indigestion since about 1889. I took her in about four years ago. I tried to persuade her to have an operation done, but she declined. She was very ill, and I said you must have an operation done; but again she lost her symptoms with the rest in bed and medical treatment, and she persistently refused to have the operation. What has become of her since then I do not know; I can give you that as an experience, but it would be very unsafe to trust to her case for laying down rules; and I think six or seven relapses in a period of about five years should be the limit in regard to allowing medical treatment to go on. Unfortunately four or five years' duration and six or seven relapses will not always be allowed you. This is probably the meaning of the death-rate in those medically treated; they have died of perforation or haemorrhage under circumstances in which it was impossible to do anything, and surgeons will say, why do you not, then, have them surgically treated in order to anticipate these catastrophes? I do not hesitate to say, strange though it may appear, that it is absolutely impossible to be certain that one of these catastrophes is going to occur. I go further, and I say that even if the surgeon be called in on the first occasion, you cannot guarantee that the catastrophe will not occur after that, because the death-rate after relapse and after operation has been something considerable. Therefore, lame as the conclusion may seem, the fact remains that you cannot be certain a catastrophe will not occur in any given case of gastric ulcer. Still, provided there is no catastrophe, I say five or six relapses over 30 years of age, and then *qua* relapses only, provided the patient's consent be obtained, operate.

Lastly, is there anything to be felt in the shape of a lump in the abdomen which means either simply a scar without adhesions, or a scar adherent to the anterior abdominal wall, or to the liver, or somewhere else? Shall you operate? I must answer that for you by saying, Yes; generally speaking, you should operate if you find these big organic lumps, because it means chronic ulcer which will not heal without treatment. I should have made this statement without hesitation if it had not been for my experience of a case in the last month.

The patient came to me a month or six weeks ago, when I found a big organic lump, and I said, This ulcer has gone too far for medical treatment; you must come in and be operated upon. She consented and came in. In hospital one is never in a violent hurry; we can always get surgical treatment for any emergency in half an hour or so, and so we were not in a hurry. One cause of delay led to another in this case, and she seemed to be improving very much. We got her teeth removed for one thing, and I believe that they were poisoning her, for she had very bad pyorrhoea alveolaris. The result is she had no operation, but she steadily improved under medical treatment and her hard lump disappeared.

Such a favourable result in such a case is not to be commended to you as a thing to expect, but it certainly should be mentioned to you as a fact; so I shall still have to repeat that if there is an organic lump present, operate. It must be taken as one of the indications for operation, but again I insist that even this is not absolutely infallible. The only infallible indications for operation are stricture or perforation; those are the only ones which I know of to which there is no possible exception. The perforation may, of course, be so bad that the surgeon will not operate, but that does not really affect the point which we are discussing now.

WE learn from the *New York Medical Journal* that on February 1st, 1910, Senator Owen, of Oklahoma, introduced into the United States Senate a bill providing for the establishment of a Department of Public Health under the supervision of a Minister of Public Health, who is to be a Cabinet officer, with a salary of 12,000 dollars a year. The bill provides that all departments and bureaus belonging to any department, excepting those of War and of the Navy, affecting the medical, surgical, biological, or sanitary service, or any questions relative thereto, shall be combined in one department, to be known as the Department of Public Health. The work of the department will embrace every agency of the United States for the protection of the health of the people of the United States, or of animal life. The bill provides that the secretary shall establish bureaus of biology, chemistry, veterinary service, and of sanitary engineering. The bill was referred to the Committee on Public Health and National Quarantine.

A Lecture ON DYSMENORRHOEA.

DELIVERED AT THE MEDICAL GRADUATES'
COLLEGE AND POLYCLINIC.

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GENTLEMEN,—The subject we have to discuss is one which ought to be of interest to every practitioner of medicine, for this affection is apt to be the cause of suffering from the time a girl is about 12 or 14 during the many years up to the menopause; and although the worst cases come under the observation of the gynaecologist, yet before doing so they pass through the hands of the family physician, so that there is really nothing more important in the ordinary treatment of the diseases of women, or for which advice is more frequently sought, than the pain suffered at the time of menstruation. It so frequently shatters a girl's health before she has become a woman that too much attention cannot be paid to the careful study of this disease. I am certain that the judicious management of dysmenorrhoea prevents, in many cases, girls and women drifting into chronic invalidism. Although many regard dysmenorrhoea as a symptom of something occurring internally, it is certainly a disease. Healthy girls never have pain with menstruation; it occurs practically with no symptoms whatever, and except for its appearance might be disregarded as far as in any way affecting the health or well-being of the individual. Unfortunately, the minority of women menstruate in this manner, suffering no pain. It has been estimated that only about one-third of all women menstruate without pain. This shows how important the subject is.

I propose to deal with the subject principally under the head of etiology before passing on to what is, of course, the most important consideration for us—namely, treatment; but in the first place I shall merely mention the divisions into which dysmenorrhoea has been classified before giving my own view of them. It is usually said that the forms of dysmenorrhoea are idiopathic, congestive, membranous, spasmodic, obstructive, ovarian, and even neurasthenic. Some believe there is a form of dysmenorrhoea which is purely nervous, and which may be due to faulty innervation of the uterus, be it of an anatomic or a functional defect. This variety they speak of as neuralgic dysmenorrhoea.¹ Others think that it is easy to divide the various forms clinically into uterine and extrauterine;² and others, again, have classified them into primary and acquired.

The greater the experience one has, the more convinced one is that these divisions are entirely unnecessary. I know of nothing to make me alter the view I have long held—that there is only one form of dysmenorrhoea, that is, spasmodic, and that therefore all other varieties, or so-called varieties, merely produce confusion. If the word "dysmenorrhoea" were confined to the disease to which, in my opinion, it ought only to be applied—namely, painful contractions of the uterus during menstruation—confusion could not arise, but because it is so frequently associated with affections of the ovaries, Fallopian tubes, or certain conditions of the nervous system, so many forms of the disease have been described. To speak of neurasthenic dysmenorrhoea means only that a woman suffering from neurasthenia has superadded to her condition dysmenorrhoea, and in such a case it is quite possible that the doctor attending her, or prescribing for her, may think that dysmenorrhoea has supervened in the neurasthenic woman, and that therefore neurasthenic dysmenorrhoea is a legitimate name for the affection. But, as a matter of fact, pain is relative, and anything which lowers the tone of the nervous system, such as the onset of menstruation, is apt to bring on pain in certain parts, or to aggravate the sensation from very slight to severe. The most important division of dysmenorrhoea, and one which demands a considerable amount of attention, owing to the fact that it is always so constantly referred to, is obstructive or membranous dysmenorrhoea. It is considered that membranous dysmenorrhoea produces obstruction on account

of the membranes or shreds which are said to block the cervical canal, thus preventing a free flow and causing spasm of the uterus. As I have already said, I do not acknowledge that there is any real obstructive form. It will be found on examination that many women pass membranes or shreds, which are only known about when inquired into. Antelexion is also said to produce obstruction, but it is well known that obstruction is not absolutely present. According to a paper by Dr. Gustav Kolischer,³ who has observed certain cases, the blood normally flows in a steady stream from the external orifice to the posterior fornix of the vagina, only occasionally, and then gradually, increasing and decreasing in volume; but in painful menstruation during attacks the blood is forced out in jets from the external os, evidently by forcible contractions of the uterine body.

All those who have constantly examined cases before operating for dysmenorrhoea know by experience that, although the ordinary uterine sound cannot always be admitted, yet a probe of smaller size can invariably be passed into the cavity of the uterus, showing that there is no actual obstruction in the cervical canal. The late Dr. Matthews Duncan used only to speak of one form of dysmenorrhoea, although he mentions two in his lectures, and Dr. Herman⁴ also considers that there is only one form—dysmenorrhoea spasmodica.

It may be here convenient to speak of the ordinary symptoms of dysmenorrhoea. In many cases those women who suffer from it have premonitory symptoms for some days of malaise—slight pain or discomfort in the back, shooting pains, slight or severe, down the thighs, lassitude, disinclination for exertion, abdominal pain, nausea, and headache. These symptoms may last from a few hours to several days, but are only the precursors of the regular pains which occur either before or during the onset, or after the flow has been thoroughly established. The contractions come in waves or paroxysms, and in the most severe form they may affect the bladder and rectum, producing strangury and tenesmus, as well as violent abdominal bearing-down pain. These pains or violent contractions are the same in character as labour pains, and last from one to two or three minutes. There is no regularity, except, as a rule, in the individual herself, in these symptoms. Each case must be judged by itself, for although most can be grouped into those commencing in a certain manner, none are exactly alike. I have divided the cases coming under my observation into slight, severe, and agonizing. In the divisions I have made, those coming under the head of "agonizing" are not common. The word ought only to be applied to those cases actually suffering agony. By these I mean where the woman is evidently in the most excruciating pain—where she cannot keep still for an instant, but rolls about the bed, is covered with perspiration, becomes cold, and, finally, faints from the pain. Of such I have seen a fair number, and only recently a case on which I operated became collapsed each month from excessive pain. In another case brought to me some years ago, a lady about 24 years of age, maniacal excitement developed every month, and the patient was obliged to be provided with two nurses, and invariably became collapsed. In her case complete relief was obtained by dilatation, and she never had any trouble afterwards. Sometimes the usual monthly attack comes on quite suddenly. It is very common for a girl to be awakened by abdominal pain, which increases in severity until it reaches the height to which she is accustomed, when it remains the usual time, and then gradually disappears. When the pain increases in severity, nausea is induced, and very often vomiting follows, in some cases frequent, in some infrequent. I have known persistent vomiting brought on regularly by dysmenorrhoea, lasting for some hours or days, and leaving the patient weak and ill, so that many days passed before regaining strength, again to be reduced by the next attack. In the most severe form I have never known pain to last more than a few hours, but there may be considerable clonic spasms for twenty-four hours or more. A fair estimate may be gained of the severity of the attack by asking the patient if she can fulfil her social or other duties during the time of menstruation. A patient will often talk of "agony of pain," and on further questioning one can ascertain that she will be able to attend a ball or fulfil some engagement which gives pleasure, when it

may certainly be said that she does not suffer severely. I invariably ascertain if a patient can keep her engagements during the period of pain. If she cannot, it may be fairly assumed that she suffers. Sometimes there is a sensitive condition of the skin from reflected pain in the region supplied by the sensory nerves from the eleventh dorsal to the second lumbar segments of the spinal cord.

It may here be well to say a few words about the extraordinary difference there is among girls and women of all classes in bearing pain. Some girls, accustomed to every care and luxury, retire to bed every month, saying they have great pain, when, if they were carefully watched, it would be evident that they were not suffering severely. On the other hand, I have known women who have been obliged to make their living, keep at their work unless prevented by actual sickness or faintness from doing so, notwithstanding intense suffering. The test I have for examination in hospital is whether a patient can remain at work during the time of the period. If she cannot it means sick leave, and, after a short time, loss of situation, so that she is driven to the hospital for radical treatment. Doubtless many women, suffering severely, will continue to do their regular work without interruption, but if actual vomiting or faintness be brought on they are obliged to desist.

Some writers divide the symptoms into "uterine" when there is pain in the back with other symptoms supposed to have special reference to the uterus, and "ovarian" when the pain is particularly referred to one or both ovarian regions. Many women complain much more of pain in one or the other side of the abdomen, or in the hypogastric region only, and may not suffer particularly from pain in the back or down the thighs, but I do not regard any refinement of symptoms as necessary. Generally speaking, the pain is pelvic, and, although it would be easy to tabulate a certain number as suffering from sacralgia, and others as complaining mostly of aching and pain down the thighs, I do not consider that any useful object is to be attained.

I do not think I need take much time in discussing the diagnosis of the disease. It is so common, and the patient herself is so accustomed usually to the recurring condition that a mistake can hardly be made. Nevertheless, it is well to bear in mind that other conditions may occur at the same time, and possibly be overlooked. Although there may be in some cases of dysmenorrhoea extreme tenderness all over the abdomen, it is hardly likely to be confounded with peritonitis. Absence of any rise of temperature, the characteristic pulse, and the usual symptoms associated with peritonitis, are sufficient for the diagnosis. The cases in which the friends or the patients themselves may be alarmed and in doubt are those in which, although severe dysmenorrhoea is regular, yet for some reason the attack may be intensified and medical advice sought. Under such circumstances, I once saw a patient who was suffering from strangulated hernia, and who was very ill when I saw her. She was operated on successfully. It is well also to bear in mind that in cases of peritonitis absolute rest in the recumbent position is most grateful to the patient, whereas in severe dysmenorrhoea she will not keep still for an instant. In membranous dysmenorrhoea it is not always possible, without a microscopic examination, to say whether the cast is menstrual or not. There are vaginal casts, and decidual, as well as casts of the bladder from inflammation, the former being thrown off in exfoliative vaginitis, and, if this be accompanied by severe pain, it might easily be mistaken for membranous dysmenorrhoea. Of course, it is possible also for the two latter affections to occur together.⁵

Etiology.

I look upon the cause of the pain of dysmenorrhoea as a spasm or cramp of the uterus. Most people know what severe pain may be produced by cramp of the muscles of the calf. The uterine spasm may be tonic or clonic, and I have a theory that when in the severe cases there is a true tonic contraction, it is this which brings about the actual collapse from the severity of the pain. The clonic contractions may continue indefinitely, causing severe pain, but pain which comes and goes, and does not produce the profound impression on the nervous system caused by the tonic contraction. It is important to remember that the painful contractions occur at menstruation, for although

ovulation and menstruation come about the same time, ovulation often follows menstruation, and may occur between menstrual periods. The ovarian changes which precede ovulation, by producing ovarian tension, reflexly excite the uterus and cause menstruation, but may set up much pain before its arrival.⁶

Now what we have to ask is, What can be the cause of these painful uterine contractions? Dysmenorrhoea is a disease, and must have a cause for its production. Many are ready to give various explanations; I confess I know nothing at the present moment which can be accepted as the true explanation of this painful contraction. The most common explanation is the "obstructive dysmenorrhoea" or mechanical theory, to which I have already referred; and if the textbooks are consulted they will be found to give this theory, and to explain it by saying that there is antelexion which obstructs menstrual flow. It has been suggested that, as the result of antelexion and consequent obstruction, a little blood is forced through the Fallopian tubes every month into the peritoneal cavity, giving rise to miniature haematocele. These small haemorrhages are considered by some to be the cause of the posterior perimetritis which sometimes accompanies antelexion.⁷ As I have already said, I do not accept this theory of obstruction, for I do not believe, however acute the antelexion may be, that the flow is hindered sufficiently to influence the uterus in producing pain. The most striking argument to be adduced in support of this is haematocolpos, where we know that there is a complete blocking of the exit from the uterus, and yet no pain in some cases is complained of. In addition to this, we know that more than half the cases of dysmenorrhoea come on in women who have not borne children, after the period has been regularly and painlessly established. Again, I have operated in some cases of sterility when only the finest probe could be passed through a pinhole os, and yet no pain has been complained of at menstruation and there was the usual normal amount. No amount of acute antelexion or retroflexion blocks the canal sufficiently to prevent gradual flow, however slight it may be, from the cervix, and therefore this cannot be considered a sufficient explanation of the pain at the period. The average amount of blood lost during menstruation is about 4 oz., and if this is distributed over, say, four days, it gives an average loss of one-third of a drop in every minute, which will not be difficult to pass along any cervical canal.

It is quite easy to make a large number of headings under "general" and "local" causes, uterine or extra-uterine, primary or acquired, but this serves no practical purpose, for we are no further towards an explanation. It is usual to advance chronic metritis, or pelvic congestions, as the cause, but they are no explanation at all. Women suffering from metritis or endometritis are liable to have pain or discomfort increased at the time of the period, for the whole uterus and adnexa become more charged with blood and the tension is raised. It is, therefore, natural that discomfort and pain should be increased, for we know how much tension in the vessels has to do with pain. In all women, as menstruation comes on, there is a rise in vascular tension, as well as a slight rise in temperature, and because in dysmenorrhoea it may be proved that metritis or endometritis, or acute antelexion or retroflexion, is present, the conclusion is arrived at by some that it is the cause of the pain. The menstruation only aggravates the pain produced by the congestion, with the origin of which menstruation has nothing to do. This applies to all pelvic affections, whether of the uterus, tubes, or ovaries. But this cause, even if it did exist in married women, could not be adduced as a cause in virgins, for I know of no work on pathology which states that endometritis is common in them, whereas we know that dysmenorrhoea is. If it occurs at all, it must be rarely. In membranous dysmenorrhoea it might be that there was probably some obstruction, and that the spasmodic pain was caused by the efforts of the uterus to expel the membrane. The expulsion of the membranes, or complete casts of the inner surface of the uterus, is frequently associated with dysmenorrhoea, as is familiar to all, and indeed it is often the presence of these membranes, or complete casts, which induces a patient to seek medical advice. That they are not the cause of the pain is proved by the knowledge that these casts may be expelled without any pain at all. If certain questions are put with

reference to menstruation, it will frequently be found that shreds or membranes are passed quite commonly without the least pain. I have had cases which have come before me only because a complete cast of the inner surface of the uterus has been passed on one occasion, and although the patient has known that she has regularly passed shreds, she has paid no attention to them until alarmed by the presence of the cast.

In membranous dysmenorrhoea much depends upon the period of degeneration in the menstruation, which I need not go into now, but it may be shortly said that the mucous membrane of the uterus exhibits (1) the period of growth in the five days preceding menstruation, characterized by a rapid increase of the stroma, blood vessels, epithelium, etc., of the membrane; (2) four days of menstruation, or period of degeneration, during which capillary haemorrhage takes place, and the epithelium suffers degenerative changes and is cast off more or less; (3) the seven days' period of regeneration, during which the mucous membrane returns to its normal state; (4) the twelve days period of rest, during which the endometrium remains in a quiescent state.⁸ Gellheim explains the pain as being caused by dragging on the peritoneum—an explanation which will not suffice in a normal pelvis, but may serve when the mechanism of the dragging process is considered in those cases in which direct or indirect adhesions between the uterus and parietal serosa are found.

According to Dr. Mathes,¹⁰ there is a causal connexion between dysmenorrhoea and enteroptosis. Kermanner says that it is nearer the truth, and consonant with the opinions held by Lennander, to seek the source of dysmenorrhoeic pain not in the uterus but in the pelvic tissues, and in those divisions of it rich in nerves, the sacro-uterine ligament for example. Tobler¹¹ remarks that as regards the significance of menstrual pain in nulliparae, it is important to ascertain whether it has existed from puberty (primary dysmenorrhoea) or whether it has developed later (secondary dysmenorrhoea), the latter being more frequent—as much as 58 per cent. Both primary as well as secondary dysmenorrhoea are found with extraordinary frequency in girls with constitutional affections (chlorosis). He considers it is probable that the most important seat of origin of the pain is just where the most extensive vascular and nervous plexuses are present, namely, in the subperitoneal connective tissue. In this way the kind of dysmenorrhoeic pain, certainly that which is most present in nulliparae, may be attributed to stretching and tearing of the subperitoneal nerves, as has lately been maintained in the case of other pains in the abdominal cavity.

It must be borne in mind that all uterine contractions are not painful. It is now known that there are contractions continually going on in the unimpregnated uterus, and that these are intensified at menstruation. They are sufficient to get rid of blood, degenerated mucous membrane, or complete casts of the uterine cavity, without causing pain, but the contractions with which we have now to deal must be considered to be morbid. In some these contractions are intensified by a small or large fibroid in the wall of the womb, or by a polypus in the cavity setting up irritation, and acting as a foreign body. It is most important to remember that if a woman who has menstruated regularly and naturally for many years seeks advice because of increasing dysmenorrhoea, it is extremely suspicious, and at once a fibroid or a polypus must be thought of as the cause. This is one of those affections classed under "obstructive dysmenorrhoea," but, as already pointed out, in my view it ought not to be so spoken of. All who are in the habit of seeing many cases of dysmenorrhoea have doubtless some theory to account for these morbid contractions. Herman,¹² whose writings are always admirably clear, says that his theory is "that dysmenorrhoea exists because the centres in the spinal cord or in the sympathetic system which regulate the movements of the genital canal are imperfectly developed." In the normal painless menstruation there are contractions of the body of the uterus and dilatation of the cervix, so that the menstrual fluid is expelled without pain or difficulty. His theory is that in dysmenorrhoea this natural dilatation of the cervix is absent, and in consequence the contractions of the uterine body are morbidly violent and painful. I agree with Herman in

thinking that the pain of dysmenorrhoea is caused by painful contractions of the body of the uterus, and that the dilatation of the cervix which normally ought to take place does not occur, but I do not think that his theory can be altogether accepted, although it is nearly right, for otherwise, I do not believe that the disease could be cured by dilatation, or the relief would be so temporary, that constant dilatation would have to be undertaken because of the undeveloped nerve centre. But the strongest argument against it is that dysmenorrhoea may be induced or occur long after the flow has been regularly and painlessly established—what has been called by some secondary dysmenorrhoea, in contradistinction to primary dysmenorrhoea, beginning with the onset of menstruation, and about this I shall speak later; but I may here say that if the spinal centre were imperfectly developed, then the onset of the flow must be painful, and continue to be so, but we know that this is not always the case, and that the most severe cases of dysmenorrhoea may have remissions. If the imperfectly developed centres became gradually developed, and the dysmenorrhoea ceased, then it would be difficult to explain why there should be a recurrence of the pain. My own theory of this disease is that it is caused by the circulation in the blood of some bio-chemical material acting on the hyperaesthetic mucous membrane of the uterus, and possibly also upon the nerve centres regulating the genital canal, and that this material is due to faulty secretions of the ovaries. My ground for this is that, if any ordinary healthy woman is examined with a uterine sound, directly it passes into the region of the internal os and beyond she complains of discomfort, or at any rate it is disagreeable to have the mucous membrane, which is normally very sensitive, touched, but she can bear the examination perfectly well. Now, if you examine a woman who suffers from dysmenorrhoea with a probe, directly it passes into the internal os she will say that it is extremely painful, and, if you continue to introduce the probe so that it touches the uterine mucous membrane, the patient may declare that it is intolerable. Now afterwards, on withdrawal of the sound, she will say that the pain she complains of is exactly the same as at the time of the period, and this same kind of pain may continue for some time after the examination. The touching of the mucous membrane by the sound produces apparently a reflex action, and a painful contraction of the uterus ensues. Anything which acts as a foreign body will do the same, and this, in my opinion, is the explanation of the painful contraction in membranous dysmenorrhoea—the shreds or casts irritate the hyperaesthetic mucous membrane. It seems to me that, as the onset of menstruation occurs and an increased secretion commences, which is sufficient, in a condition of hyperaesthesia, to irritate the mucous membrane in such a manner that reflex painful contractions occur, these spasms continue until the mucous membrane becomes adapted to the continued irritation; or, in other words, until the irritability of the uterus is exhausted and pain no longer occurs, or the source of irritation in the circulation is no longer present, when the reflex action ceases. As in this disease there is this irritable mucous membrane, which is the only part we know must be morbidly affected, it seems reasonable to assume that in some way it accounts for the spasm of the uterus.

It is not, however, easy to explain what causes these changes of the mucous membrane to bring about this hyperaesthesia—whether the irritation is due to some secretion or altered blood it is impossible to say. We know from Gautier and Douser¹³ that menstrual discharge contains four times as much iodine as normal blood, and an amount of arsenic equal to the whole quantity normally present in the thyroid gland.¹⁴ It is, therefore, possible that this is sufficiently irritating to act on the hyperaesthetic mucous membrane. But, in any case, there evidently seems to be an irritant which, acting on a morbidly hyperaesthetic mucous membrane, or directly on the nerve centres, produces painful contractions of the womb. Matthews Duncan likened this disease to spasmodic asthma, where there is also doubtless a hyperaesthetic mucous membrane, in this case of the bronchial tubes, difficult of explanation.

It is well known that at the onset of the period there is an alteration of the blood pressure. After rising, it falls slowly, the minimum being coincident with the appear-

ance of the flow.¹⁵ This may be due to the action of the ovarian secretion influencing the spinal centre for the genital canal or region and vasomotor areas. It is possible that this ovarian secretion, which undoubtedly has a powerful influence on the blood, may, under certain conditions of health, contain an irritating material which acts on the mucous membrane of the uterus. When the amount or properties of the ovarian juice or secretion is absolutely normal no alteration takes place in the regular menstruation, but when it contains some abnormal constituent, or its elements are not duly proportioned, then the action on the blood causes the secretion preceding menstruation to irritate the uterine mucous membrane, and give rise to the reflex action leading to painful contraction. It is probable that in time we shall know more of the functions of this ovarian secretion, but at present we can only theorize as to its possibilities. It certainly seems reasonable to believe that the proper action of the ovaries and their secretion must have everything to do with menstruation being carried on in a perfectly normal manner. We now know that upon the equilibrium of the blood glands depends our health; and as our knowledge becomes extended, we may hope to ascertain exactly the action of the ovarian secretion.

Fellner says¹⁶ that the uterus secretes internally, that this secretion forms a part of those toxins which affect the increase in the wave, so that the ovary becomes poisoned, and that between secretion and organs a relationship of dependence exists. That ovarian secretion is discharged is supported by the fact that calcium is secreted by the uterus,¹⁷ and, on the other hand, that the functional activity of the ovary proceeds concurrently with the excretion of calcium. Riebold¹⁸ considers that, concurrently with the strictly periodical fulfilment of the process of ovulation, certain secretions obtain access to the circulation. These, under physiological conditions, cause, first, an increase in nervous and psychic irritation, and secondly, an increase in the blood pressure and vital energy, the general heightening of the process of metabolism, and consequently the more generally severe hyperaemization of the internal organs, and a more active secretion of fluids. These processes may be set up independently of uterine haemorrhage. He mentions what he calls "recurrent rheumatoid ovulation fever" occurring in young girls, accompanied by more or less severe disturbance of the general condition, at the time of menstruation. He considers that ovulation has the effect of storing up an infective focus of rheumatic material, present in the body but latent, or else that a functional defect of the secretory activity of the ovaries may underlie a diseased condition.

There is another explanation of what is termed by some "ovarian dysmenorrhoea," when all the pain seems to be limited to one or the other ovarian region or to both, and there is sometimes a thickened capsule of the ovary found, with small cysts in the ovary itself, or it may be a tuberculous ovary. It seems that as the increased congestion takes place during menstruation, the ovary swells, the capsule becomes tightened, and great neuralgic pain is set up owing to tension and compression of nerves. This pathological condition is certainly found in some cases of dysmenorrhoea, but is not the cause of the real painful contractions—the spasmodic dysmenorrhoea of which I speak. I believe, when this pathological condition exists in the ovary, there is often severe neuralgic pain, lasting many hours, but it is not of the character of that which we have been discussing as spasmodic dysmenorrhoea, although of course it may be associated with it.

With spasm or intense contraction, all the muscular fibres squeeze the nerves supplying the uterus, and so cause pain. In some cases it is possible that actual neuritis of some of the nerves may take place, leading to continued discomfort in the region of the womb long after the period is over, and Lawson Tait believed that there are nerves from the tubes to the sympathetic system, and these he called "menstruating nerves." It is probable that the continued contraction of the uterus causes a slight amount of hypertrophy of muscular tissue; at any rate, the cavity tends to become elongated. In nearly all cases of well-marked dysmenorrhoea on which I have operated, the sound measured an increase of $\frac{1}{4}$ in. to $\frac{1}{2}$ in. This enlargement is more likely to be due to repeated severe contractions of the uterine muscular tissue than to anything else, and is analogous to the ordinary hypertrophy of muscular tissue

from overuse. I do not believe that a small uterus—the so-called infantile uterus—has anything to do with dysmenorrhoea. No doubt it is frequently associated with dysmenorrhoea, but I believe that the cause of dysmenorrhoea is exactly the same as in patients with a normally developed uterus, and the actual ill-developed uterus follows the same laws in this disease as the well-developed one. I have so frequently found hypertrophy associated with this disease that I cannot agree with Theilhaber's theory that the pain is due to a badly-developed uterine muscle.

Prophylaxis.

I have seen enough to know that there are many girls suffering from severe dysmenorrhoea who have started the period in an ordinary painless manner, who have been quite healthy, and who have developed dysmenorrhoea apparently from causes which might have been averted. I could relate many cases bearing on this, but I need only mention one in illustration of what I mean. A young lady, aged 23, was brought to me on account of dysmenorrhoea, dating from about a year before. She commenced her period at 13, and was always regular, suffering no pain, and never being troubled in any way by it. She was staying at a country house in Scotland, and on the first morning of her period started a drive of four hours in an open dogcart. Rain fell, and continued heavily during her drive; she was soon cold and wet, and told me that for more than two hours she was sitting in a pool of water. Pain came on within a few hours, and this attack was followed by regular and severe dysmenorrhoea. This case alone shows that dysmenorrhoea may be induced, and I have had many similar severe cases brought on by cold travelling. It is only prudent to advise girls to be careful of themselves without making any fuss at the time of the period. I see no reason to advise a healthy girl to remain in bed for the first day, but I know that many brought up in luxury are made by their mothers to do so. If a girl is really healthy, beyond giving directions for sensible care at the time of the period, nothing more need be done. It is a mistake to educate healthy girls to the belief that it is necessary to look upon the period as an illness. There are unfortunately only too many who are really delicate, and who are obliged to look upon themselves as invalids for so many days of every month, but those who do not suffer, and who enjoy good health, may go about their lives as usual, merely taking care to avoid any violent exercise. It is also important to avoid, if possible, passive chill, and for girls to remember to clothe warmly during cold weather.

One other cause which I believe will induce dysmenorrhoea in those who have not previously suffered from it is overfatigue, often most difficult to avoid, but cold and overfatigue together are, in my opinion, a fertile cause of the onset of dysmenorrhoea. If a girl who has a good family history, who has health to start with, lives an ordinary healthy life, with plenty of fresh air, attending to hygienic laws, she apparently ought not to become subject to dysmenorrhoea. About this, however, strangely enough, nothing positive can be said, for sometimes the most healthy looking girls gradually develop dysmenorrhoea, and others who are delicate, anaemic, and feeble, pass through each period without any trouble. It is impossible to forecast the future menstrual history of any girl who is commencing womanhood, however well she may be at the onset. I have very frequently observed that there is a family history of dysmenorrhoea for several generations. In ordinary slight cases of this disease, where a girl is complaining of malaise and headache, with only a little pain, rest and warmth will probably be sufficient. The application of dry heat in the form of hot-water bottles, and simple hot drink will probably be all that is required for relief. As to the drink, it may be hot barley water, milk and water, or the old-fashioned mulled wine, or hot spirit and water. In the slight cases hot fluid is sufficient, whatever it may be, and the addition of alcohol is unnecessary, especially if the patient is not in the habit of taking any. If the pain is not rapidly overcome by this, then some ordinary analgesic medicine may be given.

Treatment.

In the severe cases the patient does not need to be asked to go to bed, for, as a rule, she must be there. In some

cases I have already referred to, in which, although the pain is very severe, it is not sufficient to cause sickness or faintness, the patient may be able to keep about. This entirely depends upon the nervous system of the individual and the power of self-control. As a rule, it is impossible to keep about during the whole time, and retirement for an hour or two at least is necessary. In such cases the pain may be overcome by immediate treatment. As soon as the first indication of pain occurs, if it be by day, and it is possible to do so, a hot sitz bath, of ten or fifteen minutes' duration often gives great relief. An ordinary hot bath is of no use; the patient must immerse the middle of the body in the bath, the legs and upper part of the body being still covered. It is best to add hot water as the water cools, so that the temperature is kept up, and the patient may have it as hot as she can comfortably bear it. After this, if she is put into a well-warmed bed, with an india rubber hot-water bottle to the back, and one on the abdomen, great comfort will be given. It is of importance to let the patient lie on a hot-water bottle, because there is usually so much sacral pain, and the dry heat affords immense relief. Sometimes the abdomen is so tender that the hot-water bottles cannot be borne. In these cases I advise a very thick layer of wool, which has previously been baked in the oven until quite hot (this can be done in an ordinary tin box), to be applied all over the abdomen, sometimes sprinkled with laudanum. It is light and can be easily borne. If the abdomen is very tender, the application of equal parts of liniment of aconite and liniment of belladonna is particularly soothing, combined with the heat. At the same time I order a teaspoonful in a wineglassful of water of granular effervescent phenacetin, containing either 5 or 10 grains to the drachm, according to the severity of the pain. If not better in twenty minutes, this is to be repeated with 1 drachm of brandy, and if in another twenty minutes relief does not come I give a third dose, with another drachm of brandy. The pain is usually relieved after two or three doses. It is best to give a little alcohol with the phenacetin to prevent the depressing effects on the heart. Should it be necessary, a dose can be given every four hours after the second or third doses have been given.

In a certain number of cases vomiting comes on early with the pain, and whatever is ordered may be rejected. It is usually better to order the effervescent mixture wherever there is a tendency to nausea or sickness, as it seems to be more easily borne, but some may prefer it in the form of cachet or powder. Should vomiting be frequent, mustard to the epigastrium may be applied, often with good results. It is well to bear in mind that when the pain is soothed and vomiting has ceased the patient should not be allowed to get up, or make any effort too soon, or the pain and nausea or sickness may recur immediately on exertion. Should no vomiting or nausea be present, nourishment in some easily digested form should be given during the period of pain. Sometimes, if the pain comes on before the flow, much relief may be obtained by a pint of hot saline solution given per rectum with 30 or 40 grains of bromide of sodium or ammonium added; it must be retained to be of service. There are certain cases in which this seems to answer well, but if relief can be obtained by other means I prefer them. A hot saline injection with a fair dose of phenacetin may be given if the patient is too sick to take anything by the mouth. Fifteen grains may be given, and repeated later should it be necessary, but brandy ought to be given mixed with the injection to counteract the depressing effects of the phenacetin.

The old-fashioned foot-bath, with a little mustard, is often invaluable in certain cases. Emmett recommended in addition a hot mustard plaster about 3 in. in width, reaching from the cervical region of the spine to the sacrum,¹⁹ and also dry-cupping when the flow is delayed, which I have seen give great relief.

For the agonizing form, if large doses of phenacetin or such-like drugs do not afford relief, the only remedy is morphine hypodermically. Fortunately these cases are rare, and recourse to large doses of morphine is unnecessary, but it is well always to remember the danger of giving morphine to a patient suffering from dysmenorrhoea, for the habit of taking morphine is easily established, and as the pain recurs every month, the temptation to increase the dose is ever present. In giving it for these

most severe cases it is better to combine it with atropine, to avoid the risk of sickness. For phenacetin may be substituted aspirin, antipyrin, antifebrin, novaspirin, castor, chlorotone, or any similar drug, and occasionally amyl nitrite or nitroglycerine, but it must be remembered that all these drugs only soothe the pain and tide over the attack. What we have to study is the cure of the disease, and none of the drugs I have named will do this. Unfortunately, this disease has no tendency to become cured without treatment. We must endeavour to find a drug which will so act as to prevent the onset of this severe pain, or at any rate greatly mitigate it, so that when the period occurs the patient will not suffer much. One of the drugs most commonly used is guaiacum; the late Dr. Matthews Duncan, with whom I often discussed this affection, placed it before everything; and Dr. Herman speaks well of it. It is no doubt often excellent, and it is best given at least a week before the period is due, in doses of 10 grains three times a day. I have not found it of as much service as tannate of cannabin, which, in my experience, seems to have done more good than anything I have tried. I give it in the form of a pill three times a day after meals, for seven days before the period is expected. It may be given in doses of from 2 to 3 or 4 grains, and, if preferred, may be continued through the period in increased doses. I usually stop it when the pain comes on, if at all bad, and give one of the coal-tar analgesic remedies, but if the pain is not severe the tannate of cannabin may be continued until all chance of recurrence of the pain has disappeared. With it I frequently give ovarian substance. The treatment ought to be continued for some months before discarding it. The only disagreeable symptom I have known, and that has been quite rare, has been a certain amount of looseness of the bowels, which has made it necessary to stop the drug, but this is the only point worth mentioning about its administration. I used cannabis indica for a considerable time, and although it was often of great service, I frequently found that it produced a mild form of delirium or excitement, and as this was sometimes alarming to the friends I gave it up, and now never use it. Bromides are often of great service, but they ought to be commenced some time before the onset of the period, and are apt to cause in some patients a certain amount of depression. Amongst other drugs, I have often found viburnum prunifolium of service, as well as sodium salicylate. It would be useless to enumerate all the drugs which have been advocated in the treatment of this disease. I have had better results from the use of cannabin tannate than from any other drug. I believe it acts, as all drugs which benefit do, by soothing the hyperaesthetic mucous membrane.

I must merely mention the treatment by Fleiss of the application of cocaine to the "sexual spots" on the nasal mucous membrane. In a paper by Dr. Koblanck²⁰ on nasal reflexes, he advocates the application of cocaine to the so-called sexual spots in the nasal mucous membrane in some forms of dysmenorrhoea. I will not discuss this treatment, for I have had no experience of its use. Kolischer²¹ attributes good results to suggestion.

In many cases I have certainly done good by the administration of ovarian substance, and I have found that when used with girls who appeared anaemic, it answered well when combined with iron or arsenic. It may be that my theory of the disease explains its action. The administration of ovarian substance must be watched, for sometimes it causes nausea. I usually give tablets of 5 grains (containing 0.32 gram) two or three times a day after food.

Before passing to operative measures, I must refer to Boulton's²² opinion that there is an antagonism between the physiological function of the ovary and mammary gland, and that menstruation is to be conceived of as a process which is set going by the biological power of the ovary. He has attempted to overcome the intensity of the pathological conditions of menstruation, and above all of dysmenorrhoea, by artificial stimulation of the mammary gland. He has employed a breast pump, and has produced, some days before menstruation and during it, engorgement of the mammary gland. He states that he has seen good results follow this treatment, both in the abatement of the pain and in the diminution of the flow of blood.

Surgical or operative treatment may be briefly divided into dilatation of the cervix and removal of the ovaries—the latter not to be undertaken without the most serious consideration. Now dilatation is, on the whole, a most successful operation, and all those who have had special experience in the treatment of this disease are favourably impressed by the results. It imitates Nature's cure, which is pregnancy, for then thorough dilatation of the cervix is secured; but unfortunately we know that dysmenorrhoea is frequently associated with sterility, so that this natural cure is often denied the patient. Some prefer to incise the os laterally before dilating, or to cut out a wedge-shaped piece from the cervix all round the canal.²³ Others divide the cervix, stitching back the angles, so as to ensure their remaining permanently patent. In my own practice, I hardly ever incise the cervix. It need only be done at the time of dilating if the os is extremely small. Incision of the internal os, which involves unnecessary risk, is practically never done now. It used to be much in vogue, and gave relief probably by dividing the circular fibres and giving them rest from spasm. This object is, of course, gained by slow dilatation of the cervix. As a rule, I use the ordinary Hegar's metal dilators, and do the operation at once under an anaesthetic. If the patient has no time to devote to rest afterwards, it is better not to do it at all.

The operation of dilatation should be accompanied by the same precautions as any other surgical operation. There ought to be no such thing as a minor operation in surgery, because every operation undertaken ought to be carried out with scrupulous care. After thorough dilatation it is best to keep the patient warm in bed for a few days. Some advocate the use of electricity in the treatment of dysmenorrhoea,²⁴ or the intrauterine application of the galvanic current,²⁵ and by others the stem pessary is lauded. I have used neither, and I do not advise the use of the stem pessary, for it cannot be altogether free from risk. It may be that I am prejudiced against it on account of the unfortunate results I have seen from its use. In cases of dysmenorrhoea, where there is continued pain over one or both ovarian regions, it is found sometimes on opening the abdomen—the operation being possibly undertaken for something else—that the ovaries have small cysts all over them. If these cysts be punctured and the fluid allowed to run out, the ovarian pain will sometimes disappear, because presumably the tension is relieved. When intense pain over one ovary, or both, is invariably complained of at the onset of or during each menstruation—pain sufficient to incapacitate and prevent the patient from making her living—it may be justifiable to explore. In certain cases the ovary may be found to be cystic, as above mentioned, and in some cases I have seen adhesions from previous local peritonitis. If these are thoroughly broken down without doing anything further, the patient may be cured.

I believe some resort to gradual dilatation—that is, passing a dilator increasing in size every two or three days until the full size is reached. I do not recommend this proceeding. It is tedious and somewhat risky, and certainly very painful. I have known parametritis to follow in the practice of more than one who passed the dilators in his own house. It is best to operate under an anaesthetic, and to pass each dilator slowly, so that the cervix may be slowly and steadily dilated and not torn. My own experience is that if the dilators pass with considerable difficulty, there is a much better prospect of a cure than if they enter the cervix easily.

And, finally, there is oöphorectomy. This is a matter upon which the patient, and she alone, ought to be the judge. It must, of course, be most strongly condemned unless done only after the most serious consideration. If the woman is of a certain age, shattered in health, with no prospect of relief in spite of all kinds of treatment, and if she is willing to relinquish the chance of child bearing, then I think that her request for the operation which will stop menstruation and cure her pain ought to be attended to. I would say this, however, that her statements as to her sufferings ought to be corroborated by the relations or friends with whom she lives. No one would undertake this operation without feeling satisfied that the patient had had everything for and against placed before her; and, above all, it is essential that absolute certainty should prevail as to the diagnosis of the disease.

I have already referred to dysmenorrhoea and the cure of neurasthenic patients. Be certain, before undertaking an operation of this kind, that the patient is really suffering from genuine spasmodic dysmenorrhoea, and that she is not a neurotic woman, with pain intensified at the time of menstruation.

In conclusion, I would say with much regret that I do not consider we know any more about dysmenorrhoea which will enable us to speak positively as to its etiology or pathology than we did years ago, but I cannot help feeling that further observations concerning the secretions of the ovary may open up a wide field of knowledge. The exact relation between the ovary, the thyroid, and the other ductless glands is still obscure,²⁶ but we must earnestly hope that the time is not far distant when we shall be enabled to speak positively about the action of their important secretions, and that a true explanation of the occurrence of dysmenorrhoea may be forthcoming.

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SOME CONSIDERATIONS BEARING ON THE SURGEON, THE PATIENT, THE STUDENT, AND THE NURSE,

BASED LARGELY ON THE PERSONAL EXPERIENCES
OF THE WRITER*

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I PROPOSE to do this evening what I think is entirely new in this society, to present a paper based on the writer's own experiences as a patient. In doing so I am aware that I am taking some risks, but I know most of the members of the society well, and I believe I shall be accorded the same kind of consideration as has always been shown me during the twenty-five years that I have been enrolled among its members. It is not altogether pleasant to have to confess to such a record of physical weakness as I must lay before you; but these experiences, with all the

NOTE.—It should, perhaps, be stated that the writer of this paper began his medical career as the interne and medical superintendent of a general hospital, where for more than two years he had a rather wide range of experience; that, after spending considerable time in study and investigation abroad, he entered on private practice as a general practitioner, but soon became a specialist. In about two years he laid aside medical practice to enter on the career of a physiologist, which he took up in 1884. During the intervening period he has, however, frequently attended medical clinics abroad, in addition to working in scientific laboratories, and has always been an active member and regular attendant of the Montreal Medico-Chirurgical Society; so that there has been no period since his graduation when he was not in touch with practical medicine to a greater or less degree.

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pain and misery associated with them, have taught me so much and produced such deep convictions with a practical bearing that did I not speak I would feel almost guilty of being untrue to myself and to my past as you know me.

I could fill a volume with views based on new conceptions of physiology and another similar one bearing on psychology. Indeed, that I can claim your attention for only a short time on one evening is the chief difficulty under which I labour; for I fear that, in merely touching on subjects that to be adequately understood would require deliberate attention and illustration, I may fail altogether in making my meaning clear. But so many are now anxious to get the ear of the society, and this is so healthy a state of things, that however deeply I may feel the practical importance of some of my views, I must not claim from you more than a little extra time and patience.

Life to be healthy should, in a human being, be made up of reflection and action. The medical man is apt to neglect the former by reason of the numerous calls made upon him; but he himself, and his profession and the public, suffer from this. Action should be based on knowledge. What was once good practice is so no longer because of the increase of knowledge. But so-called knowledge is of very varying degrees of completeness and value. Much that passes as knowledge and even suffices in a fashion for practical life, is worth little in the development of the individual's nature. A man from viewing and handling apples may have what suffices for commercial purposes fairly well, but if he has never tasted an apple his knowledge is of little real value as judged by an educational standard; and no amount of the most graphic description can give a knowledge of an apple that one bite of it will communicate.

To him that has never felt real pain a description of a toothache is mere sound signifying nothing. The man who has been absolutely healthy and vigorous all his life—that is, beastly healthy—is also beastly narrow and ignorant as regards many of those higher things the comprehension of which makes us peculiarly human, such as not a little in literature and art, even much of psychology and philosophy; in a word, much of life in its breadth and depth. The only highest knowledge is realization. A grain of realization is educationally worth a ton of other kinds of knowledge, for it alone is the key that unlocks the real secrets of life. There is no such enviable quality as that which helps one human being to put himself in the place of another. We are born with very varying degrees of capacity to do this. To all, however endowed by Nature, some experience of life's joys and sorrows alike, including physical ills, is necessary; and I am now convinced that most men have much less ability to put themselves in the place of others than they suppose.

When you hear my history as a patient during the past year, I think you will admit that I have some special qualifications to speak on certain matters. On the subject of pain and misery generally you may be ready to admit that I have graduated to the rank of an authority. But it might not occur to you to think that on other subjects, in fields that fall little under the ken of the so-called average man or even average doctor, there has come general enlightenment. On such dark subjects as dreams, obsessions, delusions, illusions, the importance of the fundamental conceptions of time and space, hypnosis, the subconscious, and many others, the world is a new world to me. This enlightenment has not only served to emphasize the ignorance of most of us, but to make me feel how little I even yet understand some of the states of my fellow men. I believe that even those long associated with the insane do in any true sense understand them but very imperfectly.

I have been dealing in abstract statements, perhaps some of them almost truisms, yet truisms of a practical importance that is very imperfectly realized. Before passing on to give the history of my case, allow me to put in a few brief sentences some of the conclusions to which I have been led, based on my past experience as illuminated and largely interpreted by my more recent knowledge gained through so-called misfortune, but which is only so when regarded from the narrower point of view. I shall now keep largely to those convictions which have a practical bearing.