent. alcoholic solution. The injections may be given once, twice or three times a week and may preferably be made either in the interscapular or gluteal regions. They are painful but not excessively so.

Recently Unna has recommended the application of thiosinamine in various dermatological conditions in the form of a soap or plaster. The credit of the introduction of the drug belongs to Van Hebra who reported his experiments in the treatment of lupus and old cicatrizations. He injected the drug subcutaneously in the neighbourhood of the nodules and obtained a favorable local reaction without in any way interfering with the organism in general. In chronic granular swellings, not syphilitic, he also obtained very good results causing diminution or entire disappearance of the swellings. In the following year he called attention to the systemic action of the drug pointing out that it exercised its effective action on lowly organised tissue.

Since then it has been employed by many observers. The literature may be summarised as follows:—

1. The beneficial effects of thiosinamine in cicatrices, chronic glandular enlargements, keloid and lupus are undoubted.

2. It appears to possess a beneficial influence in corneal opacities and in deafness due to sclerosis and adhesions, but further testimony is needed in this direction.

3. Taking into consideration the softening and resorbent effects of the drug it seems rational to believe that it would produce good effects in such conditions as hypertrophy of tonsils, hypertrophied turbinates and in various hypertrophies of the skin. A cautious trial of the drug in the above conditions seems desirable.

4. It appears that when used locally, applied to or injected directly into the lesion, it produces a stronger and more prompt impression than when administered internally.

A. D. Blackader.

# Therapeutics.

UNDER THE CHARGE OF A. D. BLACKADER.

## The Treatment of Summer Diarrhoea in Children.

THE TREATMENT OF SUMMER DIARRHOEA, IN CHILDREN. By CHARLES GILMOUR KERLEY, M.D. *Archives of Pediatrics*, June, 1902.

Various classifications of this affection have been attempted by different observers. Some would classify during life according to supposed lesions which can only be learnt at autopsy; others would classify according to the active manifestations of the disease, which are rarely the same two days in succession, and others from the nature of the stools which may change several times a day. Obviously an accurate classification is difficult. A disorder so variable in its manifestations and uncertain in the lesions produced, is best designated for all clinical purpose by comprehensive although unscientific term such as infantile or summer diarrhoea. It is to be noted that in all cases in the beginning of an attack the contents of the intestine only are involved and not the intestinal structure; when serious symptoms appear and lesions develop they are due to the processes taking place within the intestine.

Realizing that we have an infection to deal with and a poisoned child to treat, the way is clear. We must promptly remove as much of the intestinal contents as is possible by the use of active laxatives, and for this purpose every case, whether mild or severe, should be given either castor oil or calomel as soon as it comes under observation. Castor oil is preferred, and for a child eighteen months of age two teaspoonfuls should be given. If vomiting is present, calomel in doses of 1-20th to 1-10th grain should be given every fifteen minutes till one grain has been taken. The indications for repeating this dose either of castor oil or calomel, are infrequent stools and high temperature.

It is among children under two years of age that by far the greatest number of cases of diarrhoea occur. The diet of children at this period of life is chiefly milk; breast milk, condensed milk, raw milk, sterilized milk or grocery milk. Regardless of the source of the milk or its character, it must be stopped at once for the reason that it supplies a most favorable putrefactive medium for the development of the pathogenic bacteria to which the illness is due. It is of little service to merely reduce the strength of the milk mixture; neither pasteur-

zation nor sterilization, when an attack has commenced, has the slightest beneficial effect. Cases of diarrhœa in infants fed at the breast are infrequent and are not as a rule severe ; in them complete abstention from nursing for from 24 to 48 hours is all that is required. Cow's milk is more liable to create trouble and must be discontinued for a longer period, from 2 to 3 days to 2 to 3 weeks. As a substitute diet carbohydrates in the form of cereal gruels has given the writer the best results, as it appears to furnish a fermentative instead of a putrefactive medium in which bacteria do not readily thrive. For a child one year old, one tablespoonful of Robinson's barley flour, or an equal quantity of whole rice is required for each pint of water. The barley flour should be boiled half an hour, the rice three hours. For older children when this cereal must be continued for a considerable time, it may be made two or three times this strength and dextrinized. Children soon tire of any one milk substitute if it is used as the only article of diet. For this reason it is advisable to change the taste of the carbohydrate substitute by the use of a small amount of chicken, mutton or beef broth: and occasionally of beef juice. Both the beef juice and the broths, however, must be used sparingly and only with the view of making the cereal more palatable.

Dr. Kerley considers that the free use of brandy and whiskey, as practiced by many physicians, is a mistake; in large doses they have a tendency to irritate and destroy what digestive power the child may possess; they may also induce renal complications. Egg albumin water he uses sparingly as he thinks that many children fail to digest it, and in that case it may do as much damage as milk. (This is opposed to the experience of other pediatricists—A. D. B.).

If the infant will take these gruels willingly and retain them, they may be given at two-hour intervals in such quantity as it was accustomed to take of milk in health. Boiled water is to be given at frequent intervals. Milk diet is not to be resumed until the temperature has fallen and the stools approximate the normal. It must then be begun very gradually ; Kerley recommends that at the first from one to four drachms only should be given with each feeding of the barley water. If no disturbance arises a slight increase may be made every or every other day.

If there is fever, he directs that cold water spongings for 15 minutes be given to the infant several times a day.

In reference to drugs, Kerley states that after an extensive use of many that have been advocated from time to time as valuable in summer diarrhœa, bismuth subnitrate is the only one that has proved of signal service in his experience, and this only when given in large

doses. Kerley prescribes it in from 10 to 20 gr. doses every hour or two hours, but thinks that it proves of most service when sulphide of bismuth is formed in the intestine as shewn by black-colored stools. Opium is also of service, but it must be used with caution. He employs it only when the stools are frequent, eight or more in the 24 hours, and are large and watery. Opium, in his opinion, should never be given when there are only four or five medium sized passages in the 24 hours; this amount is necessary, so long as fermentation exists, to maintain drainage. If a heart stimulant is required, he employs either strychnine or strophanthus.

Irrigation of the colon is, in Dr. Kerley's opinion of much service in those cases in which the stools are infrequent and contain much mucus and blood. When the passages are frequent, irrigation effects little beyond disturbing the child and increasing the irritability of the lower bowel. Kerley uses generally normal saline solution. (In some cases a weak solution of tannic acid 3ss-5j. to the Oj will be found of much service—A. D. B.). The irrigation may conveniently be given by means of a fountain syringe which should not be held higher than three feet above the child, and a small rectal tube. From 1 to 2 quarts of the saline are employed generally at blood heat; but when the patient's temperature is much raised an irrigation of salt solution at 70° will act as an antipyretic, and reduce the temperature from two to three degrees. In cases of extreme prostration and low temperature, an irrigation of salt solution at 110° acts as a decided stimulant. Not the least of the beneficial effects of this irrigation depends upon the absorption of a certain amount of the solution from the intestine into the general circulation supplying fluid which many of these cases are badly in need of, especially if there has been considerable vomiting and many watery stools.

In conclusion Kerley, emphasizes the necessity of taking prompt measures in every gastro-intestinal derangement in a young infant during the hot months, and expresses the opinion that as soon as the necessity for discontinuing the administration of milk in every case of diarrhœa until the child is well, is generally appreciated and practiced, then, and not till then, will the large infant mortality from summer diarrhœa be materially reduced.

#### On the Treatment of Syphilis.

ON THE TREATMENT OF SYPHILIS. P. McDougall, *Medical Chronicle*, March, 1902.

The much debated question whether general mercurial treatment

should be begun before the appearance of the roseola, was answered by Heuss with a decided negative, and Jadassohn agrees with him to the extent that specific treatment should not be begun for a suspicious ulcer until the diagnosis of syphilis is certain (excepting in the case of severe phagadenic ulcers), for, if syphilitic lesions remain absent after treatment, one is uncertain whether he has dealt with syphilis or not, and that is even worse than the certainty of the disease. Jadassohn admits the difficulty of diagnosis in many cases, especially for the less experienced. He also admits that little harm is done by waiting for the roseola; "better wait in all cases," he says, "than treat one of uncertain diagnosis too soon." Nevertheless he upholds early treatment in every case in which a diagnosis can be made, and refutes the statement that the diagnosis of syphilis is never certain before the roseola, and that in treating it thus early we use our powder at the wrong time, and thereby render the course of the disease irregular and unfavorable. Jadassohn also believes that syphilis can be prevented in many cases by destruction of the virus at the point of entry immediately after inoculation, and is also of the opinion that wide excision, even of a commencing syphilitic chancre may in some cases abort the disease. He reports the details of three successful cases of such excision from his own practice, in each of which the diagnosis was verified histologically. To attempt to abort the disease, however, when the large lymphatic vessels and lymph glands are affected is useless. Excision should be wide and deep in healthy tissue and be preceded by cautery, by heat, or by pure carbolic acid to prevent any infection of the wound.

An important point in the treatment of syphilitics is whether the exhibition of mercury should be pushed repeatedly during the first years after infection, even when no symptoms are present. Jadassohn answers this in the affirmative. He advocates the prolonged intermittent treatment as opposed to the merely symptomatic. The object, he says, of the physician should be not only to relieve symptoms but to remove the *materies morbi*, and to prevent the transmission of the disease to the offspring and the development of tertiary and so-called parasymphilitic troubles. To attain these objects mild symptomatic treatment is inefficient. He maintains that the syphilitic virus is attacked by mercury in the latent periods as well as when symptoms are present and that the more prolonged course gives rise to no ill effects.

In a case of average severity and normal course, he would give in the first year, one energetic course of mercury followed by two moderate courses; in the second year, one energetic and one or perhaps two mild courses; in the third year, two courses, stronger or weaker

as the disease requires, and finally, if there are any symptoms after the end of the third year, a course in the fourth year. As regards the method of exhibiting the mercury, he declares his preference for inunctions and for hypodermic injections of the insoluble salts of mercury. Since 1888 he has used salicylate of mercury suspended in liquid paraffin, 1-10, as an emulsion. He begins with small doses, from  $\frac{1}{4}$  to  $\frac{1}{2}$  ccm. and avoids any danger of embolism by aspirating before injection to see if blood comes. If so, he goes deeper or less deep as he may think best. He calls special attention to the importance of mercurial treatment even for tertiary symptoms. Most of the various tertiary symptoms react as well to mercury as they do to iodide, and one sometimes finds that symptoms react to mercury when potassium iodide is ineffective; it is therefore well to combine the two drugs in all tertiary cases, the more so as there is some reason to believe that relapses are then less frequent. A second course of mercury should be given some time after the disappearance of tertiary symptoms to ensure against their reappearance.

#### On the Treatment of Gout.

GOUT, OBSERVATIONS ON ITS PATHOLOGY AND TREATMENT. A. P. LUFF, M.D., F.R.C.P. *The Practitioner*, March, 1902.

Our knowledge as to the actual pathology of gout still remains uncertain and has practically derived little or no advancement from the more recent investigations that have been made. One of the latest theories is that of Kolisch, who has found in the urine of gouty patients a constant excess of alloxuric substances and considers therefore that the xanthin bases are the actual poisons in gout, but his results have not been confirmed by subsequent observers. With regard to the oft debated question of heredity, it is now generally admitted that hereditary predisposition is a most important factor in its development. Recently Archdall Reid has stated that while the inborn tendency to acquire the disease under certain conditions is transmissible there is no evidence that parental high living increases it in the child.

It will generally be conceded that the deposition of a salt of uric acid, namely the sodium biurate, is intimately related to the gouty attack although there may be a difference of opinion as to whether this is the essential materies morbi. If by any means the conversion of the soluble gelatinous biurate into the insoluble crystalline form can be delayed, the advent of the gouty paroxysm is also delayed, and if during this period the elimination of this soluble biurate, is promo-

ted, then the gouty paroxysm may either be considerably diminished or averted altogether. Luff has shewn that by increasing the alkalinity of the blood serum with sodium bicarbonate, the conversion of the gelatinous biurate into the crystalline form is accelerated; while if the potassium bicarbonate be employed, the conversion is delayed in time and diminished in quantity. The result of these experiments explains the utility of the potassium salts in the treatment of gout. The citrate and the bicarbonate are the two most commonly employed. As to the beneficial effects of their employment especially in the treatment of the acute and subacute gout in conjunction with colchicum Luff is fully assured; and his experience is that of the two the citrate is the most useful. If given in sufficiently large doses, not only does it act as a distinct diuretic, but also by its conversion into the carbonate, it tends to diminish the acidity of the urine which is generally high in connection with the gouty paroxysm; at the same time it increases the solvent power of the urine for the uric acid salts and so assists their elimination. It also delays and inhibits the conversion of the soluble gelatinous sodium biurate into the comparatively insoluble crystalline biurate. The potassium salts are also valuable in the gouty state on account of their stimulating action upon the gastric and hepatic functions.

Although emphatic in his statement of the value of the potassium salts in the gouty state, he does not consider that sodium salts are always injurious. In cases of sluggish action of the liver, of gastro-intestinal catarrh, of acute dyspepsia and of other forms of irregular gout where there are no appreciable uratic deposits in the joints, sodium salts are, in Luff's opinion, undoubtedly beneficial owing to their action as hepatic and gastro-intestinal stimulants.

The lithium salts, Dr. Luff does not consider so useful as the potassium salts. He says they have not the same inhibiting action on the conversion of the gelatinous biurate into crystalline form as the potassium salts have, and they are no better solvents of gouty deposits. An important objection to their use is their greater toxicity and their depressing action upon the heart as compared with the potassium salts. Luff states that he constantly meets with patients suffering from cardiac depression as the result of the excessive and continued consumption of lithia tablets which are so persistently, and yet so erroneously vaunted as curative of gout.

When the treatment of the gouty state is associated with a disturbance of the functions of the liver, the restoration of that organ to its normal state of activity is undoubtedly of importance, and in such cases the alkaline sodium salts are especially useful. In these

cases there is no better treatment at the outset than a dose of blue pill or calomel at night followed by a dose of Epsom or Carlsbad salts in the morning. Subsequently a pill containing a small dose of blue pill or calomel combined with euonymin and colocynth will be of occasional service in connection with a mixture containing sodium bicarbonate, gentian and nux vomica before food.

A sedentary life with a deficient amount of exercise conduces to gout owing to a lowering of general metabolism, and to an impairment not only of the circulation of the blood but also of the lymph. Under these conditions the influence of massage and muscular movements in many gouty subjects becomes readily intelligible. Massage should never be resorted to in cases of acute gout but should be reserved for the more chronic cases. In cases of acute or subacute gout, considerable amelioration of the pain, sometimes complete disappearance of it follows the employment of radiant heat and superheated baths; such baths increase the oxidation processes in the body, and cause a temporary elevation in the body temperature, marked reddening of the skin of the part treated, and profuse local and sometimes even general perspiration. Cases of gout of long standing, however, in Dr. Luff's experience, do not derive much benefit from radiant heat. In such cases more good follows the employment of vapor baths with massage of the affected joints, a treatment by which he has frequently succeeded in producing softening and absorption of the deposits. Sometimes, however, radiant heat baths appear to set up trophic changes in the joints which are apparently maintained for a prolonged period after the baths have been discontinued. In several instances after the baths had been abandoned in despair, a progressive improvement continued for weeks and even months, and in a few cases progressed to a more or less complete cure.

In the acute or subacute stage of gout, Dr. Luff considers the use of the Turkish bath most undesirable, and states that he has known of its employment being followed by an exacerbation of the attack and its extension to joints not at the time affected. This point should be borne in mind by medical men.

Insomnia is a fairly constant symptom in gouty patients. As a rule it is not complete, but consists of restlessness interspersed with varying intervals of light or broken slumber. In such cases attention should be paid to the patient's pulse and to the possible existence of albumin in the urine. If, as is frequently the case, the pulse is found to be of high tension, the administration of blue pill or calomel followed by a saline purge will often prove beneficial.

As regards the preventive treatment of gout Dr. Luff has con-

siderable faith in the prophylactic effect of guaiacum resin. Its action is probably due to its stimulating effect on the hepatic metabolism, thereby increasing as it undoubtedly does the elimination of uric acid. He prescribes it in the form of the powdered resin in cachets, commencing with a dose of 5 grains three times a day after food and gradually increases the dose to thirty grains a day. Taken in this way it gives rise to no discomfort, whereas if administered in the tincture or in a mixture a most nauseous dose results.

No hard and fast line as to dietary can be laid down in the treatment of gout; each individual must be carefully considered as regards his habit of body, his capacity for the digestion of the different articles of food, the amount of exercise he is able to take and the nature of his work. An important point is that the dietary be simple in its character. As a rule the intelligent individual who has reached middle life knows what articles of diet suit him, and which are injurious. A sufficient quantity of water should be taken to secure the flushing of the kidneys, liver and other organs and tissues and favor the removal of waste and toxic products. The free consumption of water apart from meals is most desirable.

With regard to climate, a fairly bracing air with a low relative humidity is, in Dr. Luff's experience, the most suitable for the gouty. It is especially desirable to avoid exposure to the cold east and north-east winds; high mountain regions, and valleys where there is an excessive relative humidity of the air, are alike unsuited to the gouty; residence by the sea unfavorably affects most cases of gout, and especially cases associated with acute eczema.

#### On the Treatment of Chorea.

ON THE TREATMENT OF CHOREA. DR. JAMES W. RUSSELL. *Treatment, March, 1902.*

The estimation of the value of drugs in the treatment of chorea is a matter of much difficulty. Not only does chorea tend naturally towards recovery but its duration is very uncertain and the greatest fluctuations are liable to occur in its symptoms. The value of small doses of arsenic has probably never been satisfactorily established, but of late much has been written about the good effect of large doses and there appears to be a growing impression, if the medical journals can be taken as a guide, that something of the nature of a specific for chorea has been discovered. Among recent writings Dr. Russell quotes the thesis of Dr. Del Pozo who reports 30 cases of this affection treated at *L'Hôpital des Enfants Malades* in Paris, with large doses of

arsenic. The preparation used was the "liqueur de Boudin," a solution of arsenious acid in water. Translating the doses of this solution into terms of Liquor Arsenicalis, B.P., the quantities given were as follows:—During the first day 15 m. were administered, divided into three doses; this quantity was increased daily by  $7\frac{1}{2}$  m. until on the 6th day a total of  $52\frac{1}{2}$  m. had been reached. The doses were then diminished daily by the same amount until on the 11th day the daily dose was again 15 m. The drug was then discontinued. The total quantity of the solution taken was 352 m. In many cases, however, the increase of dose was stopped on the 5th day and the total quantity taken only 255 m. Out of the 30 cases, 28 cures are claimed. The average duration of the treatment was 9.1 days and the average interval between the beginning of treatment and the occurrence of cure, as far as was able to be made out, was 9.6 days. The length of stay in the hospital in 19 cases averaged from 18.6 days. Another series of cases are reported by Dr. Billington (*Lancet*, July 21st, 1900) in which good results followed the use of large doses. In these cases also the average stay in the hospital was only 18 days, all symptoms of chorea have disappeared for 5 or 6 days before discharge. Formerly the average stay had been about six weeks and even then many cases were sent away but imperfectly cured. The testimony in these papers in favor of the value of large doses of arsenic in the treatment of chorea is very clear, yet Dr. Russell has to admit the failure of this method of treatment in his hands to produce any definite results. All of his cases, however, were treated as outpatients and the important factors of rest in bed, good hygiene, and the moral discipline of hospital treatment were lacking. He gives the details of those cases in which he had the best results and adds that while these cases afford some evidence in favor of the larger doses, as the two in which the recovery was longest delayed were those in which the quantities of arsenic taken were smallest, yet the case in which the largest amounts were taken, 405 m. of Fowler's Solution in 11 days, changed greatly for the worse during this period. Dr. Russell states that he had the opportunity of watching only two cases treated in the wards by this method but both these cases were unfortunately failures so far as the treatment went and their course did not appear to be materially affected by the drug.

In reference to sodium cacodylate Dr. Russell states he has used this drug in a large number of cases giving it in doses varying from  $\frac{1}{4}$  to  $\frac{3}{8}$ ths of a grain three times a day and his best result was that of a boy aged 17 who took 23.6 grains in the course of six weeks, by which time he reported himself as recovered; the case, however, was a slight one and the result was not remarkable.

As regards the action of the bromides Dr. Russell thinks there is not much evidence in favor of their having any distinct beneficial action in chorea. Dr. Bourneville, however, recently records (*Progress Médical, July 16, 1898*) a case treated by large doses of bromide of camphor with improvement after six weeks.

In a paper published in the *Birmingham Medical Review, July, 1899* Dr. Stacey Wilson records the treatment of a severe case of chorea with frequently repeated doses of sodium sulpho-carbolate, (20 gr. every two hours) and states that the patient made a rapid and complete recovery. Dr. Russell has employed this drug in a few cases in the out-patient department without any appreciable result.

Very recently the treatment of two severe cases by the administration of the extract of Calabar bean has been recorded. (*Birmingham Medical Review, September, 1900*). The patient was admitted on March 29th; the case at that time was so severe that chloroform had to be administered in the earlier hours of the following morning. One sixteenth of a grain of Calabar bean extract was then given three times a day until April 4th by which time there was a marked diminution in the movements, though they did not entirely cease until April 19th. In the second case the outlook seemed particularly bad on account of the inability of feeding the patient, as all food set up a violent paroxysm of choking. One sixteenth of a grain of the extract three times daily was prescribed as before; hot baths were ordered in addition, with what little massage the mother was able to carry out. The patient was seen again in three weeks time when all trace of the disorder had disappeared. Dr. Russell states that he is inclined to think that much of the improvement in this case was due to the baths but considers that the drug had also a distinct effect.

Dr. Russell concludes his article as follows:—Of the value of rest in bed and isolation little need be said, as the importance of such measures in severe cases is universally conceded; but whether such means are of value in slight cases may be doubted, unless possibly on account of their moral effect. Hot packs are of distinct value in severe cases. General massage is also of some value. Regulated exercise in the later stages of chorea may give good results so long as they produce no immediate or subsequent increase in the movements.

A. D. Blackader.

## Otology.

UNDER THE CHARGE OF F. BULLER.

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BAGINSKY, B.—Ueber gewisse Eigenartigkeiten der Ohrerkrankungen der Kinder.—*Berliner Klin. Woch.*, Feb. 10th, 1902.

A peculiarity of the child's organism, noticeable in its physiological behaviour, is observable also under pathological conditions in the most widely different diseases affecting the same, and this peculiarity is apparent not only in the diseases of the internal organs but also, and perhaps still more, in affections of the sense organs, especially that of hearing.

The frequency with which children suffer from diseases of the ear and the greater severity of the sequelæ of aural affections in childhood, constitute certain peculiar features which place children in a separate class and find their explanation only in a special study of the various parts connected with the child's organ of hearing.

As regards the temporal bone one has to consider the ossiferous and developmental conditions in general. It is well known that in growing organs the parts are more susceptible to injury and disease than under ordinary circumstances, and there is present, therefore, at the outset, in the delicate and rapidly developing temporal bone of children, a greater predisposition to disease than is the case with the adult structure.

But in addition to this, certain inherent peculiarities still further predispose the child's temporal bone to disease. The fissura-petrosquamosa situated in the tegmen tympani and almost entirely ossified in adults, transmit in children a vascular prolongation of the dura mater directly into the middle ear. In this way the tympanum and the cranial cavity are in more direct communication in children than in adults and diseased conditions extend more readily as well from the middle ear to the brain as in the reverse direction.

A further peculiarity is seen in the hiatus subarcuatus, a slit-like depression in the posterior surface of the petrous bone below the superior semi-circular canal. Through this structure a process of dura mater with the vasa subarcuata passes directly into the bone and it has been shown lately by Lucae that, particularly in children, osseous suppurations and inflammations can extend by this channel into the

cranial cavity, either directly through implication of the bone or through the agency of the vessels.

Finally, the *fissura-mastoidea-squamosa* and the *fissura-tympano-squamosa*, transmitting as they do connective tissue processes to the middle ear, can also serve as channels for the passage of possible diseased processes and inflammations, though truly these ways are more uncommon.

The Eustachian tube of children, shorter, much wider and more horizontally placed than in adults, permits on the one hand diseased conditions to pass more readily from the nasopharynx to the ears, and on the other hand renders it possible for infections of the gastro-intestinal tract to occur through the medium of the deleterious substances aspirated from the middle ear during the sucking and swallowing movements of the child.

As an outcome of the work of Meyer an endless number of clinical studies has made every physician aware that characteristically in children, as a result of so-called adenoid vegetations, disturbances of ventilation and irritations of the middle ear frequently occur and express themselves directly or after a consecutive otitis in grave disturbances of hearing.

To these local peculiarities must be added the general behaviour of the child to outside influences. The greater susceptibility of the child's nervous system, the frequent appearance of convulsions and the relatively slight resisting power of the whole organism are matters of moment in the appreciation of ear diseases among children.

For the understanding of certain pathological processes one must also bear in mind the recognized fact that in children the character of the mucous membrane, as such, is more marked than in the adult, and various pathological experiences go to show that changes easily occur in the child's ear which in the adult could only be accounted for by severe general disturbance.

Coming to the clinical peculiarities which mark aural diseases in children little is to be said regarding the external ear except, perhaps, that eczema is more frequently met with and more difficult to treat on account of the age of the patient. Of much more importance are the diseases of the middle and internal ears.

From those regular cases of acute suppurative otitis media are to be distinguished the forms which show certain peculiarities in their origin and course. These cases occur mostly among older children and generally run a febrile course. They begin usually of a sudden without any apparent cause, but accompanied by systemic derangement, headache, lassitude, more or less pain in the affected ear and

fever which can rise, usually with only slight morning remissions, to 103° or more. Pains radiating to the teeth, mastoid process, and temporal region are often present, and, at times, especially among younger children and sucklings, spastic conditions of the muscles of the neck and opisthotonos occur. These symptoms are apparently reflex from irritation of the nerves of the middle ear. The affection continues for several days until liberation of the exudate occurs through spontaneous or artificial perforation.

Much more difficult for the practitioner are the cerebral or meningeal forms of middle ear disease, which occur among children and set in under the cloak of a genuine meningitis. The affection begins often suddenly and the unsuspecting physician, seeing a perfect picture of an acute cerebral inflammation, may be led into error in his diagnosis and prognosis. A systematic examination of the ear reveals however to the informed attendant an acute middle ear suppuration and recovery follows gradually upon proper treatment of the aural condition.

Of still greater interest, because especially peculiar to the child, is the further variety of the meningeal form of ear disease, the primary genuine inflammation of the labyrinth or otitis intima. This not exactly common and destructive disease sets in suddenly with fever, headache, convulsions and nausea, symptoms which lead the physician to think of some internal condition, and the more so as in the following days stupor, stiffness of the muscles of the neck and irregularity of the pulse frequently appear. But while after a few days the above mentioned symptoms begin to disappear, and a certain euphoria gradually occurs, there often remains, as the only symptom, a double sided deafness with occasionally a disturbance of co-ordination, which shows itself in a certain dragging of the feet and unsteadiness in the sudden movements and turnings of the body. These cases, which occur almost entirely among children, are extremely difficult to diagnose, because in the great majority of instances the aural examination is entirely negative; and indeed often a proper conception of the disease is only obtainable through lapse of time.

In conclusion it must be emphasized that in the aural affections following the infectious diseases among children, serious changes in the temporal bone occur much more rapidly in the child than in the adult, and further that, keeping this fact in mind in treating those of tender years, quickened efforts to arrest the morbid processes will be rewarded by many a good result.

*W. Gordon M. Byers.*

## Reviews and Notices of Books.

**PEDIATRICS.** The Surgical and Medical Treatment of Children. By THOMAS MORGAN ROTCH, M.D., Harvard University, 3rd Edition, rearranged and rewritten. J. P. Lippincott Co., Philadelphia, 1902.

It was with much pleasure that we have read this third edition of Dr. Rotch's work on Pediatrics, which we are told has been entirely rewritten, and may be regarded as virtually a new book. No other work that we are acquainted with gives such an excellent account of the disorders of infancy and the management of infant feeding. In these chapters much attention has been devoted to the anatomy and physiology of early life; specific infectious diseases are well described and well illustrated. Diseases of the special systems follow. Dr. Rotch writes clearly and illustrates his text with numerous histories which serve well to impress the picture of the disease on the reader's mind. The work is well illustrated and several new colored plates and radiographs have been added. We can cordially recommend this work to our students and to physicians in general as an excellent practical treatise on a most important subject. It is scientific and practical and deserves to have a place in the library of every physician.

**MATERIA MEDICA, PHARMACY, PHARMACOLOGY & THERAPEUTICS.** By W. HALE WHITE, M.D., F.R.C.P., Lecturer in Medicine, Guy's Hospital, London. Edited by R. W. Wilcox, M.D., Professor of Medicine and Therapeutics in New York Postgraduate School. P. Blakiston, Son & Co., Philadelphia. Price, \$3.00 nett.

The fifth edition of this work which both in England and America has for many years occupied the position of one of the leading textbooks for students, calls for but few words from us at the present time. The American Editor has quite expurged from this edition all the preparations of the British Pharmacopœia and substituted for them those of the United States, thus rendering it less useful as a textbook in Canada than it otherwise would have been. Nevertheless to those of our students who purpose practicing in the States we can recommend the work as a clear exposition of our knowledge of the therapeutic action of drugs.

PROGRESSIVE MEDICINE. Edited by HOBART AMERY HARE, M.D.; assisted by H. R. M. LANDIS, M.D., Vol. I, March, 1902, Vol. II, June, 1902.

With the rapid advances made in all departments of medical science, a short readable annual retrospect embracing all that is of value in the several departments of medicine and surgery is of the greatest value to the practitioner who would keep abreast in his work. These volumes purpose not only to be a résumé, but also a criticism of medical literature for the year, written by men, acknowledged by all as authorities in their departments. For this reason no year-book, in our opinion, so happily fulfils its purpose as these quarterly volumes of Progressive Medicine. Since it first started four years ago we have been regular readers of its reviews and have consulted its pages in all departments with pleasure and profit. In the first volume for 1902, the article on the surgery of the head, neck and chest has been prepared by Chas. H. Fraser. Speaking on surgical intervention in cases of chronic hydrocephalus, the writer states that not the slightest relief has thus far been obtained, as the mortality has approached 100%. Epilepsy is still regarded as the "bête noire" of the surgeon and removal of the sympathetic ganglia has fallen into deserved disuse. Dr. Crandall discusses the diseases of children and Dr. Fred. A. Packard writes on acute rheumatism, croupous pneumonia and influenza. Dr. Ludwig Hektoen treats on general pathology.

In the June volume the review of the surgery of the abdomen is written by Dr. Coley. Discussing the treatment of tuberculosis of the peritoneum he quotes a recent article by Finger, who regards peritoneal tuberculosis as a disease having under favorable circumstances a tendency towards spontaneous recovery; but considers that this tendency may be aided in some cases by laparotomy. He concludes from a review of all cases reported in which laparotomy was performed, up to and including the year 1900, that a cure may be expected in from 30 to 40 per cent. of cases that under the older methods were considered fatal. A recent paper by Borchgrevink is quoted, in which is given a careful analysis of two almost equal series of cases, the one treated by laparotomy and the other without operation. His conclusions are, "that in strong patients in whom fever is absent, the operation is well tolerated, especially if a good condition of nutrition speaks for the spontaneous disappearance of the tubercular process. Laparotomy, however, in patients with high fever, and in whom the tuberculosis has a progressive character, may diminish the slight power of resistance remaining

to the patient. Fenger believes that laparotomy has little advantage over mere paracentesis, in its effect upon the exudate. In this chapter also Dr. Coley discusses the more recent additions to our knowledge of the surgery of the stomach, kidney, liver and omentum. Dr. John G. Clarke writes the review on gynæcology and Dr. Alfred Stengel writes on diseases of the blood and ductless glands. In this chapter we have an excellent criticism of the articles which have appeared during the year on leucocytosis, the blood in childhood, hæmocytolysis, and pernicious anæmia, etc. In speaking of pernicious anæmia Stengel quotes Rumpf who has investigated the chemical constituents of the blood in this disease and has found that along with the increase of water there occurs a marked increase in the chlorine content while the potassium content is diminished. Whether this diminution of potassium is a primary manifestation due to a direct action of a toxine or is secondary to the death of the potassium-containing blood cells, it is possible that the lack of potassium may interfere with the regenerative attempts of the blood building organs, and thus lead to the fatal termination of the disease. Rumpf accordingly advises the administration of the easily assimilable potash salts and reports several cases where good results were obtained. Hunter in the treatment of this affection advises careful attention to the teeth, the administration of intestinal antiseptics and occasionally the injection of antistreptococcal serum. McPhedran of Toronto tried antidiphtheritic serum in two cases for its stimulating action on the blood and afterwards plain horse serum but both were found valueless. McCrae advises absolute rest in bed, fresh air, good food, arsenic, and a careful attention to the mouth. Recent papers on the various forms of leucæmia are also discussed, and there is an excellent review of the latest additions to our knowledge of gout and diabetes which will well repay reading. The review of ophthalmology is written by Dr. Edward Jackson and will afford to those interested a complete *résumé* of all the advances during the past year. We cordially recommend these volumes to our readers.

THE INTERNATIONAL MEDICAL ANNUAL. A Yearbook of Treatment and Practitioner's Index. 20th year, 1902. E. B. Treat & Co.

The majority of contributors to this well known annual are English, and the list includes such well known names as Allingham, Fenwick, Holthouse and Saundby, but of late years a few American writers have been added to the list. Among the more important articles in the volume are those on Toxines and Antitoxines, Clinical Examination of the Blood, Diseases of Metabolism, Epilepsy, Lateral Curvature of the Spine. There are also a large number of illustra-

tions. The reviews on each subject though brief are well written; being alphabetically arranged they are easy of reference. They are also eminently practical. We have much pleasure in acknowledging its value.

INFANT FEEDING IN HEALTH AND DISEASE. By LOUIS FISCHER, M.D.  
F. A. Davis & Co. Small 8vo. pp. 348.

This work has been prepared with the intention of supplying a convenient guide to both the student and active practitioner in the modern methods of infant feeding. After a description of the more essential details of the anatomy and physiology of the intestinal tract in the infant, the writer discusses the difference between breast milk and cow's milk and goes on to a description of the many methods at the present time employed for the adaptation of cow's milk to the infant's digestive powers. We regret extremely that the author in our opinion gives only a very imperfect account of Rotch's method of modifying milk. It is evident that he is much more in sympathy with the views of Jacobi and the exponents of German methods than with those of the majority of American Pediatricists. Nevertheless we are quite sure that those who desire information upon this very important subject, will obtain excellent advice from this well written volume.

INTERNATIONAL CLINICS. A QUARTERLY of illustrated Clinical Lectures and Specially Prepared Articles on Medicine, Neurology, Surgery, Etc., By leading Members of the Medical Profession throughout the world. Edited by Henry W. Cattell, A.M., M.D., Philadelphia. Vol. I, Twelfth Series, 1902. Philadelphia, J. B. Lippincott Company, Canadian Agent, Charles Roberts, 1524 Ontario Street, Montreal.

The present, the first of the new series, gives promise that the high standard set by the International Clinics last year, will be maintained. The volume contains a new departure in the form of Biographical Sketches of eminent living physicians, Drs. S. Weir Mitchell and John A. Wyeth being selected for notice in the present number. This will prove an interesting feature of the work, we well believe, to many who have come to know and admire these masters through their work, without the opportunity of personal acquaintanceship. In the section on Therapeutics we have an article on the use of opium, one on habitual constipation and one on the treatment of acne, the latter by Professor Hallopeau, Dermatologist of the University of Paris. Charles E. Simon, under Medicine, discusses the significance of the basophilic granules in red corpuscles, especially in plumbism. He goes into the

matter fully and states fairly the present knowledge of the subject, and the article is illustrated by a coloured plate. He inclines to the view that they are evidence of degeneration. Professor Alexander McPhedran, of Toronto, reports cases of dilatation of the stomach, on one of which gastroenterostomy was performed with only partial relief of the symptoms. In the section devoted to Surgery these are numerous short and extremely interesting reports of rare and interesting cases. James K. Young and James Kelly, of Philadelphia, contribute an interesting article on the surgical treatment of infantile palsy by tendon transplantation. The articles on the special subjects of the eye, ear, etc., are timely. The last hundred pages of the volume give a review of the progress of Medicine during the year 1901, compiled by Dr. E. W. Watson. The review, although necessarily somewhat condensed, is very comprehensive and will be of great value to the majority of practitioners who do not invest in the larger year-books and need some reference of this kind.

The volume is profusely illustrated by coloured, black and white plates and figures in the text and maintains the high standard of its well-known publishers.

**THE PRACTICAL MEDICINE SERIES OF YEAR-BOOKS.** Comprising ten volumes on the year's Progress in Medicine and Surgery. Issued Monthly. Under the General Editorial Charge of GUSTAVUS P. HEAD, M.D., Volume III. The Eye, Ear, Nose and Throat. Edited by Casey A. Wood, C.M., M.D., Albert H. Andrews, M.D. and T. Melville Hardy, A.M., M.D., December, 1901. Chicago, The Year-Book Publishers, 40 Dearborn Street.

This little volume will be a welcome visitor in the library of every busy practitioner interested in the subjects therein reported. The three special subjects are fairly evenly divided in the small volume of 364 pages, and the whole forms an excellent résumé of special work during the preceding twelve months the world over. The work contains much useful information presented in an agreeable, readable form and we cannot too highly recommend this practical series for those who have not time for the laborious perusal of many medical journals.

F. B.

## Correspondence.

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### NO. X. CANADIAN FIELD HOSPITAL.

*Head-Quarters, Canadian Field Hospital,*

*Western Transvaal, May 21st, 1902.*

*To the Editors of the Montreal Medical Journal.*

During the earlier stages of the present war a great deal of time was devoted to the criticism of hospitals in general, and field hospital in particular.

In many instances this criticism was of an adverse nature, and unjustified. Even at the present time, with railroads in operation, with increased facilities for transport off the line, and with more accessible medical stores, a field hospital is somewhat disappointing to those in charge.

With wind, dust and rain storms, it is impossible to preserve cleanliness. Food, clothing and dressings all show signs of unavoidable dirt, and to a casual visitor might suggest carelessness and inattention on the part of medical officers and orderlies but such is not the case, and the patients, realizing the disadvantages under which all ranks are laboring, are cheerful and contented.

Though the personnel of the Canadian Field Hospital differs very little from that of a similar organization, on active service, as laid down in the manual of R. A. M. C., there are many points of dissimilarity in the equipment, plan of encampment, compactness, lighting, and method of transporting patients. In the matter of personnel the addition to our staff of a dental surgeon is a most invaluable feature, for nowhere does a man suffer more from dental neuralgias, ulcerating roots and alveolar abscesses than at the front, exposed to wet and cold nights, without shelter, and with insufficient clothing, and nowhere does a tooth broken by an inexperienced hand cause more suffering and annoyance.

Many officers advance as an argument against the appointment of dental surgeons that men with bad teeth should not be passed for active service, or should have their teeth attended to before being sent into the field. Granted, but where is it possible to recruit an army with sound teeth: many an officer having his teeth filled before sailing finds himself after a few months on hard tack biscuit as bad

as before. Our dentist with his excellent equipment of instruments and temporary fillings (gold extra), is as a rule the busiest man in camp, and most popular with men who have been in the trek for two or more years. He is about to be appointed Government Dentist.

With our present personnel and equipment the hospital is readily divisible into two sections accompanying troops, or as at present, the larger section acting as a stationary hospital, the other can accompany a column and transfer its cases to it.

In order to render the hospital so readily divisible the equipment has been duplicated in almost every particular, especially as regards surgical and medical panniers, surgical haversacks, field companions, filters, Forbes sterilizers, instrument and dressing sterilizers, supplementary instruments, dressings and hospital comforts, one large additional sterilizer being available for the section of hospital in rear.

The officers, ward and transport orderlies, are also so versed in their duties as to admit of division.

The transport waggons convertible into ambulances, are somewhat similar in pattern to the Canadian prairie waggon. Strong but light running, they carry four lying-down and two sitting-up cases, and have all necessary waggon accessories, a detachable galvanized iron tank holding 8 gallons sterilized water, can be placed on tripod over fire and boiled, or as at present, owing to the scarcity of fuel, filled while in camp, from a Forbes sterilizer. The lightness of the waggons as compared with regulation English pattern can be realized from the fact that we frequently carry four lying-down cases to Klerksdorp, 40 miles in 24 hours with two horses and that in the four stretchers there is a saving of over sixty pounds; a Canadian stretcher weighing 15 pounds to the regulation 34.

The "Hubert Tent" with which we are supplied is most admirably adapted to this climate, the tent proper, kharki in colour, with a fly of white canvas, is a great relief from the glare of the sun and readily ventilated, is cool during the hottest day, and warm on winter nights. It has also tarpaulin flooring.

The arrangements of tents according to the enclosed plan of encampment we have adopted and found most satisfactory and convenient.

Arranged in the form of crosses, with flies meeting (except in the central compound which is covered separately by rectangular fly suspended from pins of ridge poles) they comprise, one cross, 8 wards, capable of holding from 64 to 80 patients according to use of beds or stretchers, and two smaller crosses of 4 wards each. This plan of encampment commends itself for adaptability and compactness and

is unique and picturesque. With the doors rolled up one can see through the four wards at once, while from a convenient desk in the central compound the ward-master can readily overlook the 8 wards at a glance, superintend the work of the orderlies, and the conduct of patients. In one corner of this compound can be placed a Forbes sterilizer from which hot and cold sterilized water is at all times available; in another corner, or rather outside, for safety, is an acetylene gas-plant, from which tubing conveys the gas through the tents to lights of 30 candle power each.

The plan of encampments in cross formation is readily changeable as regards the number of tents employed. In this plan the larger cross is available for medical or surgical cases, according to their respective predominance. With the eight tents available as surgical wards one smaller cross of four can be used for enteric and dysentery cases and the last for other ailments, convalescents and "up" medical cases. All are easy of access from the officers and ward section lines, the operating tent and dispensary, and the horselines are well out of the way. The dispensing and medical equipment is most excellent and compact. The medicines, mostly in "Tabloid" form, were specially packed for us by Messrs. Chandler & Massey of Toronto, in panniers and boxes of their own construction, which are quite equal to those of the regulation pattern, their sterilizing chest being most complete. These articles have been satisfactorily commented on by inspecting officers and it is with pleasure that we hear we can in future obtain their goods by specifying their name.

With a field hospital constructed on these lines, the transport section and disengaged ward orderlies can be utilized during or after an arrangement (preferably the latter, as their continued presence on the firing line is of doubtful use) for the same purpose as a Bearer Company, thus doing away with the latter. Situated as we are, the want of an X-Ray plant is sadly felt. Influenced by the opinion of Surgeon-General Sternberg, U. S. Army, who, for reasons based upon his experience in the late Spanish War, is not in favor of the use of an X-Ray plant in a field hospital, we decided not to bring one; but hope in the event of the continuance of the war that it may be added to our equipment. Here the exigencies of the case are vastly different, the distances are great, and it is frequently days or even weeks before a wounded man can be got to the rear or to a stationary hospital; and there is no reason why a portable X-Ray with storage batteries might not accompany a Field Hospital with the main body of an army.

So much has been said and written about the use of explosive

bullets that the recital of a few cases of extensive injury from non-explosive bullets may be of interest and assist in dispelling the idea of their indiscriminate use.

Case No. 272 Tpr., South African Constabulary. Ambulance sent out 25 miles and patient brought to hospital April 17th, 6 days after injury. *Gunshot wound*.—Right thigh, right forearm, left foot (two latter wounds healed readily). Condition of patient very low, precluding any operative interference. Right leg was four inches shortened, thigh was enclosed in coaptation splints, and without extension. One hurried examination under anæsthetic two septic offensive wounds were found.

Entrance.—Lower third of thigh outer aspect, behind border of tensor facial femoris.

Exit.—Front aspect of thigh at level and in front of tuberosity of femur.

From the wound of exit which was ragged and five inches long by three wide, the overriding ends of the femur could be seen. The limb was scrubbed. Alcohol and ether used—the wound irrigated with bichloride, swabbed with pure carbolic and washed out with alcohol; several large fragments of bone being previously extracted, one, quite four inches in length by three-quarters in width; drainage tube passed from exit to entrance wound and a double-inclined splint (made of wire and Yucca wood covered with mackintosh) applied, and bent to fit the buttock—thus giving support from the pelvis,—with extension. For several days it was a question whether amputation of the hip joint should not have been attempted, but the low condition of the patient, septic state of wounds and loss of tissue rendering a good flap impossible, fortunately prevented such a course, and union has taken place; patient is progressing favorably, and will doubtless have a very useful limb, after five weeks of daily irrigation and dressing.

A case almost identical with this occurred in "E" Battery, Can. Field Artillery, when Corpl. Neild was accidentally shot from the Colt gun of the Imperial Yeomanry at a distance of fifty yards. The bullet .303 first passed through the arm of the trooper, then entered Neild's thigh, shattering the femur as in the former case—point of entrance small, the point of exit being below the fold of the buttock and fully 3 by 5 inches in extent and very ragged with numerous spicula of bone protruding. The leg was afterwards amputated at No. 11 Hospital, Kimberley, and a subsequent operation found necessary, from which patient succumbed.

Case No. 453, Border Regiment. Accidentally shot in blockhouse,

admitted 5 hours after injury, gunshot wound.—Leg bullet, Lee-Mctford, entered from a distance of 30 yards.

Entrance inner aspect of lower third of tibia, exit diametrically opposite and about the wound,  $2\frac{1}{2}$  inch. long by 1 wide. Patient had been dressed by Medical Officer, who stated that he would do till the morning. Wound was then dressed under anaesthetic and fragments removed, 17 in number, from tibia, simple transverse fracture of fibula existing. Patient did well for three days, foot and knee below and above splint looking quite normal with entire absence of swelling; then trouble began, and the leg was amputated at knee joint. It was subsequently learned that patient's comrades had kept a leather shoelace tied tightly below the knee for 3 hours to prevent hæmorrhage.

Many similar cases can be instanced of great loss of tissue from non-explosive bullets; some even where the bone has been uninjured. From these points we would gather:—

1. That a bullet on striking a bone, may frequently perforate that structure without fracture, especially in flat bones like the scapula and ilium, or the softer ends of long bones like the head of the tibia; condyles of the humerus or femur; bones of tarsus; and, rarely, the shafts of long bones.

2. That extensive gaping wounds of entrance, or exit, or both, may occur with weapons used accidentally.

3. That extensive wounds of exit are often caused by spiculæ of bone impelled forward from compact of bullet; and by the shock from impact forcibly bending a limb in the direction of progress of bullet. Or, the bullet may be altered in its shape from impact with the bone, or deflected from the same cause and proceed sideways.

4. That extensive wounds may be caused by a ricochet, the bullet being in consequence flattened, or bent in its long axis, thus causing a large entrance as well as exit.

5. That the wound of entrance may be longer than that of exit, torn and ragged. This we have sometimes found to be the case with a bullet which has struck a bone close to the surface; as an instance case No. 248, Boer, with wound of left thorax, entrance to left of left nipple, wound 2 inches long and  $\frac{3}{4}$  wide, extensive injury to lung, wound of exit to left of outer scapula margin behind being small, thus indicating a normal bullet. In this case the larger wound may have been caused by the sudden severing of a rib and tearing of tissues by the rough ends.

6. Again bullets deflected in their course before reaching their object may cause a larger entrance wound, as in case of Corpl. Brown,

R. C. F. A. He was laying a gun when a Mauser bullet glanced off a wheel-spoke and struck him in its long axis sideways on the neck, severing the external jugular, and passing in this position diagonally backwards from where it was extracted a few days later.

Case No. 445, Tpr. 10th, M. I., admitted 4-5-02., 2 days after injury, G. S. W.—Trachea and right lung.

Patient was in the act of rising from the sitting position, and thus, stooping somewhat forward, when accidentally shot by a comrade "shooting off," the "safety" of his rifle at 20 yards. The ball, Lee-Enfield, entered the middle line of neck  $\frac{1}{2}$  an inch above the upper border of the manubrium sterni, passing through the trachea and coming out just below the spine and of right scapula at junction of inner and middle thirds.

At the same time there was very little bleeding from the wound in neck, but considerable from that behind over the scapula; a tracheotomy tube was inserted through which for several days thick bloody mucus was expelled by coughing, the tube was then removed, as patient breathed well without it, and thin antiseptic gauze kept over wound which has granulated over and closed. The wound in the neck being septic and discharging, gauze drainage was employed through the hole in the scapula and a large probe passed daily, to prevent closing and facilitate drainage, patient could not speak above a whisper but has rapidly regained his voice; and is transferred convalescent. Here also the wound of entrance was larger than that of exit—being  $\frac{3}{4}$  in. long by  $\frac{1}{2}$  wide.

*A. N. Worthington, A.M.S.,*

Lt.-Col. Commanding No. X. Field Hospital.

THE

# Montreal Medical Journal.

*A Monthly Record of the Progress of Medical and Surgical Science.*

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## SPECIAL NUMBER.

### THE HISTORY OF THE MEDICAL FACULTY OF MCGILL UNIVERSITY.

For some time past the Editors of the MONTREAL MEDICAL JOURNAL have had in view the publication of an article descriptive of the new buildings of the Medical Faculty of McGill University, which were formally opened by the Prince of Wales, during his recent visit to Canada. The preparation of this was entrusted to Dr. Maude E. Abbott, Curator of the Museum of the Medical Faculty. It was seen, however, that an article of much wider scope, dealing with the history of the Medical Faculty since its inception, would be of far greater interest, both by showing the progress in medical teaching and in bringing together much valuable information regarding the pioneers of medicine in this Province, information which has hitherto been scattered throughout the medical journals of that period. As the founders of the first medical school in 1824, were all members of the Medical Staff of the Montreal General Hospital, established five years previously, in 1819, the history of the two is intimately associated, and an account of the origin of one is incomplete without including that

of the other. Furthermore, for a proper understanding of the causes which led to the establishment of a hospital and medical school in the early twenties, a short description of the then existing social conditions among the poor, and of the need for gratuitous medical services is required to render the article more complete.

Dr. Abbott, in preparing the article, has used the utmost care to make it accurate, by consulting original documents and archives in Ottawa, Montreal and elsewhere. She has, in addition, had the advantage of obtaining information and advice from several well-known authorities upon the early history of Montreal.

This article will form the August number of the Journal and will contain numerous illustrations, comprising, among others, portraits of the founders of the medical school and university, cuts and plans of old Montreal, views of the various buildings occupied by the school, and plans and photos of the present home of the Medical Faculty.

The Editors feel that this article cannot fail to interest all graduates and students of the school, whilst the struggles and devotion of the early teachers form an instructive and encouraging chapter in the history of medical education in this country.

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#### STUDIES FROM THE ROYAL VICTORIA HOSPITAL.

Through modesty and mischance—those of the Editorial Board in charge of the subjects treated, happening to belong to the staff of the Hospital and not liking to cry up their own wares, and those not so connected expecting them to make the necessary move—it happens that no notice has so far been taken in these pages of a series of publications which contribute a new departure in Montreal which, without unduly vaunting ourselves, we think we may say are a credit to Canadian Medicine. We refer to the Studies from the Royal Victoria Hospital, of which since the autumn of last year three numbers have appeared, each in the form of a monograph of some sixty to eighty pages. We have not as yet advanced so far in Canada as to possess any learned society wealthy enough to publish detailed communications upon medical subjects. Studies of this nature are out of place in medical weeklies, and even in the monthly journals whether here or elsewhere, and in the organs of special departments of medicine, anything above twenty pages in length gains entrance with difficulty and only after long delay, more particularly where illustrations are needed. It may be questioned whether all that is necessary may not be written within this latter limit. Undoubtedly, in most cases it can be brought into this compass, and that with positive advantage for both general readers and the particular writer.

When, however, an investigator has spent many months sedulously cultivating one particular field, there is much in the matter of detail which he acquires which is likely to be of value, not so much to the general reader as to others cultivating this same ground. To develop this into an independent publication in the form of a book is too often inadvisable, if only from monetary considerations—the interested public is too small in numbers. Here it is that Hospital or University Reports may fulfil a most useful function. Too often these are relatively valueless—we refer, for example, to the Reports of the great London hospitals. Their very bulk, the mass of contained matter, good, bad and indifferent, on all kinds of medical subjects, is against them—and in these a communication of first rank is buried, in fact, a more secure burial place could not be devised. But, if, following the example of Johns Hopkins, communications of a certain order only be accepted for the Reports, be issued separately and be so distributed that they reach the various medical centres and those specially interested in the subjects treated, then it is that such reports become of peculiar value to all parties.

Following this line of thought the Governors of the Royal Victoria Hospital has instituted this series of Studies, and this in a form that in print, illustration and general appearance, is very attractive. We trust that the friendly rivalry subsisting between the two institutions will lead those interested in the General Hospital to find the necessary funds—and the yearly sum required is not excessive—to permit that institution to follow the good example. For these Studies show that the younger generation in Montreal is capable of producing work of a singularly high order—work which we trust will materially add to the reputation of our city as medical centre.

The first number of the series is on the subject of the Intradural Tumours of the Optic Nerve. Dr. Byers discusses these in all their aspects; the work would seem more particularly valuable from the light thrown upon the histology and relationship of these somewhat rare growths and from the conscientious study at first hand and analysis of the previously recorded cases. Of these until the end of 1900 he was able to collect 102 cases, three of which are reported from Montreal. What is remarkable is the great discrepancy in the pathological diagnosis of the nature of the tumours. With great clearness Dr. Byers shows how many of the diagnoses—such as those of glioma, glio-sarcoma, and carcinoma—are, in the light of present knowledge, obviously wrong, so that all the cases come under one or other form of overdevelopment of the fibrous connective tissue of the sheath of the optic nerve; that, in short, the condition is one of fibromatosis—a conclusion which throws light upon the progress of the condition,

the histological variation and, as he points out, the frequent existence of coincident intra-cranial growths either along the intra-cranial portion of the optic nerve or along other nerves. He concludes with a careful study of the treatment of the condition, analytical tables and a well arranged bibliography. The work promises to be the "locus classicus" for some years to come upon this particular subject.

In the second number, Dr. Shirres gives what we believe is the most thorough and complete study of a case of Porencephalus which has yet been afforded. The case is in many ways remarkable: That of a woman of 76, who had gone through life with complete absence of the greater part of the left hemisphere, including the whole of the motor area of that side, and who yet had shown little evidence of the effects of the same—had no convulsive seizures, inconsiderable rigidity of the fingers of the right side, only moderate want of development of that side; who, in short was so little removed from the normal to outward appearances as to have gained and lost two husbands. Obtaining his material very shortly after death, Dr. Shirres employed it to make a minute study of the various tracts in the brain and cord, and has obtained valuable information upon the relationship between the cerebrum and cerebellum, the relationship of the direct pyramidal tract, the fibres composing the fillet, Gower tract, the peduncular tracts, etc. Incidentally, he discusses the characteristics of primary and secondary degeneration and the causation of spasticity. The article is illustrated by eighteen photographic reproductions and diagrams.

The third number, by Dr. A. G. Nicholls, is on that curious progressive and proliferative condition of the serous membranes which leads to the deposit upon them of a thick tallowy layer of hyaline connective tissue. We have no adequate term for this; in fact, it is difficult, if not impossible, to suggest a term which will at the same time indicate the chronic proliferative nature of the condition, its tendency to affect more than one of the larger serous cavities, and the peculiar thickening which results. Neither "Zuckergussleber," a term not infrequently used, nor "Icing liver," its English equivalent, is satisfactory, because either term indicates but one of the regions affected. Dr. Nicholls speaks of it as "Multiple Progressive Hyaloseritis," probably if the term be accepted "hyaloseritis" alone will be found ample. It is certainly better than the chronic Polyorromenitis, suggested by an Italian worker.

Dr. Nicholls gives a very full story of a typical case seen in the post mortem room at the Royal Victoria Hospital, and of other cases showing the condition to a greater or less degree; he discusses fully the literature upon the subject; falls foul of Pick's "Pericarditic

Pseudocirrhosis of the Liver" (in which we find he is well supported by the speakers at a recent discussion at the Chicago Pathological Society); points out the essentially inflammatory nature of the condition and traces its origin to inflammations of a low type originating in any one of the serous cavities, though most frequently in the abdomen; shows that it is not of tuberculosis origin, though tuberculosis and peritoneal cancer may both lead to a somewhat similar progressive thickening. He gives a table from the differential diagnosis between "Zuckergussleber," atrophic cirrhosis, chronic tubercular peritonitis and carcinoma of the peritoneum, which is of definite value, though reading over the records of the cases so far recorded one is convinced that diagnosis is a matter of peculiar difficulty and must be so from the varieties in the parts affected. The paper is useful as calling renewed attention to this "hyaloseritis" as a possible condition in cases of prolonged ascites with little oedema until the terminal stage. Here again—at least in our language—the paper fills the void, for there is no previous study of this condition in all its aspects.

J. G. A.

#### CANADIAN MEDICAL ASSOCIATION.

Arrangements are being gradually completed for the meeting of The Canadian Medical Association, and the provisional programme of papers and other contributions, containing as well an announcement of the entertainments, will soon be published and forwarded to members of the Association.

The railway companies have reported a clerical error in the transportation announcements with reference to points east of Montreal. It should read as follows:—

From points east of Montreal: If ten or more delegates are in attendance from Quebec city, Megantic and east thereof, holding standard convention certificates, delegates from such points will be given tickets free for return.

To those who come from points west of Fort William, the following concession has been made by the Canadian Pacific, Canadian Northern and Great Northern Railways:—

Return tickets will be good, as in previously mentioned arrangements, up to October 12th, provided that, on the return journey, the destination is reached by that date.

MONTREAL MEETING, SEPTEMBER 16TH, 17TH AND 18TH.

PROVISIONAL PROGRAMME.

(The general meetings and evening addresses will be held in No. 111 Lecture Room, Medical Faculty, McGill University. The Sections will meet in other lecture rooms of the same building.)

*First Day.*

9.30 a.m.—General Meeting: Proposal of Members; Notices of Motion, etc.; Striking of Committees.  
10.30 a.m.—Meeting of Sections.

## SURGICAL SECTION.

Paper by Dr. A. Primrose, Toronto—Filariasis Cured by Operation.  
“ “ Dr. Perry Goldsmith, Belleville—Hæmorrhage in Removal of Adenoids.  
“ “ Dr. H. D. Hamilton, Montreal—Complete Occlusion of Posterior Nares.  
“ “ Dr. Casey A. Wood, Chicago—Empyæma of Frontal Sinus.

## MEDICAL SECTION.

Paper by Dr. John Hunter, Toronto—Pleurisy Associated with Tuberculosis.  
“ “ Dr. A. E. Orr, Montreal—On Blood Pressure, clinical observations.  
“ “ Dr. G. A. Charlton, Montreal—Anæmia due to Toxines.  
“ “ Dr. J. R. Clouston, Huntingdon—The Country Doctor of To-day.

2 p.m.—General Meeting. Proposal of Members, etc., followed at  
3 p.m. by Address in Surgery by Dr. John Stewart, of Halifax, N.S.  
5 p.m.—Garden Party at Residence of Mr. James Ross, Peel Street.  
8.15 p.m.—President's Address, followed by Lantern Demonstration of Skin Diseases by Dr. Corlett, of Cleveland, Ohio.

*Second Day.*

8 a.m.—Exhibition of Cases at the different hospitals. Montreal General Hospital, Surgical cases; Royal Victoria Hospital, Medical cases; Hotel Dieu, Medical cases; Notre Dame Hospital, Surgical cases.

9.30 a.m.—General Meeting, followed by a Discussion on “Diseases of the Gall Bladder and Bile Ducts;” (a) Medical Diagnosis introduced by Dr. A. McPhedron, Toronto; (b) Medical Treatment, introduced by Dr. A. D. Blackader, Montreal; (c) Surgical Diagnosis, introduced by Dr. Jas. Bell, Montreal; (d) Surgical Treatment, introduced by Dr. J. F. W. Ross, Toronto, followed by Dr. G. E. Armstrong, Montreal.  
2 p.m.—

## MEDICAL SECTION.

Paper by Dr. J. F. McDonald—On Tuberculosis.  
“ “ Drs. Starr and McKenzie, Toronto—Multiple Sarcomata.  
“ “ Dr. A. D. Blackader, Montreal—On Therapeutic Uses of Alcohol.  
“ “ Dr. Maude E. Abbott, Montreal—Methods of Classification in Medical Museums.  
“ “ Dr. D. A. Shirres, Montreal—Degeneration of Spinal Cord in Anæmia, etc.

## SURGICAL SECTION.

Paper by Dr. G. A. Peters, Toronto—A New Symptom of Intestinal Paralysis in Peritonitis.  
“ “ Dr. Ferguson Chicago—Removal of Prostate by Perineal Incision.  
“ “ Dr. G. E. Armstrong, Montreal—Treatment of Prostatic Hypertrophy by Suprapubic Incision.  
“ “ Dr. J. O. Orr, Toronto—Artificial Astigmatism.  
“ “ Dr. Burnham, Toronto—Sympathetic Ophthalmia.  
“ “ Dr. Monod, Montreal—

## OBSTETRIC AND GYNÆCOLOGICAL SECTION.

Paper by Dr. Robinson, Ottawa—Normal Labor.  
“ “ Dr. Smith, Montreal—  
“ “ Dr. Lockhart, Montreal—  
“ “ Dr. Chipman, Montreal—

8.15 p.m.—Address in Medicine by Dr. Wm. Osler, Baltimore, followed by Reception in Engineering Building at 9 o'clock.

*Third Day.*

8 a.m.—Exhibition of Cases at the different hospitals. Montreal General Hospital, Medical cases; Royal Victoria Hospital, Surgical cases; Hotel Dieu, Surgical cases; Notre Dame Hospital, Medical cases.

9.30 a.m.—General Meeting: Reception of Reports from Committees; General Business.

10.30 a.m.

Paper by Dr. Robinson, New York—X-Ray Treatment of Cancer.  
“ “ Dr. Girdwood, Montreal—X-Ray as Diagnostic and Curative.  
“ “ Dr. W. F. Hamilton, Montreal—X-Rays as a Diagnostic Agent in Thoracic Disease.  
“ “ Dr. S. F. Wilson, Montreal—On the Use of High Potentials in X-Ray Work.

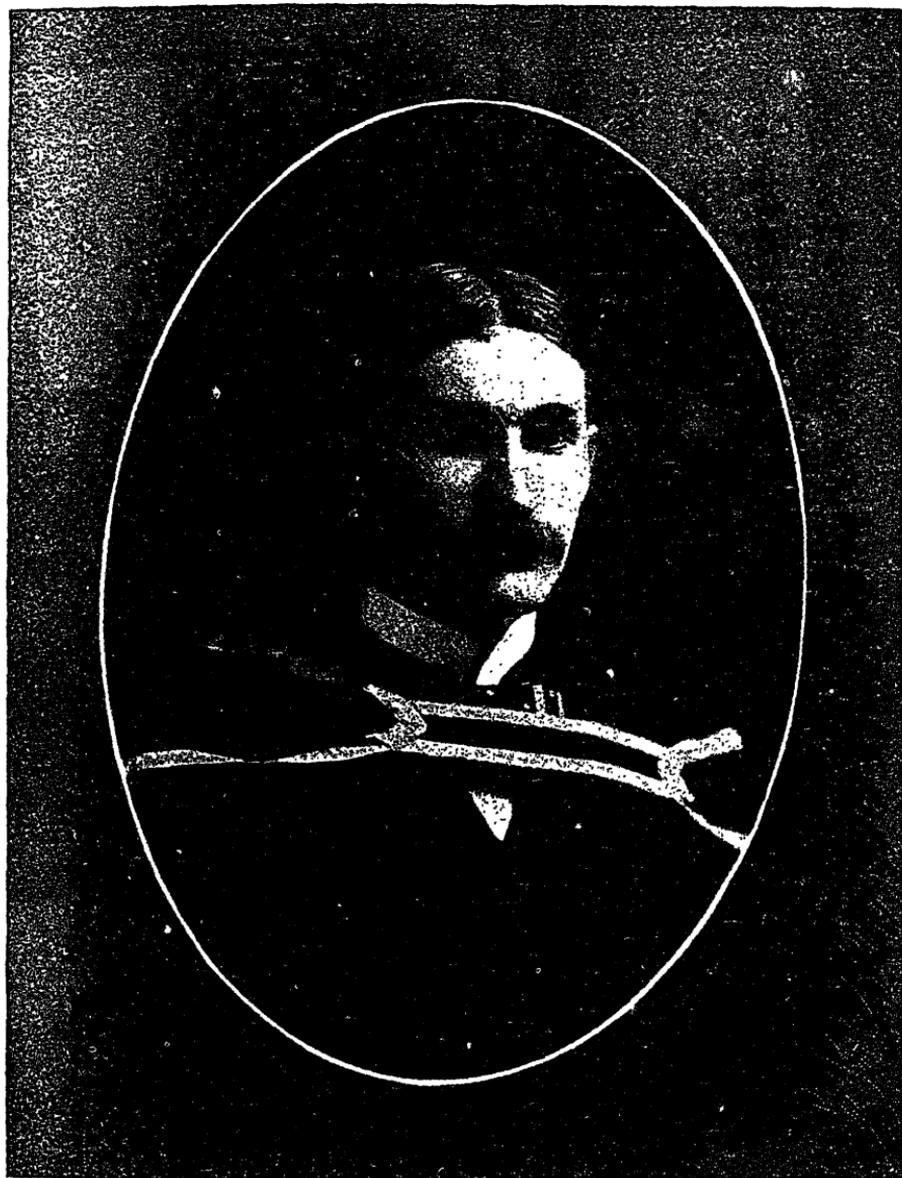
The afternoon will be given over to an excursion by rail over the Victoria Bridge and thence to Lachine (through the courtesy of the Grand Trunk Railway). From here the steamer “Duchess of York” will make the trip up Lake St. Louis and run the Lachine Rapids, arriving in the city about 5.30 p.m. (Lunch on board steamer.) At 8.30 a “Smoker” will be given in the Victoria Rifles Armory, Cathcart street.

## Obituary

### PROFESSOR WYATT GALT JOHNSTON.

The death of Professor Wyatt Johnston, which occurred on the 19th of June, from pulmonary embolism, deprives the profession of Canada of one of its most brilliant and original members. His death was due to septic poisoning acquired in the autopsy room of the Montreal General Hospital. A streptococcus inoculation of his hand in February last incapacitated him for work for a few weeks, but he returned again to his duties, and probably received a second infection in April. A thrombus appeared in the internal saphenous vein of his left leg about the end of April, followed by a more extensive coagulation later. He then removed to a private ward in the General Hospital, and shortly after this the veins of the other leg became similarly affected, and there was evidence of the presence of thrombi in the iliac veins of both sides. Death resulted on the 19th of June from a pulmonary embolism. The autopsy showed extensive thrombi on both sides and a general streptococcus and diplococcus infection.

Dr. Wyatt Galt Johnston was the son of the late Dr. J. B. Johnston, of Sherbrooke, Que. He received his early education at Bishop's College, Lennoxville, and entered upon the study of medicine in McGill University in 1880, graduating in 1884. As a student he showed special aptitude for pathology, and was a constant associate of Dr. Osler, assisting him at autopsies and preparing material for demonstration. Immediately after graduation he became resident medical officer in the General Hospital, and during the period of his service had more than the usual responsibility on his shoulders, as the staff that year was small and continually changing. In the spring of 1885 he paid his first visit to Germany, working during the summer in Virchow's laboratory in Berlin. Next year he returned again to Germany and carried on researches in connection with pernicious anæmia in the laboratory of Professor Grawitz at Greifswald. He was appointed demonstrator in pathology at McGill, and alone he gave all the lectures and demonstrations in this department for a number of years. He subsequently returned to Germany and worked at comparative pathology in Munich and also for some months in the Zoological Gardens in London. Shortly after this he resigned his position in pathology in McGill, but still continued to work in the General Hospital, devoting himself almost exclusively to bacteriology and beginning his medico-legal work.



THE LATE WYATT GALT JOHNSTON.

In 1890 he made a bacteriological study of the water supply of Montreal, including the bacteriology of surface water generally. His very thorough report on the methods of classification of water bacteria and their sanitary importance was widely published. He was appointed lecturer in bacteriology at McGill in 1895, and was connected with the departments of pathology and hygiene. About this time also he became bacteriologist for the Provincial Board of Health and medico-legal expert for the district of Montreal. In 1897 he was made Assistant Professor in Public Health and Lecturer in Medico-Legal Pathology, and only a few months before his death received the chair of Hygiene and director of that department in the Faculty of Medicine, McGill University. He had practically occupied this chair for the Sessions 1900-01, and 1901-02, but until just before his death he was not formally appointed.

In December, 1895, he married Julia, daughter of the late Michael Turnor, of Rugely, England.

Professor Johnston's career has been a varied one; from pathology proper he proceeded to the study of comparative pathology and spent a year in the investigation of the Pictou Cattle Disease. During this period he was associated with the Faculty of Comparative Medicine in McGill University as well as the Faculty of Medicine. Becoming more interested in bacteriology, he made a specialty of the sanitary application of this science, and was recognized as one of the best authorities on the subject of the bacteriology of water supplies. Originality, inventiveness and the power of recognizing the simplest and most direct method of reaching results, characterized his work in every department. While engaged in the investigation of the water supply of Montreal, he devised a very rapid and convenient method for collecting samples of water at various depths in such a way as to exclude the possibility of contamination. He also devised a method of distinguishing and counting the various animalculæ found in surface waters. When engaged in bacteriology in the General Hospital, his simple method for the diagnosis of diphtheria by culture on hard-boiled eggs, which is even now very widely used, was announced. His modification of the Widal reaction for the diagnosis of typhoid by means of dried serum, is also widely in use in different countries. An indefatigable worker, he tried all the methods announced that gave promise of practical value in connection with the application of bacteriology to hygiene and medico-legal work or to the diagnosis of disease. Having studied these methods, they were either immediately discarded or utilized in his work, and almost invariably improved upon or simplified. Instance after instance occurs to the writer where his inventive genius has made practical and useful many laboratory methods in bacteriology and pathology, and so to a great

degree simplified the method of instruction or economized the time of both student and demonstrator.

Dr. Johnston's habit of mind, his rapidity of thought and quickness in seizing upon what was of immediate importance, makes his published writings a very poor index of the amount of work he accomplished, and only to those who knew him do they give anything but an imperfect idea of the soundness and extent of his knowledge. His mental habit of concentration and going to the root of the matter, neglecting all side issues, which made him so valuable and trustworthy as a medico-legal expert and a coroner's physician, showed itself in all his research. A given problem presented itself to him, and he worked at it until he had satisfied himself with regard to that problem only, and being satisfied with results, was extremely careless in placing them upon record. His papers are characterized by directness, they are unaccompanied by any full or orderly history of the development of his subject up to the point at which he took it in hand, and he was content, as a rule, to incidentally refer to the work of others which he was able either to confirm or refute. These references, however, were always adequate for those familiar with the matter, but not always so for the ordinary professional reader. The difficulties which he encountered in attacking the problem, the side issues which sprang up in the course of his investigations, were rarely more than hinted at; the part of the subject which interested him and which impressed him with its importance was recorded red hot. Thus his published papers, an incomplete list of the more important of which follow this notice, are apt to strike the reader as being short and hurried, and certainly do not do him justice. But one has only to glance over the list to appreciate his remarkable versatility.

His mastery of many allied branches of medicine, gross and microscopic pathology, both human and comparative, bacteriology in a more abstract form as well as in its applications to hygiene and public health, sanitation, medical jurisprudence in many aspects, as well as medical education, will be found among his contributions. To each of these subjects he made valued and pre-eminently practical contributions, endeavouring to popularize each subject and to bring its methods within the reach of those to whom it would be useful.

Of recent years he devoted himself to hygiene and medical jurisprudence. One of his most thorough studies in the department of medical jurisprudence, in which he probably stands pre-eminent in Canada, if not on this continent, was a method of determining the pecuniary equivalent of injuries to one or other portions of the body, a subject which was very largely neglected by English-speaking medical jurists, although it has been very scientifically investigated in France and Germany. About the time of his death he was negotiating a scheme for the use of

companies with a large number of employees, and accident insurance companies, which would enable them to follow the after-effects of injuries and the conditions and treatment after leaving hospital, forming a basis from which valuable statistics could be compiled in this country and in the United States.

As a teacher, the same characteristics showed themselves, his great mental activity and his rapidity of thought often made it difficult for him to exhibit to his hearers the process by which conclusions were reached, hence, it was always necessary for him to carefully prepare his set lectures. But in practical teaching, at the autopsy table, at his weekly demonstrations in morbid anatomy, and, above all, to a few interested students, graduates or assistants in the laboratory, he was at his best. In devising methods of demonstration and of checking the work of classes in the laboratory, his originality was of much value. He was never contented unless he could develop some simple method of staining, some simple apparatus for class purposes, or for reproducing diagrams in a few minutes; method after method occurs to us all alike in their directness, simplicity and effectiveness for the purposes for which they were designed. He had a perfect genius for recognizing what was at the same time practical, scientific, sound and capable of performance by the simplest means.

In addition to his methods for the diagnosis of diphtheria and typhoid fever, already referred to, his simple method for the diagnosis of leprosy by scraping a suspected cutaneous nodule and staining the mixed blood and lymph, which exudes, and his introduction of the ordinary sterilized cotton wool swab at the end of a length of strong wire enclosed in a test tube, which now-a-days is used in all public health diphtheria outfits, may be cited as examples of how he always thought of the most direct and simplest methods of reaching his results.

But, after all, it is Wyatt Johnston, the man, the delightful companion, whose wit was ever full of such delightful surprises, that his friends and associates will regret the most. Intellectually honest, direct and simple to an unusual degree, he had the greatest contempt for all that savours of dishonesty and pretence in scientific work. His wonderful personal magnetism, his ready wit and sympathy, made him hosts of friends and admirers among those associated with him in the various organizations and societies with which he was connected—the Bar of Montreal, the Coroner's Court, the General Hospital, the Provincial Board of Health, the American Public Health Association, the American Medical Association, the American Medico-Legal Society, the Montreal Medico-Chirurgical Society, the Faculties of Law and Comparative Medicine.

The following resolution of regret, passed by the Faculty of Medicine, is but one of the many echoes of sorrow which has reached us from all parts of Canada and the United States:—

“The Members of the Faculty of Medicine of McGill University wish by this Resolution to put upon record their recognition of the great loss they have sustained by the untimely death of their brilliant colleague, Professor Wyatt Johnston.

“Throughout the twenty-one years during which he was associated with this Faculty, as student, demonstrator, lecturer and professor, his work was always characterized by a rare degree of conscientious exactness and originality. An earnest student, a thorough and successful investigator, and ever an advocate of advanced scientific medical education, his loss to the Faculty is indeed a great one.

“To his exertions this Faculty owes the practical character of the teaching in the various departments of State Medicine, with which he was connected, and also the introduction of advanced and post-graduate courses leading to the diplomas of Public Health and Legal Medicine.

“His high status among scientific men as a trustworthy investigator, especially in the fields of bacteriology and preventive medicine, has added not a little to the reputation of this University as a centre for research. His reputation as a reliable and scientific medical jurist and expert, was not confined to this city or this country, and his services to the Courts of Justice have done much to demonstrate to the professions of Law and Medicine the value of this branch of medical education.

“His colleagues in the Faculty of Medicine feel that in his untimely death each has lost a bright and cheering companion and a friend whose earnestness of purpose and enthusiasm in his work was a stimulus to all who came in contact with him,—one who was a high type of intellectual honesty combined with singular simplicity and modesty regarding his own capacity and the importance of his valuable original work.

“The Faculty further resolves to transmit a copy of this Resolution to Mrs. Wyatt Johnston and to his mother, Mrs. J. B. Johnston, and to convey to them their deep and heartfelt sympathy in the great loss which they have suffered.”

The following is an uncomplete list of his more important contributions to scientific literature:—

Retrospect of Pathology—MONTREAL MEDICAL JOURNAL, 1889.

Thymus Gland—Reference Handbook of Medical Sciences, 1899.

Thyroid Gland—*Ibid.*

Retrospect of Pathology—MONTREAL MEDICAL JOURNAL, 1890.

An Unusual Case of Perityphlitis—MONTREAL MEDICAL JOURNAL, 1890.

A Rare Form of Kidney Tumor—MONTREAL MEDICAL JOURNAL, 1891.

Notes on the Bacteriological Study of Diphtheria—MONTREAL MEDICAL JOURNAL, 1891.

On the Collection of samples of Water for Bacteriological Analysis—*Canadian Record of Science*, 1892.

A new Method for the Culture of Diphtheria Bacilli in Hard-boiled Eggs—*The Medical News*, 1892.

Anomalous Cases of Primary Nasal Diphtheria—*MONTREAL MEDICAL JOURNAL*, 1892.

Fracture of the Skull from the Discharge of a Shot-gun into the left Orbit—*Montreal Medical Journal*, 1893.

Six months' Medical Evidence, Coroner's Court of Montreal—*MONTREAL MEDICAL JOURNAL*, 1893.

One Hundred Cases in Coroner's Court of Montreal in 1893—*MONTREAL MEDICAL JOURNAL*, 1893.

Return to an Order of Legislative Assembly of December 13th, 1893, upon Coroner's Inquests—1893.

"Coroner's Quest" Law in the Province of Quebec—Read before Medico-Legal Society, May, 1893.

Report of Special Committee appointed by Montreal Medico-Chirurgical Society to amend Coroner's Law for Province of Quebec—*MONTREAL MEDICAL JOURNAL*, 1894.

Coroners and Inquests—*The Gazette*, February 8th, 1894.

Statistics of Coroner's Court, Montreal, for 1893—*MONTREAL MEDICAL JOURNAL*, 1894.

A Biological Analysis of Montreal Water Supply from November, 1890—November, 1891—*MONTREAL MEDICAL JOURNAL*, 1894.

The Use of the Autoclave for Sterilizing Nutrient Gelatin—*The Medical News*, 1895.

A few Observations upon Sedimentation in Water—*Trans. American Public Health Assoc.*, 1895.

On Grouping Water Bacteria—*Trans. American Public Health Assoc.*, 1895.

Clinical Microscopy—Reference Handbook of Medical Sciences, Supplement, 1895.

Thymus Gland, Development of—*Ibid.*

Thyroid Gland, Pathology of—*Ibid.*

Biological Analysis of Water—*Ibid.*

Report on a Year's Work on Bacteriological Diagnosis of Diphtheria—*MONTREAL MEDICAL JOURNAL*, 1896.

On the Application of the Serum Diagnosis in Typhoid Fever—*New York Medical Journal*, 1896.

A Note upon Serum Diagnosis by means of Dried Blood Samples in (Experimental) Cholera—*New York Medical Journal*, 1896.

Ueber den Gebrauch von im Wasser aufgelosten trockenen Blute für die Serundiagnose des Typhus—*Centralblatt für Bakter. Parasit. u. Infekt.* XXI. Band, No. 13/14, 1897.

Three cases illustrating the Value of Bacteriological Diagnosis of Leprosy for Public Health Purposes—*MONTREAL MEDICAL JOURNAL*, 1897.

On the Difference between Blood Serum and Blood Solutions, the Condition of the Test Culture and Significance of Bacterium Coli Infection in Relation to Typhoid Diagnosis—*MONTREAL MEDICAL JOURNAL*, 1897.

On the Iodide Test for Semen—*Boston Medical & Surgical Journal*, 1897.

On the Medico-Legal Application of Entomology—*MONTREAL MEDICAL JOURNAL*, 1897.

Notes on Household Disinfection by Formaldehyde—*British Medical Journal*, 1897.

An Experiment with the Serum Reaction as a Test for Typhoid infection in Water, etc.—*New York Medical Journal*, 1897.

On the Application of the Serum Diagnosis in Typhoid Fever to the Requirements of Public Health Laboratories—*Trans. American Public Health Assoc.*, 1897.

Compilation of Pathological Reports of Montreal General Hospital from 1883-1895, August, 1897.

The Medico-Legal Significance of the Presence of Sugar and Glycogen in the Liver, Post-mortem—*Boston Medical & Surgical Journal*, 1898.

Cardiac Embolism—*MONTREAL MEDICAL JOURNAL*, 1898.

The Condition of Test Cultures, especially as regards filtration, favourable to clear Serum Reactions by the Dried Blood Method—*British Medical Journal*, 1898.

On Serum Reaction with Bacteria other than the usual Pathogenic Forms—*British Medical Journal*, 1898.

A Quantitative Method of Serum Diagnosis by means of Dried Blood—*British Medical Journal*, 1898.

Notes on Progress of Legal Medicine—the Medico-Legal Study of Injuries—*Philadelphia Medical Journal*, 1898.

Death by Electricity—*MONTREAL MEDICAL JOURNAL*, 1898.

Legal Medicine—*American Yearbook of Medicine & Surgery*, 1898.

Recent Work Bearing on the Pathology and Morbid Anatomy of Shock—*The Railway Surgeon*, 1899.

Some Personal Experiences in Disinfection—*Trans. American Public Health Assoc.*, 1900.

On the Practical Clinical Teaching of State Medicine—*Philadelphia Medical Journal*, 1900.

Legal Medicine—*American Yearbook of Medicine & Surgery*, 1900.

On the Estimation of Disability and Disease Due to Injury—Read before Montreal Medico-Chirurgical Society, January, 1900.

On the Establishment of Medico-Legal Diplomas—*Boston Medical & Surgical Journal*, 1901.

A simple Method for Bacteriological Examination of Milk Supplies—*MONTREAL MEDICAL JOURNAL*, February, 1902.