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DISCUSSION ON DYSMENORRHŒA.[1]

SYMPTOMATOLOGY AND DIAGNOSIS.

BY

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The Function of Menstruation is surely one of the most remarkable in the animal economy. It is the only instance of a physiological shedding of blood. It is confined to the human female and certain monkeys. The discharge comes from the mucous membrane of the uterus and probably also from the fallopian tubes; the body of the uterus alone is concerned with the process, the cervix taking no part therein. Into the question of the relation of ovulation to menstruation it would, I think, be obviously improper to enter in this discussion. The theory that such a relation exists is deemed by many to be untenable, but the clinical evidence that this periodical discharge is in some way related to the maturation of ova is to my mind incontrovertible. We have then to deal with a physiological function. Are physiological functions in health always painless? The answer must be no, and yet perhaps the only functions that are painful are those of the uterus, as for instance the best example of all—parturition. The fact that we are to discuss to-night dysmenorrhœa, or painful difficult menstruation, implies that it is often painful, difficult, disturbing. That it is painful—sometimes an exceedingly painful process—in the entire absence of any other evidence or symptom of disease, subjective or objective is a matter of very frequent observation to us all. That this function is in some women an entirely painless one must be admitted by all. That however it is attended in the vast majority by certain discomforts is evidenced by the ordinary way of speaking of it, "unwell," or as the

[1] Read before the Montreal Medico-Chirurgical Society, Dec. 18th, 1896.

French say "indisposé." It is a matter of common observation that social condition and circumstances influence much the extent or amount of complaint. Women of the lower classes, obliged to work with their hands, as a class suffer relatively very little as compared with women delicately nurtured in luxury and refinement. As compared with ordinary slight discomfort and the intense form of dysmenorrhœa, attended with agitation, restlessness and loud outcry of pain, we have every degree of severity of disturbance. In all cases the relative susceptibility to influences causing pain, and the capacity for endurance of pain must be taken into account. It is much a question of the personal equation. The condition of the nervous system induced by a life of luxury and refinement and the defective training so often associated, is commonly one of greatly increased sensibility. If such influences have operated through several generations their effect is much intensified. But it is not only by their influence in rendering the woman more sensitive, that these conditions do thu operate. The modern methods of education with their system of emulation and strife for place and position, for rewards of excellence and attainments, of diplomas and the like, operating as they do at an age when a large measure of the nutritive force of the body is required for the development of the sexual organs, operate in withdrawing to other channels such energy and force. The result is a stunting or imperfect development of the generative organs. It is a law of animal life that an imperfectly developed organ performs its function with difficulty and imperfectly. Then there is local pain and general disturbance. It follows that in estimating the significance of menstrual pain many things must be taken into account. How then are we to estimate an amount of pain which we must designate painful menstruation. Roughly perhaps we may conclude that an amount of pain which interferes with the woman of the lower classes attending to her daily avocations, and which in the woman of the upper classes prevents the observance of social engagements and the taking part in the usual round of pleasures, may justly be considered as dysmenorrhœa. At every step in dealing with painful menstruation the great fact must ever been borne in mind that it is a symptom, and that it is a symptom of many and varied conditions, just as are the other menstrual disorders, amenorrhœa and menorrhagia. The physician who can accurately diagnose and skilfully treat the disorders of menstruation is an accomplished practitioner of the diseases of women. Some classification of dysmenorrhœa is therefore absolutely necessary to a proper study of the subject. But here, as in all other classifications of disease or symptoms, types must be considered. No

harm can result from such a mental attitude if we remember that types are often departed from and that we often have a blending of the phenomena of more than one type in a given case, because we have an association of the general and anatomical conditions of more than one form. A considerable experience as teacher and practitioner leads me to the conclusion that there is no better classification than an old one which I now give:

1. Neuralgic Dysmenorrhœa.
2. Congestive or Inflammatory.
3. Obstructive.
4. Membranous.
5. Ovarian.

The Neuralgic Form is met with very frequently, especially in young subjects, but it not rarely persists to middle age, especially in the unmarried. In such cases, a few years after a sterile marriage, the pain diminishes and the case then is apt to present the features of a complex condition, from the development of congestive and nutritive changes in the uterus and its appendages. In the event of pregnancy to full term, in the vast majority of cases the patient is cured, or, at all events, greatly relieved. In the typical case of this kind, not very rare, there is absolutely no discernible anatomical abnormality of the parts concerned. In many, however, we have some evidence of defective development of uterus and ovaries, especially of the uterus. The organ is smaller, measures in depth less than the normal two and a half inches, the cavity is smaller than normal, the walls thinner, the whole organ flabbier, and very commonly it presents one or other of those deformities we call anteflexion, or the rarer retroflexion. The relation of anteflexion to painful menstruation has been a subject of much discussion. By many the condition has been claimed to be a cause of obstruction, apparently suggested by the condition of a piece of rubber tubing when bent till kinking of the tube takes place. By others, obstruction in the anteflexed womb is strongly denied. Probably in this, as in most questions much disputed, the truth lies midway, and at all events in some the supervention of the hyperæmia and development of the mucosa may account for narrowing of the channel of the cervix at the time of menstruation. Anteflexion in the class of patients under consideration, the young, is a persistence, in a measure, of infantile conditions, it is imperfect development, and, as has already been remarked, an ill-grown organ does its work badly, with difficulty and pain. In those cases in which anatomically everything is right, we conclude that it is the nervous system or the general nutrition that is

at fault, and this view is confirmed by the temperament, the symptoms, the history of the patient, especially with reference to heredity, and the results of treatment. This form of painful menstruation may be acquired after months or years of normal function, and it often varies in intensity with the condition of general health and the operation of certain causes by which the nervous system may suffer. In short, the typical case is a local expression of a morbid nervous system as certainly as is so often a neuralgia of a branch of the fifth pair of nerves. In a typical case the symptoms are well marked. The picture is clearly drawn. The pain comes on with the advent of the flow, or an hour or two only before it, and lasts for from twelve to thirty-six hours; it is commonly intense, with outcry and great agitation, and not rarely attended with vomiting, and, in the severer cases, with great general nervous disturbance, hysterical manifestations and sometimes temporary insanity. After the lapse of the time mentioned, the flow continues, but the pain is gone or greatly reduced and there are the evidences of exhaustion, the result of the ordeal through which the patient has passed, and from which it may take many days to recover. The flow may be scanty or moderate, the severer types usually having a scanty discharge. Throughout the interval the sufferer is absolutely free from pelvic pain or other symptom, and remains well until quite the time of the next period. In many, however, the monthly ordeal thus endured, in time affects general health in an important way, and in not a few ultimately, without any apparent operation of other causes, we observe the gradual development of the evidences of a greater or less degree of persistent disturbance of the circulation of the womb and its appendages.

On such a grouping of symptoms, we must, in the young and unmarried, for a time at least, base our diagnosis. I feel that I cannot too strongly deprecate the physical examination of the patient under such circumstances until suitable constitutional remedies have been faithfully tried, and this conviction is borne of repeated successes. I am, however, equally clear in my mind that there must be a limit to the delay in advising examination. In this I am borne out by the opinion of that philosopher and keen observer, the late Dr. Matthews Duncan, a most strenuous opponent of the mechanical theory of dysmenorrhœa, who yet was obliged to admit that sometimes the most successful treatment is a local and mechanical one.

The Congestive and Inflammatory Form—Of all the cases of painful menstruation we meet with in practice the larger number belong to this class, but it does not contain the majority of the most

severe cases. We are now concerned with a class of cases in which the pain is a symptom of an acute or chronic congestive or inflammatory condition of the organs concerned in menstruation and of the pelvic peritoneum and cellular tissue, however brought about, and it persists with varying intensity throughout the period. The causes are, therefore, all the causes of these inflammatory conditions. The simplest is the case of a chill during menstruation, which appears to be the starting point of many cases. The various infective processes account for a very large proportion, I need only mention gonorrhœa, the various infective processes which commence their operations with abortion and full time labour and at surgical operations or simple examinations of the organs; and, finally, tuberculosis. The neoplastic growths, cancer and sarcoma, but specially the much more common myoma or fibro-myoma, are also frequently attended with painful menstruation. In all cases of this class the pain precedes the flow by two or three days to a week, and in varying intensity pelvic symptoms exist throughout the interval. It may require careful cross-questioning to elicit such evidences. Given such a relation of symptoms to the menstrual flow, whatever the age or social condition, single or married, careful physical examination of the pelvic organs is an absolute necessity to furnish a basis for diagnosis and successful treatment. While every conscientious practitioner must deprecate such examination in the neuralgic cases of the unmarried, for a time at least, until suitable medicinal and regiminal treatment has been tried and found wanting, here it is an imperative duty.

The Obstructive Form—This title implies some obstruction to the escape of the discharge which may be healthily secreted in normal quantity. It may be in any part of the genital tract and may be the result of imperfect or abnormal development, or may be acquired as a result of morbid processes or surgical operation. In this class of cases the pain precedes the flow for a few hours, is paroxysmal, and when it reaches an acme of intensity, perhaps attended with vomiting (so often an attendant on distension of uterine fibre), it is suddenly relieved by a gush of blood, fluid and clotted. Such a set of symptoms is usually repeated several times during each period. During the first months or years of such a menstrual history, symptoms are entirely absent in the intervals. In all, however, sooner or later we have developed the evidences of congestive or inflammatory processes of the uterus and appendages. An important though rare form of defective development of the uterus must be here mentioned. It is the uterus septus, with occlusion of one chamber, the other being

patent. From the latter menstruation occurs regularly, while in the other there is a gradually increasing accumulation of the secretion, leading to the formation of a pelvic tumour, with symptoms more or less well marked. I have met with one such case. It has served to impress me with the existence of a condition which may for a time at least be easily overlooked and remain undiagnosed.

Membranous Dysmenorrhœa—Relatively an exceedingly rare and well marked form. The distinctive feature is the expulsion at each period of a cast of the uterine cavity, complete, of triangular form, with an aperture at each angle, or in pieces. The cast is the mucosa of the uterus, proved beyond a doubt by its microscopical characters. I have already alluded to its great rarity. A special experience of many years may comprise at the most half a dozen cases. I have met with only three well defined examples. It is well that this is so, for it is marked by intense suffering and is most obstinate to treatment of all kinds. There is pain from the first, or even before the flow appears, but it reaches its acme of intensity on the second day, when the membrane is expelled by uterine contractions. The flow is profuse, and it continues for some days after the expulsion of the membrane. After the cessation of the bloody discharge, leucorrhœa continues for a few more days. The pathological condition is doubtless a peculiar form of endometritis. At all events there is a proliferation of the endometrium, and the uterus as a whole is not in a condition of perfect health, and yet the condition of the organ, as ascertained by all our known methods of diagnosis, is in no wise different from that of the numberless cases of chronic metritis, in which we have no such symptom. In my experience all the patients have been sterile. In the majority, they have borne children at some remote period. In a single well marked case the patient was unmarried and nulliparous.

In the classification I have adopted an *ovarian form* is included. In recent years some authorities have denied the existence of painful menstruation of ovarian origin other than that which is so often observed in more or less general inflammation of the uterus and its appendages, with adhesions from pelvic peritonitis, now recognized to be always of various infective origin. I believe, however, that there is a small class of cases in which the uterus and tubes are healthy, but the ovaries are diseased. In the early stages they are enlarged and tender, prolapsed because of their increased weight, but not adherent. If adherent, I conclude that the case should be transferred to the congestive or inflammatory class. Such enlargement of the ovaries may be due to a cystic condition, a degenerative process in

which possibly inflammation plays a part. In the latter stages the ovaries may be reduced in size, shrunken and hard (cirrhotic). In this form the pain precedes the flow by a day or two, and continues during the first days after its appearance. The prognosis is bad. The patients are usually sterile. The inaccesibility of these organs to local treatment is obvious. In the, unfortunately, rare occurrence of pregnancy lies almost the only hope of cure, by reason of the prolonged rest from the performance of function of the organs concerned.

In the foregoing pages the causation of pain in menstruation has been more or less incidentally discussed. A somewhat more particular consideration of the question seems desirable. A reiteration of the fact, a matter of daily observation in the study of disease, that all pain is relative to individual susceptibility appears to be in place. Pain is the irritation of nerve ends. Menstrual pain is the irritation of nerve ends in the uterus and its appendages. What is the cause of the irritation? It must I think be regarded as primarily the hyperæmia or congestion which precedes and attends upon the proliferative processes in the organs concerned. In perfect health of the nervous system and of the uterus and ovaries, menstruation is painless. It is so in certain cases of marked disease of these organs, even when that disease is a fatal one, as cancer. It is to my mind largely a question of relative sensibility of the nervous system. In the purely neuralgic form it is entirely a condition of abnormal sensibility of the nervous system. The abnormally sensitive nerve terminals and centres cry out under the compression produced by the hyperæmia. In the woman with a healthy nervous system but with acute or chronic congestion or inflammatory disease of the organs, such disease accounts for abnormal compression and irritation. But anatomical facts and therapeutic experiments indicate that obstruction to the escape of the discharge is an important factor in the irritation of uterine nerve terminals. A marked narrowing of any part of the genital tract will constitute an obstructive condition at all times, but there are many cases in which an examination in the interval will reveal no such obstruction, yet, the hyperæmia and hyperplasia of the menstrual period will result in partial obstruction with more or less distension of uterine fibre. Abnormal shedding of uterine mucosa, best marked in the exceedingly rare membranous form, by temporary plugging of the cervix will also lead to temporary obstruction. Abnormal amount of discharge with clotting may be partially obstructive. We have then uterine contraction set up, constituting another cause of pain, which will be paroxysmal. Under these circumstances the condition of

chronic inflammation of the contractile hollow muscle—the womb, and its appendages, the contractions are unduly painful.

Diagnosis:—Painful menstruation being a symptom of many and varied conditions, general and local, accurate diagnosis is therefore essential if treatment is to be successful. Certainly the nature of the cause in any case can only be ascertained by accurate physical examination of the organs concerned in the function. In the neuralgic or neurotic form there is however we have learnt, no anatomical abnormality. The results of examination are therefore negative. But the symptoms are characteristic. Many of the patients are virgins and examination should be deferred as long as possible, at all events until judicious regiminal and medicinal treatment has failed. Such treatment will however in a large majority of cases be successful. The evidence on which the diagnosis is to be based is derived from the neurotic ancestry, evidences of neurotic taint in the patient herself, the relation of the pain to the flow as regards time, it appears only an hour or two before or with the advent of the discharge; it rarely lasts more than a day. In the intervals, the patient is entirely free from pelvic pain, leucorrhœa, and reflex symptoms. It is rare however that true neuralgic dysmenorrhœa lasts many years without the development of chronic vascular and nutritive changes in the uterus and its appendages and then we have the inter-menstrual symptoms more or less gradually making their appearance. It must be remembered that the neuralgic uterus is predisposed to nutritive changes. For the diagnosis of the conditions present in the other forms all our available methods of physical diagnosis of pelvic conditions may be necessary. First and always most fruitful of results and safest is the digital and bimanual examination by skilled hands in the vagina and rectum. We shall thus discover ill-developed uterus and ovaries, abnormalities of the vagina, chronic metritis. inflammatory affections of the uterine appendages, or tumours of the uterus and its appendages. The more dangerous sound and curette may be necessary to discover the depth and size of the uterine cavity and the condition of the mucosa. All such examinations by finger and instruments will be much more fruitful and certain of result if conducted under an anæsthetic. In truth in many, only by the use of anæsthetics can the examination be satisfactory. In the great majority of virgin patients anæsthesis should always be employed, and after each of the methods already mentioned have been employed we may still be at sea until we have dilated the cervix to gain access to the uterine cavity with the finger. For instance a small submucous myoma or polypus may often in this way be alone discovered as the sole cause of the symptoms. In fine I must

mention a somewhat doubtful and certainly dangerous method of examination by the intra-uterine employment of the galvanic current after the method of Apostoli. This depends on the reaction of diseased uterine appendages to the current whereby they are unduly irritated. Finally Mr. President it will have been perceived that my remarks are far from being exhaustive of that part of the subject alloted to me. I have not intended that they should be so, but rather suggestive and by way of outline to be filled in I trust by the speakers who are to follow.

DISCUSSION ON DYSMENORRHŒA.[1]

THE TREATMENT,

BY

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Treatment of Dysmenorrhœa.—The treatment of dysmenorrhœa is such a wide subject that one can only rapidly run over some of the different forms without fully advancing arguments for or against any one particular kind in the time at our disposal.

In considering this question, we must keep before us the fact that dysmenorrhœa is merely a painful manifestation of some abnormal condition of either the body generally or one or more of the pelvic organs, and that, in order to cure the symptom we must cure the cause. Thus our first steps should be directed towards discovering that cause. The physician who blindly treats dysmenorrhœa by a routine course of sedatives, without thorough investigation of the case, is doing justice to neither his patient nor himself. The routine use of this class of drugs is to be most strongly deprecated as they in time do positive harm in making patients their slaves and undermining their nervous system. Of course if one is called in to see a patient who is in the midst of a most acute attack of pain, an hypodermic of morphine is often absolutely necessary, although much may be gained by the application of heat to the hypogastrium and a dose of 10 grs. of antipyrine or phenacetine repeated twice if necessary with an interval of one hour. Alcohol acts like magic in relieving the majority of cases and it is largely used (far more largely than one would at first think) by women, but it should be utterly prohibited as the habit is very apt to grow on one and it really increases any local trouble which may already exist.

A great deal may be done to prevent the occurrence of dysmenorrhœa by care of the growing girl. I think that it is the experience of the older physicians, that dysmenorrhœa is growing more and more common, and this is to a great part due to the carelessness and ignorance of parents who do not know the extent of the injury that they are doing to their daughters by urging them to excel at their studies. As they approach puberty, girls should have freedom from all kinds of excessive work. They should be encouraged to go into the open

[1] Read before the Montreal Medico-Chirurgical Society, Dec. 18, 1896.

air and take as much exercise as is possible without actual fatigue. Instead of their brains being used, it should be their limbs, except just before and during menstruation, when they should be kept quiet, at all events until regular menstruation has set in. They should keep regular hours and their diet should be nourishing but simple. The girl ought not to be kept in ignorance as to what she should expect at puberty through any false modesty on the part of the mother. As a consequence of this want of knowledge, I know of at least one case where a young girl was just beginning to menstruate for the first time but, only noticing a stain of blood on her underclothing, went in bathing. She was attacked by pelvic peritonitis and has ever since suffered from dysmenorrhœa.

Once menstruation has become fairly established, we may relax our rules to a great extent, but there are few women who ought not to take especial care of themselves one week out of every four of their sexual life.

After this trouble has been once set up, what are we to do for its cure or relief?

In the first place, we must take the patient's personal equation into consideration if we hope to do her much good. Is she inclined to be neurotic or too introspective? If the latter, prescribe some regular occupation for her, but it must be one which will keep both mind and body occupied. In addition, you may prescribe a placebo or some simple tonic for her. If she is neurotic, advise some open air exercise, change of scene and the administration of nerve tonics. An excellent combination for these cases is one containing arsenic, valerianate of zinc and nux vomica, either in solution or pill.

Where the patient is a young girl just beginning to menstruate, you will often find that she is chlorotic, in which case this disease will require to be dealt with, and it is wonderful what an improvement in the pelvic condition can be effected in these cases by the judicious use of fresh air, wholesome diet and regular exercise and rest, combined with iron tonics. One of the best of these latter is Blaud's Pill with arsenic, although the compound syrup of the phosphates (Easton's), is also very useful. The condition of the bowels should be watched, the constipating effect of the iron being overcome by nux vomica, cascara, etc.

Under no circumstances should a local pelvic examination be made in these cases until you have conscientiously employed general remedies, and the girl should be encouraged to make as light of her trouble as possible, as an injudicious word of discouragement may convert her into one of those miserable neurotics, who wander from

doctor to doctor without relief and finally fall into the hands of charlatans and quacks.

If the above methods fail after thorough trial, it will be necessary to make a thorough pelvic examination per rectum. The condition usually found will be one of mal-development of the uterus, and this must be corrected by attention to general nutrition and local measures. One of the best of the latter is the application of galvanic electricity, which may be applied by placing one electrode over the sacrum and the other over the pubes, or, if this fails after thorough trial, the sacral electrode may be replaced by one in the vagina.

Pelvic massage has been highly recommended by some for this variety of dysmenorrhœa (which one might call "developmental"), but I think that its utility is doubtful. For one thing, it is extremely difficult to employ it effectively on account of the abdominal walls of a nullipara being usually so tense, and, secondly, the necessary manipulations are apt to direct the patient's attention to her genitals.

The bicycle is a most useful assistant in this class of cases, but its use must be very carefully regulated. It acts, of course, by stimulating the general and pelvic circulation and also as an encouragement to take exercise in the open air.

In congestive or inflammatory dysmenorrhœa, the indications are, first, to discover the cause, and, secondly, to remove it. For example, a small sub-mucous fibroid of the uterus may partially block up the canal and cause congestion of the endometrium, which swells up and causes the pain at the menstrual periods. Here the indication is to remove the diseased endometrium, and this may best be done by thorough curettage. The application of the positive electrode of a galvanic battery is also an efficacious remedy, although, naturally, the treatment will require to be more prolonged than where the curette is used. A slower, but sometimes a surer, way of removing the diseased tissue is to use gradual dilatation and the application of iodine, iodized phenol or pure carbolic acid to the interior of the uterus. If the uterus is out of position, you must endeavour to replace it and maintain it in its normal situation. If this cannot be done on account of adhesions, these may be softened by using the hot douche, by glycerine tampons and the application of iodine to the vaginal fornices. These methods will relieve the congestion as well as soften the adhesions. In the majority of these cases the uterus will be found to be prolapsed, in which event the wearing of a properly fitting ring pessary will give great relief by supporting the uterus and ovaries and so relieving the congestion, and it is under these circumstances that the much abused pessary will most strongly

prove its right to a place in gynæcological treatment. You should deplete the uterus and whole pelvis and try to restore the vessels to their normal condition. The flow of blood through the uterus may be lessened by giving ergot, hydrastis, viscum album, quinine and the like, all of which have a marked effect in causing contraction of the muscular fibres of the uterus.

Promote the activity of the bowels by salines for a few days and then keep them regular by cascara, liquorice powder, etc.

Moderate exercise such as walking or bicycling will be found of great service, this being so much better than carriage exercise on account of the effect the movements of the limbs have upon the pelvic blood supply. Some of the movements recommended by Thure-Brandt are also very useful in the same manner. The best are rotation of the limbs, their flexion and extension against resistance and rising and falling on tip-toes. All of these procedures determine the blood from the pelvis where more or less stasis has occurred, and cause it to flow more freely through the limbs and pelvis.

Locally, where the uterus itself is the seat of the congestion, much may be done by the extraction of blood from the cervix by either leeches or scarification. Boroglyceride tampons, galvanism, the application of iodine to the cervix and fornices, the judicious use of the sitz-baths (especially where the flow is slight) and the hot douche are also distinctly serviceable where you desire to reduce pelvic congestion. In an acute case, the application of hot stupes or else an ice-bag over the pubes will give great relief, as does also the application of a blister over each ovarian region.

A most useful form of treatment is gradual dilatation of the cervix by Hanks' dilators, etc., as was previously mentioned in connection with those cases complicated by the presence of a submucous fibroid.

Membranous dysmenorrhœa is probably a modification of the congestive or inflammatory form. Fortunately for suffering woman this is one of the rarest varieties of painful menstruation. It is also the most difficult to cure. Numerous methods of treatment have been instituted and highly recommended for this trouble, but that method which will cure all cases has still to be discovered.

One of the most highly praised methods is thorough cauterization of the interior of the uterus with the positive electrode of a galvanic battery, and this will doubtless cure many cases, especially if seen early.

Curretting, with or without the application of strong caustics, has many adherents, but, in the majority of cases, the membranes reorganize before many months elapse. Reamy, of Chicago, reports

the cure of three patients by the following decidedly drastic method of treatment. Five days prior to one menstrual period, he thoroughly curretted the uterus, using first a sharp curette and then an inflexible one of dull wire. The cavity is then thoroughly cleansed by swabs of cotton moistened in a 1 per cent. solution of carbolic acid. This latter solution is then replaced by one of 2½ per cent. of the same acid, at least twenty applications of this stronger solution being made at the one sitting. A loosely rolled wad of iodoform gauze is placed in the vagina and the patient is returned to her bed, having an ice-bag over the hypogastrium. The menstruation now due is generally missed. The patient receives a similar treatment, except that the sharp curette is omitted, fourteen days after the first operation and two other curettings with the dull curette, followed by the application of the acid, etc., at intervals of from fourteen to seventeen days, the amount of tissue which could be removed being less and less each time. In the first case, the menstruation was normal after the third month from beginning treatment. The patient became pregnant soon after and was quite well after delivery. The second patient had one relapse, which was cured by one more course of treatment, while the third required but the one course.

Duke treats membranous dysmenorrhœa by scarifying the cervix three or four times weekly between the periods. Just before menstruation begins, he thoroughly curettes the uterus and introduces a spiral-wire stem pessary into its cavity. This is worn for three or four months, the patient taking daily hot douches, even during the flow. This, however, is rather risky treatment, as one cannot always watch the patient as closely as one would like to when she is wearing a stem pessary. His objects evidently are to deplete the uterus, remove the diseased mucous membrane and allow of free drainage of the uterine cavity, so that the tissue may not form again.

The *spasmodic* form of dysmenorrhœa depends in many cases upon constitutional conditions, such as strong neurotic tendencies, and can often be cured by drugs, one of the first indications being to restore tonicity to the nervous system by arsenic, nux vomica, zinc, etc. Anti-spasmodics are indicated just before the period approaches, and, as there is often more or less anæmia present, iron and chlorate of potash may be added with benefit. A favourite prescription of my former teacher, Dr. J. Halliday Croom, is for a mixture containing actæa racemosa, perchloride of iron, chlorate of potash and serpentaria, and I can bear witness to its undoubted efficacy in many cases. Olliver gives a combination of ammonium, potassium and sodium bromide nightly for one week midway between two periods and then

5 grs. of antipyrine every hour for six doses, if necessary, as soon as the pains are felt. He also recommends hot hip-baths when the discharge is scanty.

Cannabis Indica is a favourite drug to give and is especially useful where menorrhagœa is present. Nitro-glycerine, nitrite of amyl and viburnum are also highly recommended. Depletion of the pelvis is indicated and may be carried out just as with the other varieties.

Anti-spasmodics may be applied locally to the cervix with advantage. This was practised in olden times, when the patients were instructed to squat down over a basin of burning herbs, at the same time as they dilated the vagina by their fingers. Sir James Simpson used to employ the vapour of carbonic acid gas, either alone or combined with that of chloroform. The gas was formed by putting equal parts of tartaric acid and bicarbonate of soda into a bottle with a little water. It was then conducted into the vagina through a pipe.

In the majority of the cases of spasmodic dysmenorrhœa, there is anteflexion, with consequent endometritis and a certain amount of stenosis of the uterine canal, and these must be corrected before much relief can be obtained. This may be effected by dilatation of the cervix, either forcibly, by Goodell's or Sim's instrument, or else gradually, or, as some recommend, by dividing the cervix.

Dilatation is one of the oldest methods of treating stenosis of the cervix, Hippocrates stating "that where the orifice is very much contracted, it must be opened up with bougies or leaden instruments." It is also one of the best methods in the class of cases which we are considering. Many prefer forcible dilatation under an anæsthetic, thoroughly curetting the uterine cavity and inserting an intra-uterine stem pessary at the same time. This is undoubtedly good, but it is not always advisable to alarm the patient with the idea of an operation, when a similar or even better result may be obtained without an anæsthetic and with but little pain; I refer to gradual dilatation with graduated bougies, as has been described elsewhere. This method is practically painless, if properly carried out, is continuous and very effectual, several cases having been cured by it in my own practice.

The use of tents dates back at least two centuries, mention being made of them in a book written in 1676 by Van Roonhuyse. He used tents made of "gentian radix, medulla sambucii, or even by a prepared dry sponge, having been first moistened in melted white wax and squeezed in a press to make of it convenient pessaries, according to the exigencies of the case, by which means the neck of

the womb can be disclosed and widened and made to have its due purgations." He goes on to say that the patient may be made to wear an instrument (evidently a stem pessary) made of silver, ivory or horn, and prefers this treatment to divulsion of the cervix by the knife.

Most gynæcologists are opposed to the use of tents as they are apt to produce sepsis and pieces may become broken off and left inside of the cavity, but Poulet and Fraipont strongly recommend their use on account of their softening effect upon the tissues. They employ laminaria tents which have been preserved in a saturated solution of iodoform in ether, as they are then antiseptic and pliable. This is followed, where necessary by forcible dilatation, which looks as if the advocates of the tent had not very much faith in it themselves.

Electrolysis is employed to overcome the stenosis by some, a bulbous pointed electrode being used. High currents are to be avoided, one of from eight to ten milliamperes being all that is necessary.

Many writers say that it is impossible to cure spasmodic dysmenorrhœa by dilatation, on account of the uterine canal again closing up, but Howard Kelly says that it will cure forty per cent. of the cases. He refers to forcible dilatation, and, while I can give no actual statistics, I feel confident that gradual dilatation will produce as good results.

The old method of divulsion of the cervix, as practised by Simpson, is not to be recommended. He held that the chief seat of the trouble lay in fibres around the external os and began to make his incision below the internal os, cutting right through the cervix at its lower extremity. If you are going to use the knife at all (and it is necessary every now and then), your best way will be to make several nicks through the fibres at the internal os, as it is these which contract and cause the spasm. The canal may be kept patent by strips of gauze or a stem pessary. As for Dudley's operation, where a wedge-shaped piece of the cervix is removed, I consider it wrong in principle, as you establish a condition, which, when caused by parturition, frequently calls for operation. I refer to laceration of the cervix. If in the one case, this sets up a chain of symptoms requiring operation, why will it not do so in the other?

ON SO-CALLED IDIOPATHIC DILATATION OF THE LARGE INTESTINE.[1]

BY

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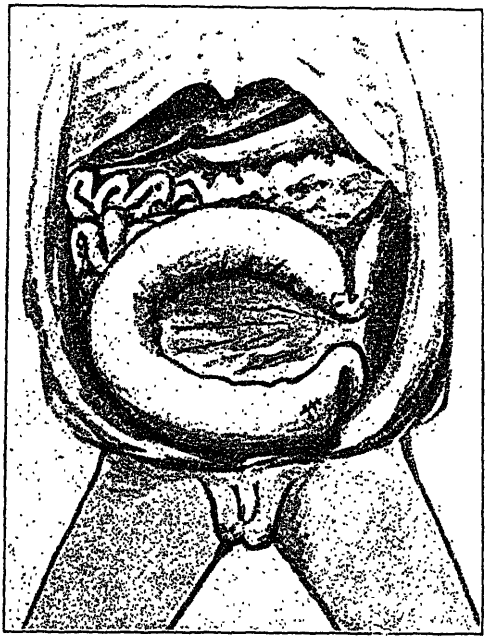
Medical literature of the past three years contains a few remarkable cases of unexplained dilatation of the colon and sigmoid flexure, which are of unusual interest to the pathologist and clinician. The condition has, without a single exception, proved fatal, baffling the skill of physician and surgeon alike, and yet the failure of methods



hitherto employed, has stimulated suggestions in regard to treatment which may in future cases be of some benefit. A similar instance of the kind, which occurred a few months ago in the Royal Victoria Hospital, had, in addition, interesting features worthy of record in connection with the others of its kind so rarely seen by the clinician.

[1] Read before the Montreal Medico-Chirurgical Society, November 20th, 1896.

It is interesting to note the marked similarity in the clinical histories of almost all the recorded cases. In nearly every instance there has been observed a more or less persistent constipation or other "trouble with the bowels" commencing within the first few days of life—necessitating the use of purgatives or enemata, which treatment is attended by varying success. Following upon this, comes either very early or within a few years, a noticeable abdominal distension—sometimes with frequent passage of flatus and progressively increasing constipation, resisting more and more the measures employed to evacuate the large intestines. Pain accompanies most of these cases and occasionally there are vomiting and intermittent liquid stools.

Examination of the patient reveals a distended tympanitic abdomen, with occasional localised lateral dullness from impacted fæces, and vermicular movements may often be seen. As a rule there is some pain on deep pressure. In every case, moreover, a rectal examination fails to reveal evidence of stricture, organic or otherwise, and there is never any appreciable obstruction to the insertion of catheters or syringes. It is true that in a few instances the clinician has suspected a spasm of the rectum and anus, but the observations made were never positive on this point. There is often progressive emaciation, though sometimes death is very sudden and unexpected, and the autopsy reveals no satisfactory reason therefor. The suggestion made by Peacock may, in a general way, be taken as satisfactory. "Death resulted from a disturbance of the vital powers in consequence of the mechanical injury of the intestine resulting from its extraordinary distension." The condition, moreover, is rarely associated with the usual symptoms of rachitis.

While as a rule the malady is fatal at an early age, it is nevertheless not incompatible with moderate health for many years, and cases which appear to have been congenital, have persisted for 28 years, as described by Peacock. Idiopathic dilatation of the colon may be present at birth, or appear later on in life, and in many of these latter cases the condition is regarded, though it would seem wrongly so, as congenital in nature. If a condition of dilated colon develop in adult life and the autopsy reveal no apparent cause, it is scarcely justifiable on this basis alone to regard the state as one undoubtedly congenital. Thus for example, in a case reported by Strahan, there was no disturbance of the bowels until adult life, and then within a few years a fatal issue resulted from colitis with dilatation, and no organic lesion was found to explain the origin of the trouble. The patient, however, was a lunatic, and, as was to be expected, disregarded entirely the necessary precautions to improve his intestinal condition, and hence constipation and

irregularities were present which could readily induce the existing abnormalities. Indeed, Van der Kolk, as noted by Hurd, found a slight dilatation of the colon so common in the insane, as to associate the conditions very intimately, and the cause is doubtless that above given. The mere fact that no organic obstruction was found is not sufficient in itself to make one regard the condition as congenital, particularly when no symptoms whatever develop until the patient attains adult life.

It is of course of prime importance to distinguish between purely congenital cases and those which have been acquired at a later date, for dilatation of the colon as a result of (or at all events following upon) koprostasis is by no means uncommon. Many instances are recorded of dilatation of the colon coming on late in life, but these are nearly all associated with some condition interfering directly with the evacuation of the bowels, and are obviously due to chronic constipation with or without constriction of the intestinal lumen. Such for example is the case recorded by Little and Callaway, and that above mentioned by Strahan, while in the same connection may be cited the interesting condition described by Mr. Gay, where as a result of atony of the bowel following typhoid fever, chronic constipation supervened and with it marked dilatation of the colon.

So far as the congenital cases are concerned, it is not an unfrequent circumstance that antenatal stenosis or imperforate condition of the anus will lead to dilatation of the large bowel, either diffusely or in the form of diverticula. Cases of this kind may show equally well a series of symptoms and morbid anatomy resembling those seen in the apparently idiopathic congenital dilatations. Many instances are recorded, such for example, as those by Vulpian, Lacave, Dupleix and others ; but all these are quite evidently not idiopathic in the true sense of that word. (We understand by the term "idiopathic" in reality a confession of our ignorance, or at all events our inability to find the true organic lesion associated with the morbid anatomical condition present. For if "nothing is that errs from law," there must be some etiological factor to explain every case of abnormal dilatation of the colon).

In endeavouring to differentiate between cases that are acquired and those which are purely congenital in nature, no small difficulty arises, and while some would apply the term congenital to those instances only where the intestine has never from birth acted normally, the definition, it would seem, is too restricting. Several cases for example exist in the literature where within the first few months of life this condition has arisen and the autopsy has

revealed no satisfactory explanation. Indeed, all gradations exist between the congenital idiopathic dilatation and that developing after several years.

Dr. Rolleston, in his interesting paper on this subject (to which I am indebted for several references), differentiates between acquired and congenital cases, admitting, however, the impossibility of absolute divisions. He includes under the latter group only those where the bowels have never acted naturally and distension appeared soon after birth, while all other cases are classed as acquired. In the statistical table, however, which is included in his article, this classification is scarcely adhered to, inasmuch as the case of Little and Callaway above mentioned, is regarded as congenital in origin, although the symptoms developed only late in adult life, and if such a case be regarded as antenatal, it would seem unjustifiable to exclude at least six or seven others where the condition has arisen even in earlier childhood, though perhaps not co-incident with birth. There can be no question that in the majority of these cases some mechanical hindrance to the evacuation of the large bowel is the main immediate etiological factor, and though these may frequently be antenatal, it could scarcely be regarded as associated with changes which have arisen in the earliest days of life in the embryo.

The cases of idiopathic dilatation of the colon or sigmoid which occur, might perhaps be classified as follows :

1. Those in which the symptoms occur at birth, either as constipation alone, or combined with distension of the abdomen (Rolleston's congenital cases). Of these there are very few on record, apparently only four cases about which there can be no doubt, viz. : those of Generisch, Osler, Hirschsprung and Peacock ; my own case is also to be herein included.

2. Those in which the symptoms develop shortly after birth (*i.e.*, within a few months), or where it is stated that " from earliest infancy" there was one or other sign present.

These cases are more numerous, and though they cannot be definitely called congenital, they so closely resemble them as to be practically identical, and are more than probably of congenital origin. These are recorded by Walker and Griffiths, Eisenhart, Hughes, Formad, Osler, Bristowe, Gee (2 cases) and Rolleston.

3. Those developing after several years and associated with no pathological lesion. Such is Gee's, subjoined, in which the symptoms appear to have commenced only after 4 years of age.

4. Those cases which occur only in adult life, which can likewise be explained only as idiopathic (*i.e.*, with no organic lesion to suggest a clue as to the cause). Of these, there are many cases too numerous to mention, *e.g.*, those of Herringham and Bruce Clarke, Little and Callaway, Hadden, Lewitt and many others.

The following table will explain these various cases and include a few details concerning each :

	Date.	Sex	Age.	Date of Onset.	Earliest Symptoms	Early constip'n.	Operation.	Death.	Part affected
Undoubted Congenital Cases.									
Peacock	1872	M.	28	At birth	Constipation	Yes	No	Sudden	Whole large bowel.
Hirschsprung	1892		2 months	"	" and Dist'n.	"	"	Yes	Chiefly transverse colon—rest less so.
Osler	1893		7 "	"	" "	"	"	In statu quo	
Generisch	1893		1½ years	"	" "	"	"	Yes	Colon.
Author's	1896	M.	3½ "	"	Constipation	"	Two	"	Sigmoid chiefly.
Probable Congenital Cases.									
Walker and Griffiths	1893	M.	11 years	A few weeks after birth	Distension	No	No	Yes	Colon and sigmoid.
Hughes	1887	M.	3 "	Early infancy	Constipation	Yes	"	"	Sigmoid chiefly.
Formad	1892	M.	23 "	Before 1½ years	Irregular bowels—slight abdominal enlargement	Irregular	Exploratory only	Sudden	Colon mainly.
Gee	1884	M.	4½ "	3 months	Constipation	Yes	No	Yes	Sigmoid.
Gee	1884	M.	4 "	1 month	Distension	"	"	"	Sigmoid and colon.
Rolleston and Haward	1896	M.	12 "	2 months	"	"	"	"	Colon and sigmoid.
Osler	1893	M.	10 "	"Early in life"	" and cons'p'n	"	Yes	*Recovery for 2 years	Sigmoid mainly.
Bristowe	1885	F.	8 "	"Long time constipated"	Constipation	"	No	Yes	Sigmoid and colon.
Hadden	1893	M.	11 weeks				Yes	Yes	Small and large intes.
Dubious Cases.									
Gee	1884	M.	5½ years	4½ years	Distension	Yes	No	Yes	Sigmoid and colon.
Lewitt	1867	M.	21 "	12 (?) years	Constipation	At 12 yrs.	"	"	Colon and sigmoid.
Eisenhart	1894	F.	35 "	Always constip'd.	"	"	"	"	Sigmoid.
Strahan	1893	M.	32 "	17 years	Sudden pain and distension	No	"	"	Sigmoid and colon.
Little and Callaway	1850	M.	34 "	(?)	Distension and constipation marked at 33 years	No	Puncture	Yes	Sigmoid and colon.

* Operated on two years later for obstruction and died.

As will be observed from the above table, the cases which have certainly arisen coincident with birth or before it are but five in number, while at least eight are recorded where the onset of the symptoms appeared so soon after birth that it is difficult to ascribe to these an origin different from the five undoubted congenital cases. In several instances the conditions are so similar in all respects that one is scarcely justified in regarding them in the light of non-congenital (*i. e.* acquired) cases in contradistinction to the five instances mentioned.

So far as constipation alone is concerned, it is difficult to believe that this in itself is the cause of the malady, but it is much more probable that the gas developed in the intestine would equally well induce a kinking and functional closure of the intestines, particularly when with a lax meso-colon the bowel may become twisted. The cause is obviously purely mechanical, and while numerous theories have been advanced in practice, none have proved entirely satisfactory as applying to every case on record.

Among the most commonly cited of these are the following:

1. An unduly lax meso-colon, by means of which there arise kinks in the bowel, consequent constipation, and gradually increasing distension.
2. Immoderate or anomalous development of the tissues of the sigmoid flexure or colon.
3. Undue length of the sigmoid flexure in early infancy, combined with habitual constipation.
4. Defective innervation of the intestinal muscles.
5. Spasm of the rectum.
6. Adhesions.
7. Colitis, and hence weakened intestinal wall.
8. Contracted meso-colon at one place.

Case Report.

Without discussing at the present time the value of these different theories, I will now pass on to describe the case that has come under my notice, after which it will be possible to discuss which of these theories best accord with the conditions therein recognized.

For the notes of the clinical history I am indebted to Dr. H. S. Shaw, senior resident surgeon.

W. E., aged 3½ years, a male Canadian child, was admitted on January 3rd, 1896, to the surgical wards of the Royal Victoria Hospital on account of persistent constipation. The history given by the mother was briefly as follows: At birth the patient seemed to be

well in all respects except that the bowels did not move for five days. A purgative was then administered with good effect. During the first part of his life, the child was constantly constipated, sometimes for as long a period as eleven days. This necessitated the periodical administration of glycerine suppositories and castor oil, which generally produced the desired effect, flatus also passing frequently and freely. For the first year no enlargement of the abdomen was observed; the child suffered no pain and was in all respects a quiet baby. At the end of the first year, however, gradual and progressive enlargement of the abdomen supervened until the child had attained the age of 3½ years. From time to time the abdominal distension lessened, and flatus passed freely, but the bowels were inactive unless purgatives or injections were persisted in Pain was observed merely a few months before admission to the hospital, and was then associated only with defæcation or injections. The stools presented at first large scyballous masses, and, later, semi-solid evacuations, with two intermitting attacks of diarrhœa.

At the end of December, 1895, the constipation became alarming and no flatus was passed; the distension and pain became more marked than ever before, while purgatives and enemata seemed useless; friction over the abdomen proved equally futile. Two days before admission, however, a large evacuation was obtained, and, with it, a large amount of flatus was passed.

The *personal history* was negative.

The *family history* was of considerable interest in one respect, namely, that one other child of the family had been observed at birth to present an unusually large abdomen, and likewise to require enemata and purgatives from time to time. This child lived but three months, with this condition unaltered, the fatal issue being brought about by an acute broncho-pneumonia. No autopsy had been made.

Condition on admission—The child is pale, fairly well nourished, sleeps well, and suffers but little pain, except at stool. The tongue is clean, the appetite good, and the bowels obstinately constipated.

The abdomen is very greatly distended, having a girth of 68 cm., and is uniformly enlarged. From the ensiform cartilage to the pubes the measurement is 33 cm. Vermicular movements are distinctly seen over the lower half of the abdomen and apparently associated with the distended colon. This part of the bowel presents as an elongated prominence, running obliquely across the abdomen, and varying in position from time to time, and particularly with the vermicular movements. The movements are both spontaneous and easily excited by examination. On palpation there is marked gurgling; the

abdomen is soft, unresistant to the touch, and there is no tenderness. Fluctuation is sometimes elicited in the flanks, but seems to vary greatly and is probably associated with fluid in the intestines. Percussion yields a tympanitic note throughout, except for a modified dulness on each side low down.

The hepatic and splenic dulness are normal. On auscultation there are borborygmi heard, but otherwise no abnormality. The rectum showed no signs of disease nor stricture. The urine is normal. In the chest there is no evidence of disease, beyond that induced by the pressure upon the diaphragm from below. An operation was performed by Dr. Bell on January 16th, and the abdominal cavity opened in the median line, giving exit to a small quantity of serous fluid. The distended bowel was found to consist of sigmoid flexure, whose diameter was 9—10 cm. There was elsewhere no signs of collapse of the bowel or stricture, nor could any obstruction be detected. The rectum was examined again, but found perfectly free, and the abdomen was therefore closed and nothing further done.

The patient recovered well, and the bowels moved by means of enemata and the distension was markedly diminished, though the girth was never less than 55 cm. The condition, however, otherwise remained in *statu quo*, so a second operation was performed on January 30th, and an incision made in the left inguinal region. Bougies were introduced per rectum to empty the large bowel, but failed to move some impacted fæces. Accordingiy large trochars were employed and the bowel punctured in the abdominal cavity, and semi-solid fæces were then pushed out of the dilated sigmoid flexure, and the wound thereafter sutured in the usual manner.

For five days the patient did well, but on the sixth day symptoms of perforative peritonitis developed and death ensued.

The *autopsy* was performed 17 hours after death and the following notes from the report are abstracted concerning the conditions of the abdominal cavity :

The operation wounds are both almost entirely healed On opening the abdominal cavity fetid gas escapes, and about 400 cc. of creamy, greyish fluid having a fæcal odour is removed. It is for the most part free, but in portions is sacculated off by the recent plastic adhesions in the peritoneum. There is a very recent general peritonitis : the omentum for the most part covers the small intestines and is adherent to the lower end of the sigmoid flexure. The visible intestines are covered with a plastic exudate, and the coils are loosely adherent to each other. The lower half of the abdomen is occupied by the enormously distended and hypertrophied sigmoid flexure, which

lies completely across the abdominal cavity with its concave border looking to the left. The upper half of the loop is the wider and longer, measuring 20 cm. x 8 cm., while the lower half is 15 cm. long x 5 cm. in diameter.

There are fairly loose adhesions between the two portions of the loop, as also between the end of the sigmoid flexure and the left abdominal incision. There seems to be a thickening of that part of the meso-colon which approximates the two ends of the loop and causes traction on the lower end, thus creating a partial narrowing of the lower portion. The sigmoid immediately above this narrowed part is dilated with a pouch formation on its inferior surface, evidently caused by gravitation of accumulated fæces.

On the outer and lower surface of the sigmoid are a number of Lembert sutures to which the omentum is adherent. Union is complete, except at one median point where a small perforation, 2 mm. in diameter, indicates the evident origin of the peritonitis.

On opening the sigmoid, solid fæces weighing 850 grms. are removed, the wall is greatly thickened, measuring on an average 5 mm. The mucosa itself is normal without any ulceration. The rectum is of about normal size and thickness, and there is nowhere any evidence of constriction.

The descending colon is also greatly thickened, somewhat dilated and its mucosa congested. Elsewhere the large intestine shows but slight hypertrophy and no ulceration. The total length of the colon from cæcum to sigmoid flexure is 50 cm. The sigmoid itself measures 38 cm. The cæcum, appendix and small intestines appear normal in all respects except for the plastic peritonitis on their serous coats. So far as the other organs and structures are concerned, there was nothing of importance detected.

The interest in the above case then concerns the same features as those already observed in the first four cases found in the above table as being undoubtedly congenital in origin.

The condition is most like that described by Curschmann in his article on topographical clinical studies, where he specially notes that in early life the sigmoid is relatively larger than the rest of the large intestine and that we often find a persistence of the infantile condition. This he describes as often monstrous, and records 15 cases out of 233 examined. From his observations it would seem that the sigmoid is very prone to congenital volvulus, especially when there is a marked approximation of the two ends of the limbs of the loop. The meso-colon thus becomes fan-shaped, the widest portion of the fan

corresponding to the loop within, the narrowest part being where the two ends of the loop are approximated (as in the figure). This portion, according to Curschmann, is nearly always more opaque and thick than other portions, because of chronic inflammation, hence retraction, chronic constipation and dilatation of the intestine above. It is worth noting in this connection that Jacobi in his clinical lectures on pædiatrics likewise considers this antenatal condition of the sigmoid flexure as an important factor in the production of infantile habitual constipation.

The *diagnosis* rests upon the combination of symptoms and signs already referred to, the main features being :

1. Constipation in early infancy, sometimes with intermittent diarrhœa.

2. Early distension of the abdomen with exacerbations and remissions according to the success in evacuating the flatus and intestinal contents.

3. Evidence of a dilated colon from physical examination.

4. Absence of any constriction at the anus or in the rectum. Sometimes emaciation.

5. Pain and tenderness, not usually marked, except when copious enemata are employed.

Rolleston has pointed out that the condition is much more common in males, a fact confirmed by the additional cases from the literature which have been included in the above table.

The *prognosis*, as indicated above, is most grave, not a single case being permanently cured. The case under Dr. Osler, which was operated upon and an artificial anus created in the dilated sigmoid, remained well for nearly two years, but it appears from references made to this by Dr. Rotch, that the symptoms again returned and the patient shortly afterwards died, a second operation being performed. Sometimes death is very sudden and the autopsy fails to explain the reason. As a rule, however, gradually increasing constipation and distension prove so serious that nutrition fails, and either a fatal peritonitis ensues, or the patient dies from what was referred to above as " disturbed vitality from the mechanical injury."

The Treatment in all the cases has proved most unsatisfactory and the usual means of purgation are believed by most authorities to only aggravate the existing conditions. In the present instance it is certain that the enemata increased the child's sufferings, rendered it much more nervous and did little to give more than very temporary relief. Purgatives were equally useless. Massage was employed by the child's father but was likewise found futile; in fact Rolleston em-

phasizes the danger of such a method and the liability of rupture of the bowel where ulcers have existed.

All operative measures have hitherto been unsuccessful and the various incisions and punctures produced relief for but a short time and death resulted either from shock or peritonitis. But the rationale of an operation performed upon the enlarged intestine itself, may well be questioned inasmuch as the paralysed condition of the muscle wall would render the evacuation of the bowels still difficult, and it is evidently for this reason that Rolleston has made what seems an admirable suggestion viz :—To open the lower end of the small bowel where there will be no obstruction to the out-flow of fæces and by this means to relieve the distention and accompanying symptoms.

Where any kink has formed or where there is contraction of the meso-colon one might expect by relieving these conditions to obtain a good result only in those cases where the dilatation had not become excessive, otherwise it would seem that the diseased condition induced by the stretching and hypertrophy would be irremediable.

Where indeed very much hypertrophy and distention have occurred and the symptoms are in no way relieved, it may truly be said that the large intestine where affected is to all intents and purposes a foreign body and it may therefore be reasonably considered whether total extirpation of the affected portion is not commendable and whether an operation for intestinal anastomosis could not easily be performed between the two healthy ends remaining. This could be attempted either between the unaffected colon and the rectum, or if the whole upper colon be involved an anastomosis could be accomplished between the lower end of the ileum and the remaining portion of the healthy rectum. In this way fæces would have a ready escape and the sphincter action of the rectum and anus would remain intact. This could be done either by means of an end to end anastomosis, or, as my friend Dr. A. E. Garrow has suggested, better still by a lateral anastomosis which would thus obviate the liability to intussusception and prolapse.

My best thanks are due to Prof. Adami for the appended drawing, and to Dr. Patrick for the accompanying photograph.

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ON THE DIFFERENCE BETWEEN SERUM AND BLOOD SOLUTIONS, THE CONDITION OF THE TEST CULTURE AND THE SIGNIFICANCE OF BACTERIUM COLI INFECTION IN RELATION TO TYPHOID DIAGNOSIS.

By

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We wish to report some details concerning technique which we find necessary in order to insure successful results in Serum Diagnosis by the dried blood method, with which we have now tested over 500 bloods.

We mention the facts only in so far as they have a direct practical bearing on diagnostic work.

Our results already published were as follows :

1. Out of 129 cases, which we had good reason to regard as true typhoid, if we exclude a few cases where the first samples were taken at a very early stage and no re-examinations could be obtained, and also a few cases first examined late in convalescence, we have met with but one apparently genuine case of severe typhoid, which, when re-examined under satisfactory conditions, did not give a decisive reaction by the dry blood method and this one also gave no reaction by the serum method. Occasionally the first appearance of the reaction is delayed beyond the end of the first week.

2. We have never met with a well marked reaction under conditions where there were not strong reasons for believing it to be due to typhoid.

3. In a few cases where the result of the blood examination remained in doubt the mild type of the fever made an accurate clinical diagnosis impossible. In such cases, we believe bacteriological examination to be the most exact method of procedure.

4. We have not yet met with a case of typhoid where a decisive reaction was obtainable by the serum method and not by the dried blood method.

5. We found that pseudo-reactions may be avoided by attention to the character of the culture media. We have found that by using an attenuated or quiescent stock culture grown at room tempera-

ture, and transplanted at intervals of about one month, a suitable degree of sensitiveness was obtained. From such stock cultures a 24 hour bouillon at 37°C., with a moderately diluted blood solution, or serum would give prompt and decisive reaction within a few minutes in the case of typhoid patients, while concentrated solutions of non-typhoid blood or serum were found to give no reaction, even at the end of 24 or 48 hours, hence estimation of the amount of dilution is not necessary for ordinary diagnostic work. (See circular, Board of Health, Prov. of Quebec, Jan. 7th, 1897.)

The reaction, although specific in degree, is now generally considered to be quantitative, and small amounts of the agglutinative substances are admitted to be present in varying amounts in non-typhoid bloods. The specific substances are, however, a hundredfold more abundant in typhoid blood.

With virulent cultures, the presence of agglutinative substances in non-typhoid bloods may lead to pseudo reactions occurring which can usually be excluded by estimating quantitatively the intensity of the reaction. These pseudo reactions we have found to be characterized by a rapid clumping, without the corresponding loss of motion so characteristic of the true reaction. If watched for some hours these clumps tend to break up.

Quantitative estimation is now generally done by diluting the typhoid serum, but may also be done by modifying the virulence of the culture.

The degree of dilution which can be employed with a given blood solution or serum, while still producing a decided reaction, will depend entirely on the activity (virulence) of the culture employed. This factor has been too much left out of the reckoning in much of the work already published, and it probably affords a natural explanation of the widely different results obtained by competent observers.

Cultures which are made active and virulent by frequent (daily) transplantation and growth at body temperature, are much more sensitive to the agglutinative substance than cultures which have become quiescent and attenuated by infrequent (monthly) transplantation and growth at room temperature.

This is apparently at variance with Pfeiffer's statement (*Cent f. Bakt* XIX and XX.), that highly virulent cultures are less influenced by typhoid and cholera sera than less virulent ones. No details are given by Pfeiffer as to the conditions under which his non-virulent cultures were kept. Pfeiffer's statements refer to serum and not blood solution, he pays little attention to the agglutinative and much to the paralytic phenomena of the reaction, and attaches most

importance to certain disintegrative changes produced by his special method of testing *in vivo*. We have stated elsewhere that highly active cultures, if left for a few hours longer than usual between the times of transplantation, rapidly undergo involution changes, and while in this condition are far more liable to show agglutination than was the case with the same cultures tested a few hours earlier. We have found that for class purposes involution forms in cholera are as abundant and striking in a virulent culture left unchanged for three or four days as would be the case with a non-virulent culture, grown at room temperature, if left without transplanting for as many weeks or months. Bouillon cultures, which have stood long without transplanting, show a tendency to spontaneous partial clumping, which is quite absent during the first 24 hours. For this reason we prefer to use 24 hour bouillons, which are free from sediment, for the test.

The peculiar disintegration obtained by Pfeiffer in typhoid cultures placed directly in the peritoneum of a specially immunized animal, does not tend to occur where the serum is tested in vitro by the hanging-drop method. With blood solution, however, this peculiar phenomenon is frequently witnessed. The clumped bacteria, if watched, for an hour or so, may be seen to break up in granules, which gradually become indistinct and vanish whilst under observation until practically no trace remains of the clumps which shortly before studded the entire field of the microscope. The change is more liable to occur in cultures some days old than in young cultures, and more, perhaps, with attenuated than virulent cultures. It does not occur with all samples of typhoid blood, and is not well marked in very dilute blood solutions.

This greater tendency to bacteriolytic action in blood solutions often makes the reactions obtained with them look at first sight less striking and intense than that obtained with serum where the clumps usually remain intact Apparently, however, the difference indicates that a large amount of the bactericidal substances originally found in the plasma do not permanently remain as constituents of the serum. This not only has an obvious bearing on serum therapeutics, but explains how the action of serum may be modified by mechanical mixture with the fibrin elements of the blood.

Quantitative estimation of the degree of dilution in the case of blood solutions is possible by hæmometry as well as by making direct measurement. With samples of freshly dried blood, sufficiently accurate observations can be made to express the degree of dilution in multiples of 10—($\frac{1}{10}$ $\frac{1}{20}$ $\frac{1}{50}$, etc.)

We have employed a cell having a depth of 0·85 mm. and giving

with a Fleischl's hæmometer a tint reading 100 p.c., with $\frac{1}{10}$ dilution of normal blood. In anæmic cases the dilution will vary with the degree of anæmia, which can readily be determined. Blood dried for some time gradually yields less and less hæmoglobin, owing to the change of this substance into the hæmatin compounds. This change goes on rapidly in air where gas is being burned and slowly in pure air. In any case, the error is in the direction of a less dilution than that shown by the hæmometer. As a matter of experience, we find exact estimation of the dilution, while interesting for scientific purposes is not necessary for the practical purposes of the test if attenuated cultures are used, and the establishment of fixed arbitrary time limits, as recommended by Grünbaum, seem only of use in avoiding pseudo results, due to the use of highly virulent cultures.

Grünbaum, being enthusiastic for exact estimation of dilution in all cases, claims (*Lancet*, Sept. 19, 1896), that though most sera will in time produce clumping, that typhoid serum can still be specifically identified by its being the only serum, which, with free dilution in a ratio of 16 to 1, will produce a complete clumping and arrest motion in 30 min. A fixed dilution ratio, with an arbitrary time limit, appears to us quite uncalled for as a routine diagnostic practice, and has no standard value unless a culture of fixed virulence is used.

Since writing the above we find that Grünbaum has now stated on theoretical grounds "that possibly the use of attenuated cultures would enable us to dispense with the dilution" (*Lancet*, Dec. 19, 1896.)

We had anticipated *a priori* that the solution obtained from the dried blood would be less sensitive as a reagent than the fresh liquid serum. We find the blood solution on the contrary to be apparently more potent than the serum, in causing the agglutination though not as to the paralytic effect, and perhaps to give the reaction at a somewhat earlier stage of the disease. This view agrees with the researches of Widal, who found that the agglutinating substance was contained in the globulins and fibrinogen, and that the serum albumin and corpuscles contained none. Thus the blood serum contains only a part of the agglutinative substance. Dr. A. H. Appel of the U. S. Army has also recently made studies and observations showing the greater agglutinative properties of solutions of the whole blood as compared with that of the serum. A decided agglutination can be obtained from weak solutions of the entire blood when none is produced by stronger solutions of the serum. While Widal places the limits of dilution with serum below 1 to 200, R. Stern who employed solutions

of the entire blood in bouillon reports reactions with dilutions of 1 to 2000.[1]

Owing to the greater sensitiveness of blood solutions as compared with typhoid serum, there is a greater tendency to pseudo-reactions if active virulent cultures are used, than is the case in working with serum. This difficulty is, however, completely obviated by employing attenuated cultures for testing. Cultures which exhibit darting movements in hanging drops are too sensitive for the dry blood test. Those cultures having a quiet but rapid gliding motion in hanging drops have given us uniformly good results. If the movements of the culture become sluggish, one or two daily transplantations at body temperature will make it more active and sensitive. One or two cc., of the living bouillon cultures injected into the peritoneum of a guinea pig produce immunity and a marked blood reaction without injuriously affecting its health.

Clean preparations containing very little fibrin can readily be obtained if care is taken not to stir up the film of blood clot and to use plenty of water for dissolving.

We find that the blood dries in a few minutes sufficiently to be enclosed in an ordinary letter.

Our routine method of testing is to place a large drop of water from a capillary pipette, on the film of dried blood and let it stand for a minute or two. A loop full of the solution so obtained is taken *from the top of the drop* and mixed with a loop full of the bouillon culture, or may, if desired, be diluted further.

For the re-examination of cases giving a negative reaction, a somewhat more virulent culture can be used or a quantitative estimation also made by the serum method. We have not succeeded however in obtaining a decided reaction by the serum when the result with the dried blood was inconclusive and now attach equal importance to a negative result by the dried blood test.

Our published observations (*N. Y. Med. Journal*, Oct. 31, 1896, *British Medical Journal*, Dec. 5, 1896), on the dry blood method

[1] We observe that Widal, who was the first to show that dried blood could produce the reactions, and already, in June, 1896, obtained reactions from serum after four months drying, has recently (*Semaine Med.* Jan. 13, 1897), reported that he has been able to obtain successful results by the dried blood method in the earliest stages of the disease and that the blood after six months drying retained the power of producing the reaction. The dried blood also gave him positive reactions late in convalescence in cases where agglutination had become very feeble. We are glad to find our published results on these points agree with those of so high an authority. We have found that with those who have had difficulties with the dried method, these have been due to their having acted upon the erroneous idea that the blood solution was much weaker than the serum whereas, even with attenuated cultures, we have got a reaction readily with it in dilutions as high as 1 to 125.

were made with attenuated cultures, and pseudo-reactions were practically never encountered.

Later on, for a few weeks we tried active virulent cultures transplanted daily at 37°c., but these gave us with the dried blood solution numerous and very peculiar pseudo-reactions, i.e., reactions not due to existing typhoid. For instance, the blood of one of us (W. J.) when dissolved gave prompt and abundant agglutination with a virulent culture, while we habitually use it as a suitable negative control blood with attenuated cultures. A solution of the blood of the other (D. D. McT.) gave no reaction. (W. J. had typhoid fever 16 years ago; D. D. McT. has never had it). W. J's blood serum gave no pseudo-reaction with the virulent culture.

On resuming the use of the attenuated cultures described above, the pseudo-reactions disappeared. On re-examining, the blood drops which had given them with the virulent cultures no longer did so when tested with attenuated cultures, although dry blood from genuine cases taken at the same time still reacted typically.

For practical diagnostic work it may be stated that when a blood does not show a decisive reaction in a serious case of fever which has lasted over a week, the fever is almost certainly not typhoid. In very mild febricular cases the result may remain doubtful, unless investigated by an early bacteriological examination of the spleen pulp or stools.

In this connection we may state that we find that Elsner medium containing 25 per cent. gelatine instead of 10 per cent. will remain solid at a temperature about 30 C., and give visible typhoid colonies within 24 hours instead of 48.

Reaction with the Colon Bacillus.

Very little attention has as yet been paid to the clinical significance of serum reactions with colon bacillus. Courmont and Rodet have stated that typhoid blood serum reacts with colon cultures, while Achard and Chantemesse state that it does not. Widal states that he has studied quantitatively the intensity of reaction of typhoid sera with Coli, but has been unable to draw any important diagnostic conclusions from the results.

Various observers have reported colon reaction as being present occasionally in different chronic and acute diseases. This can readily be understood in the light of our present knowledge of terminal infections. One case, which at first strongly resembled typhoid but gave no serum reaction, has been recorded by Vedel who found a marked colon reaction and looked upon it as only colon infection, this opinion being confirmed by the subsequent events. Personally we have found

reactions with the colon bacillus to be rare with typhoid blood or serum (even in cases when perforative peritonitis had occurred) provided the typhoid reaction was well marked. On the other hand we have been struck by the large proportion of positive colon reactions obtained in cases having step-ladder temperature and other symptoms strongly resembling typhoid but without the typhoid serum reaction. We think that under these circumstances the colon reaction may have a real diagnostic importance, and indicate that the colon infection whether occurring alone or as a secondary complication of typhoid may be playing an important part in the production of the patient's condition. The whole question of associated colon infection deserves further study.

The reaction can be tested with ease by placing a duplicate drop of blood solution or serum on the cover slip with the drop to be tested by typhoid culture and mixing it with a drop of colon bacillus culture, Pseudo-reactions can be avoided by using stock cultures kept at room temperature, and transplanted infrequently. Test cultures grown in bouillon from the stock at room temperature for 24 hours are free from scum or sediment, and give reliable results. The conflicting results just mentioned may have been due to pseudo-reactions having been taken seriously.

In our case of apparently genuine typhoid without serum reaction (on which, by the way, the test was first applied during the third week) the blood reacted very decidedly to B. Coli, producing typical clumping. The same held good of four other blood samples referred to us for examination as having a clinical course like typhoid, but with negative serum reaction. A complete colon reaction we have found to be exceptional in ordinary typhoid and its presence would indicate a condition of Coli intoxication sufficient to explain the existence of many symptoms giving to typhoid its general clinical features. Whether this excludes typhoid, is another question. W. H. Park has observed a case of fever with no typhoid serum reaction, where he was able to cultivate the typhoid bacillus by spleen puncture. Later on in the case however a relapse occurred and the reaction appeared. The possibility of a latent typhoid infection overshadowed by toxic phenomena, due to concurrent action of the colon bacillus is quite consistent with the generally accepted opinion that many of the symptoms in typhoid and especially the intestinal ones are due to secondary infection by B. Coli. It follows that in severe cases of typhoid type, with no typhoid reaction, the blood should be tested with a culture of B. Coli and a bacteriological study made by examination of the stools or by spleen puncture.

In a few cases we have met with a partial typhoid reaction only, in mild cases clinically febricular, where the fever subsided by lysis in within two weeks of the onset. Here, the possible presence of typhoid appeared to indicate the prudence of keeping the patients in bed and avoiding articles of diet which are contra-indicated in typhoid. Our experience has been that febriculæ, with completely negative blood reaction, get suddenly well after a few days of fever. Here, also spleen puncture, as in Dr. W. H. Park's case, might enable a decided diagnosis to be made earlier than by the blood test alone. Wesbrook recommends spleen puncture under the circumstances. The possibility of infection by organisms resembling the typhoid bacilli must naturally be borne in mind.

Diabetic blood has been found by Block and by W. H. Park, to give a decided agglutination. We have examined two cases of diabetes, which both gave perfectly negative results.

Conclusions.

The difference in reaction observed between typhoid blood solution and blood serum is not simply due to varying intensity, but to an alteration in the relative prominence of the agglutinative, paralytic and disintegrative phenomena which constitute the reaction. The extent of this difference varies with the virulence of the culture, but the difference probably depends also on the presence of part of the specific substances elsewhere than in the blood serum.

Blood solution has a greater capacity than blood serum for producing the disintegrative (bacteriolytic) changes described by Pfeiffer Descriptions of this phenomenon are conspicuously absent from the many recent accounts of the reactions with typhoid serum as observed in hanging drops.

The paralytic effect is relatively more marked with serum than with blood solutions.

Agglutination without stoppage of motion is more readily occasioned in virulent cultures by blood solution than by serum, and does not indicate existing typhoid, nor occur with attenuated cultures.

It appears preferable that for the dry blood method only attenuated cultures should be used. These have the advantage of being more easily kept in readiness than virulent cultures, and are less sensitive to changes of temperature. With the serum method virulent cultures give prompt results. Dried blood serum can be readily obtained and transmitted to the laboratory by pushing aside the edge of a blood drop which has clotted for a few minutes but has not dried.

and collecting the serum beneath it on the tip of an ivory vaccine point, etc. This does not, however, give a quantitative result.

For ordinary diagnostic purposes, the simplicity of the method as originally described does not require modification, provided attenuated cultures are used.

A drop of the solution obtained from a dried typhoid blood drop, mixed with a drop of the culture, will give the reaction promptly, without any special attention to the degree of dilution. In order, however, to obtain the best results, it is well to dilute freely and especially to avoid having a sticky solution of syrup-like consistency.

In cases where the clinical type strongly resembles typhoid and where the serum does not give the typhoid reaction, a decided reaction with cultures of the colon bacillus may explain the symptoms.

Our results with the dried blood test have been very satisfactory, giving uniformly positive results with genuine and well marked typhoid cases, and not reacting with non-typhoid bloods when attenuated cultures were employed.

Although the use of serum undoubtedly enables the results to be recorded and compared with greater scientific precision, we find that dried blood answers just as well for routine diagnostic work.

The alterations in reaction induced by very slight modifications of the manner of testing, help to explain differences in the results reported by experienced and careful observers. With the same blood and culture, the amount of dilution possible largely depends on whether plain bouillon, bouillon culture or water is used for diluting. Opinions also vary as to what should be regarded as constituting a reaction. Personally, we do not think that anything less than complete clumping and total arrest of motion obtainable by the dry as well as the moist test in a young attenuated culture, should be regarded as typical.

A PECULIAR FORM OF FAMILY "TIC CONVULSIF" WITH NOCTURNAL EXACERBATIONS AND EPILEPTIC ATTACKS.[1]

BY

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The two following cases occurred in brothers and are recorded as presenting some unusual features:

Case 1. Jean Degan, aged 23, a French Canadian, was admitted to the Montreal General Hospital for twitching movements in the hands in December, 1896.

Family History. The patient's mother states that she suffered from chorea in childhood. She also gives an indefinite history of insanity previous to the patient's birth. A maternal uncle is affected by "nervousness" manifesting itself by following out any sudden order; if told to "strike" or "to drop" anything he does so at once. A brother (case II) is affected in a somewhat similar way to the patient, and all the members of the family appear dull and somewhat stupid.

The patient's birth was normal, not requiring forceps. He suffered from measles at 12 years of age. Although he attended school for four years he is quite illiterate.

Previous to the onset of the convulsive movements, was affected in a similar way to his uncle, and if given any sudden command was obliged to carry it out. On one occasion he rendered a little girl insensible by a blow on the chest at the suggestion of a mischievous individual.

His present trouble came on six years ago. On returning from the lumber camp his friends noticed that his arms and hands were affected with shaking movements.

In June, 1894, he had a fit, and during the present year there have been three similar seizures. The attacks are preceded by irritability, indistinctness in speech and dulness of hearing. They are marked by sudden rigidity of the body, lasting several minutes, but not accompanied by biting of the tongue, involuntary micturition, or cyanosis. One attack occurred at night in bed. The twitching movements are much diminished for several days following a fit.

[1] Read before the Montreal Medico-Chirurgical Society, January 15th, 1897.

Present Condition. The patient is dull and stupid. He speaks intelligibly but it is impossible to obtain a clear account of his illness from him. He is of good muscular development, 5 ft. 4 in. tall. Every few seconds a single twitching movement of one or other side of the mouth or a similar single contraction of the fingers of one or other hand is observed. The movements are slight in degree and are apparently unaffected by his attention being drawn to them.

In addition to these twitching movements, marked jerking incoordinate clonic movements are induced in attempting to perform any action. In attempting to pick up a piece of paper, he hovers over it for a few seconds, his hand swaying to and fro, and then suddenly pounces down and picks it up with a grasping, clumsy movement. When asked to button his shirt, these movements are often so marked that it is impossible for him to do so. They vary, however, considerably in intensity from day to day. He can convey a cup of water to his lips, occasionally, however, spilling a little from twitching of the hand. In attempting to touch the fore-fingers together, the twitching becomes so marked that he usually fails to do so.

During sleep both the twitching and the jerking incoördinate movements continue, and are, indeed, much increased. He is also restless when sleeping and throws himself quickly from side to side of the bed. He occasionally utters a guttural, grunting sound when asleep, but has had no evidence of echolalia or coprolalia during his waking hours.

The motor power tested by the dynomometer shows there is slight diminution, 20 to 22, instead of 25 to 30. Sensation is unaffected. The knee jerks are increased. The pupils react well to light and accommodation. The optic disc is normal and there is no nystagmus.

There is some deafness in both ears, the watch being heard at three inches only. Dr. J. J. Gardner reports a double chronic catarrhal otitis media.

There is an eruption of scabies on the skin and evidence of a small quantity of fluid in the left pleura; a small encysted collection of fluid is present in front of the left side of the chest, displacing the apex impulse upward to the third space in the anterior axillary line. A trace of albumen was present in the urine during a stay of some weeks in the hospital, but no casts.

On January 18th, at night, he had several convulsive attacks, described by Dr. Ewan, who witnessed them, as follows: The onset is marked by clonic spasmodic flexion or extension of one or more fingers of one or both hands, followed by flexion or extension of the wrists, jerking forward of the shoulders, and, lastly, a general clonic

spasm of the muscles of the trunk and legs; the back became slightly arched. These attacks shook the bed, and were followed by twitching of the mouth and closing of the eyes. Later on in the night he had three attacks, in which the arms were thrown wildly about and pounded on the bed or table. The eyes remained open and staring and the jaw closed; the extremities were somewhat stiff. There was slight flushing of the face, followed by pallor, but no incontinence of urine or biting of the tongue. The attacks lasted about half an hour and were accompanied by sounds like the yelping of a dog.

Case II.—Alex. Degan, æt. 20, first noticed shaking of the hands five or six years after an attack of inflammation of the lungs. Some months later he began to suffer from fits, the first coming on when being teased and tickled. These fits are chiefly nocturnal and occur with varying frequency at intervals of a week, or, again, of a month.

During the fits he loses consciousness, froths at the mouth, passes urine and once bit his tongue.

Present Condition. Intellectually he is brighter than his brother. but is also somewhat dull. When at rest, there is no motor affection, The twitching movements in the hands and face, noticed in the brother, are here absent when awake, but he presents precisely similar jerky and incöordinate movements on attempting any action, such as buttoning his clothes. During sleep, however, the twitching movements have been observed on a few occasions.

The tongue presents distinct jerky and tremulous movements. Owing to this, the speech is somewhat indistinct, but not syllabic.

The motor power and sensation are normal. The knee jerks are diminished and brought out with difficulty. The special senses are normal. There is no nystagmus and no albumen in the urine.

The diagnosis of tic is based in the first case on the characteristic twitching movements in the face and hands. In the second, these movements are much less pronounced, and were only observed when carefully watched for and at night. The movements present in both cases are of two forms, the one consisting of twitching movements in the face and hands, occuring when at rest at intervals of a few seconds; the second form is brought out by action and marked by jerking and incöordinate movements, which continue as long as the action is kept up. The diagnosis of tic is based on the former, although in the second case these movements were so slight as to be almost passed unnoticed.

The similarity of the second form of movement, jerky and incöordinate, was so marked in both cases as to at once suggest the identical character of the disease.

Another feature of tic observed in the first case was the history given of being obliged to follow out any quick command, and it is interesting to note that a similar condition existed in a maternal uncle.

The exacerbation of the movements during sleep was well marked in both cases, and both the single clonic movements like tic and the incöordinate irregular movements were then seen to best advantage. It is very generally recognized that the movements of tic and other spasmodic affections are lessened or absent during sleep, and although cases are recorded in which they continue, yet this is so unusual as to throw some doubt on the diagnosis.

It is now pretty generally admitted that tic and the allied condition of para-myoclonus are manifestations of the neuropathic subjects, and a few instances are recorded in which several members of a family have been so affected. Unverricht for instance records a family in which a brother and four sisters were affected with para-myoclonus (*Die Myoklonie, Wien* 1891) and Earald also refers to a somewhat similar incidence (*Berl. Klin Woch.* 1883, *M.* 51). In Unverricht's family the children suffered from epileptic attacks in early life. These gradually lessened in frequency and disappeared and later on the spasmodic movements came on.

In both the above cases the epileptic attacks followed the onset of the convulsive movements, and in view of the neurotic family history may be looked upon as expressions of heriditary nervous degeneration.

Although these cases are classified as "Tic," the features of this disease are quite subordinate to the other symptoms. In the first case the clonic movements about the face and hands are sufficiently characteristic, but in the second, they were only observed during sleep and when specially looked for. As Raymond remarks (*Clinique des Maladies du Système Nerveux, Paris*, 1896), numerous cases of tic occur in which the symptoms do not conform to any well defined type. Both the above cases are typical in the irregular movements occurring on movement, in the increase of the clonic movements during sleep and in the occurrence of epileptic seizures.

ENLARGED PROSTATE REMOVED BY SUPRA-PUBIC PROSTATECTOMY.

BY

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H. T. S., aged 61, had his first attack of cystitis, with retention, in September, '95. During this attack and always after it, great difficulty was experienced in introducing a catheter, owing to enlargement of the prostate. A gum elastic, with stylet in it, and well curved to the front, was the only kind of catheter that could be introduced at any time without causing great pain.

A soft rubber could not be passed, and the large silver prostatic catheter also failed to find its way in except upon one occasion.

The difficulty constantly experienced in introducing the catheter, the point of resistance, and the method of overcoming it, conveyed the opinion that the hypertrophied gland was impinging upon the internal urethral opening and pushing it forward.

Examination per rectum discovered the gland to be enlarged in the centre, the lateral lobes also markedly enlarged and pretty equally so.

Catheterisation during attacks of retention was pretty commonly accompanied with bleeding, followed by relief to the urgent symptoms, and the catheter would pass more readily for a few days. The patient would be able to urinate with less difficulty and the urine would become clearer.

From the date of the first attack, the patient required almost constant attendance. As time went on the enlargement of the prostrate increased, attacks of retention became more frequent, and, as the patient seldom succeeded in introducing a catheter, his condition became more critical. Internal and local treatment, rest and carefully regulated diet and daily catheterisation and washing out of the bladder were thoroughly and perseveringly tried, with the hope of lessening the size, or, at least, arresting the further increase of the gland, but proved ineffectual. It became more apparent as time went on that operation would have to be undertaken to relieve the condition. Small particles of gravel were washed out at times, and many unsuccessful attempts were made to pass a searcher and when this was accomplished careful examination failed to detect stone.

In the beginning of November, '96, patient's condition was as follows: General health fairly good, but failing; capacity of bladder and expulsive power still good; quantity of urine and sp. gr. about normal; small quantity of albumin persistently present; prostate very much enlarged, reaching tuber ischii on either side.

An operation having been decided upon, the patient was given preparatory treatment at his home, and on the 17th of Nov. was admitted to the Nicholls Hospital and preparation for operation completed.

On the morning of November 19th the patient was chloroformed by Dr. King, assisted by Dr. Boucher. I opened the bladder in the usual manner, as in suprapubic lithotomy, then divided the mucous membrane in the centre over the prostate and completed the division of the middle lobe with scissors.

The left lobe was first enucleated; this was done with the finger, assisted just at the first by the single blade of a large pair of dressing forceps. Then the right lobe was removed in like manner. As the hæmorrhage was severe, this part of the operation was completed as rapidly as possible and the bleeding controlled by free irrigation with hot water.

The patient was a large man; pelvis large and abdominal wall thick; the gland very adherent on the left side, consequently considerable difficulty was experienced. The bladder was stitched at each side and lower angle of the wound to the deeper tissues of the abdominal wall, a large rubber drainage tube inserted and the remainder of the bladder wall closed, fine kangaroo tendon being used for sutures; the abdominal wall above and below the drainage tube was closed with silkworm gut sutures and the usual dressings applied.

The patient made a rapid and complete recovery. Highest temperature after operation 99⅘°.

The after treatment consisted of washing out the bladder night and morning with boric acid solution; drainage tube removed on the third day, then the washing was done through a gum elastic catheter, introduced through the wound. After a week, a soft rubber catheter was introduced through the urethra and the gum elastic still through the wound and the washing done in that way until the wound became too small to admit the catheter, when it was continued through the soft one in the urethra.

Patient passed urine on 21st day; wound almost closed, not more than a drop of moisture showing at site of opening. On the 23rd day, patient passed all urine naturally; wound completely closed. He went home on the 24th day. Since his return to his home I have repeatedly examined the bladder. He has full power of retaining the urine four or five hours without any inconvenience and passes it in a full stream, with plenty of force.

A catheter introduced immediately after voiding urine enters without out the slightest difficulty. No residual urine, only a few drops escaping.

His general health is now much improved, he looks years younger and is able to attend to business as in years gone by.

The gland weighed 3¼ oz.

THE TREATMENT OF RHEUMATIC AFFECTIONS BY THE TALLERMAN-SHEFFIELD HOT-AIR APPARATUS.

(From the Medical Clinic of the Royal Victoria Hospital.)

BY

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AND

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In December last, Mr. Lewis A. Tallerman, of London, gave two demonstrations of the method of using his hot-air apparatus at the Royal Victoria Hospital before a large number of the practitioners of Montreal. Since then the apparatus has been in constant use in the treatment of various forms of subacute and chronic rheumatic affections. The results on the whole have been very satisfactory. Relief to pain has usually followed, and in nearly all cases there is soon noticed not only an improvement in the local conditions, but also a marked change for the better in general nutrition. In the present preliminary communication an account is given of three cases treated to a conclusion. In all it will be noticed that the results obtained are much more marked and satisfactory than by any other method at present known.

CASE I.

Subacute Rheumatism of Four Months Duration—Multiple Arthritis, Involving Chiefly the Shoulder, Knee and Vertebral Joints—Received Thirteen Hip Baths—Left the Hospital Greatly Relieved—The General Nutrition Much Improved.

CASE I.—A. T. L., æt. 42, was admitted to hospital on December 30th, 1896, complaining of rheumatism, he giving a history as follows: About the middle of September, 1896, he suffered from headache and feverishness. Towards the first of October pain and swelling set in in the left ankle, and still later in the right ankle and in both knees, giving a clinical picture of acute rheumatism. For about a month he suffered acutely, then the pain disappeared to some extent, but the patient was unable to walk, while with the disappearance of the pain in the joints above mentioned, he complained of pain in the spine and pain and stiffness in the shoulder joints so that motion was almost impossible.

Of his personal history it may be said that he has had repeated attacks of acute rheumatism, and in addition has had much mental worry consequent on business difficulties.

On examination after admission, the patient was seen to be a rather emaciated, poorly nourished man, with some anæmia, unable to remain in any position for any length of time, and suffering great pain on movement. He was unable to walk without crutches, and then only with great difficulty. The right shoulder joint was very painful on manipulation, and movement in all directions much limited; the same, but to a lesser extent, being the condition of the left shoulder joint. Motion of the vertebræ caused severe pain, chiefly in the lumbar regions. The knees were semiflexed, and could be with great difficulty extended, but could be fully flexed. There was nothing abnormal about the ankle joints. In addition to the above there was a faint systolic murmur at the apex, and the pulmonary second sound was accentuated. The other viscera were normal.

The patient was treated by the Tallerman-Sheffield Hot-Air Apparatus, and had in all 13 baths, with the result that at the time of discharge the pain and stiffness had been entirely removed from the knees, and the patient could walk without aid, but he still had slight pain in the back, and the right shoulder was a little stiff but not painful; the left was free from both pain and stiffness. The appetite and general health were much improved, notwithstanding that the patient had a severe attack of tonsillitis while in hospital.

CASE II.

Gonorrhœal Arthritis of the Right Knee of Four Weeks Duration—Inability to Walk or Even Stand—After the Third Bath He was Able to Walk About the Ward Without Assistance—After the Twentieth Bath, He was Discharged Free from Pain and with Good Movement in the Joint.

CASE II.—J. L., æt. 22, was admitted to the hospital on December 18th, 1896, complaining of pain and swelling in the right knee, with inability to walk.

The history of the case is briefly as follows: In October, 1896, he contracted gonorrhœa, and up to the middle of November had a profuse urethral discharge. At this time the knee suddenly became much swollen and intensely painful; the conditions lasting about three weeks, when it became less painful, but was still swollen and very stiff. There was no constitutional disturbances other than rapid loss of flesh. Of his personal history nothing was ascertained save that he had used alcohol and tobacco to excess.

On admission the patient was found to be unable to stand without support, and could not walk at all. The knee could be flexed and extended but a short distance, while there was uniform enlargement of the tissues about the joint, but no increase in the synovial fluid. No other joint showed abnormality. The urethral discharge contained gonococci.

The treatment, as in the previous case, was the use of the hot-air bath. After the first application a decided improvement was noticed, while after the third the patient was able to get about the ward without assistance. In all he had 20 applications, and on discharge, January 27th, 1897, there was free movement of the joint and practically no pain in walking. Although there still remained some enlargement and deformity about the joint, his general health had much improved as evidenced by a gain in weight of 14 lbs. during the period of treatment.

CASE III.

Repeated Attacks of Subacute Rheumatism—Anæmia—Emaciation—Arthritis of the Right Knee and Shoulder—Marked Limitation of Movement in Several Joints—Air Treatment Quickly Followed by Relief to Pain—Marked Improvement in General Nutrition.

CASE III.—J. H., æt. 26, was admitted to the hospital November 3rd, 1896, complaining of pain in the back and joints and difficulty in walking.

The onset of the illness is stated to have been six years previous, at which time he suffered severe pain in the right hip joint on movement or pressure. Two months later he had acute inflammation in the right knee and subsequently the ankles and shoulders became involved successively.

After being in bed for nearly a year, the patient began to move about on crutches, and, still later, was able to get about when using a cane, but not otherwise. The condition remained stationary, apparently, for the next four years, then he began to suffer from pain in the back, with progressive weakness and loss of flesh. In December, 1895, he had acute inflammation in the right knee, and this has persisted to some extent up to the present time.

Save that he had a great deal of domestic worry, his personal history was negative.

On examination, he was found to be emaciated and anaemic. There was enlargement of the right knee joint, due to fluid, and the joint was hot and painful, and, in addition, there was some enlarge-

ment of the right shoulder joint. There was limitation of movement in the left hip and in the left knee and right hip pseudo crepitus was easily demonstrated. The patient could not walk without a cane, and, when walking, there was limitation of movement about the pelvis, the trunk much bent forward, the feet widely apart, and he could not stoop to pick an object off the floor.

The examination of the viscera revealed nothing abnormal. This patient is still under treatment, but after the first application an improvement was noticed. He can now walk about without a cane, has become much more erect, and can pick an object off the floor readily. The effusion into the joints has disappeared and there is practically no pain either in the joints of the extremities or in the back. His general health has much improved, there being a much better appetite and a rapid gain in weight.

On Februrary 20, patient left the hospital practically well.

The Tallerman-Sheffield apparatus is made in various forms and sizes suitable for the different joints or limbs to be treated, viz., for the hand, arm, elbow, foot, leg and knees, and there is also one for the pelvic region. The hospital model, the one mostly supplied to institutions, is constructed so as to enable the treatment of the extremities and to obtain a general effect upon the body. Cylindrical in shape the apparatus is sufficiently long to admit a leg to some inches above the knee, the end through which the foot enters is furnished with a curtain which is bound round the leg, the distal end is furnished with a cap working on a pivot which acting together with valve taps at the top and bottom of the cylinder enables the moisture thrown off by the limb to be expelled or evaporated and the air contained in the chamber to be again dried.

The highest temperatures at which patients have been treated according to hospital reports are from 300° to 315° F., but the great value of the Tallerman treatment is the ability to administer these high temperatures over a period of upward of an hour if necessary. Experimentally a patient had been treated for more than two hours at a temperature averaging 260° F., without any other discomfort than lassitude on the following day, the skin was not unfavourably affected or unduly sensitive and it could be rubbed briskly with a towel when released. The therapeutic effects produced are relaxation of the part, copious and free perspiration over the whole of the body, enormously increased circulation and raising of the body temperature of from 1½° to 4° F. This last effect, so contrary to the belief hitherto held that the body temperature could not be raised by a local applica-

tion of heat is remarkable, and it is the belief of Tallerman, will before long be shown to have a very material and beneficial effect in the treatment of diseases other than in the classes of cases which until now have been subjected to it, these are such cases as: rheumatism, acute, sub-acute and chronic, acute and chronic gout, rheumatoid arthritis, sprain, stiff and painful joints, gout, rheumatic sciatica, lumbago, peripheral neuritis, gouty neuritis, &c. Also before and after breaking down of adhesions, and kindred complaints.

The Tallerman treatment has been demonstrated at some of the principal London and other hospitals, and during the course of the three years supervision to which it has been subjected it has been proved that the treatment can be safely administered with benefit even where great debility, weak action or valvular disease of the heart or kidney disease are present. Rheumatic and other pains are relieved if not entirely removed shortly after the commencement of the first operation and that the treatment itself is not only absolutely painless but so soothing as to frequently lead to patients falling asleep if permitted whilst under it, hence the sleeplessness caused by rheumatic pain is relieved and patients are able to rest at night.

Clinical Lecture.

MITRAL STENOSIS—SUDDEN DEATH—BALL THROMBUS IN THE LEFT AURICLE.

(Clinical Remarks, Johns Hopkins Hospital, Jan. 13th, 1896.)

BY

WILLIAM OSLER, M.D.

Professor of Medicine, Johns Hopkins University.

Sudden death in mitral stenosis is very much less frequent than in aortic valve disease, and the cause which carried off the little girl of whose case I shall speak to-day is among the rarest of the complications of chronic valve lesions. I will ask Mr. Day, the Clinical Clerk in Ward G,, to first read an abstract of the history.

"Mabel M., aged 20, was admitted Dec. 15th, complaining of swelling of the legs and shortness of breath. She knows nothing of her family history.

"*Personal history.* She had diphtheria and scarlet fever when nine years of age. She had a discharge from the ears when she was about thirteen, and ever since has had "catarrh of the head," as she calls it. She began to menstruate at her thirteenth year. She was always well and strong, but for a year or more she had been short of breath on exertion. For the past two years she had been employed in a book-bindery, where part of her occupation was working a machine with her feet.

Present illness. About two months ago, while wearing a pair of tight shoes, she noticed a swelling beginning at the shoe tops. This gradually ascended to her hips. Then the back began to ache, and there was slight swelling in the lower part of the spine. On close inquiry she confesses that she has been for a long time short of breath on any such exertion as climbing the stairs or walking fast, and she has sometimes felt faint. The dyspnœa has been growing worse for the past few months, and in walking a square she would have to stop and rest. Lately she has had headache, and on waking in the morning the eyes are puffy. She has had loss of appetite and the bowels are irregular.

"*Present condition.* Patient does not look more than fourteen or fifteen years of age. She is well nourished, has a rather high colour, the cheeks are red, and the lips a little cyanotic. The facies is distinctly luetic—saddle nose, projecting forehead. There is cloudiness

of the right cornea, and the upper central incisors are somewhat peg-shaped.

"Inspection of the chest showed a heart impulse in the fourth and fifth interspaces, the maximum in the fifth, 11 cm., from the mid-sternal line. The relative dulness was at the upper border of the third rib. On palpation there was a thrill at the apex, which varied a good deal in intensity. On auscultation the first sound was very snapping at the apex, and preceded by a rough, harsh, pre-systolic murmur, and there was a soft blowing systolic murmur passing towards the axilla. The first sound had a very sharp valvular character. The pre-systolic murmur was lost at the mid-axilla. There was a good deal of echoing over a limited area in the fifth space. In the second and third left intercostal spaces the second sound was very much accentuated. The second aortic sound was relatively feeble.

"The liver was enlarged, and could be felt 6 cm., below the ribs in the mid-sternal line. The legs were a good deal swollen. The urine contained a small quantity of albumin and a few hyaline casts."

During her stay in hospital she improved somewhat; the dropsy disappeared, the heart's action became slower, and she became very much more comfortable, though she still had the flushed suffused facies.

I saw her on Jan. 7th, and she seemed very well. The pulse was regular, and the heart's action seemed quite natural. At 4.30 A.M., on the 8th the nurse found her very cyanotic; she gave a gasp or two and died in a few moments.

Let me first call your attention to this drawing, which was made by Mr. Broedel, of the heart in situ, in which you see that almost the entire exposed portion was made up of the right auricle and ventricle; only a small portion of the apex of the left ventricle is apparent. It was noted particularly, too, that the auricular appendix of the left auricle was not visible. The heart, as you see, presents the usual anatomical features associated with an extreme grade of mitral stenosis. The mitral valve segments are thickened and adherent, the chordæ tendineæ greatly shortened, and the orifice just admits the tip of my index finger. There is no fresh endocarditis. The left ventricle is relatively small, the right ventricle very large, and the walls greatly hypertrophied. The right auricle, too, is a very capacious chamber with relatively thick walls. The left auricle is also very large, the endocardium very opaque, and the walls greatly thickened.

The most remarkable feature in the case is this firm ball-thrombus, which lay loose in the left auricle, occupying the funnel-shaped space leading to the mitral orifice. It is ovoid, measuring about 3 cm., in

length and at one end is roughened, indicating an area of attachment. Beyond the venous engorgement of the viscera there were no other features of special interest. There were no lesions of congenital syphilis.

There can be but little doubt, I think, that the sudden death in this case was due to the dislodgement of the thrombus and the plugging by it of the narrowed mitral orifice, so that she really died of embolism of the left auriculo-ventricular orifice.

I call to mind another instance of sudden death due to embolism of one of the cardiac orifices. In a child aged three and a half years, (whose case I reported in the *Journal of Anatomy and Physiology*, 1880,) there was a striated myo-sarcoma of the left kidney, which had extended into the renal vein and inferior vena cava; portions of the sarcomatous thrombus had become detached, and a mass 2.5 by 1.2 cm., had plugged the tricuspid orifice, and a mass the size of a hazel-nut the orifice of the pulmonary artery.

These free thrombi in the cardiac chambers are very rare. The only other case I have met with, which is reported in Vol. II., of the *Johns Hopkins Hospital Reports*, occurred in a woman, aged 55, with mitral stenosis, who died in the Montreal General Hospital. In her case the death was not sudden. The thrombus was the size of a small egg, 3.5 by 2.5 cm. In the article referred to I have dealt briefly with the forms of cardiac thrombi, and particularly with the cases which had been reported up to that date, only five in number. I have not looked over the literature recently, and no doubt many additional cases have since been added.

I will refresh your memory by enumerating the various forms of thrombi met with in the heart chambers.

1. Globular thrombi, with sub-trabecular ramifications, which are common in the auricular appendices and in the apices of the ventricles in cases of extreme dilatation.

2. Mural thrombi, usually laminated, which occur in the dilated auricles, particularly their appendices, in the ventricles in cases of fibrous myocarditis, and in aneurism of the heart.

3. The pedunculated polyp-like thrombus—a very rare form—met with usually in the auricles.

4. The ball-thrombus, free in the auricle, which constitutes the rarest form of cardiac thrombus.

In all probability in this case the ball-thrombus had previously been attached in the auricular appendix, and sudden death followed its dislodgement.

RETROSPECT

OF

CURRENT LITERATURE.

Medicine.

UNDER THE CHARGE OF JAMES STEWART.

Two Years of Serum Treatment of Diphtheria.

CUNO ; Frankfort-on-the-Main. "Twei Jahre Diphtherie-heil-serum-therapie"—*Deutsche Medicinische Wochenschrift*, Dec. 12th, 1896.

The favourable reports on the results of serum therapy in diphtheria are accumulating and the review of the cases here reported makes the evidence in favour of the new treatment so much the stronger. It is thus that any new remedy is tested and thousands of cases are needed whereby there may be eliminated all possible sources of error.

Particularly interesting are the figures which Dr. Cuno presents, summarizing the cases during six years previous to that in which the serum treatment was begun, and which he contrasts with those of the two following years, 1895 and 1896, or more accurately from October, 1894 to October, 1896. The six years previous show a death rate of 37 to 38 per cent., 1510 cases having undergone treatment.

In the two years herein reported upon 483 cases were treated and 51 died. A death rate of 10.5 per cent.

It seems fair to the treatment but perhaps not just, so far as statistics go, to deduct from the number of those dead five who were admitted moribund and died within 20 hours, and twelve who died from other causes, the diphtheria having been healed. Thus the surprisingly low death rate of 7.03 per cent. is reached.

It is interesting in this connection also to note that in these cases all local treatment was omitted and only such treatment applied in addition to the serum, as seemed indicated, such as stimulant measures, and in cases of nephritis, hot-air bath, etc. The method of using the serum differed in no important manner from that in other hospitals.

Laryngeal diphtheria was found in 125 cases, 71 of whom recovered

without interference, 54 were operated on, trachæotomy being done. 31.5 per cent. of these cases died.

There is no report of intubation having been attempted.

Albuminuria did not appear to follow the use of the serum.

No outward effects of the serum working was traceable in any of these cases.

In 291 cases the bacteriological examination established the diagnosis and the mortality in these cases was 13·05 per cent. The other cases were diphtheria clinically.

OSLER. "Features in the Prognosis of Pneumonia."—*The American Journal of the Medical Sciences*, January, 1897.

The circumstances influencing prognosis Prof. Osler has set down in two groups:—General, as age, race and habits; special, as the degree of lung involvement, fever, complication, etc.

Beyond 60 years of age the death rate is very high, 50 to 60 or even 80 per cent.

The negro succumbs more frequently than the white. Then of course the previous habits of life and the condition of health at the time of the attack influence the prognosis very greatly. We are led to remark that the chief point which this instructive article of Prof. Osler's emphasizes is the element of toxæmia to which pyrexia and consolidation are subsidiary as prognostic points in this disease. This may be manifest in severe chill, early onset of cerebral symptoms and a case picture which is out of all proportion to the extent of the physical signs.

The blood may present no leucocytosis. Sudden death in many cases of pneumonia Dr. Osler attributes in all probability to the action of specific toxins on the heart-centres, thus favouring this view above that which attributes such a termination to the action of fever on the myocardium, or to the direct results of mechanical obstruction. Such influences however must be considered as factors.

W. F. Hamilton.

The Paraplegia of Potts' Disease.

At a recent meeting of the Neurological Society, of New York, several valuable papers on the treatment of the paraplegia of Potts' disease were read. The contributors, chiefly orthopædic surgeons, were unanimous in the importance of mechanical treatment, carried out, if necessary, for a year or longer.

Dr. N. M. Saffer's paper was based on forty cases treated among the poor in the out-patient service of the New York Orthopædic Dis-

pensary, by the application of the Taylor spinal brace, in such a manner as to give firm support to the spinal column, but not to make special pressure, and keeping the patient in the recumbent position. Out of the forty cases, there were only four that did not show some indications of recovery, the great majority recovering within one year. The disease of the spine was present before the onset of the paralysis for a period of five years and upwards in thirty of the cases. In ten it was present between one and two years; in one for eleven, and in one for twelve years. In twenty-four of the cases the paralysis was solely motor, and in sixteen it was both motor and sensory. Of the twenty-four cases of motor paralysis, twenty-one recovered and three are still under observation. Of the sixteen cases of combined motor and sensory paralysis, eleven recovered. Of the thirty-two who recovered, fifteen walked well, with exaggerated knee jerks; five walked well with normal knee jerks; in the other cases there is no record of knee jerks. Four patients have been under treatment from six to ten years and are still paralyzed. The average duration of the motor paralysis was about seven months and of sensory paralysis ten months.

Dr. V. P. Gibney's paper was based on seventy-four completed cases. In forty-three there was a permanent cure of the paraplegia. In eleven there was improvement when the patients left the hospital, and there was reason to believe that many of these were subsequently cured. In eight there was no improvement, and death took place in thirteen cases. The longest duration of the paralysis was seven years, and recovery then followed. The shortest period was two months. In ten cases the paralysis lasted from four to six months. The average duration was about twenty-two months Dr. Gibney uses a jacket of plaster of paris. When there is much uncontrollable spasm he uses traction as well. He frequently employs the Paquelin cautery. He has great faith in iodide of potassium given up to the point of tolerance. Several of the speakers who took part in the discussion expressed themselves as being favourable to the use of iodide of potassium. It appears to act much more favourably when combined with proper support of the spine.

With hardly an exception, the speakers considered an operation should only be resorted to in cases where it was clear it was impossible to expect any beneficial effect from the rest and supporting measures.

Dr. de Forest Willard, of Philadelphia, who took part in the discussion, said that he had collected the histories of one hundred and thirty-four cases of operative interference for the relief of spinal

paraplegia, the majority in children. In four, the result was not recorded ; in thirty-five per cent. of the remainder a successful result was claimed, but later reports showed that the symptoms recurred in some cases. In sixty-five per cent. of cases the patients either died or were not materially improved. One-fourth of the patients operated upon died from shock within the first day or two ; upwards of one-third died within one month after operation ; and nearly one-half died within a year. In the light of such results operation is clearly only indicated where all other measures have entirely failed. Leaving interference for such conditions renders any amelioration in the patient's condition very nigh hopeless. Possibly, with an improved technique, the immediate dangers (shock) would be greatly lessened.

James Stewart.

Surgery.

UNDER THE CHARGE OF GEORGE E. ARMSTRONG.

Castration and Vasectomy in Hypertrophy of the Prostate.

J. WILLIAM WAITE. "The Results of Double Castration in Hypertrophy,"—*Annals of Surgery*, 1895, Vol. I., p. 1.

A. T. CABOT. "The Question of Castration for Enlarged Prostate."—*Annals of Surgery*, 1896 Vol. II., p. 265.

DISCUSSION ON THE SURGICAL TREATMENT OF PROSTATIC HYPERTROPHY.—By David Macewen, M.D.; Reginald Harrison, F.R.C.S.; C. W. Monsell Moullin, M.A., M.D., F.R.C.S.; Dr. Sandberg; John Chiene, M.D.; F. A. Southam, F.R.C.S.; Charles A. Morton, F.R.C.S.; Jordan Lloyd, F.R.C.S.; J. Haddon, M.D., and J. H. Cameron, M.D.,—*British Medical Journal*, October 10, 1896.

The importance of the subject of enlarged prostate and its results, as manifested by the secondary changes which, in many cases, take place in the bladder, ureters, kidney and heart, gives great interest to any new suggestions as to treatment. Life is certainly shortened in a certain number of old men by the pathological effects of enlarged prostate. No man can have under observation an old man, with his pain, toxæmia and sleepless nights, without feeling himself stirred to do his best to find some means of relief.

The etiology of prostatic hypertrophy is still involved in obscurity. Dr. White thinks that the theory of Guyon that the disease is only a part of a constitutional condition peculiar to advancing years and characterized by arterial sclerosis, etc., and that of Harrison that the growth is compensatory in character and secondary to certain bladder changes to be untenable in the light of the information we now have. There seems to be some reason to think that it may be due to prolonged ungratified sexual desire. The function of the testes would seem to be twofold. (1) To control and determine the development of the characteristics of the male sex, and (2) to produce spermatozoa for the reproduction of the species.

Dr. D. Macewen thinks that in the performance of the first function, it is probable that a physiological product is formed, which becomes absorbed into the circulation and acts as a stimulant and

nutrient to the tissues of the whole body. This is in harmony with the theory upon which a watery extract of the thyroid gland has been administered with such signal success in myxœdema, in which the thyroid gland atrophies and ultimately disappears. The disease myxœdema arises from the want of the influence of some unknown substance, which the thyroid gland, as is supposed, elaborates, upon the nutrition centres of the central nervous system. Professor Waymouth Reid, of Dundee, has expressed the opinion that the epithelial-like cells in the intertubular tissues of the testes, to which no function has yet been assigned, may possibly be concerned in the elaboration of the product in question. These cells, which are found within the lamellæ of the intertubular tissue, are larger than lymph cells, and exactly similar to epithelial cells, and form large continuous groups. Griffith states that in the process of involution or decay in the testicles of the aged, the intertubular connective tissue remains practically unaltered in the first stage, and even in the second it still remains of loose texture and contains, as in the normal state, many connective tissue cells.

Still it may be truly said that, up to the present, we are in ignorance as to the cause of hypertrophy of the prostrate.

It seems to be pretty well established that, in the great majority of cases, a degree of atrophy ensues after double castration. This atrophy seems to be chiefly in the glandular portion of the prostate. As the middle portion or the middle lobe, as it is sometimes called, is very largely glandular, it would be expected that this portion would undergo the greatest degree of atrophy. Such is generally found to be the case, but by no means always, as, at autopsies performed a considerable time after castration, the middle lobe has been found very much enlarged.

The following figures, taken from Cabot's table, show that seventy-nine cases survived the operation. In eighteen of these, the reports were not sufficiently explicit to enable one to form an opinion as to the functional result. We have left, then, sixty-one cases for our purpose.

Of these, five cases showed no improvement; one case improved at first and afterwards suffered a relapse. In four cases the catheter was still required, but entered more easily, and in these cases the sensibility of the bladder was markedly diminished.

In twenty-seven cases, retention, which existed at the time of operation, afterwards disappeared.

In the remaining twenty-four cases a decided improvement was

reported, the gain showing itself in a diminution of pain and frequency and often a decrease in the amount of residual urine.

Reducing these facts to percentages, we find that these cases show 9·8 per cent. failure, 6·6 per cent moderate improvement, and 83·6 per cent. of substantial improvement.

There are remote results that must be borne in mind. There does not seem to be any degree of effeminacy following castration in old men as a rule. However, in ninety-nine cases, there were eleven of mental disturbance in the individual. A severe maniacal condition followed in six cases, and in five others some loss of mental balance, and in several a degree of melancholia. Of the six cases of mania, in one, signs of mania had been observed before operation. The administration of testicular fluid in these cases of mental disturbances has been followed by an improvement. The success of this agent has been sufficient to warrant its further trial.

The mortality following castration in old men has been considerable. Just what this rate is has been the subject of considerable discussion. As a matter of fact, 17 or 19 per cent. of the old men who have been castrated have died. Dr. White would eleminate a certain number of these on the ground that their death was not due to the operation, and, by so doing, bring the death rate down to about 7 per cent.

It is well known that old men suffering from prostatic hypertrophy are hazardous patients to touch with either a catheter or a knife or an anæsthetic. Only too often they are suffering from the secondary effects of vesical obstruction before they consult a surgeon. They often have unhealthy bladders, ureters and kidneys and are more or less toxæmic, and the mortality is, of necessity, considerable after whatever interference is adopted.

Resection of the vas deferens has been proposed by Mr. Reginald Harrison as a substitute for orchectomy and if it can be shown to give as good results, it should certainly receive the preference, as it is easily performed, and would be more readily accepted by the patient.

Just how vasectomy causes diminution in size of the prostate is a question requiring further elucidation. Some have thought that vasectomy caused atrophy of the testicles, and as a secondary result atrophy of the prostate. But in many of the recorded cases, there seemed to be an amelioration of symptoms without any appreciable sign of change in either the testicles or prostate. The evidence on this subject is very conflicting. Dicimus Hodgson says, "In persons who have been castrated, the prostate dwindles down almost to a radimentary condition." Birkett and Hilton record cases where the

vas has been destroyed by injuries and the corresponding testicle atrophied.

Curling in his *Diseases of the Testicles* says, that the vas may be obliterated from birth, or may become so from injury or disease, without interfering with the health or development of the testicle. Griffith sums up the result of his observations on dogs by saying that ligature of the vas induces a slight enlargement of the epididymis and of the testicle, but does not in any way interfere with the stucture of the seminal tube or the production of spermatozoa. White, in his experiments upon dogs found that there were comparatively few changes in the testicles themselves. Alessandri got a different result, for he states that a short time after ligature, atrophy of the testicle and epididymis was produced. However, Mr. Harrison has performed single vasectomy in 12 cases, and seven appear to have derived permanent benefit from the operation, whilst in the remaining five the results were either negative, or it was found impossible to trace the patients subsequently.

Out of ten cases of double vasectomy, Mr. Harrison claims for five, great, and he believes, lasting benefit from the operation. Of the remaining five, two do not appear to have derived much advantage from it, two could not be traced, whilst the fifth is of too recent a date to be of use. That relief of the symptoms of prostatic enlargement follows double castration in a very large percentage of cases seems to be well established. How permanent this improvement will be found to be it is perhaps too soon to say.

That relief of symptoms follows double vasectomy in many instances seems also clear, although the symptoms may subside more slowly than after orchectomy. The rate of mortality after orchectomy and vasectomy can only be improved by a more judicious selection of cases. Up to the present it has been 18 or 19 per cent. in orchectomy, and less after vasectomy.

Mr. Harrison suggests that in double vasectomy an interval of a month be allowed to elapse between the operations. His method of operating is very simple. He draws a loop of the vas out of a small wound and puts a ligature around it, cutting off the distal part. In this way he ensures against a reunion of the ends. It might be well to adopt this suggestion in double castration, allowing an interval of a month to elapse before the second testicle is removed. Some comparison has been made between the mortality rate in orchectomy and in prostatectomy. In the latter, the rate of mortality has been about 20 per cent. or over. It is a question worth careful study, whether or not the technique of prostatectomy cannot be so improved as to materi-

ally lessen the danger. Suprapubic prostatectomy has the advantage of permitting a careful examination to be made of the vesical prostate, and the determination of the part that is causing the obstruction to the outflow of the urine, as well as the removal of calculi, if present, and an examination of the bladder and drainage.

If this could be made a reasonably safe operation, it is free from many of the objections raised by patients against the loss of the testicles, and assent to prostatectomy could be obtained much earlier and more readily than to castration. While there can be no doubt castration and vasectomy enable us to give relief to many patients, yet consent to such a mutilation can only be obtained under great stress of circumstances, and for this reason it may be predicted that the mortality rate will remain high. It must be admitted that we have not as yet any remedy, medical or surgical, that we can safely advise in an early stage of the disease.

Geo. E Armstrong,

Canadian Medical Literature.

UNDER THE CHARGE OF KENNETH CAMERON.

[The editors will be glad to receive any reprints, monographs, etc., by Canadian writers, on medical or allied subjects (including Canadian work published in other countries) for notice in this department of the JOURNAL. Such reprints should preferably be addressed to Dr. Kenneth Cameron 903 Dorchester street, Montreal.]

PERIODICALS.

THE JOURNAL OF EXPERIMENTAL MEDICINE, VOL. I., NO. 3, 1896.

On hæmorrhagic cysts of the thyroid gland—W. I. Bradley, Montreal.

JANUARY, 1897.

THE CANADIAN PRACTITIONER.

Hæmoptysis—J. M. Cotton, Lambton Mills, Ont., p. 1.

The operation for cleft palate—G. R. McDonagh, Toronto, p. 8.

THE CANADIAN MEDICAL REVIEW.

The physiology of nervous exhaustion—D. Campbell Meyers, Toronto, p. 1.

Cases illustrating the cure of epilepsy and chorea by the relief of eye-strain—G. Sterling Ryerson, Toronto, p. 5.

THE CANADIAN JOURNAL OF MEDICINE AND SURGERY.

The operative treatment of mammary carcinoma—George T. McKeough, Chatham, Ont., p. 1.

Two cases of slow pulse—P. A. Dewar, Essex. p. 6.

THE CANADA LANCET.

Two interesting cases of ectopic gestation—Norman Allan, Toronto, p. 219.

Oral and nasal breathing, with exhibition of patients—Price-Brown, Toronto, p. 222.

CANADA MEDICAL RECORD.

Nursing the insane—J. V. Anglin, Montreal, p. 177.

Afebrile typhoid fever—Robert Wilson, Montreal, p. 194.

Peculiar temperature in a parturiant—Robert Wilson, Montreal, p. 193.

THE DOMINION MEDICAL MONTHLY AND ONTARIO MEDICAL JOURNAL.

Chronic inflammation of the bladder and its treatment—J. F. W. Ross, Toronto, Ont., p. 25.

Diphtheria and its treatment—Alex. Taylor, Goderich, Ont., p. 29.

THE MARITIME MEDICAL NEWS.

Slight and serious eye troubles—J. R. McIntosh, St. John, N.B., p. 1.

Twin labour, complicated by hour-glass contraction—C. H. Morris, Middle Musquodoboit, N.S., p. 11.

Cases of fibroma of the nasal passage and naso-pharynx—N. E. McKay, Halifax, N.S., p. 15.

L'UNION MÉDICALE DU CANADA.

Les aliénés devant la loi : responsibilité légale des aliénés—Georges Villeneuve, Montréal, p. 5.

Les cocaïne en chirurgie—O. F. Mercier, Montréal, p. 20.

LA CLINIQUE.

No original articles.

FEBRUARY, 1897.

THE CANADIAN MEDICAL REVIEW.

Clinical notes on hysterectomy for large fibroids—J. F. W. Ross, Toronto, p. 39.

THE CANADA LANCET.

A case of typhoid fever with unusual nervous symptoms—J. T. Fotheringham, Toronto. p. 272.

Clinical notes on a case of apoplexy—A. J. Harrington, Toronto, p. 273.

THE CANADIAN JOURNAL OF MEDICINE AND SURGERY.

Notes on the symptomatology and diagnosis of sensory, motor or trophic paralysis, consecutive to lesions of contiguous parts, resulting from violence—Thomas H. Manley, New York, p. 49.

REPORTS, &c.

Second Annual Report of the Board of Health of the Province of Quebec, for the year ending June 30th, 1896.

On Hæmorrhagic Cysts of the Thyroid Gland—W. I. Bradley.

These investigations have been extensively quoted and commented upon by Dr. Archibald in a paper on the same subject, which will appear later.

Cases Illustrating the Cure of Epilepsy and Chorea by the Relief of Eye-strain—G. Stirling Ryerson.

The writer affirms that in all cases suffering from chorea and epilepsy, heterophoria is an element which must be eliminated in making a prognosis and in prescribing treatment. It is generally admitted that headache frequently arises from errors of refraction and from muscular insufficiencies. It is only going a step further to admit that the severer manifestations of nerve disorder unattended by gross lesions may be caused by the same source of irritation. The first case was a man, aged 25, who suffered from headache on the top of and at the back of the head, dizziness, loss of memory, and at times loss of consciousness. He also complained of pain across the back and at the angle of the scapula. General treatment had been without benefit. The patient was found to be suffering from hyperphoria and esophoria with much weakness of vision. The right superior rectus was tenotomized, followed shortly with complete relief of the symptoms. A year later the patient still retained good health. The second case was a young woman, who suffered from severe headaches in the occiput and pain in the nape of the neck. She had also marked chorea, which was bi-lateral and affected the whole body. Vision $\frac{15}{20}$, with $3\frac{1}{2}°$ right hyperphoria. Partial tenotomy of the right superior rectus was performed, followed by recovery.

The writer stated that in his opinion 2°, at least, was necessary to justify operative interference, and no decision should be arrived at until after two or three examinations on as many days, because while on one day a large defect is registered, on the next it has disappeared

Second Annual Report of the Board of Health of the Province of Quebec.

This report contains the record of the large amount of valuable work done by this energetic Board. There has been obtained from the Legislature a revision of the law on interments and disinterments, which enabled the Board to modify a great many provisions, which were either contrary to hygiene or, at least, insufficient for the protection of public health. Though there has been no epidemic of contagious diseases, a great many cases have been reported. Of the 4,729 cases there were diphtheria 2,294, scarlatina 942, typhoid fever 850, measles 641, and smallpox 1. These figures are far from stating the whole truth, for it is estimated that 63 per cent. of the cases occurring were not reported to the Board.

The report of the Bacteriologist contains much valuable information upon disinfection by formaline (quoted in the JOURNAL, February, p. 652) and the diphtheria diagnosis. Concerning the latter he has reached the following conclusions :

1. The culture method enables a positive diagnosis to be made in 90 per cent. of all cases of diphtheria when seen early.

2. The significance attaching to a negative result depends entirely upon the length of time which has elapsed since the onset of the disease, and the absence of bacilli from a case which has lasted often four or five days does not prove that it is not diphtheria : in any case where the course of the disease made it likely to be diphtheria, repeated re-examination is made.

3. In severe cases of suspicious angina, it is advisable not to delay the preliminary dose of antitoxin in order to learn the result of the bacteriological examination.

4. The greatest value of the bacteriological examination is in determining the necessity and the duration of isolation and quarantine, and if cases continue to appear, the throats of all persons exposed to contagion should be examined whether they show signs of disease or not. A swabbing to be taken post-mortem in all cases of death from croup.

5. The patients should not be released from quarantine, and the final disinfection of the premises should not be done until the bacilli have disappeared entirely from the affected part.

6. The bacilli have been shown to infect articles of clothing, furniture, etc., and these should be thoroughly disinfected, preferably by steam under pressure, and solutions of mercuric chloride. Fumigation by sulphur is unreliable in the majority of cases as commonly carried out.

7. Cases showing a heavy growth of bacilli, on serum at 20 hours, not quite of the Klebs-Lœffler type, should be regarded as suspicious and strictly isolated until their non-diphtherial nature is clear. In order to avoid the conflict between the opinions of the medical attendant and the bacteriologist, it is preferable, when a case diagnosed clinically as non-diphtheritic shows a growth of bacilli, that the further tests of acid production and pathogenes are to be applied, the medical attendant being informed of the suspicious nature of the case and of the necessity of isolation pending more thorough bacteriological study. This would remove a common cause of friction between the medical attendant and the Health Officer, and lead to the more careful study of the doubtful cases.

8. In spite of the use of antitoxin and the great benefits resulting from it, the mortality of diphtheria has greatly increased in Montreal during the past year.

The study of the demographic movement in the Province gives the following results: Birth rate, 39.30 per 1000 inhabitants; marriage rate, 32.76 per 1000 persons of marriagable age, or who were not married; death rate, 21.24 per 1000 inhabitants; 20.46 per 1000 inhahitants (omitting still births).

The proverbial prolificness of the French-Canadian race enables them to occupy a very remarkable position. In the 35 counties where the population is almost exclusively of that nationality, the birth rate assumed the remarkable proportion of 44 per 1000, while in the County of Yamaska it had reached 60 per 1000.

Details of deaths are given as to ages, causes and the counties wherein they occurred.

Canadian Medical Journalism.

With the new year, changes have occurred on the editorial staffs and in the general appearance of several of the Canadian journals. The representative of the Maritime Provinces has been enlarged, is printed on better paper, and contains several interesting articles, as well as the proceedings of the various societies that meet in that part of the country. In Toronto, a new publication, *The Canadian Journal of Medicine and Surgery*, has appeared, making the fifth published in that city. The reasons for its existence are not apparent, the editors having offered no explanation, except that they signify their intention "to devote their energies to the task of bringing out a helpful, and, withal, bright and readable monthly—a digest of some of the best articles in foreign medical journals and an open field for the original articles of Canadian physicians." The selections are well made, the arrangement is good and the printing is excellent. It is

noticeable, however, in the first number, that though the editors promise "to carry on the *Journal* in accordance with the ethical principles which characterize the proceedings of reputable physicians," there is, in the middle (p. 33), a full page advertisement of a mineral water, and two pages, of what purports to be editorial, are devoted to the same commercial article. In the second number these objectionable features have been eliminated, for which the editors, no doubt, will receive the cordial approval of the profession. While such notes as this may not be strictly a violation of the code, it is very suggestive, that editors have placed their pages at the disposal of the advertiser, instead of confining that enterprising individual to his special department at the beginning or end of the number. In no way is the endeavour of the publishers and editors of most of our journals, to raise the standard of their magazine more in evidence, than in the gradual disappearance of that form of journalistic depravity—the reading notice. Two, however, of the journals still pursue their evil way, and one is particularly guilty in this respect. Not satisfied with the paid-for notes and testimonials of proprietary medicines from unknown practitioners, they now inflict upon their readers offers of supply of legal advice of a questionable character. At the end of the section devoted to gynæcology and obstetrics appears the following: "Sue for your divorce in the United States. ———, Attorney-at-Law and Solicitors in Chancery, —— Chamber of Commerce, ———, ———." (Names omitted for obvious reasons.) If this is intended for wit, it is a failure, if simply as an advertisement, it is a disgrace.

Kenneth Cameron.

Reviews and Notices of Books.

Food in Health and Disease. By J. Burney Yeo, M.D., F.R.C.P., Professor of Clinical Therapeutics in King's College, London, &c. With illustrations. New and revised edition. Philadelphia: Lea Brothers & Co.

We are pleased to see a new and revised edition of Dr. Yeo's useful manual on food. The work is one which has met with great favour. In the revised edition much new matter has been added, including a chapter on the sterilization of milk. J. S.

Current from the Main. By W. S. Hedley, M.D. Pages, 34. H. K. Lewis, London.

This little book consists chiefly of articles published in *The Lancet* in December, 1891, and April, 1892. After briefly discussing in the first chapter the obvious risks in using the current from the main due to leakage and to breakdown of transformers, and showing that fuses and cut-outs are not a very satisfactory safeguard, the author proceeds to recommend the usual devices of the "shunt or potentiometer rheostat" and the "motor-dynamo" as the safest and most convenient means of reducing the electric pressure within limits suitable for therapeutic purposes. The pages are full of technical terms, indicated by inverted commas, and appear to be offered to specialists as "a complete survey of the whole problem," for which the time is said to have arrived. The book is all too short to be intelligible except to the expert electrician, and we fear that the current from the main must still remain a possible source of danger in the hands of the average M.D., unless he is content to take a practical course under some competent instructor. H. L. C.

A Handbook of Surface Anatomy and Landmarks. By Bertram C. A. Windle, D.S.C., M.D., M.A., Professor of Anatomy in Mason College, Birmingham, &c. Second edition, revised in collaboration with F. Manners-Smith, M.A., M.R.C.S., Lecturer on Osteology and Senior Demonstrator of Anatomy, Mason College, Birmingham. London: H. K. Lewis, 1896.

Into the small space of 143 pages is crowded a great deal of very valuable information, and the carefully drawn diagrams (some of them beautifully coloured) show, at a glance, the exact position of the most important internal organs. In addition to the strictly anatomical details, there are many useful hints given as to the performance of the simpler surgical operations, which render the work useful to the general practitioner, as well as to the senior student, for whom it is more especially designed.

Each chapter takes up, and finishes, a certain part of the body, and therefore any information is easily obtainable even without reference to the full and excellent index. The book should prove of great service to the students of clinical surgery and medicine, and the busy general practitioner may often quickly get there the information he wants. The price puts this little work within the reach of every student.

J. M. E.

Voice Building and Tone Placing. By H. Holbrook Curtis, Ph.D., M.D. New York, D. Appleton & Co., 1896.

This work is divided into chapters, under which are considered the origin of music, the anatomy and physiology of the larynx, the subject of respiration, the vocal resonators, tones and over-tones, the registers of the human voice, tone placing, voice building, and, finally, voice figures.

Under the chapter on respiration, the various methods used are criticised, and the one advocated by the writer is ably defended. On the subject of tone placing, the writer brings forcibly to the front the ill effects of imperfect focussing of tone, causing, in reality, the greater number of the difficulties experienced by singers in producing pure tones, and other symptoms which prevent the keeping of the voice in all pureness and sweetness. One symptom, which is the *bête noire* of singers, is the presence of the so-called "singers' nodules," and the author shows how they are produced and how they may be removed by properly graduated vocal exercises carried out in a correct manner. This is indeed a great advance in the usual method of treating such cases by the use of applications made directly to the vocal cords, and the writer is to be heartily congratulated upon bringing such a work as he has here prepared before the public, and the work certainly should be in the hands of all teachers of singing, as well as the laryngologist. The book is well illustrated by numerous diagrams and the printing is done in the manner so characteristic of the publishers.

H. S. B.

The Principles of Theoretical Chemistry with special reference to the Constitution of Chemical Compounds. By Ira Remsen, Professor of Chemistry in the Johns Hopkins University. Fifth edition; thoroughly revised. Lea Brothers & Co., Philadelphia and New York.

The object of this little volume as stated in the preface is "to help students to get clear ideas in regard to the foundations of chemistry" and to serve as a "brief treatise on those facts and speculations that have to deal especially with the problem of the constitution of chemical compounds."

The book may be considered as divided into two parts, the first dealing with the atomic and molecular hypotheses and the second with the constitution of compounds. The first part opens with a discussion of the combining numbers and atomic weights of the elements, a brief descrip-

tion of the methods employed in the determination of these quantities, and an outline of the historical ideas connected therewith and culminating in the atomic theory. Following this the development of the molecular theory, due largely to the labours of Gay Lussac and Avogadro, is traced. To this is added a short, clearly written chapter on the very important subject of solutions, the study of which has within the last decade brought about a small revolution in many of our fundamental ideas; and a chapter on solids with special reference to their specific and molecular heats, and a short reference to isomorphism as furnishing a means of determining atomic weights. This part of the book is then appropriately closed by a chapter on the Periodic Law, presenting the atomic weights of the various elements in their relations to one another and pointing out the fact that the general properties of the elements appear as periodic functions of their atomic weights.

A chapter on valency forms the connecting link between the first part of the book and the second, which deals with the constitution of chemical compounds. In this part the division of compounds into classes is described and then follows a thorough study of the constitution of the principal groups of organic compounds, with a chapter on the application of physical methods to the problems of constitution, and a chapter on chemical affinity. The second half is also brought to a suitable conclusion by a chapter on the relations between the constitution of compounds and their properties.

The whole book is written in Mr. Remsen's lucid style, and is to be highly recommended to all those who wish to obtain a good elementary knowledge of theoretical chemistry. N. N. E.

Society Proceedings.

MONTREAL MEDICO-CHIRURGICAL SOCIETY.

Stated Meeting, December 18th, 1896.

GEORGE WILKINS, M.D., PRESIDENT, IN THE CHAIR.

Dysmenorrhœa in Young Women.

Etiology and Symptomatology, by Dr. WM. GARDNER. (See page 681.)

Treatment, by Dr. F. A. L. LOCKHART. (See page 690.)

Discussion.

Dr. A. LAPTHORN SMITH said that all must recognise the fact that dysmenorrhœa was not a disease, but rather a symptom of many and varied pathological conditions, and the treatment, therefore, would depend entirely upon the diagnosis. He found, on looking up his records, that it was an extremely common symptom, almost one-fourth of his patients having complained of it. The order of frequency had been as follows: greatest, in unmarried girls; next, in childless married women; then, in women with scanty flow at the periods, who had borne one child; and lastly, in married women who had borne several children and had prolonged and excessive menstruation. The reason of this was, partly because one met with more cases of stenosis of the os uteri in unmarried women, and partly because of a little of the general pelvic congestion occurring at one period often remained over to the next, and this was added to, at each successive period, hence, little by little, the external layers of the ovary became thickened and the mucous lining of the uterus swollen and blocking up the canal. He thought pregnancy might be called nature's remedy for dysmenorrhœa because it both dilated the uterine canal and gave the ovaries a more or less complete rest, but that married life without pregnancy often made it worse.

Of the class who have borne one child but still suffer, the cause would be found, on examination, to have been an acquired, acute septic, or gonorrhœal endometritis, which had subsequently become chronic, leaving the mucous membrane of the cervical canal swollen with distended glands.

Of the fourth and smallest class, the cause would generally be found to be some form of displacement of the uterus, usually a backward

one which seriously interfered with the circulation of the organ. Besides these four large classes, many scattered cases were found in which the pain was due, either to fibroid tumours blocking up the internal os, or to closure of either one or both ends of the Fallopian tubes.

Speaking of the treatment of that form due to stenosis, Dr. Smith recommended: (1) Improvement of the uterine circulation by curing constipation, the use of iron, strychnine, and phosphoric acid, and general hygienic measures; and by these measures he claimed to have cured one-half of his cases. (2) Relief of the spasmodic contraction of the sphincter of the internal os; here, acetanilide in doses of ten grains three times a day administered in strong coffee or weak whiskey, or combined with citrate of caffeine had given him the best results. Another drug that might be used was viburnum. He unqualifiedly condemned the use of opium and alcohol. A hot sitz bath was also of use. Where these measures had failed, the introduction of the negative pole of the galvanic current within the uterus was most effective. It was indeed marvellous to see how readily a sound would glide into the uterus, as the negative wire touched it, when that same sound could not be made to enter previously, even by force. In the majority, the second or third period after the treatment was painless, unless disease of the appendages was present. And where electrical treatment was not obtainable, rapid dilatation under anæsthesia with aseptic precautions, came next in value. At the same time the mucous membrane of the uterus should be curetted, and equal parts of Churchhill's iodine and carbolic acid applied to its surface. Where no improvement followed, there should be at least one repetition, and the cervix if elongated, amputated. He condemned the use of dilators in office practice.

In the event of all these measures failing, abdominal section would probably reveal the tubes bound down with adhesions and the extremities closed, and a small percentage of cases would thus require extirpation of the appendages for relief.

Dr. F. W. CAMPBELL alluded to the fact that the term "dysmenorrhœa" is being replaced by the modern synonym "painful menstruation," although in but few the function was entirely painless. In his experience the seat of the pain was in the pelvic region, back, loins, and inside of the thighs; and during the flow the expulsive efforts were often as marked as during labour.

He had met with, not only all the varieties described by Dr. Gardner, but also another which was only described by a few authors, as ovarian dysmenorrhœa. It was not possible to draw the line between these absolutely, as some cases seemed to possess characteristics of two or more.

While he believed that many cases, perhaps the majority, would reach the office of the gynæcologist, yet he could see no reason why the general practitioner should not treat such cases with marked benefit to themselves and to his own satisfaction. He felt that he had been able to relieve the great bulk of his patients by medicinal treatment, and that failure had been mostly in the mechanical variety, where subsequently the knife of the surgeon had been required to produce relief.

In discussing the drugs used, he unqualifiedly condemned both opium and its derivatives, as tending to produce the opium habit, and the administration of gin or any kind of liquor. Many a bright life had been blasted by the liquor taken in the first place for the relief of menstrual pain. In the congestive form, he recommended the administration of some of the coal tar derivatives and viburnum. For the neuralgic variety, he thought general treatment most important with potassium bromide in half drachm doses three times a day at the period. Membranous cases he invariably handed over to the gynæcologist and in the ovarian variety, tincture of conium twenty minims three times a day, with the application over the ovarian region of equal parts of extract of opium, extract of belladonna, and iodide of lead.

Dr. D. J. EVANS did not agree with Dr. Smith in considering pregnancy nature's cure for dysmenorrhœa, and cited several cases in support of his opinion.

Dr. J. C. WEBSTER stated that he would limit his remarks to some statements regarding the treatment of dysmenorrhœa in general, which would supplement Dr. Lockhart's paper, and be a sequel to Dr. Gardner's.

The latter speaker had pointed out that dysmenorrhœa often occurred in cases of slight or non-recognizable pelvic lesion. These were instances of disturbed innervation in one or other of its various manifestations. Notwithstanding the great increase in neuroses among women during the present generation, it must be confessed, that in the gynæcological world, scant attention had been paid to them. When we remember the great disturbances which mark the advent and departure of the reproductive era of a woman's life; the profound changes taking place during ovulation, menstruation, pregnancy, labour, and lactation; the subtle and complex activities of her psychical life in her various diastaltic functions; it is not remarkable that neuroses should manifest themselves, particularly in relation to her reproductive mechanism. That they are increasing, *pari passu* with the advance in our higher civilization, cannot be denied. Among the

poor, the inducing factors were overwork, overworry, ill-regulated and poor nutrition; among the well-to-do, educational strain, over-indulgence, the stress of life, and emotional excitement.

Another important factor in explaining the prominent part which the pelvic organs play in the neuroses, is the widespread habit among women of centralising their attention upon these organs, because they are led to regard them as the primary cause of most of their ills. There is a fascination in the mystery of the sexual mechanism, and a morbid introspectiveness is easily engendered by an undue attention to it, too often passing into a condition of hypochondria. This mischevious habit is due, also, partly to the influence of the narrow mechanical school of gynæcologists; partly to the work of quack pamphleteers and vendors of patent medicines—would-be saviours of suffering womankind.

Owing to the marked surgical trend in gynæcological practice during the last twenty years, a narrow and debased specialism has been evolved which has resulted in the establishment of a school whose motto is "*Le bassin c'est la femme*," and whose remedial measures are limited to various procedures—from the passing of a sound to the extirpation of the appendages. Too strong a protest cannot be urged against the centralisation of attention on the local condition without regard to wider physical and psychical relationships.

The accusation of the broad-minded general physician, that the gynæcologist works in ignorance of the neuropathies and organic diatheses in that region of the body where they are of chief importance, is a well-merited one, and the majority of gynæcologists will, if they be honest, acknowledge its force.

In considering a case of pelvic pain we must bear in mind the following points:—

1. The pain may be directly due to pelvic lesions sufficient in themselves to produce this symptom.

2. Pain may exist with minor degrees of pelvic trouble, insufficient in themselves to cause more than a small amount of suffering.

3. Pain may be a pelvic symptom in association with some condition which in itself cannot directly produce this symptom.

4. It may be a prominent symptom in cases in which no local changes of any kind can be made out.

It is, therefore, very evident that other than local factors must be taken into count as explanatory of the symptom which we are considering. Among these, attention should be directed most markedly to the neuropathic condition—neurosis, in the widest meaning of the word.

This condition is related to the pelvis in various ways. In one set of cases, a local lesion, capable or not in itself of causing pain, may be the primary cause of development of a neurotic state manifested by diverse phenomena. The more marked these become the more is the pelvic pain intensified—a reactionary exhibition of the neurosis, as it were, on the seat of the primary affection.

In another class of cases there may be a slight pelvic lesion, causing very little discomfort. A neurotic condition may be developed from causes foreign to the pelvis, and this may manifest itself in intense pain, related by the patient to the pelvic lesion.

In another set the symptom of pelvic pain is developed as one of the phenomena of a wide-spread neuropathic state, there being no local lesion of any kind.

There is another interesting class in which the local symptom is practically the only neurotic feature in the patient. In some of these cases the condition is somewhat like that in which the possession of a "fixed idea" is characteristic.

In others it is of the nature of a "secondary reflex action" induced by a former continuity of habit when there was an actual painful local lesion which has since been cured. The patient's nervous system has so registered the former habit that it is reproduced apart from all control of the higher centres.

In the treatment of dysmenorrhœa, the failure to consider the existence of relationships between local and general conditions, between pelvic suffering due to and commensurate with pelvic lesion, and that which is due to neuroses, and the fixation of attention upon the local state, have resulted in a form of practice very often fraught with disappointment both to physician and patient.

The mechanically-minded specialist on coming into contact with his dysmenorrhœa case, at once proceeds to establish *a locus standi* in the pelvis. He argues thus: The patient complains of pain in the pelvis. It must be there. Its cause is there; its treatment must be by measures directed to the pelvis. He then has a choice of procedures. Probably he thinks first of a uterine flexion, and a pessary may be brought into requisition; or he may diagnose a stenosis of the cervical canal and proceed to a dilatation or to a cutting operation; or he may deem the ovaries at fault and decide heroically on their removal.

It may be that he will carry out these different operations *seriatim* in the chance that he will at last hit upon one which will be successful. Sometimes he cures his patient; sometimes he does not. When he is successful, he attributes the good result directly to his operation, forgetting that very often the benefit is obtained either through its

indirect effect on her nervous system or by the influence of the rest, change of scene, diet, etc., with which her operative treatment is accompanied.

The history of gynæcology is one of a succession of periods of concentrated attention on one after another of the pelvic contents. Before the days of the bimanual examination, when every gynæcologist wielded the tubular speculum, the supposed great source of pelvic trouble was the so-called "ulceration of the cervix," and there are well-founded traditions of fabulous fortunes made by those who devoted their lives to the touching of these diseased spots with various applications. Then, with the discovery of the uterus, came the period of displacements and contractures, when nature's mistakes were remedied by pessaries, dilators and scissors. Then the era of the ovaries, and, finally that of the tubes.

Now, at the end of the chapter, what can the *fin de siécle* gynæcologist do but practise upon the whole gamut of his predecessors, giving special attention to one organ or another according to his particular bent or predilection, and so we find the country getting filled with women nursing a grievance against their wombs, their ovaries or their tubes; in many instances possessing diagrams of their pelvic topography furnished by their zealous gynæcological physician, in order, it may be supposed, that they may, in their leisure hours, exercise their already over-stimulated introspective faculty with more scientific accuracy.

Who that has read Clifford Albutt's lectures on visceral neuroses has not smiled at his account of the woman "entangled in the net of the gynæcologist, who finds her uterus, like her nose, perhaps, a little on one side, or again, like that organ, running a little, or as flabby as her biceps, so that the unhappy viscus is impaled upon a stem, or perched upon a prop, or is painted with carbolic acid every week in the year except during the long vacation when the gynæcologist is grouse shooting, or salmon fishing, or leading the fashion in the Upper Engadine?"

Should the gynæcologist's moral sense become blunted, it is not difficult to understand why he may fall into the reprehensible habit of trading on the fears which naturally fill the minds of women when their reproductive apparatus is out of order, and of elevating into an unnecessary importance, conditions which are but trifling.

He trusted his words would not be misunderstood. He did not denounce local and operative measures. In their place they were essential. He only denounced their irrational and injudicious employment. All are subject to this temptation. All desire short cuts

to success. All are prone to try like Clifford Albutt's *bête noir*, "to stem the tides of general and diathetic maladies with little Partington-mops of cotton-wool on the ends of little sticks." It is much less troublesome to make a few cuts than patiently to analyse a subtle and puzzling case and to exert our whole energy in overcoming an obstreperous or aberrant nervous system. Yet it is this latter practice that must be our constant study in many cases where pelvic pain and discomfort are prominent symptoms.

Throughout the orthodox medical fraternities of the most advanced modern civilized countries, there has been a widespread distrust of all remedial measures of a distinctly tangible kind. This attitude has, no doubt, justly been developed in antithesis to the ridiculous pretensions of the mystics of dark ages in Europe.

We are taught to denounce with academic scorn, and rightly, too, in most cases, faith-healers, Christian scientists, hypnotists, religious miracle-workers, *et hoc genus omne*.

Yet it must be confessed that if a careful study of this interesting congerie of empirics be made, it will be found that amid their extravagant claims and sententious philosophies they have all been nursed upon one common germ-idea, viz., that the transcendant power in the human organism is mind, and that the effects of diseased conditions may be enormously modified by influences brought to bear upon the cortical centres, especially if the disturbances are due to neuropathic states.

It should, therefore, always be the aim of the physician, in addition to the means which he employs in toning up the general health by drugs, food, etc., and to the local measures which he adopts, to endeavour to impress upon the mind of the patient the necessity of taking her thoughts from the pelvic condition, teaching her self-control, encouraging her, removing from her anxiety and fear as to the gravity of her state, and impressing upon her the importance of counteracting every development of neuroses that may become manifest in her.

Dr. J. C. CAMERON thought that our duties in the way of the medicinal treatment of dysmenorrhœa were not likely to be neglected, but that we were more liable to forget our duty in the line of prevention. Preventive medicine was the medicine of the future; the prevention of malnutrition and nerve strain in youth was the true one for dysmenorrhœa. We do not realize this when we allow the strength of growing girls to be overtaxed and their nervous system to be overstimulated by study and excitement. The public would never learn these things except from the profession, and yet we did not seem to realize our responsibilities in this respect. We should raise our voices

persistently against those modern methods of education and training which undermine the strength and impair the usefulness of modern men and women.

Dr. WESLEY MILLS was pleased to hear from Dr. Gardner that the clinician could not agree with the view that there was no connection between ovulation and menstruation. This view could not be held by any person who was an observer of nature. It illustrated a very grave danger to the profession, that of proceeding to general principles from very special cases. Because, in certain diseased human females, one could not always trace the connection between them, it was rash to conclude that the process of menstruation was not dependant upon the function of the other reproductive organs. He expected as a result of recent advances in the knowledge of the innervation of the regenerative organs, as worked out by the Cambridge school, that a sounder basis of treatment would follow. As all parts of the body were related we did not know what the general effect might be of the removal of any one organ. He suggested that the gynæcologists might make valuable observations in this line.

Dr. LOCKHART, in reply, said he could not claim to have cured 50 per cent. of his cases by the use of drugs. With regard to the use of the stem pessary, it was always his practice, where it was required, to insert it at the time of the operation, and to remove it before the patient left her bed.

Those who object to the bicycle for women should remember that it might be a question of use or abuse. He considered it essential that the wheel should be carefully selected and proper directions given as to the amount of exercise to be taken. He objected strongly to the routine use of potassium bromide and conium, believing that the exhibition of sedatives would not effect a cure.

Dr. GARDNER felt that he had not made himself clear with regard to the varieties of dysmenorrhœa; the classes mentioned he intended to represent types, as a large proportion of the cases was complex.

He considered the neglect of mothers and guardians to inform their charges of the onset of menstruation was very common indeed, and was scarcely short of criminal. In his experience the English were much more guilty than the Americans in this respect.

As a method of treatment in the neurotic form he had had pronounced success from the prolonged administration of the hypophosphites of lime and soda given in doses of from one to two grains freely diluted after each meal. Phosphide of zinc had proved satisfactory in a few cases, in some instances after mechanical treatment had failed. Nutritives were of the greatest value, but he was a little

more conservative with regard to the use of iron. In neurotic cases if suspended at the approach of, and during menstruation it was of value. Often, in the congestive form, it was injurious, the patient might gain in colour, but she would suffer more severely at the periods.

The treatment by electricity was sometimes followed by brilliant results, using the negative pole of the galvanic current for a few minutes with a weak current.

He thought there was something we did not understand about the influence of the introduction of sounds into the uterus on painful menstruation. Often, after having passed the sound for diagnostic purposes, perhaps three or four periods following would be free from pain. He cited the case of a patient who came once every four or five months for five years, simply to have the sound passed.

Hot baths he had used for a long time, and bromides he thought of some value. For a few days before the advent of the period, in some cases, he used the bromides and conium, while in the intervals he employed curative measures.

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BRITISH MEDICAL ASSOCIATION.

MONTREAL MEETING.

If the selection of various officers and readers of addresses before the Association, has taken longer time than had been expected, and if still we are not authorised to publish a list of those already appointed, this much may be said, that the policy pursued by the Local Executive Committee and the recent journey of Dr. Roddick to England. have already resulted in the production of a list of officers, the like of which has never been equalled at any previous meeting save possibly those which have been held in London itself. We are informed on the best authority that in section after section the recognised leaders, men whose names are familiar as household words to the profession, have gladly accepted the invitation to preside. This fact alone makes it certain that the meeting will be most memorable.

We are glad to note also that the profession in other portions of the empire is realising the importance of this, the first Colonial Meeting of the Association. Within this last week letters have been received from Australia, Barbadoes and Bermuda, indicating clearly that we in Montreal can count upon the presence and active co-operation of members from the Branches there. With regard to the profession in Canada, letters are being received each day from all parts expressing pleasure that Montreal is making of this a national and not a local meeting. Only at the moment of going to press we hear that a well-known and leading member of the profession in Winnipeg, has not only written his appreciation but has generously offered the sum of $100 towards the expenses of the meeting.

From the Secretaries of the Museum Sub-Committee we learn that there is already an active competition to secure the best places in the Exhibition. We may here state that no steps will be taken to allot the spaces for which tenders are invited until March 27th.

PULVIS ET UMBRA.

We shrewdly suspect that the ordinary sane individual forms his or her opinion upon the relative propriety of various modes of disposal of the dead by the exercise of the imagination, rather than by calm reasoning or an attempt to apply the dictates of religion; otherwise we cannot explain to ourselves why we, with the majority of mortals, continue to have a preference for ordinary burial. Viewed philosophically—aye, viewed with the truest reverence—it is a small matter what becomes of the encasing shell when the *imago* bursts therefrom and wings its flight away. That shell must inevitably vanish. Sooner or later, be it in the space of a few brief minutes or be it only after an odd thousand or two years, the lifeless body must become thin air and a mere handful of dust, and dust and air be blown to the four quarters of the heavens. Do what we will, hold we however firmly to whatever creed, however strong our conviction that once again this corruptible shall become the framework of the incorruptible, we must admit that by no human device can we overcome its corruptibility.

Fundamentally the views of the majority concerning the proper disposal of the dead resolve themselves into a matter of æsthetics, a matter not of what is best for the community, but of what is most seemly to themselves; and what is most seemly is, as we say, essentially determined by the imagination. With most of us the final determination of the matter—if with most it be not the first and final—is based upon an attempt, as grimly humorous as it is pathetic, to strive to appreciate the comfort of coffined dissolution *à la mode*, as compared with the swifter dissolution within the furnace. We cannot divest ourselves of the idea that this familiar body of ours is our very self, cannot help picturing it as still sentient after death, cannot contrast the relative advantages—or rather, disadvantages—of the furnace and the grave without in the one case a painfully keen anticipation of the agony to be endured in the process of being burnt, while, regarding the other, we are the slaves of custom and view with relative indifference the inevitable happenings underground, the uncleanly horrors of putrefaction (to use the mildest of language). Let the earth be shovelled in, and the tombstone cover everything. That is enough for us.

Like unto healthy people in general, we, of the editorial staff, are not given to contemplate this matter of the *omne quod superest*. As individual members of the community, we do not by any means represent ourselves as active advocates of cremation. What we here take to be the general view of the subject may—so little have we

thought about it in the past—be equally taken to indicate our own æsthetic proclivities. We do not think that the time has come for cremation to be adopted as a general means for the disposal of the dead, nor are we prepared to urge it upon the community. But if we be asked whether it be reasonable, we, as medical men, must admit that it is—nay, more, must acknowledge that there is no more perfect way of disposing of the dead. Indeed, from a hygienic standpoint, it is abundantly evident that there is little or nothing to be said in favour of the consignment of earth to earth, as usually conducted, while cremation, as now carried out, fulfils every hygienic requisite We do not attach much weight to the objection that the crematorium will help to defeat the ends of justice. Those who favour cremation can have no objection to the performance of autopsies. For years to come cremation must be regarded as a luxury, and will be paid for accordingly, so that no hardship will be imposed in demanding a preliminary autopsy whensoever the crematorium is called into use.

We trust that we have made it clear that we are at one with those who shrink from being consigned, and from consigning those near and dear to them, to the action of fire, purifying and cleanly though that action must be. But we cannot see a solitary satisfactory objection to permitting those who so desire to be cremated. No valid reason can be brought against the erection of a crematorium in this immediate neighbourhood. If such be erected, it is not proposed to cremate therein the members of the Board of the Mount Royal Cemetery, save at their express desire. The sentiment which of late led a majority of those present at the annual meeting of that Board to oppose the erection, can only be described as mediæval. Surely the time has passed when one section of the community can deny to a minority of the same—a minority which, nevertheless, contains some of the greatest philanthropists and most highly respected men in Montreal—the privilege of disposing, in a strictly legitimate manner, of that which

> "the soul
> Hath broken and cast away."