relief from hæmatometra has been obtained. In cases where opening up the natural route is impracticable or too hazardous, opening by rectum may be resorted to as a temporary expedient. Fatal peritonitis followed in cases treated in this way by Antoine Dubois and Dupuytren.

DISORDERS OF MENSTRUATION.

Dr. Oldham (Guy's Reports, 1857) reports two cases in which puncture per rectum was practised. In one there was congenital absence of vagina; the os uteri was felt through the rectum, the trocar was made to pierce at this point. The operation was repeated on four occasions; at last the opening continued patent, and menstruation took place by the rectum. In the other case the vagina was closed by dense cicatrix; the os uteri was felt by rectum, and was punctured; relief followed. A third case at Guy's is reported by Dr. Hicks (Medical Times and Gazette, 1861): here there was an absence of vagina; puncture by rectum was followed by relief, and, as far as the report goes, there was subsequent amenorrhoea.

When these cases of retention have been relieved, and have apparently recovered, it must be remembered that the Fallopian tubes do not at once, perhaps not for a long time, recover their normal calibre. Some degree of abnormal dilatation remains. This is certainly the case in the partial retention due to stenosis of the cervix and to retroflexion. The knowledge of this fact is of the highest importance in practice. The longcontinued obstruction having entailed dilatation of the uterine cavity, and catarrh of its mucous membrane, with very often a disposition to metrorrhagia, the physician is tempted to inject astringent fluids into the uterus. Fatal accidents have followed this practice, and much discussion has taken place as to the immediate cause of these accidents. The prevailing idea is that the injected fluid is driven along the tubes by the force of the syringe, its return by the cervix being stopped by the injecting tube which fills it. I am disposed to believe that where there is unusual patency of the Fallopian tubes this may occasionally be the case. But the more common mechanism, I am convinced, is that which I have just explained as occurring in retention from imperforate hymen. The astringent fluid thrown into the uterine cavity acts primarily as an irritant and constringent. This action is forcible and rapid. The uterus instantly contracts and pumps on the fluid along the patent Fallopian tubes. That this was what occurred in a case in which a solution of perchloride of iron was injected into the uterus, on account of hemorrhage from retroflected uterus, in the London Hospital, seems to me beyond doubt. The tubes were found patulous, and fluid had run along them into the peritoneal cavity.

CHAPTER VIII.

DYSMENORRHŒA—NEURALGIC; CONGESTIVE; FROM OBSTRUCTED EXCRETION; INFLAMMATORY; OVARIAN DYSMENORRHŒA; DYSMENORRHŒA MEMBRANACEA, OR EXFOLIATIVA.

Dysmenorrhæa is the term used to express that menstruation is performed with difficulty and pain. It is a very frequent affection, being symptomatic of, or consequent upon, a variety of morbid conditions. These morbid conditions of course are mostly unknown to the patient; she applies for relief of the functional distress. To give the sought-for relief we must form a clear idea of the causes of the distress. The method by which this knowledge is arrived at is partly by clinical observation and study of the phenomena which present themselves, and of the condition of the organs involved; and partly by observation of the effects of treatment. It may be admitted that the means of treatment employed are sometimes empirical; that is, they are not directed by a clear comprehension of the cause of the distress; but if we find that this is frequently followed by success, empirical though it be at first, it will lead us to a clearer knowledge of the evil which it overcame, and thus it becomes rational.

By this double process we arrive at the conclusion that cases of dysmenorrhoea may be classified under the following heads:—namely, 1. Neuralgic, or sympathetic. 2. Congestive, or inflammatory. 3. Mechanical anomalies of the uterus. 4. Fallopian obstruction. 5. Ovarian disorder, constituting a distinct form of dysmenorrhoea.

The simple study of the subjective phenomena will not enable us to distinguish cases of one kind from those of another kind. Indeed, so long as this very imperfect method was exclusively pursued, all cases of dysmenorrhœa were confounded together, or the distinctions made were necessarily arbitrary and fanciful, and treatment, being aimed at random, was generally unsuccessful. This is a logical necessity. For the practitioner who limits his observation to the subjective symptoms must perforce exclude from his resources those means which are suggested by the objective method of investigation. Not many years ago, dysmenorrhœa was almost universally looked upon and treated as a nervous affection of the uterus itself, or sympathetic with disorders of distant organs, or the expression of constitutional debility. But in proportion as precise objective methods of investigation have been applied to the study, it has been discovered that in most cases the nervous phenomena are dependent upon distinct abnormal conditions of the uterus or of the ovary.

If, therefore, we still retain the term neuralgic dysmenorrhæa, we must do so on the understanding that, although expressing a really existing disorder, it is a convenient asylum ignorantiæ, under which we may class a number of cases, the true pathology of which eludes our research.

We have already averted to the "irritable uterus." The late Dr. Robert Ferguson, commenting on Gooch's description, said: "This malady, I believe, is deeply rooted in the very essence of that complex organic function termed the generative; which, in its most comprehensive sense, includes no inconsiderable portion of the moral as well as of the physical development of the female organization. . . . The local changes have been the fluctuating, the nervous affection, the constant element; in it, therefore, and in no doctrine of a phlogistic origin, can I place the essence of this strange disease." This vague description really carries us very little way behind the ideas of Gooch.

Henry Bennet assigned inflammation as the real pathological condition; Rigby thought many cases were due to a rheumatic diathesis; and other authors have from to time, impelled by the accidental nature of their experience, or the bent which preconceived theories had imparted to their observations, given prominent or exclusive importance to some other complication. If we carefully analyze a large number of cases, noting the complications, and the effects of treatment, we shall find that the cases of "irritable uterus" resolve themselves into the following groups,—viz., 1. In which there is manifest enlargement from congestion of the uterus; 2. Sub-involution with chronic inflammation of the uterus, following labor or abortion; 3. Reclination or flexion of the uterus, most frequently retroflexion; 4. A projecting conical vaginal portion, with very small os externum uteri; 5. Lateral reclination, mostly associated with imperfect development of the uterus; 6. Disorder of distant organs, especially of the digestive organs, attended or not by one or more of the preceding structural faults, and almost always with impaired sanguification and nutrition; 7. A morbid condition of the ovaries; lastly, a residuum of cases in which, whether from not pushing investigation to the proper point to discover the associated fault, or because there really is no physical fault, we are obliged to conclude that the dysmenorrhea is simply the expression of nervous disorder. The truth is, that difficult menstruation so exhausts the tone of the nervous centres, that the general or local hyperæsthesia is almost certain to follow.

I think observation warrants this general conclusion: The healthy, well-formed uterus is rarely an "irritable uterus," or associated with dysmenorrhea. Or the case may be stated as follows: For menstruation to occur healthily, the genital canal, from its commencement at the fimbriated extremity of the Fallopian tubes to the vulva, must be easily

This presumed purely neuralgic dysmenorrhoa we will now endeavor to describe. If we follow a chronological order, and consider first the dysmenorrhoa which is observed at the very outset of the function, we find a number of cases from which we may fairly exclude the idea of inflammatory ulceration or other tissue disease, since these conditions very rarely occur in early girlhood. The reverence due to youth, and pre-eminently to female youth, imperatively forbids physical examination, unless under urgent circumstances and the failure of ordinary treatment. We are therefore precluded in most of these cases from determining in

the first instance the presence or absence of uterine flexions and narrowness of the os uteri, which are perhaps the most frequent causes of primitive or initial dysmenorrhea. Whether the pain be due to recognizable mechanical conditions or not, the phenomena observed are nearly the same. The disorder may be associated with an hysterical disposition; it is generally associated with a highly susceptible nervous temperament, which may be defined as the hyperæsthetic temperament. Extreme susceptibility to pain is one of the penalties of high civilization, and of too luxurious rearing. Hence the neuralgic dysmenorrhea chiefly affects the easier classes. It is not common, I believe, amongst the laboring agricultural population; but it is by no means infrequent in towns, where, although girls and women may have to work for a living, they are nevertheless exposed to many enervating influences, hygienic and moral.

The first onset of menstruation is generally late; it is marked by pain coming on a day or two before the flow, sometimes so intense that the sufferer writhes upon the floor, and is compelled to take to bed. The pain begins in the pelvic region, radiates to one or both groins, and shoots down the legs. It is commonly paroxysmal, resembling colic—it is, in fact, uterine colic. It is often likened to labor. Often the whole abdominal surface is tender to the touch. At times it simulates peritonitis. This pelvic eccentric irritation, commonly involving, as it does, ovarian irritation, propagated to the nervous centres, may evoke other nervous phenomena, as hysteria, vomiting, hiccough, headache, even delirium, and in some cases, mania. Tetanoid rigidity is not uncommon. The urgent symptoms subside in two or three days; the patient recovers so much strength as to enable her to resume her ordinary mode of life. But as the period comes round the same series of painful phenomena is renewed.

The pain is often diminished when the flow sets in, which is often attended by the expulsion of a clot. But it sometimes attends the whole period with more or less severity. It does not appear to bear any constant relation to the amount of the discharge. If there is no recognized organic change in the uterus, or displacement in the first instance, we may be certain that some complication of the kind will appear sooner or later. I coincide in the statement of Scanzoni, that long-standing dysmenorrhoea rarely fails to induce some change of tissue in the uterus, the most common being hyperplasia.

The nervous phenomena described may attend all the forms of dysmenorrhea. We are thus led to ask: is there any physical condition of the organs concerned that can account for the pain? The colic, the spasmodic character of the pain, seem to indicate a contracting uterus seeking to expel contents that irritate it; and this is often true. But not always. It is a well-recognized character of the nervous function that its phenomena or actions have a tendency to periodicity, as if, like electricity, it required a certain degree of accumulation of the vis nervosa before it can act. So in the case of pain we often see alternations of acme and of ease, of discharge and accumulation. The fact that the period of most intense pain is usually twenty-four hours before the appearance of blood, is held to prove that these uterine colics or paroxysms cannot be due to anything contained in the uterus, and irritating it to contract. This

¹ New Sydenham Society's Edition of Gooch's Works, 1859.

objection rests upon the assumption that there is nothing but blood, fluid or coagulated, that can be there. But this is overlooked—the rapid preliminary development of the mucous membrane into menstrual decidua, the congestion of this structure, and of the uterus generally. This is enough to cause tension of the uterine muscular fibre, and to excite it to contract, and this swelling of the mucous and muscular walls may close the os internum, and lead to partial retention when the flow begins. The frequent vomiting at this stage favors this view. At the same time, there is the ovarian pain; and to this the hysterical symptoms are most commonly due.

The course and prognosis of neuralgic dysmenorrhoea.—The obstinate character of the affection is well known. It may be predicated with some confidence that a girl who starts with dysmenorrhoea is doomed to suffer for years, perhaps for life. It is said sometimes to wear itself out; occasionally marriage, if fruitful, brings relief; but more frequently the recurring attacks of pain, even if unattended by other causes of distress, increase the irritability of the nervous centres, impair nutrition, destroy the harmony or correlation of the vital forces, and reduce the sufferer to the condition of a perpetual invalid, enjoying at the best, only comparative remissions of illness. If pain do not persist throughout the intermenstrual intervals, it is liable to be evoked by any fatigue or emotion, so that the state of the patient comes to be the chief care of the household.

After a time, as R. Ferguson, who draws the most terrible but not exaggerated picture of the affection, observes, the erotic element is in most cases entirely extinguished. "All intercourse is dreaded or loathed, at the very instant when the victim under the passion for sympathetic commiseration is ready to give up her whole soul to the first acquaintance, nurse, or practitioner who will listen and pity. They who have been able to watch this real and most formidable malady through years have many a tale to tell—of husbands estranged, children neglected, and home stripped of all its holiest influences, authority delegated to strangers and abused, ill-assorted marriages, expenditure stretched for health's sake to its extreme limits." Under the goading of repeated agony the occasional resort to stimulants merges into a confirmed habit of drinking.

Happily the recent application of means of exploring the state of the organs primarily affected has, by enabling us to analyze the cases, shown that the majority at least are dependent upon physical causes which admit of remedy. The treatment has become far more successful than was contemplated as possible by Gooch and Ferguson. The first condition in which we are likely to be consulted is during the attack. We are called upon, as our first duty, to relieve pain; and during the menstrual flow our hands are commonly tied. We are driven to a trial of sedatives and narcotics. Where the agony is so intense as to induce delirium, it is justifiable to induce anæsthesia by chloroform or chloral, but the frequent recourse to these agents is apt to entail a terrible penalty. The patient who has once or oftener thus drowned her sufferings, is little able to resist the imperious craving to throw herself into the same treacherous oblivion on every return of pain. She soon falls into the habit of exaggerating her suffering so as to impose upon others, as well as herself, the

necessity of getting relief, even momentary, at any cost. To say nothing of the fatal accidents which have occurred from the use or abuse of chloroform or chloral, even when skilfully administered, experience shows, it is said, that the repeated or habitual use of these agents is liable to induce epilepsy and mental prostration of a kind to justify apprehension of lapsing into dementia. The use of chloral is only another form of intoxication. It entails like evils. There is no principle of conduct more imperative than this: so to direct our treatment as to preserve and encourage to the utmost the mental and moral integrity of the patient. When once we have lost the aid of her own will, when she has lost the precious gift of self-control, our task is a sad one. We are almost driven into becoming quasi-accomplices in a course that almost infallibly ends in moral annihilation, compared with which the original malady, still subsisting, sinks into insignificance.

One of the best temporary sedatives is Hoffman's anodyne, which may be given in half-drachm doses. To this may be added ten or fifteen drops of liquor ammoniæ acetatis. Indian hemp in half-grain or grain doses is often valuable; it may be given alone or combined in pills with lupulin, or five grains of Dover's powder. Where there is a distinct hysterical character, musk, camphor, and assafectida are often useful. The bromides of potassium and ammonium are of great service. One or other of these may be given in scruple or half-drachm doses every four or six hours. Bromine seems to possess a specific power in subduing ovarian excitation. Apiol capsules sometimes give great relief. If sedatives cannot be taken by the mouth, we may resort to subcutaneous injection of one-eighth or one-sixth of a grain of acetate of morphia; or one-twelfth of a grain of atropia; or half-a-drachm of laudanum may be thrown into the rectum; or medicated pessaries containing opium or belladonna may be placed in the rectum or vagina.

The local treatment in the purely neuralgic affection is restricted to the use of hot fomentations or cataplasms to the abdomen, foot-baths, and other external applications. Simpson recommended the injection of chloroform vapor or carbonic acid gas into the vagina, or the application of a small bit of lint soaked in chloroform and covered with a watch-glass over each groin. This produces a small blister. The diet should be simple, and the use of stimulants reduced to the narrowest limits, if not absolutely excluded.

Moral treatment is of great importance. During the intervals great care should be taken to cultivate habits of industry. Occupation, physical and mental, is the great panacea. "Something to do!" is the great female cry. In no case is it more urgent than here.

If these and other similar means, as well as Time, fail to bring relief, a physical examination becomes necessary, and then we shall probably discover some condition of the pelvic organs, on the successful management of which the hope of curing the dysmenorrhea will rest.

The Congestive Dysmenorrhæa may be either primary, dating from the commencement of menstrual life, or secondary, acquired at a later period. The primary cases do not differ essentially in their symptoms from the neuralgic cases; and until examination by touch is made they can only be conjecturally distinguished. In addition, perhaps, to the

subjective signs marking the neuralgic kind, there is a greater sense of weight and bearing-down in the pelvis, pain referred to one or other ovarian region, principally the left. It is difficult to derive any precise information from external palpation, because in congestive as well as in neuralgic cases, the hyperæsthesia is often so great that the patient shrinks from that amount of pressure which is necessary to fairly depress the abdominal wall. Vaginal touch, too, is often difficult for the same reason, and it may become desirable to conduct it under chloroform. In single women, rectal touch is free from some of the objections applying to vaginal, and may even give better diagnostic results. We then ascertain that the uterus is somewhat enlarged, and on returning consciousness the patient complains of pain on pressure. There is also a peculiar sense of tension and heat. Of course in the case of simple congestion we assume a normal uterus as to structure, form, and position. But this coincidence, I believe, is rare. A normal uterus will generally perform its function normally. The physiological blood-fulness, which is an essential condition of every menstruation, is different from congestion, which is a morbid process. The physiological state is relieved by excretion. The morbid state is only partially so relieved; some of the blood-elements remain, keeping up more or less tension of the bloodvessels, and the serum is effused into the tissues. Hence congestion is liable to induce some degree of permanent enlargement, which may even lead to hypertrophy. This enlargement is perceptible to the touch in the intermenstrual intervals. It induces relaxation of the pelvic tissues which support the uterus; hence, from increased weight and lessened support, the uterus tends to sink lower in the pelvis.

What is the cause of this congestion? We can hardly conceive the idea of primary congestion. This condition is almost necessarily the consequence of some morbid process or injury. These are manifold, and will be discussed under their appropriate heads. But in especial reference to the present subject, it must be remembered, that an organ which performs its functions with difficulty, is by that circumstance disposed to congestion. Thus the simple neuralgic dysmenorrhoea is pretty sure to merge sooner or later into the congestive form. We may go further, and affirm that the congestive dysmenorrhoa, if not primarily due to a mechanical impediment, is certain to produce a mechanical impediment to excretion, chiefly marked at the menstrual epochs, thus increasing the pain. The tumefaction of the mucous membrane fills up and chokes the cervical canal, especially at the os internum. Here then is a mechanical obstruction to excretion. If the disease continues, the body of the uterus, increased in size, and all the surrounding structures, upon whose healthy tonicity the uterus depends for maintenance of its form and position, being relaxed, is liable to fall back in retroflexion. This necessarily increases the obstruction at the angle of flexion, that is, near the os uteri internum. Although I believe this is the history of some cases of retroflexion, I am very sure that in the majority the retroflexion is the primary condition. We are thus by several routes led to the discovery that mechanical obstructions to excretion are the most important factors in dys-

Obstructions vary in seat, extent, and kind. They are most frequent

at one of the natural orifices of the genital canal. Thus, narrowing of the os uteri internum, as brought about by flexion or angulation, is not uncommon; narrowing of the os externum is very common. But like results may attend narrowing at any other part of the canal, as in the vagina. If the closure be complete, and menstruation takes place, of course there will be retention. If the closure be incomplete there will be partial retention, the expression of which is dysmenorrhea. This partial retention and dysmenorrhea we know is extremely common. Its phenomena should, I think, be studied in connection with those of complete retention. This subject is discussed under "Atresia." We shall find in this study endless illustrations of the proposition that one essential condition of dysmenorrhoea is retention of menstrual secretion. There is another condition to which retention of secreted matter is not necessary. In many cases where there is congestion of the uterus combined with extreme nervous susceptibility, the pain is most marked at the outset of the period, that is, in all probability, before any pouring forth of blood into the uterine cavity has taken place. The pain is explained by the sudden distension of the morbid uterine tissue by the gathering of the blood in the vessels preliminary to secretion, and the swelling of the mucous membrane. In both there is retention, the difference being that, in the one case the menstrual blood is retained in the cavity of the uterus after secretion, and that in the other case, the blood is retained in the tissues of the uterus. The point which brings both cases together is that there is difficult excretion, causing distension of the uterine fibre, and nervous irritation.

The residual cases, which do not fall under one or the other description of retention, are rare indeed.

I have seen many cases in which long-standing dysmenorrhea was cured by incision of the os externum, relapse occurring when the os contracted again; and a permanent cure was obtained when the os was kept

In cases of anteversion and anteflexion, without stenosis, dysmenorrhoea has been from time to time relieved or averted by the passage of a sound a day or two before the onset of menstruation. By this means and rest the uterus was redressed for the occasion, and the obstruction and retention were averted. If this measure was at any time omitted, the dysmenorrhoea was sure to come, and the body of the uterus became very sensibly enlarged. Permanent cure has commonly followed permanent restoration of the uterus to its proper position.

Another cause of dysmenorrhoea, and often of menorrhagia, is the fixing of the uterus by perimetric deposits, coming on after labor or abortion, or other conditions. The fixing of the uterus, although commonly attended by patency of the cervix, seems to cause dysmenorrhea by favoring engorgement and impeding the contraction of the uterus.

Dysmenorrhœa not seldom attends upon fibroid tumors, which produce obstruction by twisting or compressing the cervical canal, by keeping up a state of congestion, or by interfering with the effective regular contraction of the uterus.

Many other illustrations will occur of pain analogous to that of dysmenorrhoea, produced by the retention in the uterus of blood-clots, as







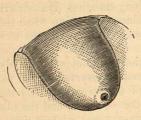
after labor and abortion, of intra-uterine polypi, of the exfoliated membrane in dysmenorrhoea membranacea, or, in fact, of anything which distends and irritates the uterine cavity. The difference in the symptoms, and the degree of severity, depend not so much on the nature of the substance retained, as upon the completeness of the retention and the nervous

susceptibility of the patient.

A further proof that dysmenorrhoea is due to retention lies in the changes the menstrual fluid undergoes, and the character it presents when discharged. In some cases, especially those in which there is such excess of blood as to deserve the designation of menorrhagia, the escape being impeded, and the mucous secretions of the cavity of the uterus being insufficient in proportion to preserve the normal state, clots form. In other cases, in which there may be no excess of quantity, the retention is so protracted, or the quantity of catarrhal mucus mixed with it so large, that the fluid when discharged closely resembles, in its syrupy consistence and dark color, that which is pent up by an imperforate hymen. This is markedly so in some cases of temporary retention from compression of the cervical canal by a fibroid tumor. But it is not uncommon in obstruction from retroflexion, and from stenosis of the os externum. The discharge is also often offensive to the smell.

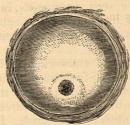
With all this variety of illustration concentrated into one focus, we shall be justified in repeating the proposition with which we started, namely: The essential cause of dysmenorrhoa—at least, in the great majority of cases—is retention of the menstrual secretion. The exceptions in my experience are very few. And yet among these few excep-

Frg. 65.



Showing One Form of the Conical Vaginal-Portion (R. B.).

Fig. 66.



Showing a Common Form of a Narrow Os Uteri, attended by Dysmenorrhœa and Sterility (R. B.).

tions there are some which I would hesitate to consign to the neuralgic asylum. We meet with cases, every now and then, in which the dysmenorrhoeal symptoms are very severe, although there is no obvious stenosis. In some of these I have found the uterus small, perhaps inclined to one side, set in a short, non-distensible vagina. Sometimes the os externum is preternaturally small; but even after freely dilating this, the dysmenorrhoea persists. The subjects of this kind of imperfect development—for such it is—are commonly of a highly nervous temperament, acutely sensitive of pain, and it would be easy to say they suffer from "irritable uterus," or neuralgic dysmenorrhoea. But this refuge seems unsatisfactory. In some of the subjects it is certain that the

hyperæsthetic condition has been gradually developed, caused by the frequent pain and imperfectly performed function, and was not a primary condition.

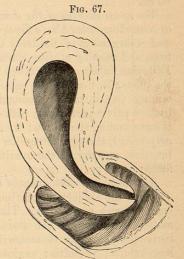
DYSMENORRHŒA FROM OBSTRUCTED EXCRETION.

The principal mechanical anomalies associated with dysmenorrhoea are: Narrowing of the os uteri externum, with or without projecting conical vaginal-portion (Figs. 65, 66); retroflexion or retroversion; anteflexion, or anteversion of the uterus; lateriversion; torsion of the uterus (Figs. 24, 26); inflammatory and hyperæmic state of the uterus; fibroid tumors in the walls of the body, and especially in the neck of the uterus; polypi; tumors or effusions outside the uterus, pressing upon it, such as pelvic peritonitis, or perimetritis, and retro-uterine hæmatocele, which impede its mobility, and keep up hyperæmia. These conditions

may exist simply, or two or more may be combined. I propose now to discuss, in relation to dysmenorrhoea, the narrow os, and the displacements of the uterus. The other conditions will be studied un-

der their appropriate heads.

I have sketched the most common forms of conical vaginal-portion and ste nosis of the os externum in Figs. 65, 66, and 67. They are mostly congenital, and may be traced back to imperfect development. The vaginal-portion may project into the vagina half an inch, an inch, or even as much as two inches. Sometimes the vaginal-portion is rounded, representing the half of a globe. In some cases the excessive projection is due to acquired hypertrophic elongation of the infra-vaginal-portion. In the normal construction the cervical canal communicates freely with the vagina by an open transverse fissure; inclining, in-



Section showing Conical Cervix with small Os Externum (R. B.).

deed, to the circular form in the virgin. The form of the cervical cavity is thus a flattened cone or funnel, of which the base is open (see Fig. 18, p. 47). The vaginal-portion projects as a flattened hemisphere scarcely half an inch into the vagina, the vagina being reflected off from the cervix a little above the level of the os externum.

Instead of the natural free communication between the cervical cavity and the vagina, the os externum is so contracted as to form a sensible obstruction, the uterine sound passing only with difficulty. As soon as the os uteri externum is penetrated by the sound, it is usually found that the point enters into a fairly capacious cervical cavity. This narrows again towards the os uteri internum. In cases of protracted suffering from dysmenorrhea attending this peculiar form of cervix, I have, however, generally found that the sound passes through the os internum without difficulty. I conclude that in some cases the excessive projection of