On painful menstruation : the Harveian lectures, 1890 / by Francis Henry Champneys.

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ON PAINFUL MENSTRUATION.

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THE HARVEIAN LECTURES, 1890

BY

FRANCIS HENRY CHAMPNEYS
M.A., M.D. Oxon.,- F.R.C.P.

PHYSICIAN-ACCOUCHEUR, AND LECTURER ON OBSTETRIC MEDICINE AT ST. BARTHOLOMEW'S HOSPITAL (LATE AT ST. GEORGE'S HOSPITAL); CONSULTING PHYSICIAN TO THE GENERAL LYING-IN HOSPITAL; EXAMINER IN OBSTETRIC MEDICINE, MEMBER OF THE BOARD OF THE FACULTY OF MEDICINE, IN THE UNIVERSITY OF OXFORD; EXAMINER IN OBSTETRIC MEDICINE IN THE ROYAL COLLEGE OF PHYSICIANS, LONDON, AND (LATE) IN THE UNIVERSITY OF LONDON.

LONDON
H. K. LEWIS, 136 GOWER STREET, W.C.
1891

PRINTED BY
H. K. LEWIS, 136 GOWER STREET,
LONDON, W.C.

JOHANNI WILLIAMS

MEDICO INSIGNI

SODALI DILECTISSIMO

PREFACE.

The main purpose of these Lectures is set forth in the Introductory Remarks with which they open.

To speak for nearly three hours on such a subject as "Painful Menstruation" might seem to require some expansion of the subject. Such, however, is not the case, as will be seen from the following pages, in which the process of condensation has played a large part and expansion no part at all.

The text has not been overloaded with references, but the literature of "Membranous Dysmenorrhœa" is so copious that it has been relegated to a table; which, in its turn, is so large that it has required a pocket in the cover, where it will be found.

60 Great Cumberland Place, Hyde Park.
June, 1891.

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LECTURE I.

Only two varieties of Dysmenorrhœa, namely:—Inflammatory and Spasmodic. Of these, the Inflammatory variety is not strictly Dysmenorrhœa. Membranous is a variety of Spasmodic Dysmenorrhœa. Thus:—

(1) Spasmodic.
(Membranous).
(2) Inflammatory.

LECTURE II.

LECTURE III.

PAINFUL MENSTRUATION.

LECTURE I.

Introduction.

Mr. President and Gentlemen,

When I received an intimation of the honour which your Council wished to confer on me, I felt many difficulties in accepting it.

In the first place, I remembered the excellent Harveian Lectures delivered before the Society by many men of high distinction, into competition with whom I shrank from entering.

In the next place, the difficulty of finding a subject which would prove of general interest oppressed me.

After serious thought I determined, as regards the first, that the Council of the Harveian Society must be better judges than I, and that it would be wise to hide my deficiencies behind their choice.

As regards the second, remembering that the large majority of the members are engaged in general practice, I decided to leave all such subjects as are, in the first instance at least, of purely scientific interest, and to choose a subject of general and practical importance.

Among such, the subject of Painful Menstruation seemed to me one of the most suitable; for, although the name is only the name of a symptom, still, it em-

braces a vast number of cases which come before our daily notice. Added to this, the subject is one of great difficulty. The truth of the views which have, at least till quite lately, held the field, and which have entailed a great amount of local treatment of a particular kind, have been seriously undermined by investigations which ought in truth to have preceded, instead of following, theories and practice based on these views.

To collect the truth, so far as it has been ascertained, into an easily accessible form, seemed to me to be particularly desirable; and it is with this object that I have worked.

It will be my reward if such a presentation of facts, both pathological and clinical, based, not on the opinions of eminent men, but on the "Harveian" investigation of the truth, shall bear fruit in better knowledge, and consequently better practice.

Menstruation.

To enter on a complete description of the known, and on a complete discussion of the still uncertain phenomena of menstruation, would occupy more time than that available for these lectures.

I therefore propose to confine myself to a brief statement of what is known, and a brief statement of what is debatable, keeping in mind that our present object is the elucidation of painful and not of normal menstruation.

It is generally known that in this country the average age of the first menstruation is about fourteen; that of its cessation about forty-five. The average rhythm

is about twenty-eight days, counting from the beginning of one period to the beginning of the next. Much confusion is often imported into this question by patients. For instance, one is often told that (in cases where it is pathologically frequent and profuse) it occurs every week and lasts a fortnight, a statement which is inconceivable until we realise that what the patient really means is that it recurs every three weeks, lasting a fortnight, with a week's clear interval. It would save much trouble if some nomenclature, intelligible to patient and doctor, could be invented.

Its duration varies greatly, perhaps five days is about the average.

The quantity lost varies greatly, perhaps four to six ounces may be taken as the average.

The colour is that of prune juice, it is acid, and does not normally coagulate. The cause of this peculiarity has been variously explained. The popular explanation appears to be that it is due to admixture with acid vaginal mucus. Another explanation is opposed to this hypothesis, and attributes the absence of coagulation to the admixture of the blood with the secretions of the uterus, cervix, and vagina.

In Whitehead's work on Abortion and Sterility (1847) there is an interesting chapter on the "Nature of the True Menstrual Secretion" (p. 21). He collected some twelve specimens of menstrual fluid through a speculum, first wiping away the mucus which exuded from the cervix. As it escaped it was not so dark as menstrual blood usually is, and coagulated in three or four minutes. Sometimes it escaped from the cervix as a thin stream of pure blood; sometimes as a thin coloured serum, with small flattened clots of the size

of small orange seeds, which afterwards broke down in the vaginal mucus, and escaped at the "ostium externum" (of the vagina) in the usual uncoagulable form. It was always alkaline. He found that one part of pure acetic acid in sixty parts of blood from a vein or from a scarified surface prevented coagulation. "Vaginal mucus" added to blood prevented coagulation. It is quite plain that by "vaginal mucus" is meant the cervical mucus found in the vagina; for its description (p. 20) leaves no doubt on this point. An interesting fact in this description is the observation of the escape of clots as large as orange-pips from the cervix.

Another interesting observation is that of Vogel (Wagner's "Physiologie," 3 Auflage, S. 230, Anm., quoted by Krieger) in which the menstrual blood collected from the uterus in a case of procidentia did not coagulate. Here the vagina was eliminated, but the cervical mucus was not.

It is, however, a matter of common observation that menstrual blood, as seen through the speculum issuing from the cervix, is of the dark menstrual colour, not seen at other times, and liquid.

This difference, since it does not depend upon the blood itself, must depend upon the alteration in the secretions of the uterus and cervix, doubtless in respect of quantity (and possibly also of quality), such as is observed during labour, which must always be kept before our eyes if we are rightly to understand menstruation.

We conclude that the cause of the non-coagulability of the menstrual blood is its admixture with uterine and cervical mucus, and that its coagulation in cases of profuse menstruation is due to the excess of blood over

mucus. The cause of the acid reaction of the vagina is still unknown.

Microscopically, menstrual blood consists of blood-corpuscles of both kinds, mucous corpuscles, compound granular corpuscles, uterine, cervical, and vaginal epithelium.

Changes in the Uterus.

Mucous membrane.—In speaking of the "mucous membrane" we use this word, in its popular sense, for the layer superficial to the muscular fibres. This is, however, probably incorrect morphologically; for, as Dr. John Williams has pointed out,* the human fœtal uterus shows a distinct submucous layer just beneath the peritoneum, and this makes the whole of the tissue internal to this mucous membrane. Nearly the whole of the muscular thickness of the human uterus is therefore "muscularis mucosæ," and the apparent absence of a submucous coat, which is so strange, is explained. We all know that size counts for nothing in questions of homology, and, remembering this, the above startling theory loses its improbability. It is, moreover, in accordance with comparative anatomy, for the uterus of most of the lower animals is more like intestine than like the human uterus, and the relation of the submucous layer in their uterus to its two surfaces is like that of the submucous layer of the intestine. This view has also been arrived at by so excellent a microscopist as Dr. Delépine, of St. George's Hospital, who was unaware of Dr. Williams's observations, and we believe that it will eventually prevail. The layer, however,

* "Obstet. Trans." for 1885, vol. xxvii., p. 112.

known as "mucous membrane"—that is, the part superficial to the muscular coat—has a thickness of 1 mm. ($\frac{1}{25}$ in.) before the first menstruation. At its full growth before the first menstrual flow it measures from 3 to 6 or 7 mm. (from $\frac{1}{8}$ to $\frac{1}{4}$ in.), a thickness which it regains before each flow; but after the first menstruation it never regains its original small thickness, but retains a minimum thickness of 2 mm. ($\frac{1}{12}$ in.).

With regard to the changes associated with menstruation, opinions and observations differ.

(1). Kundrat and Engelmann (1875) examined uteri in the pathological laboratory of the Allgemeines Krankenhaus in Vienna. These consisted of "seventeen pregnant uteri and two hundred others, some of which corresponded to the menstrual period, some were the subjects of recent abortion, some of recent parturition." Those concerned with menstruation are not enumerated, and general conclusions only are stated.

The conclusions are as follows:—

The increase in thickness is due to proliferation of the round cells of the stroma, an enlargement of all the cell-elements of the superficial layers, and an increase in the intercellular substance. The glands are increased in thickness and length, and the vessels are engorged. The increase in thickness of the mucous membrane begins at the approach of the menstrual period, is most marked during the flow, and afterwards gradually decreases.

Fatty degeneration takes place in the cells of the inter-glandular tissue, blood-vessels, and glandular and surface epithelium.

The cause of the hæmorrhage is fatty degeneration rendering the tissues unable to resist the pressure of the blood.

Only the superficial layer of mucous membrane is shed.

(2). Dr. John Williams (1875) presented the first, and so far the only series of observations of uteri at different periods during the month.

He believes that the whole of the mucous membrane—that is, as far as the muscular fibres—is shed in menstruation, that this shedding takes place from below upwards—that is, from the os internum upwards—and that its regeneration takes place from below upwards also. Its increase in thickness is a growth.

The predisposing cause of the bleeding is fatty degeneration; the exciting cause, uterine contraction. The hæmorrhage takes place near the surface, where the degeneration is furthest advanced, after which the whole membrane rapidly breaks down and is removed.

(3). Leopold (1877) studied the mucous membrane of the uterus during menstruation, pregnancy, and the lying-in period. His own observations of menstruating uteri are six, and he quotes from Dalton (Essay on Corpus Luteum, 1851), Hyrtl (in Bischoff's article, "Menstruation und Befruchtung," 1844), Benham (Corpus Luteum, 1873), Janzer (1848), and Dittrich (1851). Some of these observations, all of which were made previously to the beginning of active inquiry in 1875, concern the other subjects of Leopold's paper rather than menstruation; while, in numbers, those subsequent to the date mentioned are about half of Dr. Williams's series.

Still, this question will not be decided by numbers until observations are far more numerous.

Leopold denies fatty degeneration. He describes the increase of thickness in the mucous membrane as "swelling, œdema," without explicitly denying true growth.

He believes that the bleeding is caused thus: A few days before menstruation, the swollen mucous membrane is quite intact, and shows no fatty degeneration or engorged vessels. Ovarian influence causes acute hyperæmia of the vessels of the mucous membrane, the superficial capillaries are filled to repletion, and from them corpuscles escape (diapedesis) for several days into the surrounding tissues, especially towards the surface, undermining the epithelium and superficial layer of cells, and the orifices of the glands.

He has never seen regeneration take place from below upwards.

(4). Wyder (1878) believes that the cause of menstrual bleeding is not primary fatty degeneration (Kundrat, Williams), but very likely the peculiar vascular arrangement (Leopold). The most superficial parts of the mucous membrane only are detached. His cases are two in number.

(5). De Sinéty (1881) found the epithelium in menstruating uteri intact, and could not find it in carefully decanted menstrual fluid.

(6). Möricke (1882) scraped the uteri of forty-five women shortly before, during, and after menstruation.

He states that during menstruation the mucous membrane remains intact and preserves its ciliated epithelium. There is no increase in the inter-glandular cells or any fatty degeneration. The vessels are engorged, extravasations take place beneath the superficial layers, and the homogeneous ground-substance is always increased.

The cause of the bleeding is reflex engorgement due to ovarian activity, and acts through the peculiar vascular arrangement (Leopold and Wyder), but by diapedesis and not by extravasation.

(7). Wyder (1883) discusses a series of uteri at various stages, only two of which are his own, and are apparently those already mentioned. In one of these the cylindrical epithelium of the mucous surface was wanting, and the mucous membrane was uneven. A clot in the uterus consisted of unaltered cylindrical epithelium. The patient died on the fourth day of menstruation from an accident. There was no fatty degeneration. Extravasations the size of a pin's head were found in the mucous membrane. The other case was that of a woman aged thirty-one who died from burning on the eighth day after the beginning of menstruation, the burning taking place fourteen days before death or six days before menstruation. The cylindrical epithelium of the mucous surface was retained in places; extravasations in the superficial layers; no fatty degeneration. His other cases are taken from Leopold. The cause of the bleeding, according to him, is not fatty degeneration, but diapedesis, as well as extravasation from torn vessels, but especially diapedesis. Extravasation leads to partial detachment of the surface, while

(as proved by Spiegelberg in a menstruating inverted uterus*), bleeding may take place from an intact surface. Besides this, the pressure of the extravasated blood impedes nutrition, and produces fatty degeneration of the involved portions.

(8). Minot (1889) found in a virgin, who was said to have died on the day of the regular period, the mucous membrane 1·1-1·3 mm. ($\frac{1}{25}$-$\frac{1}{24}$ in.) thick, its upper fourth very much broken down, some of the vessels doubtfully torn through, the surface-epithelium everywhere loosened, and in parts absent, much proliferation of small cells in the deeper layers, no large decidual cells or increase of leucocytes.

(Minot's statement as to the day of menstruation is given uncertainly, and the thickness of the mucous membrane is very small).

The facts observed and the theories upheld by these different authors are equally contradictory.

Fatty degeneration of the mucous membrane, the nature of its increase in thickness, the cause of its decrease in thickness, the cause and nature of the bleeding—all these are still matters of dispute.

We shall discuss the whole question a little later, but will here only say that the increase of thickness cannot be due to mere swelling, or the glands would become shorter and straighter instead of longer and more convoluted; and that the cause of the bleeding, occurring suddenly and punctually as it does, cannot be due to a merely gradual cause. Indeed, in considering the whole question, it seems to me that there

* "Lehrb. der Geburtsh.," 1878, S. 45.

is a danger of microscopical investigations inducing a near-sighted view, and that such investigations, valuable and indispensable as they are, need controlling and correcting by clinical observations which, unlike them, can be continuous and direct. For let us just consider what is meant when we assert that during any gradual process such and such changes are proved by the microscope. It means that from a series of individuals with all their peculiarities and individualities neglected, we construct a composite picture by inference, just as we might construct a picture of a horse at full gallop from a series of pictures of different horses at different parts of their stride. Such a picture, though it might be valuable, would certainly not be the same as the reality of any one galloping horse.

A similar caution must be remembered with regard to inferences drawn from the results of curetting. How can anyone assert that he has scraped the whole uterus? This has been tried and tested by subsequent examination of the uterus, and it has been found that the apparently thorough scraping has been far from perfect. Then as to the injury caused by the curette; surely this must be discounted. The results of scraping, therefore, must be received with caution in these respects. In the literature of the subject much criticism will be found of the modes of microscopical examination, and questions of loss of epithelium, decomposition, &c., will be repeatedly met with to explain differing results.

In any future investigation—and it is to be hoped that such will be forthcoming in a large series—I would suggest that careful and tabulated notes should be furnished of complete menstrual history, of its rhythm, its last occurrence, of the cause of death, of the time

intervening between death and the necropsy, of the temperature of the surrounding air, of the treatment of the specimen after the necropsy (noting the time intervening between the necropsy and its immersion in preparatory fluids), the mode of preparation, and, finally, the microscopical examination, which should include that of fluids and substances found in the genital tract. A good plan of avoiding the reproach of unskilful loss of epithelium, &c., has been adopted by placing the surface of the mucous membrane in contact with a piece of known tissue, such as liver, and cutting the two in contact.

The Question of Uterine Contraction.

We know that the uterus contracts periodically, generally without, but sometimes with pain, during pregnancy; we know that uterine fibroids sometimes undergo similar spontaneous and rhythmical contractions. The question is: Does the uterus contract in connection with menstruation; and, if so, when, and with what result?

This question it is not at present possible to answer certainly in the affirmative. But I firmly believe that that affirmative answer will be given hereafter; and in the meanwhile the behaviour of fibroid uteri during menstruation, and the phenomena of menstruation itself seem to me to point strongly in that direction.

Fibroid uteri have been seen to enlarge with fair steadiness during the inter-menstrual period, and to diminish (contract) before the flow, the diminution continuing during the flow. The dimensions have

been tested by vertical, transverse, and internal measurements.* Another proof of uterine contraction in connection with menstruation is furnished by the occasional regurgitation of menstrual blood through the Fallopian tubes, forming a so-called menstrual intraperitoneal hæmatocele. This, again, is allied to a similar regurgitation which sometimes occurs after the opening of a so-called imperforate hymen with retention of menses, a regurgitation whose favourite time, it must be remarked, is after the relief of tension, and not before.

Spontaneous contractions in the uteri of the lower animals, apart from excitement, are very doubtful; but, on the other hand, it is yet to be proved that any animal "menstruates" during heat, and any conclusions drawn by analogy from animals to women in this respect are liable to error.

Condition of the Pelvic Organs during the Menstrual Cycle.

The condition of the pelvic organs during the monthly cycle is learnt by observations on fibroids, on the condition of the cervix uteri and vagina as regards coloration and texture, and on hernial ovaries; and it is confirmed by observations on the general vascular conditions of the body, and of the pelvis especially.

* Williams, "The Lancet," vol. i., 1880, pp. 764 and 873. Dr. Williams also, in the "Obstet. Journ.," expresses his belief that the uterus contracts, because the cavity after menstruation is smaller than it would be if the mucous membrane were gone, without uterine contractions. This, however, seems to me more akin to retraction, and might be expected to occur after the evacuation of any of the uterine contents.

As regards fibroids, the observations already referred to showed in some cases a gradual increase, beginning after menstruation, and ending in diminution (contraction) shortly before the flow.

As regards the cervix and vagina, these are seen to become darker and fuller of blood as the menstrual flow approaches, and the cervix at the same time often becomes softer; moreover, at this time, erosions are liable to become livid and bleed.

As regards hernial ovaries, a case was observed by Dr. Oldham in 1857, in which about every three weeks one or both ovaries increased in size, and then shrank. The woman had no uterus or vagina, so that the belief in the menstrual character of the swelling could not be proved. This question is seen to be bound up with the difficult problem of the relation between ovulation, impregnation, and menstruation, which some recent observers have attempted to dissociate. In some of the lower animals there is undoubtedly a long interval between ovulation and impregnation (for instance, in bats), and in this case the uterus may remain full of semen for months before the ovum is extruded from the ovary, showing that in them the semen lies in wait for the ovum rather than the ovum for the semen. There seems no reason why semen should not live in the uterus of the female as well as in the testicles and vesiculæ seminales of the male.

In most mammals, and especially in women, the question is doubtful, but not, I venture to think, to the extent of dissociating ovulation from menstruation. Whatever may be the behaviour of the Graafian follicle, however, it seems, from the phenomena of the approach of menstruation, especially in cases of ovarian dysmen-

orrhœa (to be hereafter referred to), that the menstrual epoch is preceded by a period of sanguineous afflux, both to the ovaries and to the rest of the pelvic organs. As the flow approaches, the whole pelvis, including the ovarian regions, is often the seat of a feeling of tension, and this is accompanied by the darkening and softening of the cervix and the darkening of the vagina.

As regards the general vascular condition of the body, and especially of the pelvis, the pulse has been found to increase in rapidity from a minimum one to four days after the flow, to a maximum seven or eight days or less before the next.

It seems to me more than probable that, as regards the pelvis, the growth of the mucous membrane is accompanied by increasing afflux of blood to the pelvic organs until the time of the flow, and that this is determined by uterine contraction, which, acting suddenly, squeezes the blood out of the distended capillaries, and so into the uterine cavity. Some such explanation is required, for it is to me inconceivable, as above said, that a bleeding so sudden and so punctual can be due to a gradually acting cause. The difficulties surrounding the fact of its punctuality are akin to those besetting the question of the cause of the beginning of labour—a question which, in all matters connected with menstruation, has been too much lost sight of. Whatever may be the predisposing causes of labour or of menstruation, it seems to me that the exciting cause of labour must also be akin to the exciting cause of the menstrual bleeding, and that, in both, this exciting cause must act through uterine contraction. To sum up, then, I believe that the thickening of the mucous membrane is due to growth ; the bleeding is due to increas-

ing afflux of blood to the uterus in common with the pelvic organs, on the top of which comes uterine contraction which determines the hæmorrhage.

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General Considerations Concerning Dysmenorrhœa.

A woman who suffers pain in connection with menstruation may be said to be the subject of dysmenorrhœa. Yet a little consideration shows that we shall be obliged to narrow this definition.

In the first place, it is plain that a woman whose menstrual pain consists in headache does not fall within the accepted limits, though it may be true that her headache is caused, or at least induced, by menstruation. There are many women liable, for general or special reasons, to headache, in whom the disturbance of menstruation is sufficient to determine it, more especially if menstruation is in any way disordered. But pain in the head cannot constitute dysmenorrhœa.

The pain which is implied by that word must clearly, to be correctly named, be such as is or may be due to the pelvic organs, and must be contained within what may be conveniently called the "genital sphere."

A crucial test of the proper boundaries of this sphere may be obtained by studying the regions affected by a well-marked disease, such as cancer affecting the pelvic organs. Such an inquiry as that undertaken by the author,* on the "Pain in Pelvic Cancer," shows that pain due to the pelvic organs is limited above by a line level with the iliac crests in front and behind, and by the level of the knees below. This excludes the common left submammary pain so commonly found in pelvic affections in women, but not confined to such affec-

* "Obstet. Trans.," vol. xxii., 1880, p. 5.

tions in women or even to the female sex. Such pain, like headache, must be regarded as secondary or remote.

Another consideration must be remembered. Women vary much in their capacity for feeling, appreciating, and bearing pain. There can be no doubt that at one end of the scale we have the hardy or callous individual who really does not feel that as pain which would amount in average women to severe suffering; and at the other, we have the hysterical or hypochondriac woman, to whom any sensation, however natural, amounts to agony.

Again, as regards the appreciation of pain, we have the woman who thinks little and talks less of real pain, and we have the woman who regards any discomfort as injustice which she resents. The latter class are probably of increasing numbers in at least a part of a society whose greatest good is pleasure and whose greatest evil is physical discomfort. They form the army of morphiomaniacs, chloralomaniacs, cocainomaniacs, antipyrinomaniacs, and will be maniacs possessed by each reputed anodyne as it is advertised. The defect here is in the false position of their norma or zero. Perhaps this is better fixed for what we are pleased to call the lower animals.

Lastly, as regards the capacity for bearing pain, which is really quite distinct from the other two, given the same power of feeling and appreciating pain, the power of bearing it and of controlling its reflex manifestations varies greatly.

We have no power of measuring pain as we have of measuring heat and electricity, and it is only by experience and judgment that a correct valuation can be

arrived at by an observer, who naturally has the difficult task of discounting all disturbing influences.

Classification of Dysmenorrhœa.

Much misplaced ingenuity has been displayed in sub-dividing dysmenorrhœa into as many divisions and classes as possible. Some of these—as they do not seem to me, in medico-legal language, to have the power of maintaining a separate existence—I shall strangle in the birth, and shall not eventually register them.

Chlorosis and anæmia.—It is certain that anæmic, and especially chlorotic, girls are particularly liable to dysmenorrhœa, yet we shall not erect them into a class under the head of "chlorotic or anæmic dysmenorrhœa." Many of these are cases of imperfect development, chiefly of the nervous and vascular systems, and sometimes of the pelvic organs. It is easily conceivable that imperfect vascular nutrition of the pelvic organs, and especially the uterus, may hamper the function of menstruation, especially by inducing unconsentaneous, irregular, non-rhythmical contractions in the uterus—that is colic. Such cases will fall under the head of spasmodic dysmenorrhœa. Others may be associated with a vague general aching in the pelvis connected with imperfect menstrual discharge. In many the constipation, which is rarely absent, must be remembered, for this is in itself sufficient in some cases to determine dysmenorrhœa, probably from congestion of the pelvic organs.

Gout and rheumatism.—This has been erected into a

class, chiefly by the writings of Todd (1843) and Rigby (1844). The perusal of the cases, in some of which there is no record of a pelvic examination, fails to call up any clear picture to the mind. A woman who catches a chill before the monthly period may get rheumatism, and her dysmenorrhœa thus induced may be called rheumatic, but the same chill may have given her perimetritis. Gout, again, may be associated with dysmenorrhœa in one of two ways, either by a low form of inflammation of the serous membranes, or by its nervous influence. In both gout and rheumatism, dysmenorrhœa, if present, is probably inflammatory. It must be remembered, too, as regards the argument from the effects of treatment, that guaiacum does something besides act as a "specific" for gout—for instance, it opens the bowels.

Fibroids.—It is easy to understand that a fibroid, which, even apart from menstruation, is often a cause of severe pain, acting, as it does, as a foreign body, and exciting painful contractions (colic), should, during the the sanguineous afflux of the monthly period—or, rather, before it—be the cause of frequently severe suffering. It is in fibroids that this swelling during the intermenstrual period, followed by contraction just before the flow, can be best observed.

Ovarian dysmenorrhœa.—It is very doubtful how far, apart from inflammation, there is justification for this title. In cases that were formerly described as oöphoritis, but are now known to be usually associated with diseases of the tubes, a certain group of symptoms was often observed, and it is still correct to say that, in cases of inflammation of the uterine appendages, menstruation is affected in a particular or special way.

Still, the inflammation is the primary fact, and its locality is secondary.

The theory of ovarian pain, produced by the maturation of deep-seated Graafian follicles, rests on insufficient foundation. The ovaries, like any other organ, may be the seat of neuralgia especially in neuralgic or weakly persons.

Apart from these two considerations, ovarian dysmenorrhœa probably deserves to be struck out of the list.

It therefore belongs in the main to the condition of inflammation, and should be classified with other forms of inflammatory dysmenorrhœa.

Diseases of the tubes.—What has just been said will relieve me of the necessity of specially describing dysmenorrhœa due to tubal disease.

Congestive dysmenorrhœa.—To separate this from the dysmenorrhœa due to inflammation seems to me neither possible nor desirable. Permanent congestion often follows inflammation.

Congestive and inflammatory dysmenorrhœa. — This name is, strictly speaking, a misnomer, for the pain, in the majority of cases, principally occupies the intermenstrual period, and is relieved by the flow. Indeed, it often happens that the actual time of the flow, where this is at least moderate, is the most comfortable time experienced by the patient.

The pathology of the affection depends rarely on the presence of acute inflammation, frequently on the sequelæ of past inflammation. In a case of perimetritis, for instance, while the affection is acute, there may be suppression of menses, or there may be profuse or scanty menstruation. The approach of the

period is marked by increased afflux of blood to the inflamed and tender pelvic organs, with the result that they become the seat of pain.

In a similar case some weeks later, the temperature is normal, the acute inflammation has ceased, adhesions and peritoneal thickening have taken place. The swelling of the pelvic organs is impeded thereby, and the return of venous blood is obstructed by the adhesions.

The symptoms are aching and a feeling of swelling in the pelvis, often quite general, including the rectum and bladder, and referred externally to the lower abdomen and base of the sacrum.

In cases where the ovary and uterine appendages are specially affected there is pain in the groin of the corresponding side, darting through to the same sacro-iliac region. The patient, being asked to place her hand upon the seat of pain, often grasps this region, with the thumb on one spot and the fingers on the other. The pain runs down the inner or front aspect of the thigh. There is pain on defæcation, especially if the left side is affected, from direct irritation of the inflamed and displaced appendages by passing fæcal masses. There is often pain on micturition, a genito-urinary reflex, and, naturally, there is pain in coition.

The pain in inflammatory dysmenorrhœa begins at a variable time after the monthly flow is over, sometimes within a few days, as the vascular tension begins to rise, and reaches its acme just before the flow. If this is free, the pain quickly subsides in most cases; if scanty, then more slowly and less effectively. The relief of the pain is proportionate to the amount of the flow; or, in other words, the pain is inversely proportionate to the amount of the flow.

The main part of the pain is inter-menstrual, and not menstrual.

This variety is almost always secondary—that is, it does not come on at or soon after puberty. It is generally secondary to pregnancy, and follows parturition, but still more often abortion. The pathological connection most usual is the spreading of inflammation, especially septic, from the uterine cavity along the tubes to the peritoneum, in which it may or may not become diffused. It is rare in women who have never been pregnant, unless they have had gonorrhœa, which may infect the peritoneum in the same way.

It is very rare, indeed, in virgins, but it may, in rare cases, especially where it chiefly affects the appendages, be secondary to long-standing primary dysmenorrhœa, and especially to membranous dysmenorrhœa, the irritation travelling up the tubes as before described.

The pelvic organs also may be simply congested from any cause impeding the return of blood from the vena cava inferior, such as valvular heart disease, liver disease (such as cirrhosis), or, in some cases, lung disease; but in the case of lung and heart disease, the stress will first fall on the liver. In cases of this sort, hæmorrhoids are very common, and testify to the general impediment to the return of the blood.

In such circumstances it is fortunate for the patient that the flow is generally profuse.

The details of treatment will vary according to the duration or stage of the affection. The treatment of acute inflammatory dysmenorrhœa is the treatment of acute pelvic inflammation. This, however, is a matter of a few weeks only in most cases.

After this is over the conditions are different. We

have to deal with a condition of tenderness and of impeded return of blood. For the former we have fomentations, counter-irritation to the lower abdomen, iodide of potassium, and mercury; for the latter the most important remedies are saline laxatives.

And here I must remark that general physicians often, in my opinion, make a mistake in the treatment of this affection, or, at least, of pelvic inflammation.

A diagnosis is made of pelvic peritonitis. The word "peritonitis" is remembered, while "pelvic" is forgotten. The patient is put upon opium, and the bowels are kept confined. The result is that the symptoms are merely masked, and the progress towards recovery is arrested.

In general peritonitis the great indication is to give the intestines, and especially their serous coat, repose. In pelvic peritonitis (perimetritis) the rectum is the bowel involved and part of the sigmoid flexure, but no more. Constipation keeps up the engorgement, and laxatives judiciously used relieve it. The indication is to deplete the vessels, and especially those of the pelvis, by saline laxatives aided or not by enemata, especially such as glycerine enemata or suppositories.

I have now eliminated all the varieties of dysmenorrhœa except one—namely, that which has so many aliases, and is known as spasmodic, neuralgic, mechanical, obstructive dysmenorrhœa, and the remarkable subdivision of the same, which is known as membranous dysmenorrhœa. In doing so I shall have nearly reverted to the classification of Carus, who, in 1829, divided dysmenorrhœa into inflammatory and spasmodic. I shall reverse the logical order, and take the membranous variety first.

LECTURE II.

Membranous Dysmenorrhœa.*

I shall begin the last division of the subject with the variety of dysmenorrhœa which is generally placed in a far less conspicuous position, if not as an appendage to one of the other forms. My reasons are that, though generally believed to be one of the rarest forms, membranous dysmenorrhœa has been studied more assiduously and more exhaustively than any of the others. Its literature is enormous, as will be seen by a glance at the table which I have prepared, and which, though it contains all the cases accessible to me, is, doubtless, not complete. No work of importance has, however, I believe, been overlooked. The great bulk of the work expended upon the subject has been pathological; and although, as we shall see, some of the greatest facts have been determined by such studies, the endeavour to arrive at a conclusion applicable to all the cases of this disease has not been crowned with success; nor, in truth, can it be said that it has furnished the material for a differential diagnosis between membranous dysmenorrhœa and some of the affections from which it has to be distinguished.

On the other hand, the clinical side of its study is of the highest importance, and, if considered aright, will, in my opinion, throw a most important light on many of the other problems of dysmenorrhœa, and indeed will, in many respects, be found to furnish the key to their solution.

* For references, see Table.

By membranous dysmenorrhœa we understand painful menstruation, accompanied by the discharge of membranes from the uterus.

The frequency of the affection may be estimated from a few facts. Scanzoni* says: "The expulsion of such membranes, when it occurs in small pieces, is very often overlooked by the patient; it seems to us, however, to occur far oftener than is usually supposed. We have directed somewhat more attention to this point in the course of the last five months, and found that of twenty-one patients suffering from dysmenorrhœa, fourteen, or exactly two-thirds, observed the discharge of these membranous pieces during menstruation. We must, however, remark that only two of these patients complained spontaneously of this unusual phenomenon, whereas the other twelve discovered it only after we had requested them to take particular notice of it."

Again, Dr. John Williams† found that of 419 cases of dysmenorrhœa, in which the quantity and character of the menstrual fluid were noted, clots or shreds were noticed in 305, or three-fourths of the total. In one case the membrane was expelled without any appreciable sanguineous discharge. In others it was overlooked till the patient's attention had been called to it. The shreds were found, when examined, to be membranes, and the clots frequently to be membranes also.

Another aspect of the question is the following: "What is the frequency of menstrual membranes in women in general, and do they ever occur in women without dysmenorrhœa?"

For the answer to the first question no figures are at

* "Chron. Metritis," S. 121. † "Obstet. Trans.," vol. xxiv., p. 117.

present available. It is a matter of great importance, but would be hard to determine. It would not, however, be impossible in the case of large institutions. De Sinéty's observations on "Plusieurs Femmes"* are in favour of the usual absence of membranous shreds. It is, nevertheless, known that membranes are, at least occasionally, discharged by women without pain, and this condition has gained in some quarters the slightly fantastic title of "Dysmenorrhœa membranacea sine Dysmenorrhœa." It would be more correctly described as "Menstruatio membranacea sine Dysmenorrhœa."

In this connection the case of Bernutz† is interesting. The patient was a sterile married woman, aged twenty-eight, who passed membranes without pain. Then, in desire for offspring, various treatments were adopted. Pelvic inflammation followed, and afterwards subsided, leaving membranes without dysmenorrhœa, as at first. Another patient, mentioned by Bernutz, passed membrane at fifteen consecutive periods, fourteen of which were painless. It must, however, be observed that the internal surface of one of the membranes was lined with flattened epithelium, though another membrane was lined internally by some cylindrical cells.

A patient of Paggi, aged forty-five, was found to pass membranes unknown to her. She had suffered from dysmenorrhœa since marriage, four years previously. The pain subsided under treatment, but the membranes persisted.

In a case of Dr. John Williams‡ the patient had passed membranes without pain for ten or eleven

* "Arch. de Toc.," 1881, p. 25. † "Ibid," 1878.

‡ "Obstet. Trans.," vol. xix., p. 146, Case 4.

years, then pain supervened. Such cases could doubtless be multiplied.

In a case of Beigel (No. 3) no membranes were passed till after the division of the cervix for sterility.

It may naturally be asked whether, in the face of such facts, there is any essential connection between the membranes and the dysmenorrhœa? The answer must, however, still be in the affirmative for the great majority of cases. In such patients as suffer from membranous dysmenorrhœa, the sensations of the passage of the membrane are usually unmistakable. Moreover, in cases in which the membrane is passed in more than one piece, these sensations are repeated, and, in cases in which membrane is not constantly passed, the patient can usually assert its presence or absence on the evidence of her sensations.

The question why the passage of membrane is accompanied in most cases by pain, but in some cases by no pain, will be left until the consideration of the cause or causes of the pain.

History.

The history of membranous dysmenorrhœa up to the year 1872 has been dealt with by Haussmann in an elaborate and excellent treatise, to which all subsequent historians have been indebted, with or without acknowledgment. It must here be remarked that what are generally called "Haussmann's views" refer to an earlier paper (see Table), which he published during the elaboration of his important treatise, and which views he appears (by that treatise) to have discarded.

It seems almost a pity that, under the circumstances, the earlier paper should ever have appeared.

The earliest description of the affection is by Morgagni (1762), and is called "A certain Singular Conformation of Polypous Concretions of the Uterus": "In the place of my nativity was a noble matron, of a tall stature, endowed with a good colour, and a laudable habit of body, who had suffered several miscarriages in the first months of her pregnancy; but in the intervals of these abortions, however, she had frequently completed her period of utero-gestation, and brought forth very large living children, and even sometimes twins; though not without great difficulty and troublesome times of childbed. Betwixt these difficult births she had, for the most part, been subject to a fluor albus of an innocent nature; and sometimes, in the midway betwixt her menstrual purgations, to a slight stillicidium of blood also, which the embraces of her husband, especially when rather more violent, renewed; and not without some considerable pain. This woman, then, when she had passed her thirty-fourth year, being entirely rid of her fluor albus, began to labour under a new kind of disease at intervals, which recurred frequently within the space of two years; but in the last three months of the year 1723 and the first of the following year, in which month I was consulted by letter, it returned at a certain time—that is at the time of the menstrua. For at that time pains, like those of childbirth, coming on, and the flux of blood beginning on the first or second day, and flowing even more plentiful than usual, in almost the middle of its course a membranous body, as it appeared, was discharged from the uterus, and that in such a form and of such a magni-

tude as perfectly corresponded to the triangular cavity of the uterus, being moderately convex externally, on which surface it was unequal, and not without many filaments that seem to have been broken off from the parts to which they had adhered; but internally hollow, on which surface it was smooth and moist, as if from an aqueous humour, which it had before contained, but had discharged at its own exit, by an ample foramen, which was in one of its angles that had been readily opened by rupture.

The exclusion of this body was followed by a great quantity of the lochia, and those were often interrupted, according to the custom of women. And if this body came away sometimes, not in an entire state, but divided into little pieces, and at different times, then the pains and the flux of the lochia were in like manner renewed at these times. As the patient, therefore, in each of these four months in which she had abstained from the embraces of her husband had suffered one of these very troublesome kind of abortions, and the remedies which had been prescribed by many excellent physicians who had been consulted had been of no use at all; she began to think that it would be much more advantageous to her if she could be free from the pain for nine months at least, and determined to lie alone no longer, wherefore in the month of March, 1724, she became pregnant. Yet she did not carry her fœtus beyond June. But this was the consequence of it, that in July and the two following months her menstrua flowed properly, and without any uneasiness. However, as none had appeared in the month of October, the pains returned again about the beginning of November with the discharge of such a body as I

have described, and with the other circumstances I have spoken of above, and the same symptoms continued to return a long while, at stated intervals, so that when I was last at Forli, in one of the following years, I saw a body that had been discharged, which, as I had written to them when absent, was made up of a polypous concretion, resembling a membrane, and disposed into the form of a small triangular purse. . . . . To some of those who were consulted this of ours seemed to be an excrescence of the uterus, to others a polypous concretion, indeed; but from blood distilling through some eroded vessel in the uterus itself. But if they had either inspected it, as I did, or had read the description thereof in the letters written to me by this lady's husband, which were much more accurate than those of the physician, I doubt not but they would readily have laid down these opinions, which time also showed to be foreign to the truth. For although the disease lasted a long while afterwards, yet it at length ended of itself and through the effects of age. That is to say, when the time was come in which the menstrual purgations generally leave women it now first began to return, not every month, but only twice or thrice every year, and when the menstrua entirely ceased it ceased also, nor did any sign of even the most slight erosion in the uterus or any inconvenience therefrom exist during the whole life of the woman; and she lived until a cancer, which arose in one breast afterwards, carried her off when on the verge of seventy years of age."

After Morgagni, whose description is acknowledged to contain the first accurate account of the affection, comes Denman, whose work in the table is assigned to

1846, but who appears (Haussmann) to have published it first prior to 1791, or shortly after William Hunter's great work on the "Gravid Uterus" (1774). Denman accurately described the naked-eye appearances of the membrane, and its microscopical characters were declared by Dr. Baillie to be similar to those of the decidua. Denman remarked that women thus affected were sterile, and that it occurred not only in unmarried women, but in undoubted virgins.

Morgagni's patient passed these membranes even when separated from her husband.

After Denman come various claimants, for the discussion of whose merits and credit we must refer to such a work as that of Haussmann, and to the summary to be found in my table. Among such claimants may be mentioned Moreau (1814), whose right to an early place in the history of the literature of this disorder is put forward by Cruveilhier,* and by Huchard and Labadie-Lagrave. His observation is, however, not original, but is referred by both these authors to Evrat, to whose work I have failed to find a reference, and who perhaps communicated it verbally. The passage of membranes like the decidua was observed by him in sterile women after coitus, and generally at the beginning of menstruation, and their cause was thought by Moreau to be a generative impulse without conception. The observation of Chaussier, for which Bernutz and Goupil seem to claim priority over Oldham, can hardly be regarded seriously, and seems obviously to have been a case of blighted ovum, passed at the third menstrual epoch.

* "Essai sur l'Anatomie Path.," Paris, 1816.

D'Outrepont, whose work* has not been accessible to me, and who makes no mention of Morgagni or Denman, states his belief that all are cases of abortion. In a case reported in detail he found that abstention from coitus, or suckling, stopped the formation of the membranes. This woman was fertile, and bore children during the progress of the affection.

Ulsamer (1820) was aware that all were not cases of the same class, and that some were and some were not due to conception. To the compilers of handbooks I shall not refer, unless they record original observations.

Oldham (April, 1846) and Simpson (September, 1846) both identified the membrane as decidua. Lebert (1850) remarks that dysmenorrhœal membranes are mostly fibrinous.

Tyler Smith, "The Lancet" (1855), relates a case which has been much quoted. After observing that the decidual nature of the membrane is still regarded with incredulity, he gives details of a case in which a woman after marriage constantly passed these membranes, with pain, during menstruation, until her husband died, when they ceased. During her widowhood of several years the membranes ceased and the menstrual pain became less. Then she married again, and the membranes and pain re-appeared. Tilt (1861) attributed the exfoliation of the membrane to "the sexual impulse through the ovaries." He observes that these membranes are passed by virgins.

It will be observed that most of the principal facts of the subject are already, at this date, established. It was known in 1861 that membranes were passed; that

* "Abhandl. und Beitr. Geburtsh. Inhalts.," I., Bamberg u. Würzburg, 1822.

they were sometimes the result of conception, sometimes not; that they might be passed by virgins; that they might consist of uterine mucosa (decidua), or principally of fibrin.

It is strange, therefore, to find in writings of very recent date expressions of scepticism as to their occurrence except as a result of conception. In Mr. Lawson Tait's recent work on "Diseases of Women," 1889, vol. i., p. 130, he asks: "Do instances ever occur of the uterus of a virgin throwing off its mucous surface at the menstrual period, so that its glandular character can be recognised in the shreds? There may be such; but, as I have closely watched and never yet seen it, I am very sceptical on the subject." On page 128 he has, however, already recorded a case, though no microscopical examination is mentioned, and he therefore, perhaps, found "no trace of structure" in it. Others, however, have frequently succeeded in doing so (Solowieff, Case 2; Williams, Cases 7 and 8; Meyer, Cases 2 and 14; others are referred to by Haussmann).

The subsequent history of the literature of the subject deals principally with the microscopical structure of the membrane, with its ætiology, complications, clinical history, and treatment. A summary of these will be given elsewhere.

Ætiology.

This question has excited much discussion, and it has been somewhat the fashion of late to say that membranous dysmenorrhœa is a disease, not specific or *sui generis*, but a complication of other morbid conditions. When these conditions are summed up, they are found

to include inflammations of the pelvic organs, fibroids, displacements of the uterus; and, indeed, as one writer has put it, every pelvic disease, except cancer of the womb. Now, to make an assertion of this sort seems to me to prove so much as to amount to nothing. If one class of maladies only were selected, it would be our duty to carefully investigate their possible connection, and to find out how it was brought about. But when maladies of all classes, even the most dissimilar, are pressed into service, one's sense of humour or, in other words, one's sense of proportion is startled, and the thing becomes, I venture to think, inconceivable. The truth seems to me to lie in one or two wide generalisations. The disease, membranous dysmenorrhœa, is inflammatory, and inflammatory causes may conceivably be invoked. On looking over the record of cases, it is easy to see that a large number followed inflammatory pelvic attacks, and also abortion and parturition.

Now, as pregnancy and its consequences, abortion and parturition, are the causes of the great majority of the diseases to which female flesh is heir, this connection stands on a basis which has some stability, and which, indeed, it is hard to ignore. We may therefore include pelvic inflammations among the causes of membranous dysmenorrhœa.

We must, however, even here discount an explanation which may be applicable to a large number of cases, and to which I have already alluded—namely, the uncertainty of the facts in many, if not most, of the cases. A woman who suffers pain at the menstrual periods for the first time after years of immunity has her attention called to that function in a manner new

to her. She may begin to watch the phenomena, to take note of the discharge; she may have never noticed clots before—she begins to notice them now. She may have noticed them rarely before—she looks out for them now at every period. She may have merely noticed them before—she examines them now, and, with or without suggestion, discovers that they are not like ordinary clots, in fact that they are films of membrane.

The observations of Schroeder and of Williams elsewhere referred to come in here with strong suggestion. How do we know, in any given case, that when a woman begins to suffer from membranous dysmenorrhœa she has not passed membranes previously without pain?

Among histories suggestive of pelvic inflammation should be included those of the onset of membranous dysmenorrhœa after chills, wet feet, &c.

Another question which has been much discussed is the relation of inflammation of the ovaries to this disease. It has generally been supposed that disease of the ovaries may lead to this disease of the uterus. In my opinion this is substituting cause for effect, and my reasons are mainly twofold: First, that this order is opposite to the usual order. When both organs are affected, inflammation usually spreads from the uterus to the appendages, and not in the reverse direction; though, once established, for instance in the tubes, it is liable to invade the lower territory, from which it originally started.

Secondly, the observations of Dr. Williams, elsewhere referred to, show the interesting fact that, while the ovaries are not uncommonly involved, they are involved late, rarely before the age of thirty, in cases of persistent dysmenorrhœa. The invocation of "genital

influence" from the ovaries smacks of the "aura seminalis," and at the present time would hardly be taken seriously.

One other point must be referred to—namely, Dr. John Williams's opinion, contained in one of the papers in our list, that excess of fibrous tissue was a cause of membranous dysmenorrhœa. This seems to me, again, to reverse the probable order of events. It was, indeed, the result of a single necropsy, but I am far from denying that this condition may occur frequently. Still, even so, it seems to me much more probable that the uterus, overworked and irritated, as we know it is during the course of the disease, should become the subject of the increase of fibrous tissue here referred to. To this head must also be referred the hypertrophy of the uterus found in many cases of membranous dysmenorrhœa.

The affection of the ovaries is, in my opinion, as above implied, the result of long-continued uterine irritation from membranous dysmenorrhœa.

Pathology.

A complete dysmenorrhœal membrane, being a triangular cast of the uterine cavity, varies according to the size of this. Its average length is 4·5 cm. (about 1¾ in.), its breadth 2½ cm. (1 in.), its thickness, 1-2 mm. ($\frac{1}{25}$ to $\frac{1}{12}$ in.). In the majority of cases it is discharged in two or more pieces.

Its outer surface is shaggy, its inner smooth, but marked with sulci, and also with holes (the openings of the glands). The villi of the shaggy surface may be

half a centimetre (¼ in.) long. The summits of the areas marked out on the inner surface by the sulci are bright red in colour. The sac has three openings: one larger, inferior opening, corresponding to the cervical canal; two smaller openings, corresponding to the Fallopian tubes. The ground substance of the sac consists of connective tissue, containing its cells, and also vessels and glands, of different thickness in different parts, and not infrequently entirely concealed by the other elements of the membrane. The connective tissue cells are mostly fusiform, in length varying from 0·006 to 0·026 mm., in breadth from 0·002 to 0·004 mm. Besides these, innumerable round free cells, unevenly distributed, are seen, having a diameter of from 0·006 to 0·012 mm., and a nucleus generally between 0·004 0·008 mm., often showing signs of division. There are also free nuclei and drops of oil. The glands are lined with columnar epithelium, often ciliated, which, however, is liable to be lost. The same epithelium lines the inner surface of the membrane. The villous processes of the shaggy external surface are not glands, but are processes of the membrane. The sac is generally empty, and but rarely contains fluid or clotted blood.

The characteristic of the condition of the membrane is cell-proliferation, unlike the ordinary condition of uterine mucous membrane, but resembling that at the beginning of pregnancy.

Of the later pathological views I must mention the following.

In Leopold's opinion, membranous dysmenorrhœa is not a disease *sui generis*, but is always a complication of chronic metritis, flexions, fibroids, &c. This opinion

seems to me untenable. In the first place, membranous dysmenorrhœa is often (some would say generally) primary, and many cases in my list are expressly described as being uncomplicated by any of these conditions. It must also be remembered that, in cases where membranous dysmenorrhœa has appeared to be the consequence of pelvic inflammation, it does not follow that more than the pain has really followed such inflammation. In such cases we require what is rarely obtainable—namely, evidence as to the previous character of the menstrual discharge; and we have seen how often membranes are overlooked until special search for them has been inaugurated.

Wyder says that these membranes fall into two classes—exfoliations of the uterine mucosa, and fibrin, and observes that such membranes of both kinds are sometimes passed, not only by the same woman at different epochs, but by the same woman at the same epoch. It follows from this that both are due to a common cause, and that common cause is obviously inflammation.

The thickness of the membrane and the depth of mucous membrane exfoliated vary greatly, and the microscopical examination shows great variety of pathological conditions, but all these are "endometritic." Wyder calls attention to certain large cells, which are oval, having a length of from 0·012 to 0·02 mm. and nuclei 0·006 mm. in diameter, but says that the cells are sometimes two or three times as large. These large cells he believes are only found in the decidua, where pregnancy either intra- or extra-uterine is present. They therefore serve to distinguish real membranous dysmenorrhœa from early abortions.

Ruge (in Schroeder's Handbook) describes two forms of membrane: (1) the usual form of interstitial inflammation, affecting the cells, and (2) the form of interstitial inflammation chiefly affecting the intercellular tissue. The nuclei of the cells of the stroma enlarge until they resemble decidual cells.

Ruge also denies the truth of Wyder's assertion that the large cells are diagnostic of pregnancy. He says that after the death of the embryo these cells and their nuclei rapidly diminish. We must remember that the diagnosis does not practically lie between a dysmenorrhœal membrane and a healthy, but a morbid decidua.

Meyer, like Wyder, mentions and describes these large cells. He adds an interesting contribution to our knowledge. He desired to see the dysmenorrhœal membrane at a somewhat earlier stage, and therefore, after observing it in a case in which it was repeatedly passed, scraped the uterus a day or two before menstruation, and compared the results with those of the membranes previously passed. He found so great a difference that he concluded that the condition generally seen is due to a very rapid swelling and infiltration taking place within a few hours of menstruation. There was none of this to be seen in the membranes removed by scraping.

In a second case, scraped three days before menstruation, he found large cells like those of the decidua, but smaller. The smaller size, however, may be accounted for by the absence of three days' growth. Their diameter was 0·016 mm., against 0·023 mm. for true decidual cells. He believes, however, that the two kinds of cells have different origins, the true decidual

cells being developed out of the spindle-cells of the interglandular tissue with large nuclei, the others being derived from wandering cells.

Löhlein, one of the last writers, says that the microscope has given such varied and unsatisfactory results (especially, I presume, for the purpose of differential diagnosis from pregnancy) that we are thrown back on clinical observation.

It will be seen then that, as I said at first, the numerous and careful microscopical examinations which have been made have not led to any very satisfactory results, and we shall see that our practical knowledge has not been greatly advanced by them. No less credit to those who have pursued the subject so laboriously. It is at least something to know that a road will not lead us to the place we wish to reach.

Besides uterine mucosa, membranes may be passed consisting of:—(1) fibrin, (2) blood-clot, (3) coagulated mucus, (4) casts of the vagina, (5) casts of the bladder, (6) exfoliation of uterine mucous membrane in cases of phosphorus-poisoning and cholera, (7) foreign bodies, (8) products of conception.

As regards 4, we may remark that the morbid process which produces the dysmenorrhœal membrane may extend to the cervix and vagina either continuously or in patches, and that membranes thus formed may show the arbor vitæ of the cervix or the flattened epithelium of the vagina. This has frequently been described without a true knowledge of its nature being ascertained.

The great question connected with the subject has been the relation of membranous dysmenorrhœa to abortion, and there seem, as I have remarked, to be

still persons who believe that all menstrual exfoliations of the uterine mucosa are due to conception.

This subject will, however, be specially discussed.

Clinical History.

The accounts given by patients suffering from membranous dysmenorrhœa vary greatly. It frequently follows inflammatory attacks, abortion, parturition, the growth of fibrous tumours, and the like. Some indeed have asserted that it rarely, if ever, is uncomplicated by such affections, and is essentially secondary to them.

While it is true that these affections often complicate or are complicated with membranous dysmenorrhœa, a careful study of a series of cases, such as that of Dr. John Williams already referred to,* shows plainly that membranous dysmenorrhœa essentially belongs to primary dysmenorrhœa; that is, that it begins essentially, and in the majority of cases, with the establishment of menstruation. The cases recorded by him amount to fourteen, and eleven of these had suffered from membranous dysmenorrhœa from the first or from a very early period.

Again, where complications such as those enumerated above exist, it does not follow that inflammations, especially those of the ovaries, are the cause of the membranous dysmenorrhœa, but they may equally be the consequence of it. It is a significant fact that in Dr. Williams's cases† oöphoritis

* "Obst. Trans.," vol. xix., p. 162.

† *Ibid.*, vol. xxiv., p. 125.

was frequently found, but only once under the age of thirty.

In cases where membranes are passed from the first, the pain may be superadded later.

In an uncomplicated case the history of an attack may be as follows:—The patient, either just before or at the beginning of the flow, becomes seized with severe intermittent, "labour-like" or colicky pains, principally in the hypogastrium, but also perhaps in the whole "genital sphere"—that is, sacrum, groins, thighs, sometimes the bladder and rectum. The flow begins and is generally profuse; the pain is not relieved by it. Usually within the first twenty-four to thirty-six hours the flow stops, the pains become more acute, even amounting to agony. After a few hours a filmy body is expelled, having the shape and size of the uterine cavity, being a triangular collapsed sac with three openings, corresponding to the os internum and orifices of the Fallopian tubes; its outer surface is shaggy and villous, its inner surface smooth, marked by sulci and small holes (the openings of the uterine glands). Its cavity does not generally contain blood. With the passage of the sac, if entire, the pain may entirely cease, and the patient feel a sense of such relief as to assert that the end of the flow, if not the happiest time in her life, is still that time at which her sensations are most comfortable. If the sac (as is more common) is discharged in two or more pieces, the flow stops and the pain increases before the discharge of each, to be relieved by its passage. During the expulsion of the sac the canal often dilates. Many deviations may be found from this type; there may be intermenstrual pain, and the pain may not be relieved completely by the dis-

charge of the membrane. In such cases there are generally complications. An access of pain one or two weeks before the flow has been often observed. The points in which it differs from ordinary spasmodic dysmenorrhœa would seem to be chiefly the abundance of the flow, and the fact that the pain is not relieved by the flow, but only by the passage of the membrane. This association is important as connecting the pain with the membrane.

The patient is generally, but not always, barren.

The pain usually persists, in spite of treatment, till the menopause.

In rare instances it affects families. Thus Siredey mentions a family, known to Brouardel, in which five sisters suffered from puberty; Siredey himself knew two sisters similarly affected.

Causation of the Pain.

The character of the pain has been already described as "labour-like" and colicky; it is sometimes described as expulsive. It has also been mentioned that the flow usually becomes interrupted in from twenty-four to thirty-six hours, when the pain becomes much intensified; that the membrane is then expelled together with a free menstrual discharge, and that the pain at once becomes less. This interruption may take place twice or oftener, when the membrane is expelled in more than one piece.

It seems obvious at first sight that the cause of the pain is the obstruction to the flow caused by plugging of the canal by the membrane, but further consideration shows this to be only partially, if at all correct.

The pain begins either before the flow or at its very beginning. Now at this time the membrane has certainly not plugged the canal. Obstruction, therefore, cannot be the essential cause of the pain at this time. That obstruction may be a cause of the intensification of the pain some hours later, when the flow becomes suspended during the passage of the membrane, is conceivable, and yet another explanation is possible. In cases of spasmodic dysmenorrhœa, uterine colic is produced, as is well known, by the passage of the sound or bougie through the canal. The pain is not intense until the instrument passes through the os internum, when at once an agonising colicky pain is experienced. It is quite in accordance with this to imagine that the passage of a solid body through a sensitive os internum is that which causes the pain. In support of this we may observe that the character of the pain is unchanged—it is colicky from the first; its intensity alone varies. It is also a fact that the pain in cases of absolute occlusion of the cervical canal is not usually severe. In other words it seems that the cause of the pain is not so much the fruitless efforts of the uterus to empty itself as the passage of a solid body over a specially sensitive spot.

We may again remind ourselves of the fact that membranes may be passed without pain. Here we have the membrane and, presumably, the obstruction, but we have not the sensitiveness.

Cases again occur in which membranes are found in the cervical canal some days after the beginning of the flow without the pain persisting.

The results of dilatation of the cervical canal (which

in this as well as in other forms of dysmenorrhœa often gives much relief to the pain) may seem to point to obstruction as the cause of the pain. But this subject is discussed elsewhere, and here I need only say that, in the estimation of dilatation as a cause, and relief of pain as an effect, we must remember that dilatation has other results besides enlargement of the canal; and indeed, that a large bougie may in some cases be passed along the canal during the height of the pain without meeting with any obstruction, and without causing any intensification of pain, until, with progressively increasing bougies, the canal is at last put on the stretch: then the agony is produced. In other words, I believe that were the membrane to lie across the os internum instead of entering it, the characteristic exacerbation of pain would not be felt. It is a sage remark (I think Schultze's) that the causes of dysmenorrhœa must be sought for *external to the uterine cavity*.

What, then, is the cause of the pain? In the first instance, the uterine contractions—not natural, rhythmical, and peristaltic, but abnormal, partial, and unconsentaneous (colic).

We may regard it as pretty certain that uterine contractions, which we know to persist and to occur rhythmically during labour and pregnancy (Braxton Hicks), and also in the presence of fibroids in a non-pregnant uterus, do occur, apart from the conditions during menstruation. The condition present in membranous dysmenorrhœa which is peculiar to it, is the presence of a membrane on the inner side of the uterus of sufficient consistency to be detached more or less entire. Such an abnormal consistency must necessarily oppose considerable resistance to the contractions of

the uterus, which, in metaphorical language, is said to regard it as a foreign body.

The mode of its detachment is also very instructive as bearing on this point. This has been observed by Haussmann* in a necropsy on a woman who died after ovariotomy near the time of a menstrual period, this operation, as is well known, very constantly producing a moderate uterine hæmorrhage, and probably precipitating a true menstruation when near the proper time.

The mucous membrane near the os internum was entirely detached, but fastened by fine processes to the uterine wall. The detached part was about one millimetre thick. The mucous membrane of the fundus was firmly attached.

A similar condition was found by Dr. John Williams† in a woman who died of acute pleurisy on the fifth day of menstruation, and in whom the detachment had taken place in a layer from below upwards. Raciborski quotes Richard to the same effect. This is the order in which the decidua becomes detached in cases of extra-uterine gestation, and, it may be added, in which the bag of membranes (decidua) becomes detached in the premonitory and first stages of labour.

This is the comparison which we must keep before us rather than that of blood washing a membrane before it. If the bleeding were the primary cause of its detachment, it would certainly not occur in order from below upwards. It may be added that dilatation of the os during the menstrual flow carries the metaphor

* "Beitr. zur Geb.," S. 233. Haussmann's inference, that the membrane is usually or often detached several days before menstruation, seems to me untenable, and I have explained his observation as above.

† "Obst. Trans.," vol. xix., p. 154.

of "miniature labour" a little farther still. The cause of the pain is therefore:—(1) Colic excited by a foreign body; (2) colic super-excited by the passage of this foreign body over a specially sensitive part.

Differential Diagnosis.

The membranous structures from which a differential diagnosis has to be made are, as already mentioned:—(1) Fibrin; (2) blood-clot; (3) coagulated mucus; (4) casts of the vagina; (5) casts of the bladder; (6) exfoliation of uterine mucous membrane in cases of phosphorus-poisoning and cholera; (7) foreign bodies; (8) products of conception.

1. *Fibrin.*—Fibrinous casts are frequently passed; so often, indeed, that some have gone so far as to deny that any others, or, at least, any consisting of uterine mucous membrane, are passed except as results of conception. This contention has been considered elsewhere, and proves to be untenable. Still, it will be seen by reference to the table that fibrinous casts are very common. They may occur, as I have said, in cases in which the true uterine mucous membrane is also discharged, not only at different monthly periods, but even at the same.

Their recognition, even by the naked eye, so far as the differential diagnosis from uterine mucosa is concerned, is not difficult. They may have the same dimensions and shape, the same shaggy outer and smooth inner wall; but they lack the punctate appearance caused by the presence of uterine glands. Their thickness is usually not greater than that of the true

membranes, but one on the list reached 3 mm. (? doubled).

In all these cases, however, a microscopical examination should be included, to make certain, and it is only by its means that fibrin will be certainly distinguished from vaginal exfoliation or coagulated mucus.

2. *Blood-clot.*—This may, as we all know, look very like organised tissue, especially when its surface is somewhat decolourised. It is easily detected by microscopical examination. We should, however, be careful to ascertain that apparent clot is only clot, for many apparent clots prove to contain membrane.

3. *Coagulated mucus.*—Mucus may ascend into the uterus as well as descend from it. Microscopical examination will prove its nature. It may be mixed with epithelium, either cylindrical from the uterus or squamous from the vagina.

4. *Casts of the vagina.*—In some cases the vaginal epithelium, and even the vaginal mucous membrane, is separated as a sheet, most often as the result of caustics or astringents, sometimes as the result of inflammation. In some cases the process which produces a true dysmenorrhœal membrane extends into the cervix or even the vagina. Such vaginal membranes are rendered plainer to the naked eye by being gently agitated with water, and their true nature is easily proved by the microscope, for they are found to be covered with squamous epithelium.

5. *Casts of the bladder.*—The mucous membrane, and even part of the muscular coat may be separated and expelled from the bladder in consequence of inflammation. Perhaps the commonest cause is cystitis from retention of urine in cases of retroversion of the gravid

uterus. In such cases the lining epithelium is bladder epithelium and the uterine glands are absent.

6. *Exfoliation of the uterine mucous membrane in cases of phosphorus-poisoning and cholera.*—The mucous membrane of the uterus may be separated and expelled in cases of phosphorus-poisoning (Wolfs, Wegner, Schultzen, Riess, and Vetter [Haussmann]). In cholera it has been described by Slavjansky.

7. *Foreign bodies.*—These need only be mentioned. They may include a large variety. Papers wrapped round suppositories may be named.

8. *Products of conception.*—These include:—*a*, decidua in cases of extra-uterine pregnancy; *b*, decidua in cases of double uterus; *c*, abortions. *a*. With the decidua in cases of extra-uterine pregnancy we are sufficiently familiar. Its expulsion, indeed, is one of the signs of the condition for which we look. Its general characters are those of the ordinary decidua vera of pregnancy, including, to naked-eye examination, the presence of uterine glands; and, to microscopical examination, the presence of decidual cells.

The structure and changes of this membrane under various circumstances are well worthy of a separate study, and would furnish materials for a monograph.

But in the task I have set myself my concern with them is limited by the date of one month or thereabouts, for it is only when menstruation is fairly regular in rhythm that this question comes in. The thickness of decidua vera in the first month of pregnancy is about $\frac{2}{5}$ in. (Engelmann), or nearly 10 mm. (= 1 cm.); and, although it is true that the whole of this is not detached, the expelled membrane is a thick, fleshy mass, which is not likely to be mistaken for a true dysmen-

orrhœal membrane. It is obviously more than this, and is a product of conception. How far it is modified in cases of early death of the embryo it is impossible to say with certainty; but it probably becomes atrophied, though the analogy of fleshy moles on the one side, and of some cases of extra-uterine gestation on the other, shows that death of the embryo may be followed by hypertrophy of the decidua in one case, and by hypertrophy of the placenta in the other. The atrophy of the decidual cells after the death of the embryo has already been referred to. The other morbid conditions of the decidua, from which it is not exempt, would introduce yet another element of complication.

In all cases, however, no embryo is to be found, though I need hardly remind my hearers that a superficial search often fails to detect it when it is present. Such an examination, like that of all placental tissues, is best performed in a basin of water, and under these conditions a small and often empty watch-pocket may be discovered.

The absence of chorionic villi is a matter very difficult to prove. Their presence is often very plain. It would not, however, be safe to assert that a sac was not the product of conception because we could not find chorionic villi. Moreover, it is known that an impregnated ovum may fall out of the uterus to which it has failed to attach itself on its arrival, and this failure of attachment is believed to be one of the causes of low implantation of the placenta, leading to placenta prævia.

When a decidua vera in a case of extra-uterine pregnancy is seen in the process of detachment, its detachment begins at the os internum. Such specimens show either the lower part of the decidua loose

and the upper part adherent, or the lower part missing and the upper part loose or attached.

One other point of very great importance must be referred to, as throwing light on the mechanism of the detachment of the decidua in extra-uterine pregnancy, and of the dysmenorrhœal membrane in that affection. In both the detachment is usually accompanied by "labour-like," "colicky" pains; in both the cervical canal usually dilates; in both the membrane is detached from below upwards, as are the membranes at the beginning of labour.

It is impossible not to see that in all three cases the mechanism is one and the same—uterine contractions and especially retraction; that is, Labour.

b. Decidua in cases of double uterus. The same remarks apply to this condition as to the former. With deciduæ of much more than a month's growth we have really little to do. I am not aware of any accurate observation of a decidua discharged in the first month of pregnancy from a double uterus. References to cases of its discharge at a later date may be found in Haussmann (S. 265), and an excellent clinical report of a case repeatedly observed by Dr. Cleveland will be found in the *Obstetrical Transactions*.*

c. Abortions:—This is the great class requiring an accurate differential diagnosis. It will be seen that Morgagni was well aware of the necessity for excluding pregnancy, for he remarks that the membranes were passed whether the husband of his patient were at home or away. It is true that he calls them "abortions," but obviously in a wide and general sense.

* Vol. xxiii., 1881, pp. 132 and 181; vol. xxiv., 1882, p. 297; vol. xxvi., 1884, pp. 117 and 184, with illustration, and p. 331.

The differential diagnosis depends partly on anatomical, but chiefly on clinical, signs.

α. No case can be regarded as one of membranous dysmenorrhœa unless membranes are discharged regularly at regular monthly periods for a considerable time.

That a membrane has been passed on a single occasion from the uterus proves nothing. That a membrane is passed occasionally with postponement of menstruation makes it likely that the case is one of early abortion. If the membrane is passed regularly at each period by a married woman, the case requires consideration. If it ceases when coitus is suspended and reappears when coitus is resumed, the case is probably one of genuine monthly abortion.

β. In shape the decidual sac of pregnancy is ovoid, and it is more vascular; that of the menstrual membrane is more triangular and less vascular.

γ. The thickness of dysmenorrhœal membranes averages 1 to 2 mm. ($\frac{1}{25}$ to $\frac{1}{12}$ in.), rarely 4 mm. ($\frac{1}{6}$ in.); that of abortive deciduæ may reach 5 to 10 mm. (0·5 to 1 cm., or $\frac{1}{5}$ to $\frac{2}{5}$ in.). Any membrane approaching $\frac{1}{4}$ in. in thickness cannot be dysmenorrhœal membrane unless additionally diseased. Wyder's case (No. 2) in my table is probably from a six weeks' abortion. The whole thickness of the decidua at the end of the first month is some 10 mm. ($\frac{2}{5}$ in.) as I have said. A specimen of undoubted abortion, shown by Dr. Herman, measured $1\frac{3}{4}$ in. in length, $1\frac{1}{4}$ in. in breadth, $\frac{1}{6}$ in. in thickness. The embryonic sac was the size of a pea and $\frac{3}{8}$ in. in diameter. The specimen was passed five weeks after the last menstruation.*

δ. The length of the sac of dysmenorrhœal mem-

* "Obst. Trans.," vol. xxxii., 1890, p. 272.

branes is some 4 to 5 cm. (1¾ to 2 in.). A length decidedly greater than this (when there is no evidence that the additional length is due to the extension of the membrane to the cervix or vagina) points strongly to enlargement of the uterus, and is in favour of the diagnosis of abortion.

ε. The structure of both is much the same. We have the glands, but need not have the signs of swelling, infiltration with small cells, and inflammation, in abortion. The epithelium lining the sac is cylindrical in membranous dysmenorrhœa, but becomes more cuboidal after conception. The presence of large decidual cells points to abortion, but their absence does not contradict it, as Ruge has shown and we have stated elsewhere.

ζ. The character of the bleeding: In abortion, if complete, bleeding ceases very rapidly after the expulsion of the ovum; in membranous dysmenorrhœa the flow generally lasts an average time (four to five days or more), the membrane is expelled in the first thirty-six hours, and the bleeding continues freely for some days.

In my table it will be seen that in comparatively few cases have the facts been minutely recorded. Still, to mention a few of the cases, it would seem that Moreau's (or Evrat's) cases were probably monthly abortions, though he suggests a somewhat transcendental ætiology—namely, that of "*excitations sans fécondation.*"

Chaussier's "young woman of ardent temperament" had probably a common abortion of a blighted ovum, and not even at the month. We must remember that an abortion may be retained or "missed," that is, it

may be discharged some time after the death of the embryo, and that early pregnancies are amenable to this occurrence.

Charpignon's case was probably an abortion, as was Moussous'.

Tyler Smith's case was doubtless one of monthly abortion. The patient was married twice, and only during her coverture did she pass membranes. Wyder's case (No 2) was probably a six weeks' abortion.

Treatment.

The affection is generally declared incurable. Drugs have been tried and discarded, local treatment has failed. Electricity, if successful, would have been oftener practised. It seems to me, however that one or two words still remain to be said on this matter. Treatment may be directed to two conditions—(*a*) the morbid uterine mucous membrane; (*b*) the pain.

The pain, as I have endeavoured to show, is probably uterine colic, and this, again, is the cause of another variety of dysmenorrhœa—spasmodic, neuralgic, mechanical, obstructive dysmenorrhœa. The treatment which often relieves the pain, at any rate temporarily, in both is dilatation, of which I shall speak elsewhere.

The pain itself is not, in my opinion, merely an annoyance to the patient, for, taking pain in this case as equivalent to colic, colic is bad for the uterus; it is associated with irritation, the intense contractions lead to hypertrophy in many cases, and the irritation of the

uterus may lead to its spreading upwards to the uterine appendages, where its treatment as inflammation is far more difficult. Therefore we should, if possible, treat the uterine colic.

Measures to increase the flow, such as hot foot baths, are less indicated in this case, for the flow is generally profuse and the pain is not immediately relieved by it, as it generally is in spasmodic dysmenorrhœa.

Among drugs may be mentioned guaiacum and sulphur, antipyrin (cautiously used, and probably with a diffusible stimulant), and an old remedy which has certainly, in these days of experimental pharmacology, been unjustly discarded—namely castoreum.

With regard to local measures, temporary relief has followed scraping the uterus shortly before a menstrual period. I should feel tempted to try this, not once, but repeatedly, with an irrigating curette, flushed with antiseptic solution, preceded by dilatation.

Division of the cervix has given temporary relief. Its action is, in my opinion, to relieve the colic. In my opinion, also, it should never be done.

Removal of the appendages has been practised; in one case (Mr. Lawson Tait's) with success. The other side of the picture is furnished by Mr. Doran, who refers to a case followed by intense dysmenorrhœa.

The treatment of membranous dysmenorrhœa certainly is a most unhappy problem; not even pregnancy, going to full time cures it. If it is to be cured, and if complications are to be avoided, our attempts must be made early.

LECTURE III.

Spasmodic Dysmenorrhœa.

This division, which includes the great majority of severe cases, is the only one which is justly entitled to the name "dysmenorrhœa." As has been already stated, I consider it to include membranous dysmenorrhœa, to which I shall have to refer, since it elucidates many matters otherwise obscure.

This affection is called spasmodic on clinical grounds. It is spasmodic. Unlike the vague and fixed aching of congestive or inflammatory dysmenorrhœa, the pain comes on punctually; typically intermits, or at least varies in intensity; and is spasmodic or colicky in character.

Neuralgic is a sufficiently correct but less descriptive title. The pain is sharp, and doubtless it is through nerves that the pain is felt.

"Obstructive" and "mechanical" are theoretical names, into whose correctness I shall presently inquire.

Natural History of Spasmodic Dysmenorrhœa.

In the great majority of cases this is primary; that is, it begins with the onset of menstruation.

The typical relation of the pain to the flow is that the pain precedes the flow by a few hours, or by a day or two, and lasts some twenty-four to forty-eight hours;

that is, until the flow is well established, when it much diminishes or ceases.

The situation of the pain is, practically, in the womb, or it is referred externally to the lower part of the hypogastrium, just above the pubes.

The character of the pain is intermittent, or varies in intensity, and, typically, it comes in pangs. It is described as "labour-like," "cramp-like," "forcing," &c., and is, in fact, uterine colic.

The duration of the pain, as above said, is generally from twenty-four to forty-eight hours, till the flow is well established.

The intensity of the pain varies from slight pain to agony, and its manifestations may include groaning, rolling on the floor, vomiting or fainting. In some cases pain for an hour or two will cause a shock which will last for the rest of the month.

The character of the flow is scanty, especially during the time when the pain is most intense. The blood is often mixed with clots, which on examination are found to be the membranes of membranous dysmenorrhœa.

The effect of time on the disorder is that the pain increases, and, in the case of unmarried women who are not treated, ceases only with the menopause. The effect of marriage is, in itself, generally to increase the disorder. The patients are often sterile, and in lack of pregnancy generally get worse and worse. If pregnancy ensues, and especially if it ends in a full-time natural delivery, the patient is usually permanently cured.

To nearly all these typical characteristics there are, however, exceptions.

The disorder may not be primary, but may be ac-

quired, in some rare instances, in women who have rapidly borne many children. This, which seems inexplicable, really throws light on the affection, which is essentially a colic, and may ensue in worn-out uteri, just as after-pains may also affect such uteri, the affection in both cases being, as has been justly insisted on by the late Dr. Matthews Duncan and others, of the same nature. In other cases it may follow general or local exciting causes.

In some cases the pain may not precede the flow, and may not be relieved by the flow. This is especially the case in membranous dysmenorrhœa.

The situation of the pain may be inguinal, or like that when the appendages are inflamed, or may radiate to the whole of the pelvic viscera, especially in membranous dysmenorrhœa. It must be remembered that transference or radiation of sensation is not very rare in the pelvic organs, that the passage of a sound may cause typical ovarian pain, and that pressure on an ovary may cause pain in the opposite ovarian region.

The character of the pain is not always intermittent, it may be continuous; perhaps because one spasm overlaps another. In rare cases it is intermenstrual, or occurs where there is no flow of blood at all.

Again, in rare cases, the flow is not scanty, and may even be profuse, especially where it is accompanied by the discharge of membranes.

The effect of time is sometimes in the direction of relief with improvement of the general health. In one case, in which spasmodic dysmenorrhœa had distressed an unmarried French woman so intensely as to incapacitate her for some two days every month, I witnessed a paroxysm, which was accompanied by

vomiting, faintness, and rolling in agony. It was so severe that I recommended dilatation. The next period, however, and several periods after were perfectly painless. It is quite possible to indulge in poetical speculations as to "sensory and vaso-motor storms," but, as I have no scientific facts to help me, I prefer merely to relate the phenomena.

Lastly, it must not be forgotten that more than one form of dysmenorrhœa may be present at the same time.

Pathology.

Until the last few years the question of the pathology of spasmodic dysmenorrhœa was considered settled by a very lucid and intelligible explanation known as the mechanical system of uterine pathology.

The theory of this pathology was that it depended upon obstruction to the escape of the menstrual fluid, due to flexions of the uterus or to stenosis of some part of the canal. Other elements are cited, in the shape of the texture of the uterine tissue and disorder of the uterine circulation by flexion.

They are thus summarised:—1. Flexion of the uterus causing a virtual stricture at the angle of flexion. 2. Congenital narrowness of the cervical canal, in association with the presence of an infantile uterus. 3. Congenital narrowness of the os internum. 4. Congenital narrowness of the os externum. 5. Swelling of the cervical mucous membrane, causing obstruction. 6. Increased flow of blood, the canal being too small to allow its free escape. 7. Fibroid tumours compressing or distorting the canal. 8. Chronic congestion of the

uterus associated with flexions. 9. Small intra-uterine polypi obstructing the canal. 10. Elongation of the vaginal portion of the cervix, often associated with flexion of the canal of the cervix. 11. Contortion of the cervical canal, dependent on irregular hypertrophy of the cervix.

I shall deal with these *seriatim*, endeavouring to state the case with fairness, and to appeal to facts in support of any position I may feel obliged to take.

The headings, however, may be summed up more shortly, as follows:—(A) Flexion of the uterus causing obstruction (1, 10). (B) Stenosis, congenital (2, 3, 4,); due to swelling of the mucous membrane (5); fibroids (7); polypi (9); hypertrophy (11); increased flow of blood (6). (C) Chronic congestion of the uterine walls, due to flexion (8).

A. *Flexion of the uterus causing obstruction.*—This seems at first a self-evident cause. It is said that a tube bent at an angle kinks itself, and the calibre is narrowed. It is also certain that in many cases of spasmodic dysmenorrhœa the uterus is flexed.

It remains for us to ascertain whether (1) flexion is essentially associated with obstruction; (2) flexion is essentially associated with dysmenorrhœa.

1. Does flexion of the uterus cause narrowing of the canal? The evidence adduced (besides that of the presence of dysmenorrhœa) consists in: (*a*) difficulty in passing the sound; (*b*) the evidence of specimens of flexed uteri; (*c*) the illustration of bent tubes.

a. Difficulty in passing the sound:—This is no evidence of obstruction. First comes in the question of skill. We must be sure that the attempts have been skilfully made.

In the case of most of those who have written, this may be taken for granted.

But with all the skill in the world, no one can be certain of hitting off exactly the right direction in such a canal as that of the cervix. This is barrel-shaped, and marked with large folds of mucous membrane, into which the sound sometimes easily passes. It is notorious that some of the most difficult cases on which to pass the sound are those where the canal is dilated, too wide, and not too narrow, and where the cavity is dome-shaped. In these cases it is easily intelligible that to hit off the right spot is a matter of difficulty.

The real test of stenosis is the resistance experienced in *withdrawing* the sound after it has been inserted. Here the question of wrong direction is eliminated.

Another cause of difficulty is the bend undoubtedly. But here the question is again one of direction. A passage ever so wide may cause difficulty to a body passing through it at variance to its long axis. Here again the test is the presence or absence of difficulty in withdrawing the sound.

A further question, whether real stenosis produces dysmenorrhœa, will be discussed hereafter.

b. The evidence of flexed uteri:—This is entirely against the theory that flexion of the uterus causes obstruction. A list of the specimens of anteflexion in the London museums is given by Dr. Herman.* They are to be found in the museums of University College, Royal College of Surgeons, Guy's Hospital, and the London Hospital.

Specimens of retroflexion are to be found in the

* "Obst. Trans.," vol. xxiii., p. 210.

museums of the Royal College of Surgeons, University College, King's College, and the Middlesex Hospital.*

They can be seen by any who choose to look for them, and none of them shows obstruction of any amount, or dilatation, unless complicated by adhesions, or any spur at the angle of flexion, which is so often described. The canal may be curved, but its calibre is little, if at all, diminished. The illustrations which are found in books dealing with the subjects are all, so far as I have seen them, mere diagrams representing the supposed condition, and illustrating the theories of the writers, but I can find no drawing of an actual section through the canal of a flexed uterus showing the alleged condition. Some of these diagrams show an enlarged cavity and thickened walls, both of which are incorporated into the argument, but are also diagrammatic.†

As a matter of fact, hypertrophy of the uterine walls may accompany the progress of a case of spasmodic dysmenorrhœa, but, as in the case of membranous dysmenorrhœa, is capable of a different interpretation —namely, the extra work entailed by uterine colic. If associated with a flexion in a uterus whose canal is still fairly patent, obstruction, at least, cannot be its cause. Dilatation of the uterine cavity may be found in cases in which adhesions have formed round a uterus, whe-

* *Ibid.*, vol. xxiv., p. 166.

† Dr. Graily Hewitt has called my attention to a specimen in University College Museum, described and figured by him in the *British Medical Journal*, March 3rd, 1888, showing great flattening of the canal, antero-posteriorly, with expansion transversely. The anterior and posterior walls of the cervical canal are in contact for some ¾ in. There is no history, and the specimen is small, perhaps immature. The absence of any "spur at the angle of flexion," of dilatation of the cavity of the uterine body, and of thickening of the walls, must, however, also be observed. This solitary specimen must be considered in the presence of all the facts debated in the text.

ther flexed or not, impeding its contractions, and in such cases dysmenorrhœa may be present, but is to be attributed to the sequelæ of inflammation, which are themselves an efficient cause.

c. The illustration of bent tubes. It is assumed that bending of a tube narrows its calibre. The tube is assumed tacitly to be such a tube as an india-rubber pipe. If this is bent beyond a small amount it kinks, and it is assumed that the same happens in the case of the uterus. But illustration is no argument, and the truth is that the kinking depends on the ratio between the external diameter of the tube and of its canal; in other words, a thin-walled tube will kink, but a thick-walled tube will not kink. Now, the uterus is emphatically a very thick-walled tube and is much too thick to kink, as all specimens of flexed uteri show. Moreover, if the calibre were a little narrowed, there would still be a considerable space left for the small amount of blood which passes during a menstrual period. This varies greatly; but if we take it as four ounces on an average, flowing during four days, this will give the following results:—

One ounce in a day,

Twenty drops in an hour,

One drop in three minutes.

What sized canal is required for this?

B. *Stenosis.*

This has been partially discussed above.

The causes have also been summarised.

a. Congenital stenosis is generally illustrated by that form known as "conical cervix" with "pinhole os."

This pinhole os rarely fails to admit the uterine sound, which is certainly larger at its smallest part

than any pin, and is at least capable of transmitting one drop of blood in three minutes.

The conical cervix is commonly associated with other signs of imperfect development, such as small size of the uterus, and unsymmetrical position, from unequal development of the uterine ligaments and rigidity of tissue. It is well known that an imperfectly developed organ is apt to perform its functions with difficulty, and, in the case of a muscular viscus like the uterus, with pain.

That ill-development is a common cause of dysmenorrhœa is acknowledged by some writers, but is not generally put in sufficient prominence. The following statistics from a paper by Dr. John Williams, already quoted,* show this connection plainly, and also show that, as might be supposed, the younger the age the commoner is ill-development.

In the presence of a sufficient cause, it is more rational to associate the dysmenorrhœa with general ill-development than with special features of that ill-development.

Age.	No. examined.	Uterus imperfectly developed.
Under 20	21	15 = 71 per cent.
20 to 25	40	14 = 35 ,,
25 to 30	26	4 = 15 ,,
30 to 35	10	4 = 40 ,,
35 to 40	10	2 = 20 ,,
40 to 45	7	3 = 43 ,,

The contrast is marked up to the age of thirty in the figures above, afterwards the numbers become too scanty for argument.

Vedeler† gives details of 252 women who menstruated

* *Ibid.*, 1882, vol. xxiv., p. 121. † "Arch. f. Gyn.," xxi., 1883, S. 211.

painlessly (S. 229). Fifteen, or six per cent. had some stenosis; some had the "pinhole os." In none of them was there any retention of menses with "painful contractions." Some of these women he examined when menstruating at different times, and found that the canal admitted no larger a bougie when the flow was free than when it was scanty—*i.e.*, it was always large enough to allow the flow to escape. In cases of severe menstrual pain he has passed a large bougie (No. 10) without difficulty during menstruation, and without giving vent to any collection of blood. Some other observers have passed bougies during the height of the pain, and found the canal more relaxed than at any other time.

Vedeler also (S. 231) passed a sound during the pain in patients suffering from severe dysmenorrhœal pain before the flow, and not a drop of blood followed, though the pains were "obstructive" in character. The same in some rare cases where the pain continued after the flow.

Some years ago I attempted to see whether narrowing of the cervical canal really did cause dysmenorrhœa.

I observed sixteen cases. In two of these the os externum would not admit a probe. In four the narrowing affected the canal. In ten the os internum was the part narrowed.

Eight had practically painless menstruation (50 per cent.). In one case I can find no note of the pain. The other seven had some pain, but of these one (married nine years and a half) had no pain till five months ago; another, married two years ago, at the age of seventeen, had no pain before marriage; but in this case there was descent of the uterus with retroversion, and prolapse of an ovary.

In some cases, where the canal itself was narrowed, the bougie (No. 7) was tightly gripped, showing rigidity as well as narrowing.

The test of narrowing was the gripping of No. 7 bougie or the knob of the sound on withdrawal, as already explained.

Thus 50 per cent., with or without other complications, had no menstrual pain; while, in the case of many of the rest, there were other possible causes for the pain, and in several it was slight.

b. Swelling of the mucous membrane: This has not been proved, and, indeed, seems incapable of proof. It appears to have been introduced for the sake of explaining cases of spasmodic dysmenorrhœa, in which there was certainly no conceivable cause of stenosis. Vedeler found (S. 231) in 252 women menstruating painlessly 42 (16 per cent.) cases of cervical endometritis, and remarks that in this condition the orifice is relaxed. He quotes a case in which a sponge tent was inserted into the cervical canal for dysmenorrhœa, and remained there during menstruation, which was painless.

c. Fibroids: Fibroids are capable of causing severe spasmodic pain apart from any flow irritating the uterine fibre, and there is no necessity to invoke any supposed narrowing of the canal by their means; nor, indeed, even if the canal is distorted, is it frequently narrowed. Vedeler (S. 232) among 5,800 patients, had three cases of cervical fibroid. In only one was there any dysmenorrhœa.

d. Polypi: It is not easy to understand how these should cause obstruction; when they begin to descend the canal invariably expands, the uterus goes into labour, and any pain is more rationally explained by

this process. As regards mucous polypi, I do not know of a single recorded instance of dysmenorrhœa.

e. Contortion of the cervical canal from hypertrophy: It is not easy to see why a slow trickling cannot take place in a curved canal as well as in a straight one; and, indeed, that this is the case has been directly proved.*

f. Increased flow of blood: The facts are against this. When the flow is free the pain is usually less instead of greater.

C. *Chronic congestion of the uterine organs due to flexion*.—It has been assumed that in flexions of the uterus the circulation must be impeded, and that this is one of the causes of dysmenorrhœa when it is present in such cases. The truth of this position entirely depends on the direction and arrangement of the circulation in the uterus. If this is generally parallel with the long axis, obstruction to the circulation might conceivably result.

The facts with regard to this point should properly have been ascertained before the construction of theories; but it was only in 1885 that it was investigated by Dr. John Williams.†

The blood-supply of the uterus is derived from the uterine and ovarian arteries, which are joined by a large anastomotic branch at the side of the uterus. From this branches are given off to the uterus, whose general direction is circular and not longitudinal. The veins follow a similar course.

As regards the effect of flexions on the uterine circulation, the fundus of the uterus was stitched closely to the cervix, securing the acutest flexion possible; then

* Duncan, "Clinical Lectures," fourth edition, 1889, p. 523.

† "Obst. Trans.," vol. xxvii., 1885, p. 112.

a coloured fluid was injected into one of the veins of one broad ligament, and the uterus was found to have been well injected.

The application of a tight ligature round the uterus would not, with this arrangement of vessels, produce any embarrassment of the circulation except at the part pressed by the ligature, for each part of the uterus is supplied, so to speak, at its own level, as the "rising main" in a house supplies each floor with water. The arrangement of vessels in the uterus is very similar to that in the intestines, which the uteri of many of the lower animals greatly resemble. The intestines are marked by acute flexions every few inches, but no harm to the circulation results from them; in fact, the vascular arrangements in both cases are directed to maintaining an equable supply of blood under flexion.

There is, therefore, no foundation for the idea that flexion of the uterus embarrasses its circulation.

The question whether stenosis is essentially associated with dysmenorrhœa has been discussed above and answered in the negative.

It now remains for me to answer the question: Are flexions essentially associated with dysmenorrhœa?

1. Are flexions essentially associated with dysmenorrhœa?

This question has been investigated specially by Vedeler, of Stockholm, and by Dr. Herman.

Dr. Vedeler, by the examination of 3012 women, ascertained, first, that 54 per cent. of the whole had anteflexed uteri, 8 per cent. had retroflexion, and 15 per cent. the so-called normal position. Therefore anteflexion is absolutely the commonest position of the uterus; and this holds good, whether the patients are

virgins, nulliparæ but not virgins, or women who have borne children. In virgins anteflexion was found in 70 per cent., whether suffering from uterine symptoms or not; in nulliparæ, in 71 per cent. of those without and in 56 per cent. of those with uterine symptoms; in women who had borne children, in 37 per cent. of those without and 38 per cent. of those with uterine symptoms.

Thus parturition tends to eliminate anteflexion, which still remains absolutely the commonest position of the uterus.*

Dr. Herman† examined 111 women who had never been pregnant and menstruated regularly. He found pronounced anteflexion in 53, or 47·7 per cent. He quotes seven French observers whose cases amount to 431, and whose cases of anteflexion amount to 185, or 42·9 per cent.

It is evident, therefore, that anteflexion is for all women the most usual position of the uterus, and that for women who have not borne children it is by far the commonest. This in itself practically shows that it is not to be considered as an abnormal condition. But we still have to deal with the question as to its association with dysmenorrhœa.

Vedeler‡ showed the following results of the careful examination of 252 women who menstruated painlessly :—

Denomination.	No.	Uterus strongly flexed.
1. Virgins	59	15 or 22 per cent.
2. Unmarried, not virgins	101	28 ,, 27 ,,
3. Married	92	13 ,, 13 ,,
	252	56 ,, 22 per cent.

* "Arch. f. Gyn.," XIX, 1882, S. 294.

† "Obst. Trans.," vol. xxii., 1881, p. 209.

‡ "Arch. f. Gyn.," xxi., 1883, S. 211.

He also gives details of 100 women suffering from dysmenorrhœa.

Taking the nulliparæ from his former table of 3012 women, and comparing them with the nulliparæ of the dysmenorrhœal class, the figures come out as follows:—

	Nulliparæ (of the 3012).	Dysmenorrhœal nulliparæ.
Anteflexion . . .	71 per cent.	71 per cent.
Retroflexion . .	3 ,,	4 ,,
"Normal position"	9 ,,	8 ,,
Anteversion . . .	7 ,,	6 ,,
Retroversion . . .	9 ,,	11 ,,

If only the strongly anteflexed uteri are counted we have the following figures:—In 26 per cent. of the dysmenorrhœal women the uterus was strongly anteflexed; among those not suffering from dysmenorrhœa, we have acute anteflexion in 20 per cent. of virgins, 27 per cent. of nulliparæ, 13 per cent. of mothers.

It is impossible to learn from these figures anything but that anteflexion is not a cause of dysmenorrhœa.

Returning to Dr. Herman's 111 nulliparous women menstruating regularly, and who had not sought advice for uterine but for venereal disease, at the Lock Hospital, we find the following figures:—

1. Uterus straight or slightly anteflexed (57 women): Little or no pain, 40, or 70 per cent.; severe pain, 17, or 29 per cent.

2. Uterus strongly anteflexed (53 women): Little or no pain, 37, or 69 per cent.; severe pain, 16, or 30 per cent. Again:—

3. Uterus acutely anteflexed (23 women): Little or no pain, 16, or 69·5 per cent.; severe pain, 7, or 30·4 per cent.

4. Uterus straight, or slightly anteflexed (87 women):

Little or no pain, 61, or 70·1 per cent.; severe pain, 26, or 29·8 per cent.

This shows that anteflexion is not a cause of dysmenorrhœa.

As regards *retroflexion*, the question is more complicated, but far less crucial, for retroflexion is far rarer than anteflexion, and could account for very few cases of dysmenorrhœa.

Thus Vedeler* found only 8 per cent. of retroflexions in 3912 women; or, in detail, in 3 per cent. of virgins, 3 per cent. of nulliparæ not virgins, 12 per cent. of mothers.

It is plain that, comparing the 3 per cent. of retroflexions in nulliparæ with the 12 per cent. in mothers, parturition is a fruitful source of retroflexion.

But as only 10 per cent. of the cases of dysmenorrhœa occurred in mothers (or, in other words, 82 per cent. in nulliparæ) and as the vast majority of cases of great dysmenorrhœa occur in nulliparæ, the question stands or falls, not by retroflexion, but by anteflexion.

Comparing the total 3012 women with the nulliparæ of their number, and with the women suffering from dysmenorrhœa, we have retroflexion occurring in 8 per cent. of the total, in 3 per cent. of nulliparæ, and in 4 per cent. of those suffering from dysmenorrhœa.

Dr. Herman,† in an elaborate and thoughtful paper, discusses the relation between retroflexion and dysmenorrhœa.

He finds from 85 cases of retroflexion that menstruation was painless in 21 (24·76 per cent).

The only way in which retroflexion can cause dys-

* "Arch. f. Gyn.," xix. 1882, S. 295.

† "Obst. Trans.," vol. xxiv., 1883 p. 161.

menorrhœa (for the questions of obstruction to the canal, and also to the return of blood by the vessels, have already been considered under anteflexion) is the compression of the vessels in the broad ligaments against the utero-sacral ligaments when the uterus is acutely flexed into Douglas' pouch and strangulated (Dr. John Williams).* This will lead to congestion of the uterus, and possibly to dysmenorrhœa.

Pathological anteflexion.

Under this name is described a variety of anteflexion, which is not congenital, but acquired, and was first described by Schultze,† who attributes it to posterior parametritis, or inflammation of the cellular tissue in the sacro-uterine ligaments, drawing the cervix upwards and backwards, and flexing the uterus forwards. It is not certain whether the thickening is due to inflammation of the peritoneum or of the cellular tissue. Nor does shortening of the sacro-uterine ligaments always lead to anteflexion. It is by no means uncommon to find, in cases of arrested development, the uterus retroverted and irreplaceable, with these ligaments not thickened but shortened, or rather congenitally short. If the finger be inserted into the rectum, and the ligaments felt, while an attempt is made to replace the uterus with the sound, the ligaments are felt to become tighter and tighter. The difference in the mode of displacement depends probably on differences in the place of insertion of the ligaments as well as in the conditions of tethering of the fundus.

I have repeatedly felt thickening of these ligaments in disease of the rectum, and indeed they are as close to the rectum as to the uterus.

* "Obst. Trans.," vol. xvi., p. 215. † "Arch. f. Gyn.," vol. i., S. 373.

Vedeler's statistics have been criticised as taking no account of "pathological anteflexion," but it seems to me that this only strengthens his argument.

Pathological anteflexion is granted to be a consequence of pelvic inflammation, which is in itself an undoubted cause of dysmenorrhœa. How can it be proved that the anteflexion has anything to do with it? Both the anteflexion and the dysmenorrhœa are common effects of inflammation. Cirrhosis of the liver and delirium tremens are common effects of drink, but cirrhosis of the liver is not a result of delirium tremens.

In such a case the *onus probandi* rests with those who uphold the mechanical theory, which in this case is at least quite superfluous.

If Vedeler includes cases of pathological anteflexion in discussing its effects on dysmenorrhœa, he makes the argument all the worse for the non-mechanical view; and yet see how the figures come out. If these cases were eliminated, the results would certainly be far more damaging even than they are at present.

Arguments from the results of treatment.—It must be remarked that, unless one treatment only is carried out at a time, no argument derived from it can be maintained. For instance, a patient who is kept in bed, has her bowels regularly relieved, and wears a pessary, furnishes no argument in favour of the pessary, unless each step of the treatment is taken separately and with careful noting of its effect. When, in addition to this, a sound is passed frequently to straighten the uterus, we have four simultaneous courses of treatment, from which we have no right, without proof, to select any one or two and argue from them.

This has, in truth, been very largely done.

1. *Postural treatment.*—This consists in keeping the patient recumbent, in the dorsal position in case of anteflexion, in the prone position in case of retroflexion, with or without the adoption of the genu-pectoral position in addition. The good effects of this treatment are claimed for the reposition of the flexed organ.

But it must be remembered that, while exercise, and especially riding on horseback, relieves some cases of dysmenorrhœa, others are relieved by rest in bed.

Where is the proof that postural treatment has any other effect than that of rest in bed, with low tension in the blood-vessels ?

2. *Vaginal pessaries.*—I am not aware of any recorded observations of cases in which an anteflexion pessary having been used, and nothing more done, the pain has been claimed to have been relieved. Even so, my own experience is that a cradle pessary, or any other anteflexion pessary, while it may elevate the uterus *en masse*, leaves the flexion unaltered. Nor, indeed, considering the mechanical effects of such instruments, can I see how they can elevate the fundus without at the same time tightening the anterior vaginal wall and drawing forward the cervix, thus increasing the flexion.

In the case of a retroflexion or retroversion, a Hodge's pessary seems sometimes to relieve dysmenorrhœa, but it must be remembered that backward displacements are essentially signs of descent, and that, being very rare in nulliparæ, they are much commoner in those who have borne children. The first effect of a Hodge's pessary is to lift the uterus, and I have often observed cases where the symptoms were relieved, while the uterus, though elevated, was as flexed as ever.

The effects of strangulation by the sacro-uterine

ligaments have already been referred to; in such cases the good results of a Hodge's pessary are easy to understand.

3. *Stem pessaries.*—The effects of these instruments, where they relieve dysmenorrhœa, are presumed to consist in straightening the uterus, and enlarging the canal.

It must, however, be remembered that the latter claim brings the treatment under the head of "dilatation," which I shall discuss presently, and which is by no means so simple as it appears.

It remains with those who uphold the mechanical view to produce cases which show that the effects of a stem are anything different from those following dilatation.

Stems are highly dangerous, and have caused many cases of pelvic inflammation ending fatally.

4. *Dilatation.*—In an interesting chapter of his lectures on Diseases of Women, Sir James Simpson gives a summary of the history of this treatment. It appears among the Hippocratic writings as a cure for sterility; in later times it is mentioned by Cook, of Warwick (1627), but apparently taken without acknowledgement from a work by Roonhuyse, the inventor of the obstetric lever, as a remedy for dysmenorrhœa. But the practice of dilatation of the cervical canal by a series of metallic sounds is due to Dr. Mackintosh,* and the relief afforded in some cases was made by him the foundation for the obstructive theory in all its crudeness.

Other means of dilatation are tents and expanding dilators of various kinds, as well as conical dilators.

* "Practice of Physic," 1836.

The action of all is the same. Their alleged influence comprises straightening of the uterus, as well as enlargement of the canal.

With regard to straightening, we need only say that the uterus remains straight only as long as the bougie remains within it—a fact which may have suggested the wearing of a permanent dilator or stem.

No attempt has been made to distinguish between the action of the two; and, indeed, with these words we may dismiss the question of straightening.

The facts of dilatation are, however, not so easily summarised, and to understand them we require to study a little the vital properties of the uterus. When in a case of spasmodic dysmenorrhœa a bougie is passed along the canal, if it is so small as not to stretch the canal, little or no pain is felt. As soon, however, as a bougie large enough to stretch the canal is passed along the canal, but not until it passes through the os internum, the dysmenorrhœal pain is at once excited, and remains until time exhausts it, or until the bougie is withdrawn beyond the os internum. One passage of the bougie, or sometimes even of the sound, suffices in some cases to cure, temporarily or permanently, the dysmenorrhœa.

Now the size of the bougie which easily passes, forbids the supposition that the canal is absolutely too small; it is the stretching which causes both the pain and its cure.

The questions remain, what is the cause of the pain on passing the bougie, what is its relation to the pain of dysmenorrhœa, and what is the cause of its relief?

In the *Obstetrical Journal* for 1880, I discussed this question in a paper on Uterine Polarity, taking as the

basis of my article a paper by Reil in his *Archiv für Physiologie*,* which, with much that is fanciful, is to my mind pregnant with suggestive facts.

The vital properties of the uterus include an antagonism between the upper and lower poles, the fundus, and the os internum. In pregnancy the lower pole contracts, the upper expands; in labour the lower pole expands, the upper contracts. Contraction of the upper pole may be excited by expansion of the lower pole. This antagonism is always found when the uterus is working healthily. Instances of its disorder are tetanus of the uterus, trismus, incarceration of the contents, hour-glass contraction, inversion, and after-pains, the last of which brings us into close relation with spasmodic dysmenorrhœa.

The os internum is not only the lower pole, in antagonism to the upper, but it is the sensitive spot for the uterus, and this sensitiveness is enormously increased in spasmodic dysmenorrhœa.

When this spot is stretched the uterus is at once thrown into the characteristic colicky, and often agonising, pains of dysmenorrhœa. The bougie is not removed till the pain ceases, though its passage, if not done under an anæsthetic, may provoke not only agony, but vomiting and fainting. When the pain ceases, the uterus is exhausted, and can contract spasmodically no longer; its irritability is worn out for the time or altogether; it tolerates the bougie on the principle that familiarity breeds contempt.

In the same paper I described a case of dysmenorrhœa with painful micturition. Dilatation of the cervix reproduced the pain felt on micturition, and cured both

* Band vii., Heft. 3, S. 415, 1807.

dysmenorrhœa and dysuria as long as I observed the case. This, again, points strongly to spasm.

Cases are recorded by Vedeler and others in which dysmenorrhœa occurred monthly without any flow.

It is seen that the mechanical theory fails to explain such cases.

5. *Incision.*—Various forms of incision of the cervix have been practised—division of the os externum, of the os internum, and of the region of the "spur"—with a view to straighten the canal.

Division of the os externum, where this is followed by any relief, probably acts by bleeding, followed by rest in bed, for the os externum is certainly not the site of the symptoms in spasmodic dysmenorrhœa. It is possible to keep the wound fairly aseptic in some cases, but the incision may be followed by parametritis or perimetritis.

Division of the "spur" with a view of straightening the canal, cannot, I think, conceivably leave the canal any straighter than before, and no proof is forthcoming that it does so. If it did, no advantage, as we have shown, would be probable.

If it acts beneficially in any cases, it is probably by dividing the os internum, which we shall discuss presently. The wound is at the mercy of chance, so far as septic absorption is concerned.

Division of the os internum is a very dangerous proceeding, and has cost many women their lives. It is much less heard of than formerly, partly on this account, partly, perhaps, because the tide of operative fury has left the cervix for the more remote parts of the generative tract, which can only be approached by abdominal incision.

It sometimes, undoubtedly, relieved dysmenorrhœa. How did it do so? Probably by dividing the circular fibres round the os internum and setting them at rest from spasm, as division of the sphincter ani sets the muscle at rest and at once relieves the pain. The wound generally united; but meanwhile the uterus had had a period of rest.

The above explanation is quite in harmony with what we know of the vital qualities of the uterus.

We have now gone through the whole series of statements in favour of the mechanical theory of dysmenorrhœa, and have found that most of them are at variance with facts as ascertained, while many of them are founded on interpretrations which are capable of being reviewed from another side, and are most probably erroneous.

It seems to me that, had the facts as regards flexions, stenosis, and the uterine circulation been ascertained before propounding a theory, the mechanical theory of dysmenorrhœa could never have been propounded. To ascertain the facts that have now rendered it untenable has been the work of years; but this is not the only instance in medicine of the labour entailed on innocent persons by the promulgation of a theory on insufficient grounds. Some of the most important work has appeared in the *Archiv fur Gynäkologie*, but it is curious to read, even quite recently, the utterances of Germans, who cannot be ignorant of Vedeler's papers, as if the facts were still debatable, or as if they had appeared abroad instead of in the principle place of resort for such papers in the whole of German literature.

I am inclined to think that, in matters of science, Englishmen live less on an island than other people.

I trust that in the above remarks I shall not be interpreted as questioning the good faith of the theorists, but only as criticising their scientific methods. It is true that no theory can be developed without the aid of the imagination, but all ideas should be kept in limbo until they have been subjected to the severest criticism by their parents.

It is also true that what is true is generally simple; but the converse—what is simple is generally true—by no means holds; and the mechanical theory seems to me to be an instance of such logic.

It remains to state what I believe to be the truth as regards the pathology of spasmodic dysmenorrhœa.

Let us marshal our facts. Spasmodic dysmenorrhœa is pre-eminently an affection of the immature uterus.

The pain is certainly colic; it often precedes the flow, and sometimes occurs regularly without any flow at all. Its intensity varies inversely to the abundance of the flow.

It is often associated with nervous phenomena in other parts of the body, especially neuralgic headaches.

It is essentially a neurosis, and has motor phenomena (colic) and vaso-motor phenomena (scanty or greatly varying flow); some would go further, and add secretory phenomena, such as catarrh, and quote the analogy of asthma. But, while spasmodic asthma undoubtedly has points of resemblance with dysmenorrhœa, the question of secretion, in our present knowledge of the monthly changes in the uterus, cannot be pressed.

The association of spasmodic dysmenorrhœa with sterility cannot be one of mere dimensions; for if, as we have seen, the smallest cervical canal can transmit

the menstrual fluid without sensible hindrance, much more can it admit the microscopical spermatozoa. The association of pain with sterility and their simultaneous disappearance points, in my opinion, to a vital and not an arithmetical solution. The rare cases in which, during the sexual orgasm, spontaneous changes have been observed in the cervix uteri, coupled with other phenomena, which have been so elaborately and scientifically discussed by the late Dr. Matthews Duncan in his Gulstonian Lectures on Sterility, throw light on this difficult subject, and make it probable that the peristaltic movements of the uterus, implied in what Reil calls "polarity," have functions connected not only with menstruation, but also with impregnation.

Lastly, the remedies for spasmodic dysmenorrhœa throw some light on its nature.

The relief produced by encouraging the flow, as by hot footbaths, tells in favour of vaso-motor spasm, and strongly against the mechanical theory. If that were correct, the increase in the flow would make the escape of the fluid many times more difficult and more painful ; but the facts are just the other way.

Such drugs as castoreum (an old remedy lately revived and left as a legacy by the thoughtful and trustworthy Litzmann), antipyrin, and nitro-glycerine tell the same tale, and so do so-called diffusible stimulants, especially gin. Of course, opium will drown the pain, but the action of the above drugs is not narcotic.

Ergot acts by producing tonic contraction and stopping the colicky contractions. Its action here is the same as in after-pains.

The *rationale* of the treatment by dilatation has already been discussed.

The os internum is the sensitive point for the uterus. By stretching this, years of dysmenorrhœal agony are concentrated into a few minutes ; the irritability of the uterus is exhausted ; it rests, and has a chance of starting afresh—a chance it may or may not accept.

The division of the os internum acts in a similar way to the division of other parts in a condition of painful spasm by setting the irritated fibres at rest. It must, however, be remembered that uterine colic is not associated with spasmodic contraction of the os internum, though it may be associated with a condition of tetanus without narrowing of the canal, as in after-pains.

The great remedy is pregnancy and parturition—a remedy not within the reach of all ; for we must remember that sterile marriage increases the pain. Still, the association of dysmenorrhœa with sterility in a married woman gives us a fair hope that, in the absence of any discoverable impediment, the cure of the dysmenorrhœa may be followed by that of the sterility. We must, however, bear in mind that the vast majority of the causes of sterility are beyond our discovery, and still more beyond our control. This subject is the last on which a man has any right to entertain crude and mathematical notions, the problem being of the greatest complexity and of the utmost delicacy.

Treatment.

It will be impossible to do more than indicate principles of treatment. These comprise treatment between and during the periods. In the first place comes the question of general mode of life. Generally speaking,

this should not be too sedentary. Plenty of healthy exercise, and especially riding, will promote the circulation through the pelvis, and give the generative organs a better chance of developing.

In the same connexion must be mentioned the maintenance of the regular action of the bowels by laxatives, and particularly salines. This has the same purpose: to avoid stagnation of blood in the pelvis. It is probable that of all drugs in the treatment of chronic pelvic disorders, Epsom salts are the most valuable. Indeed, with constipation, none of this class improve, even if treated by the newest alkaloids.

The diet should be simple and wholesome; in fact, the patient should go into a sort of gentle training.

During the pain most patients are better at rest, or even in bed; but some find their pain relieved by exercise, even unusually active.

Pessaries (except the Hodge's pessary in a few cases of descent with retroflexion, and except the stem pessaries) are, I believe, absolutely useless. The stem pessaries are not always useless, but are dangerous, and should not be used.

Incision of the os externum is, I believe, useless; incision of the os internum is not always useless, but is highly dangerous.

Among drugs, guaiacum, with or without sulphur, is sometimes useful, taken regularly in milk as a powder, or as a confection.

Castoreum sometimes abolishes the spasm completely. I have known cases treated by nearly, if not quite, all the usual drugs unsuccessfully get well suddenly as soon as castoreum was given. It is best given in the form of tincture, from twenty to thirty

drops three or four times daily during the pain, with or without a few drops of tincture of nux vomica.

A hot foot-bath, and a good glass of hot gin-and-water at bedtime, at the beginning of the pain, is an old and valuable remedy. It probably acts by relaxing the vaso-motor and muscular spasm. The gin should be given once a month only.

Ergot is sometimes useful by causing tonic contraction, and stopping what Reil would call the irregular, fibrillar, streaky, non-peristaltic uterine contractions.

Dilatation is the last resort. It is generally contra-indicated in the presence of inflammatory signs in the pelvis, even if old. It must be carried out with all antiseptic precautions, and is not, in my opinion, so trivial a proceeding as to be safely done in the consulting-room. The pain also is often agonising, and is far greater than that caused by some operations for which anæsthetics are habitually given. For these reasons I prefer to perform dilatation at one sitting under anæsthesia, and with full antiseptic precautions, after ascertaining that the genuine dysmenorrhœal pain is evoked by dilatation of the os internum, a point which greatly improves the prognosis.

Nothing can be promised, for dilatation may give temporary relief, permanent relief, or no relief at all. Still, considering the slight risk, I use it rather freely, for there are cases which seem most unpromising, and yet are cured by it. I remember one such case, that of a patient who had suffered for years, had had many treatments, including division of the cervix, which was followed by perimetritis, completely matting the posterior part of the pelvis. The pain was not only menstrual, but almost continuous. Her medical man in

the west of England sent her to me to see what I could do for her. In spite of the very unfavourable conditions I dilated her cervix, and she lost from that time both menstrual and inter-menstrual pain. Her medical man wrote to me some time later to suggest that as she was so much better he might dilate the cervix again. I advised him to let well alone, and he took my advice.

The best time is about midway between the periods. Hegar's dilators do very well, or we can use the metallic bougies. The dilatation should not be pressed when great resistance is felt, or the cervix may be lacerated, even with fatal result. The object is not to enlarge, but to stretch the canal. But this stretching is generally not satisfactory unless the largest bougie varies from the size of a cedar pencil to that of the tip of the little finger. Two- or three-bladed dilators are bad instruments; they stretch the canal unequally, and are liable to tear it. They are out of fashion in England, though not apparently in America or on the Continent.

A word must be said in conclusion on the ethics of the subject.

The patients are often young unmarried women. In such, unless the health is seriously suffering, we should try to dispense with a local examination, and, if it is necessary, make it by the rectum, at least in the first instance. By this route a practitioner used to pelvic examination will be able to make a very good exploration of the pelvis, unless the patient is rigid, which would equally prejudice a vaginal examination.

To make the first vaginal examination in a young virgin may occasionally be necessary, but it is most

unpleasant. It is not to be done without a due feeling of necessity.

To illustrate a mode of practice as far as possible removed from that which would be generally approved by English gentlemen, I will summarise the treatment recommended and habitually practised by the writer of a recent article.

The patient is a girl of seventeen. After general treatment has been tried and failed, hot vaginal douches are given for some days before each menstruation. If this is of no avail a vaginal examination is made, and the vagina thoroughly stretched under ether to facilitate further manipulations. This is followed by the insertion of medicated tampons twice a week, to enable the practitioner to move the uterus freely. Then the sound is passed and the tampons are resumed for two or three weeks, or even from six to eight weeks. This is followed by dilatation of the cervix, repeated two or three times between two periods. When the uterus is small electricity is used, and persisted in till the uterus develops.

I cannot do justice to such advice, and can only express my opinion that all the dysmenorrhœa endured by "suffering woman" since the foundation of the world is preferable to such treatment, even if scientifically correct, instead of being, as I have endeavoured to show, founded on unsupported theory and on false logic.

Lastly, I would say it seems to me that the profession ought to make up its mind on the subject of dysmenorrhœa. I have endeavoured to state the facts plainly, and I have given references to enable those who doubt to read for themselves.

We do not take a worthy position if we talk cynically of different schools or sets of opinions. We are not living in days when the facts of anatomy were stated on the authority of Hippocrates or Galen, but in days when verification is possible for most if not for all.

Opinions and creeds matter only to their owners as long as they remain merely opinions and creeds, but when transformed into action they become serious.

The local treatment of diseases of women is only justifiable when it is necessary. Whether it is necessary or not, or what is necessary, depends upon the question whether this view or that view is correct. Let the subject be our sister, our wife, or our daughter, and we at once see that it is of the utmost importance that those who are to treat them should be correctly informed.

When the matter stands so that more recent investigation shows or claims to show that older theories entailing a great amount of local treatment are erroneous, it seems to me incumbent on English gentlemen to do their best to find out what the facts really are.

It has been with a view to making this course easier that I have ventured to address you on the subject of painful menstruation.

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