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DISEASES OF WOMEN

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LEWIS'S PRACTICAL SERIES

DISEASES OF WOMEN

With the author's kind regards.

A

PRACTICAL TEXT-BOOK

OF THE

DISEASES OF WOMEN

BY

ARTHUR H. N. LEWERS, M.D. Lond., M.R.C.P. Lond.

ASSISTANT OBSTETRIC PHYSICIAN TO THE LONDON HOSPITAL;
EXAMINER IN MIDWIFERY AND DISEASES OF WOMEN TO THE SOCIETY OF APOTHECARIES OF LONDON;
PHYSICIAN TO OUT-PATIENTS, QUEEN CHARLOTTE'S LYING-IN HOSPITAL;
UNIVERSITY SCHOLAR AND GOLD MEDALLIST IN OBSTETRIC MEDICINE, LONDON UNIVERSITY.

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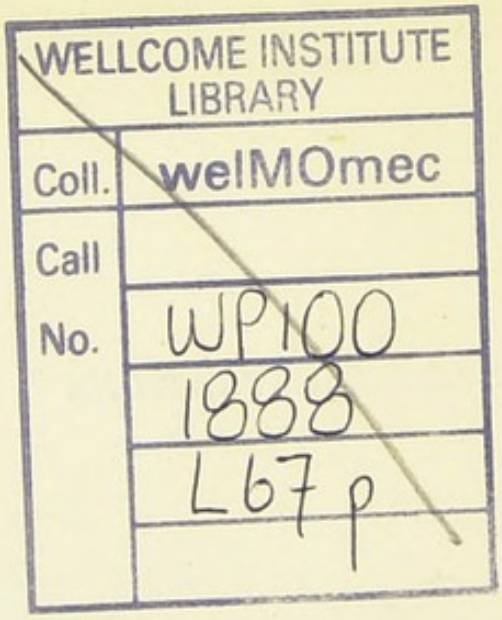

Eq.

TO

JOHN WILLIAMS, M.D. LOND., F.R.C.P. LOND.

PROFESSOR OF MIDWIFERY IN UNIVERSITY COLLEGE, LONDON;

OBSTETRIC PHYSICIAN TO UNIVERSITY COLLEGE HOSPITAL;

PRESIDENT OF THE OBSTETRICAL SOCIETY OF LONDON,

TO WHOSE TEACHING

IT WOULD BE IMPOSSIBLE FOR

THE AUTHOR

TO OVER-ESTIMATE HIS OBLIGATION

THIS BOOK IS INSCRIBED.

PREFACE.

It may safely be said that no subject presents greater difficulties to the beginner than Gynæcology.

The opportunities of becoming practically acquainted with it are necessarily less than in most other branches of medicine. Take, for example, diseases of the heart; a beginner, if he listens to the heart in as many cases as possible, spends some three or four weeks before he becomes able to appreciate even well-marked murmurs.

Frequent examination of cases is just as necessary in order to acquire accuracy in physical signs in gynæcology, as in diseases of the heart; but whereas an almost unlimited number of observers can listen in a case of chronic heart disease, a gynæcological case can only be examined by two, or at most three, on any one occasion.

It is therefore proportionately important that the very most be made of each clinical opportunity.

Before taking a clinical clerkship in the department

for diseases of women, the student should refresh his knowledge of the relations of the pelvic organs by attendance in the post-mortem room, and examining for himself the position of parts when the abdomen has been opened, and the intestines are held up out of the way.

Particular attention should be paid *to the uterus*, noticing its size, relation to the bladder, and testing its mobility by seeing how far it can be drawn up out of the pelvis; *to the broad ligaments*, and the relations of the structures projecting from them; and *to the pouch of Douglas*, bounded laterally by the utero-sacral ligaments, and at its lowest part in close relation with the posterior vaginal wall.

The pelvic organs should then be taken out *en masse* and examined more closely.

First the urethra and bladder should be laid open, the length of the urethra should be noticed, and the position of the orifices of the ureters. Probes should be passed along them. Next the vaginal portion of the cervix should be looked at, and a probe passed into the uterus. Finally the uterus should be slit up, noticing the relation of the bladder to the anterior aspect of the cervix—the cavity of the cervix marked by the folds of mucous membrane constituting the *arbor vitæ*—and the

cavity of the body. Fine bristles should be passed from the uterus along the Fallopian tubes.

The various named structures shown in Fig. 88, on p. 233, should be identified.

If even one set of organs is examined in this way, the student will find it in the end a great saving of time, as his clinical progress will be more rapid and intelligent than it otherwise could be.

Another point of importance is by no means to neglect examining cases where the physician pronounces everything normal; and again, to take every opportunity of recognising physical signs when a case is being examined under an anæsthetic. Those commencing the study of gynæcology should more especially concentrate their attention on acquiring proficiency in the Bimanual examination, and in the diagnosis of pregnancy, especially in the earlier months.

I have endeavoured to arrange the divisions of the subject as far as possible, in what may perhaps be called their natural order from a clinical point of view, first dealing with the history, then with the physical examination, then with diseases of the external parts, diseases of the vagina, diseases of the uterus, and so on.

The treatment of early malignant disease of the

cervix by the supra-vaginal amputation has been dealt with in considerable detail, as this operation is by no means so well known in this country as it deserves to be.

Dilatation of the cervix by Hegar's dilators, rather than by tents, is recommended for the reasons stated in the text.

An account of Dr. Apostoli's method of treating fibroids has been introduced; as yet I have only tried it in a few cases, and am not in a position to say anything definite for or against it.

Numerous illustrative cases have been inserted at various parts of the book; they are, I think, a considerable help in learning the subject, and moreover they relieve the monotony incidental to systematic description.

60 Wimpole Street, W.
May, 1888.

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A PRACTICAL TEXTBOOK

OF THE

DISEASES OF WOMEN.

CHAPTER I.

On the Mode of Investigating a Case.

Before discussing systematically the more important of the Diseases peculiar to women, it is desirable to consider shortly the proper way of investigating a case in this special department of practice.

By the expression "proper way" is meant the mode of procedure adopted by a practical physician in endeavouring to arrive at a diagnosis in any case that comes before him.

The materials available for diagnosis fall naturally under two heads:—

First we have all the patient can tell us about herself —**the History.**

Second the physical signs we can observe for ourselves —**the Present State.**

The History.

The following should be noted:—

Patient's name, address, age, occupation.

Whether *married* or *single.*

If married, *how long married.*

Number of children, if any, with *date when the last was born.*

Whether she has had any miscarriages; if any, date of each, and the period to which pregnancy had advanced when the miscarriage occurred.

Character of each confinement, easy or instrumental; if flooding, severe abdominal pain, vomiting or fever (shivering fits, thirst, etc.) occurred after the confinement. A rough guess may be formed as to the nature of the confinement by asking how long she was compelled to remain in bed after it.

We now ask the patient:—

What do you complain of?

Her answer should be taken down as far as possible in her own words, leading questions being avoided, and after each answer merely enquiring "anything else?"

The *duration* of each symptom should be noted.

Some difficulty at times arises in fixing the date when the present illness began. Here we can often succeed by asking:—

How long is it since you think you were in perfectly good health?

We next enquire how menstruation has been performed since the beginning of the illness.

We ask:—

Are you quite regular now?

If the patient says "yes," we next say:—

Every four weeks?

Because women often say they are "quite regular" when they mean they menstruate every fortnight or three weeks; in fact by "regular" they mean they do not go *more than four weeks* without menstruating.

How many days does it last?

Have you any pain with it?

Enquiry is to be made whether the pain is before the flow begins, or during the flow, or after it.

Also ascertain the seat of the pain, *e.g.*, the back, hypogastrium, or one or other ovarian region.

The following questions should also be asked:—

Is the pain constant, or worse at times?

Does the pain shoot down the legs?

Is it relieved by lying down?

Particularly enquire whether the patient has always had the pain since she first began to menstruate, or whether it has only affected her for a limited time, *e.g.*, since the birth of the last child, or since she married.

Is the discharge a good colour? i.e., red.

Do you lose much? Two women may menstruate for the same number of days each period, but one may lose much more than the other each day.

Are there any clots or shreds in the discharge.

Having learned how menstruation has been performed since the beginning of the illness; we now go on to ascertain how the function was performed previously, to see if there has been any alteration.

We ask:—

When were you first poorly in your lifetime?

Supposing the patient to say she was fifteen at the time, we ask "between fourteen and fifteen"? or "fifteen and sixteen?"

Did you come on quite regular at first, or after seeing it once did it leave you for some months?

Either alternative is equally physiological.

We then ask as before, whether she was quite regular every four weeks when the function had become established, or how it was. The duration, quantity lost, colour, clots or shreds in it, if attended by pain or not, are noted as in the former case.

Many diseases disturb the regular performance of the menstrual function, and the object of these enquiries is to be able to compare the performance of the function since the patient has been ill, with its performance when the patient was in thoroughly good health.

There is no absolute standard applicable to all women. Individual variations within the limits of health are very common; but the way the function was performed when the patient was quite well is the standard with which to compare the way it has been performed since she has been ill.

Short enquiries are made as to:—

I. *Micturition.*

(a) Have you any trouble with your water?

(b) Are you obliged to pass it too frequently? and if so, how many times have you to get up at night to pass it?

(c) Have you any pain in passing it?

Common instances of micturition being affected by neighbouring local disease are:—

(i.) *Retroversion of the gravid uterus* causing retention and subsequent dribbling over of the urine.

(ii.) *Pelvic Peritonitis* which is very often a cause of *frequent desire* to pass water.

II. *The Digestive System.*

(a) Is the appetite good?

(b) Are the bowels regular every day, or confined?

(c) Have you pain when you pass your motions?

III. *Nutrition.*

Have you got thinner lately?

IV. *Any other system, e.g.*, the nervous system, if the patient's account of her illness suggests the desirability of doing so.

V. *Previous illnesses.*

This concludes the taking of the History.

The next step is to ourselves observe all we can as to the patient's condition; the result of our observations constituting what is called:—

The Present State.

First the general aspect is to be noted.—Thin, or well-nourished. Healthy coloured, or pale. Whether looking obviously ill, or not. Presence or absence of œdema.

Note also the state of the tongue and pulse, and if there is any indication of fever, take the temperature.

Guided by what we have learned from the history, we may, or may not, at this stage examine the chest.

The further examination is of two kinds:—

(i.) Examination of the abdomen.

(ii.) Vaginal examination.

1. *Examination of the abdomen.* The methods employed are:—Inspection. Palpation. Percussion. Auscultation.

The patient should lie on her back, all clothes fastening round the waist being loosened; it is best to have the surface of the abdomen exposed.

Inspection.—We notice:—The *size of the abdomen* whether distended or not. The *shape of the abdomen*—localised bulging, *e.g.*, in the flanks. The *condition of the umbilicus.* If the umbilicus is depressed there is no very considerable tumour or accumulation of fluid within the peritoneum. Any apparent enlargement of the abdomen in such a case is simply due to accumulation of fat in the abdominal walls, with or without distention of the intestines by flatus.

The position of the umbilicus—whether exactly in the middle line or displaced to one side, whether nearer the pubes or the xiphisternal articulation. This can of course be more accurately ascertained by measurement.

The presence of pigmentation, particularly between the umbilicus and the pubes.

The presence or absence of "skin-cracks"—lineæ albicantes—in themselves only evidence of over-distention of the abdominal walls; but the commonest cause of the over-distention is pregnancy.

On the other hand *absence of skin-cracks* is no evidence that the patient has not had a child at term, it merely establishes a probability in that direction; for in exceptional cases, even when the patient has had a child at full term, skin-cracks may be absent.

The presence of enlarged veins under the skin of the abdominal wall.

Alterations during respiration.—Supposing the presence for example of the pregnant uterus at an advanced period of gestation, say at the seventh month, if we ask the woman to take a deep breath and to let it all out while we are looking at the abdomen in a good light, during inspiration, we see the upper border of the swelling formed by the pregnant uterus descend, and during expiration, we see it ascend. The same phenomenon is seen in cases of ovarian tumour.

The appearance of the Breasts.—Although not strictly forming any part of the abdominal examination, still practically it is at this stage of the examination that it is convenient to note their condition.

We observe:—*Their size*, whether plump or flabby.

Presence or absence of skin-cracks.—*The nipples*, well formed or not, *e.g.*, depressed, either flat, or actually tucked in at the middle.

The primary areola, i.e., that immediately round the nipple, its size, shade of pigmentation, whether studded with little prominences (enlarged follicles) or not. Whether hairs grow on it, or round it.

The secondary areola, this is only seen in the latter months of pregnancy, and for a variable time after labour; when present it occupies an area usually a finger's breadth in width (though sometimes it is much wider) around the primary areola. Its appearance is usually described by supposing a white surface to be painted brown, and then further supposing that a shower of water-drops washes away the pigment where the drops fall, exposing the underlying white. It really consists of numerous white circles about $\frac{1}{16}$ to $\frac{1}{8}$ of an inch in diameter separated from one another by brown intervening spaces.

The presence of enlarged veins on the breasts, as seen in pregnancy.

The presence or absence of secretion.—This is observed by squeezing the breast in the whole hand pretty firmly in the direction of the nipple. The fluid squeezed out may be clear or milky. In doubtful cases the presence of a little secretion in the breasts is of small value for diagnosis.

Palpation.—The whole area of the abdominal wall should be carefully palpated, *using both hands.*

Light "springy" palpation gives more information than any effort to overcome the resistance of the abdominal muscles by force.

The patient should be told to keep the mouth open; to breathe deeply and rather slowly, and to let the abdominal wall (or rather as she understands it "the stomach") be as loose as she can.

Great assistance will be obtained in some cases,

where the patient is very nervous, by taking every trouble to reassure her, and to persuade her, that she is not going to be hurt in any way. Distracting her attention by a few questions, is another help to attain the end in view, namely, as little resistance as possible from the abdominal muscles.

Light palpation frightens the patient least, and does not give rise to any discomfort, it should always be employed first. We may employ deep palpation later on, when we have learned all we can by light palpation, and when time has been given for the patient to become a little accustomed to the examination.

The Kidneys.—It is good practice to try and feel the kidneys in each case. The right one is more easily felt than the left. To succeed in this the patient must not be too fat, the abdomen must be fairly relaxed, and there must be a fair amount of space between the ribs and the iliac crest. In trying to feel the lower end of the right kidney, press the fingers of the right hand pretty steadily and firmly backwards and a little upwards in the interval between the iliac crest and the ribs. The fingers of the left hand at the same time being placed under the patient making pressure forwards towards the fingers of the right hand.

It is best to press the fingers of the right hand steadily, and to make tilting movements forwards with the fingers of the left hand.

In a great many cases, far more than anyone who has not tried it would imagine, the lower end or more of the right kidney can in this way be recognised.

If it is not felt at first, we may succeed by getting the patient to take a deep breath.

The lower end of the left kidney is not so often to be made out.

Other points to be noted at this stage of the examination are:—

(a) Whether or not the recti have been separated by over-distention of the abdomen; if the patient be asked to raise herself into a half-sitting posture the edges of the recti can be felt with an interval of varying width between them, if they have been separated; at the same time, a pouching out of the tissues between the separated recti can be seen in such cases. Sometimes on the other hand the tissues between the separated recti are tucked in by atmospheric pressure as she raises herself.

(b) Whether any part is *tender to light or deep palpation;* a little care is necessary to avoid being misled. If the patient says it hurts her at one particular place, try several others, and when the attention has been distracted from the part first pressed, press it again; or press it while taking off her attention by talking to her.

(c) Whether any abnormal swelling can be felt.—If such is recognised endeavour to make out if it is hard or soft; if it is elastic, or even distinctly fluctuating; if its surface is smooth or irregular; its exact situation; central, or more to one side than the other. Also

The part from which it seems to spring.—For instance, if it comes from the pelvis, we shall be unable to get the fingers completely under it in that direction, though able to do so in every other; and if it springs from some part of the abdomen, *e.g.*, from the kidney, we shall be able to separate it from the pelvis. Of course we are now speaking of fairly simple cases; of these, the above holds true. In complicated cases, *e.g.* large tumours co-existing with ascites, diagnosis may be difficult, or impossible.

(d) Sometimes *a crackling feeling* is communicated to

the fingers on palpating the abdomen, rather like what is felt when air has got into the subcutaneous connective tissue—surgical emphysema. The sensation referred to is felt in the abdomen in some cases of peritonitis, being due to the friction between the opposed surfaces covered with lymph; the rubbing together of these being caused by the palpation.

(e) Hardening of a tumour may be felt while it is being manipulated; the tumour in that case is almost certain to be the pregnant uterus.

(f) Movements may be felt against the palpating hand due to movements of the fœtus in utero.

(g) Supposing the tumour to be the pregnant uterus at term, it is usually very easy to get the hard fœtal head between the fingers of the two hands in the hypogastric region.

(h) When a hard tumour is present in the abdomen and there is also ascites, if we make sudden pressure inwards with the tips of the fingers on the hard tumour, a peculiar sensation is experienced due to displacement of the fluid lying between the abdominal wall and the surface of the tumour.

The above are some of the common points to be attended to in palpation.

Percussion.—The whole of the abdominal surface should be percussed. Particular attention should be given to the flanks, and to any area beneath which any mass has been felt.

(a) If dulness be found in one flank, the patient should be turned on the opposite side, and after a few seconds, the previously dull area should be percussed again. If the dulness first noticed was due to fluid *free in the abdominal cavity*, when the patient is turned on the opposite side it will be replaced by resonance.

(b) Dulness over the central region—umbilical and hypogastric regions—shading off laterally into resonance so that the flanks are resonant, points to some tumour centrally situated, such as an ovarian tumour—the pregnant uterus—a large fibroid tumour of the uterus—a distended bladder, and the like.

(c) A tumour in the lumbar region, the tumour being distinct and either feeling solid or elastic, over which a distinct line of resonance (colon) is made out, is probably of renal origin: such as hydronephrosis, or malignant disease of the kidney.

(d) Dulness is also obtained over the irregular lumps rising out of the pelvis, produced by pelvic peritonitis, or pelvic cellulitis, or a large pelvic hæmatocele.

Auscultation.—The positive information obtained by auscultation is practically limited to two cases.

1. Pregnancy, uterine or extra-uterine.
2. Large fibroid tumours of the uterus.

Sounds heard over the pregnant uterus.

1. *Fœtal heart sounds.*—Aptly compared to the ticking of a watch heard through a pillow. Every opportunity should be taken of becoming thoroughly familiar with these sounds. When they are heard we have conclusive evidence of pregnancy; our not being able to hear them by no means excludes pregnancy; nor should it even lead us to infer the death of the fœtus, unless we fail to hear the sounds after several observations at different times. The sounds become clearly audible in the last fortnight of the fifth month—from the 18th to the 20th week—some have heard them earlier; but the date named is the time they usually become appreciable to ordinary observers.

Their frequency is about 140 or 150 to the minute; they have been said to be faster in the female than

in the male, but this is unreliable in particular cases.

2. *The Uterine Souffle.*—This sound is synchronous with the mother's pulse, it is a blowing murmur produced in the enlarged arteries of the uterus. It is not peculiar to pregnancy, but is also occasionally to be heard over large fibroid tumours. It is distinguished from a mere pressure murmur by the fact that its intensity varies in a sort of rhythmical manner, gradually attaining a maximum, and then dying away so as to become nearly inaudible.

3. *The Funic or Umbilical Souffle.*—This is produced by pressure on the umbilical cord, when this is accidentally pressed between the stethoscope and some hard part of the fœtus. It is synchronous with the fœtal heart, not with the mother's.

It is only to be heard in a small proportion of cases; and is therefore of comparatively little importance.

This concludes the examination of the abdomen.

We next ask the patient to turn on her left side, to push the hips well towards the edge of the couch, and draw up the knees on the abdomen—in fact bending herself nearly double. It is an advantage to place the patient's left arm and hand behind her. This allows her to lie more on her face and chest than would otherwise be the case.

We can then go on with the special local examination.

The Vaginal Examination.—*The first step is the inspection and examination of the external parts.*—To do this properly, the fingers of each hand are placed at the sides of the vulva and the labia separated. We should notice:—

1. *The state of the Hymen.*—Its shape. Is it perfect

(*i.e.*, untorn)? or torn? or is it only represented by the fleshy eminences, about the size of split peas, in the situation where the hymen ought to be. These fleshy eminences—the carunculæ myrtiformes—being what remains of the hymen after the damage done to it by the passage of a child's head at or near term, or of any other body of similar size, *e.g.*, a fibroid polypus, through the orifice. It is important to distinguish be-

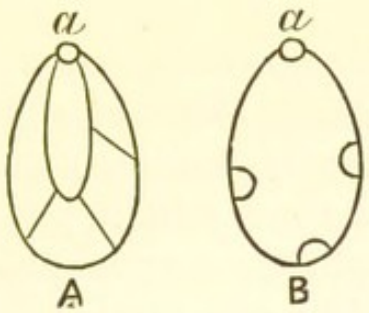

FIG. 1.—To illustrate the difference between a merely torn hymen A, and the carunculæ myrtiformes B. In A the hymen has been torn into pieces, which are only separated from one another by linear intervals. In B the carunculæ myrtiformes are seen, which represent the hymen after the passage of a large body, the size of the fœtal head at or near term, through the orifice of the vagina. They form projections which are separated from one another by wide intervals. *a*. The orifice of the urethra.

tween the carunculæ myrtiformes and a merely torn hymen.

The carunculæ myrtiformes are separated from one another by intervals in which no trace of hymen remains, intervals $\frac{1}{8}$ inch or more wide. (Fig. 1 B).

In the case of a simply torn hymen the fragments are only separated from one another by linear tears; no actual interval of any measurable width existing between the fragments. (Fig. 1 A).

The hymen may be torn by coitus, vaginal examina-

tion, use of the vaginal pipe of a Higginson's syringe, and, it is said, also by merely stretching the legs.

*Caruncul*æ *myrtiformes when seen are evidence* either that the woman has had a child at or near full term, or that a large body (*e.g.* a fibroid polypus) the size of a child's head has passed the vulva. Hence the importance of being able to identify them and distinguish them from a simply torn hymen. From the latter condition we learn that the women has not had a child at or near full term.

2. *The colour of the mucous membrane of the vulva should be noted. It may be redder than normal,* angry looking, and secreting pus; such is the case in vulvitis, the local affection *par excellence* met with in young children.

The mucous membrane may be pale; this is its normal condition in old women, frequently in these cases, there are patches of dark red on the general pale surface.

3. *The orifice of the Urethra.*—If of normal size, and free from abnormal growths—warty growths—vascular caruncles, and the like. If pus is seen in the orifice, pressure should be made with the finger in the vagina along the course of the urethra downwards, to see if any more pus can be pressed out of the meatus.

4. *The presence of any abnormal swelling or growth, e.g.,* a swelling as large as a walnut or larger in the posterior half of a labium majus—feeling elastic, is often met with, this being a cyst formed from the occlusion of the orifice of the duct of Bartholin's gland on that side, and a gradual dilatation of the duct in consequence till it attains the size and position mentioned.

5. *Swellings or tumours may appear in the vulva and be seen on inspection, that have arisen elsewhere.*—Such are prolapse of the vaginal walls, prolapse of the uterus,

tumours of the vagina, and uterine polypi protruding out of the vagina and appearing externally.

6. If nothing is visible beyond the ordinary normal parts it is well to *ask the patient to bear down or strain.* Then if there is any prolapse, or tendency to prolapse, of the vaginal walls, the anterior, or the posterior, or both, will be seen to descend, and perhaps project some distance from the vagina. Perhaps even the vagina may be completely inverted, and form a lump as big as a cocoa-nut outside the vulva, the surface of the lump shewing the external os uteri at one point, and the body of the uterus being clearly felt in the lump posteriorly; this condition is called *procidentia uteri.*

Sometimes on asking the patient to strain, if there are certain abnormal conditions of the urethra or bladder, a little urine will escape.

Having learned all we can by examination of the vulva we now pass on to the

Vaginal examination proper.—The fore-finger of the right hand is oiled or lubricated (a convenient preparation for this purpose is white vaseline, containing one part of carbolic acid and one part of eucalyptus oil, to eighteen parts of vaseline) and passed from the anterior edge of the perineum into the vagina. A small point, but one worth attending to, is to take care that the finger-nail is trimmed short, and does not project over the soft end of the finger; and it is also of importance to pass the finger into the vagina in the manner described, so that the more sensitive parts in front of the vaginal orifice may not be touched. Any unnecessary pain, apart from any consideration for the patient, renders the examination more difficult and less likely to give any useful information.

Points for special attention are:—1. On attempting to pass the finger into the vagina, it may be, that so much pain is caused, that the patient extends her legs, at the same time pressing the buttocks so close together that the examination has to be given up—in such a position nothing whatever can be made out.

This is likely to occur when there is acute, or even subacute, inflammation of the mucous membrane of the vulva or vagina—vulvitis or vaginitis; in cases also of urethral caruncle and labial abscess. Apart from such causes, it is likely to be met with in nulliparous women of emotional temperament—should further examination be considered necessary, the patient must be completely anæsthetised before it can be carried out.

2. *The condition of the vagina.*—Whether it embraces the finger closely, or is lax and capacious.

Its length, the canal is notably shortened in old age.

Presence or absence of the vaginal rugæ.

Tenderness on pressure in any particular direction, *e.g.*, pressure on the anterior vaginal wall causes pain in acute and subacute cystitis, while pressure in any other direction causes no pain in such cases.

Presence of foreign bodies, e.g., forgotten pessaries, pieces of sponge, etc.

Abnormal growths.—For instance tumours growing from the vaginal walls; or from the uterus—fibroid polypi—or malignant growths—occupying the vagina.

The temperature of the vagina.

Having noted the state of the vagina, we pass on to examine the uterus.

Attention is first to be directed to the vaginal portion of the cervix—that part of the cervix projecting into the upper part of the vagina.

We attend to :—

(i.) *The direction in which the external os uteri is pointing*, forwards or backwards. Normally it looks backwards and downwards.

(ii.) *Whether the cervix is in the centre of the pelvis*, or to one side.

(iii.) *The length of the vaginal cervix*—normally about one-third of an inch—its *shape*, long and markedly conical for instance, or short and cylindrical. Sometimes the vaginal portion of the cervix is hypertrophied, and may even extend to the vaginal orifice. This latter condition is a congenital peculiarity.

(iv.) *The shape of the external os and its size.*—Whether for instance it is a little round, or transverse, aperture some three-sixteenths of an inch across, as in nulliparæ, the edges of it free from irregularities; or, a wide aperture, half an inch or more across, with irregular edges admitting the tip of the finger, as in women who have had children. These irregularities in the outline of the external os are due to the slight lacerations that occur in every first labour. In old women the os uteri is often on a level with the roof of the vagina, owing to atrophy of the cervix, the cervix does not then project into the vagina at all.

(v.) The surface of the vaginal portion should be felt all over by the examining finger, starting from the external os; thus we may detect the slightly granular feeling of an erosion round the os, its peripheral limit being a slightly raised margin beyond which the surface is felt to be perfectly smooth.

Little shotty lumps may be sometimes felt on the surface of the vaginal portion, or when the os is patulous, often some way within the cervical canal.

Such little prominences may be due either to early

malignant disease, or to occlusion of the apertures of gland-ducts; these then becoming distended by their retained secretion.

In this last case, if the prominence be punctured with a needle through a speculum, the lump will disappear. Retention cysts of this kind are called ovula Nabothi.

(vi.) We also note whether the cervix has been lacerated deeply on one, or both sides. When there is a deep laceration, say on the left side, it will be found that the finger passes from the cervical canal (thus laterally laid open) to the vagina on the same side without anything intervening between the two, whereas on the opposite (right) side, the finger starting from the cervical canal has first to traverse the right half of the vaginal portion of the cervix before coming to the vaginal wall.

The Bimanual Examination.—This can be made equally well whether the patient lie on the left side, or on the back. It is merely a question of practice. The position on the side is far less unpleasant to the patient, and should therefore in general be adopted.

To perform it, the left hand is laid on the hypogastric region, and is pressed down into the pelvis as low as the state of the abdominal walls will allow. The hand should be so placed that the ulnar border from the first lies more deeply than the radial. Every endeavour should be made, as previously directed, to get the patient to relax the abdominal muscles. The left hand thus pressed down is kept quite passive while the finger of the right hand in the vagina, placed on the external os, tilts the cervix upwards; this of course imparts at the same time an upward impulse to the body and fundus of the uterus, so that the palmar aspect of the left hand pressed down in the way described receives an impulse, and

so becomes informed of the whereabouts of the fundus uteri.

This being known, if the uterus is in its normal position, its body can be grasped between the fingers of the outside hand, and the finger in the vagina, the latter now being carried in front of the vaginal portion of the cervix. (Fig. 2).

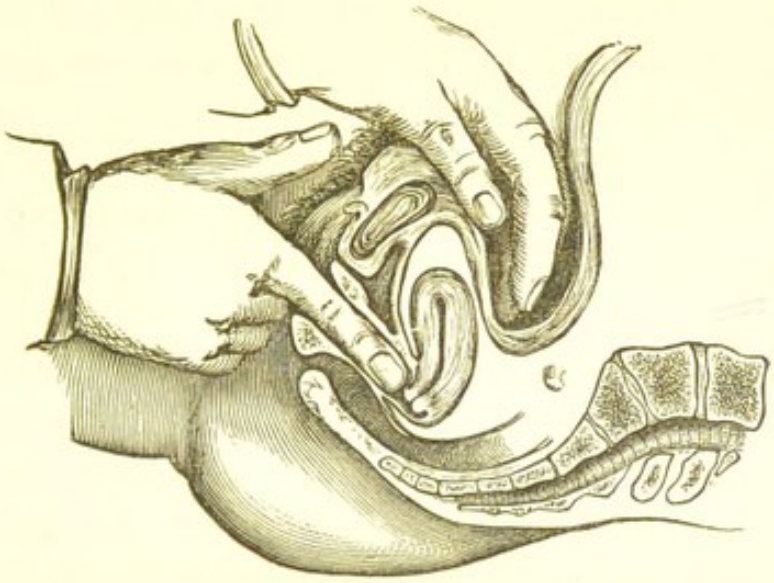

FIG. 2.—THE BIMANUAL EXAMINATION (Schroeder).

The body of the uterus is seen grasped between the fingers of the left hand pressing down in the hypogastrium, and the forefinger of the right hand in the vagina. Note that the bladder is empty.

If the bladder is full, even apart from any abnormal condition, the body of the uterus cannot be felt bimanually. If we are unable to feel the body of the uterus, a catheter should always be passed. After emptying the bladder, we are often able to feel the uterus bimanually in cases where we had previously failed to do so.

Even if the bladder is empty, we cannot, as a rule, feel the body of the uterus bimanually if the uterus be retroflexed, or strongly retroverted. If the abdominal walls are thin and *very lax* we may, however, feel the body of the uterus bimanually, even when retroflexed or retroverted.

The movability of the uterus will have been estimated when the finger in the vagina made the upward tilting movement on the vaginal cervix.

The normal range of mobility is about $1\frac{1}{2}$ inches in the upward direction; the uterus may be absolutely immovable, or less movable than normal, or freely movable.

At the same time, a fair estimate may be made of the weight of the uterus, whether heavier than normal, or not.

It is of great importance during the bimanual examination, to be able to form an estimate of the *size of the uterus (particularly with a view to the diagnosis of early pregnancy)*, also to ascertain whether its surface is smooth, or the seat of irregular projections (as in the case of sub-peritoneal fibroid tumours).

Supposing the body of the uterus cannot be felt bimanually, even when the bladder is empty, the internal finger should explore the region behind the cervix. Normally, when the rectum is empty, no lump should be felt in this situation. If we feel a lump there, it may be one of many things, *e.g.*, it may be the body of a retroflexed uterus, it may be a hæmatocele, or a distended Fallopian tube, or an enlarged and prolapsed ovary. The passing of the sound will settle whether the lump is the body of the uterus or not.

The finger having felt in front of the vaginal portion and behind it—explored the regions called the anterior

and posterior vaginal fornices—now goes on to examine the spaces at the sides of the cervix—the lateral fornices. And both without, and with, the aid of the bimanual method, note is taken of any masses to be felt in these regions. For instance in parametritis (pelvic cellulitis) of one side, a lump is felt on that side of the cervix.

For the purposes of description it is usual to divide the pelvis into quarters, and to speak of a lump being felt in the right, or left, posterior quarter of the pelvis, as the case may be. The boundaries, for instance, of the right posterior quarter of the pelvis are:—the right broad ligament, the right utero-sacral ligament, and externally, the pelvic wall.

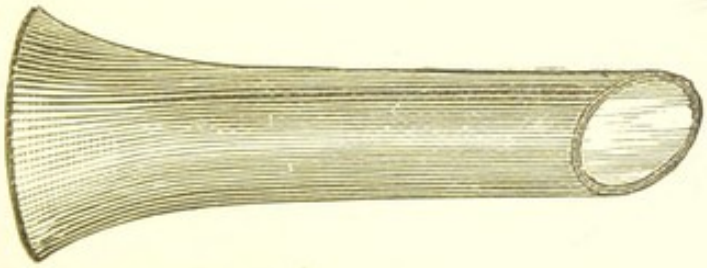

FIG. 3.—FERGUSSON'S SPECULUM.

On withdrawing the finger from the vagina, it should be noticed whether there is any blood on it, or not. If there was no blood in the vagina to begin with, the occurrence of bleeding after gentle examination is suggestive of malignant disease.

To complete the examination we may use *the speculum*, and, if specially indicated, *the uterine sound*.

The two forms of speculum in common use are Fergusson's tubular speculum, and Sims's duckbill speculum.

Fergusson's is the one which will be found most generally useful.

Sims's speculum on the other hand, is essential for operations on the vagina and cervix. It has the advantage that we can touch the cervix while the speculum is in position.

Other specula that are occasionally useful are Barnes's crescent speculum, and Cusco's bivalve speculum.

Directions for passing Fergusson's speculum.—Care should be taken to choose a size suitable to the capacity of the vagina as already determined by the finger.

The fore-finger of the left hand is passed a short way into the vagina and retracts the perineum, at the

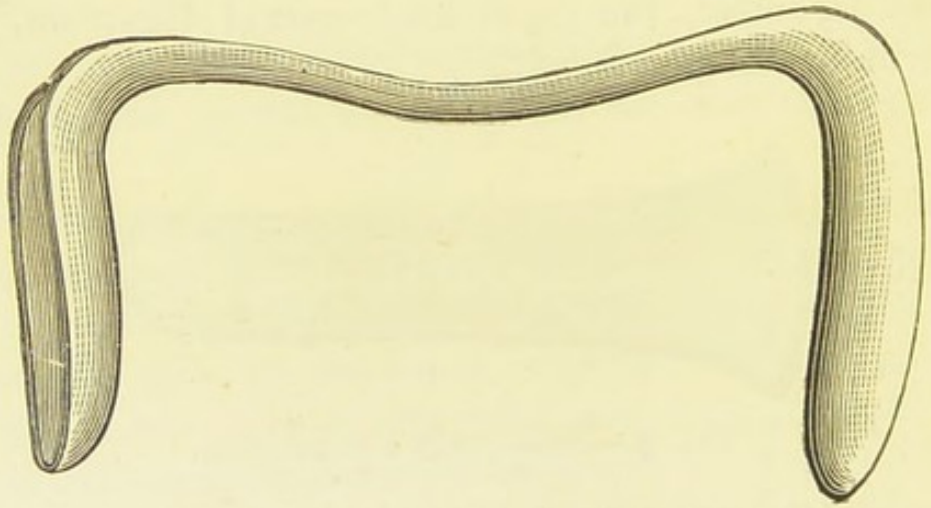

FIG. 4.—SIMS'S DUCKBILL SPECULUM.

same time the middle finger of the left hand draws the right labium to the right. The speculum is held in the right hand, and its end, previously oiled (not dipped in oil), is insinuated into the orifice of the vagina. Special care should be taken not to tuck in any of the parts, *e.g.*, the nymphæ, or hairs. It is then pushed on, upwards, but with a strong inclination backwards, till it is completely passed.

Then, looking up the tube, we see if the vaginal portion of the cervix is in view as it should be. If not, the

speculum is turned round, or passed up a little further. If the cervix is still not in view, the speculum should be withdrawn a little way, and again passed up.

The speculum enables us to see:—1. The condition of the vaginal mucous membrane—redder than normal, and if so, whether the redness is uniformly distributed, or confined to certain parts of the vagina, *e.g.*, the lower part or the upper part of the vagina, or as in other cases to the summits of the ridges of the mucous membrane, the intervals between the ridges being pale—or again whether the whole mucous membrane is spotted over with red spots, the intervals between the spots being pale, as in "spotty" vaginitis.

FIG. 5.—Retractor used with Sims's Speculum for pressing forwards the anterior vaginal wall, while the speculum presses back the posterior vaginal wall and perineum. An assistant at the same time should draw the patient's right buttock upwards.

2. *Presence of ulcerations of the mucous membrane.*—These may be syphilitic, or produced, as is often seen, by the use of hard pessaries. Sometimes we cannot assign any cause for them.

3. *The presence and character of various discharges in the vagina.*—Merely, as is natural, a little whitish fluid just sufficient to moisten the surface; or a copious white, or yellow, or greenish-yellow fluid, or blood.

4. *The secretion in the external os.*—Normally clear, transparent, and viscid, like unboiled white of egg. In catarrh of the cervix it loses its transparency and becomes opaque and either white or yellow according to

the intensity of the inflammation. Often a red, raw-looking, slightly granular, or even villous area is seen

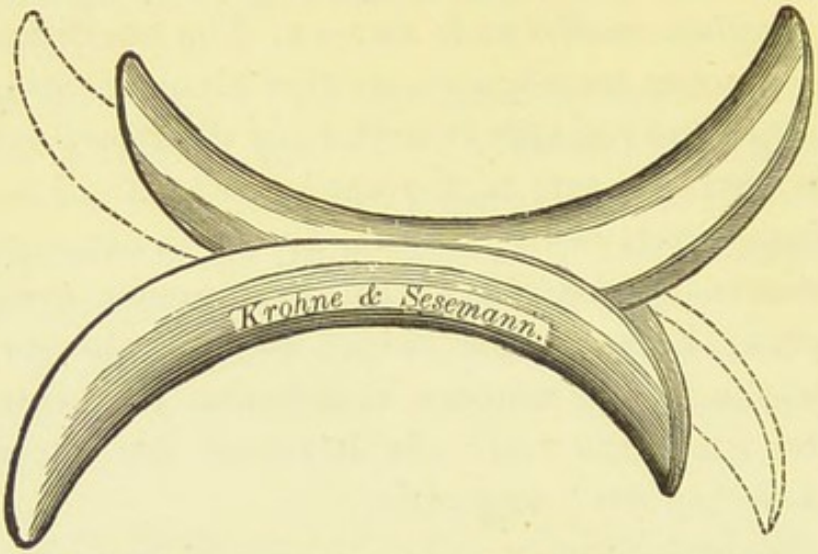

FIG. 6.—BARNES'S CRESCENT SPECULUM.

One blade is first introduced, and then the other, so that, when in position, the blades lie as in the figure.

FIG. 7.—BARNES'S CRESCENT SPECULUM.

The blades packed for carrying, one within the other.

of varying width immediately round the external os. Such areas constitute the various forms of erosion of

the cervix, and in the more marked forms are probably indications of co-existing inflammation of the cervical mucous membrane.

5. *The actual size and shape of the external os.*

The speculum is also useful for the application of various medicated fluids to the surfaces within reach.

It will often be found that what appears to be a wide erosion, when the speculum is pressed well up, becomes much diminished in width if the speculum is withdrawn a little way. The former appearance being due in part to an eversion of the mucous membrane of the cervix.

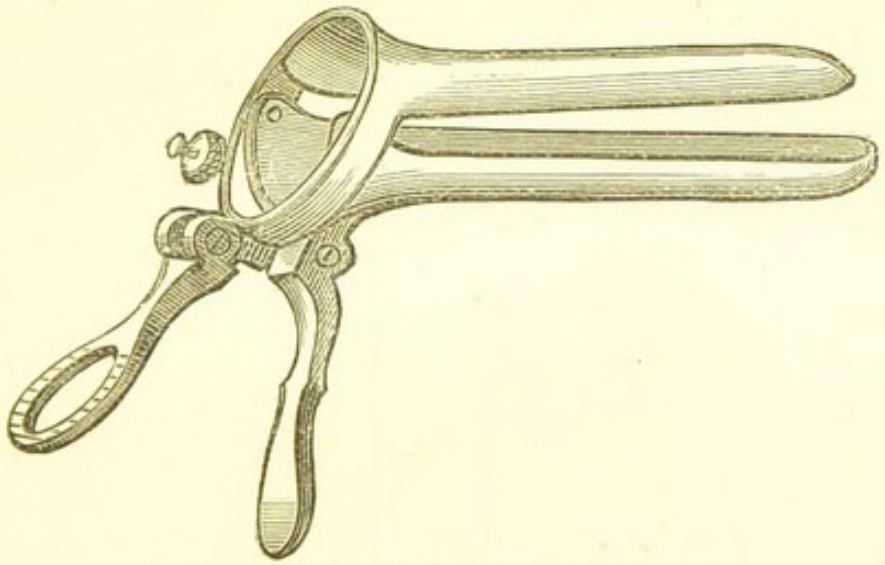

FIG. 8.—CUSCO'S BIVALVE SPECULUM.

The examination may with advantage end here in many cases. If the art of making the bimanual examination has been thoroughly mastered, the cases where the use of the sound will add much to our knowledge, are comparatively few.

The sound should not be used where there is the least likelihood of pregnancy, or in cases of pelvic inflammation (pelvic peritonitis and cellulitis), or in cases of malignant disease.

There are three safeguards against passing the sound into a pregnant uterus.

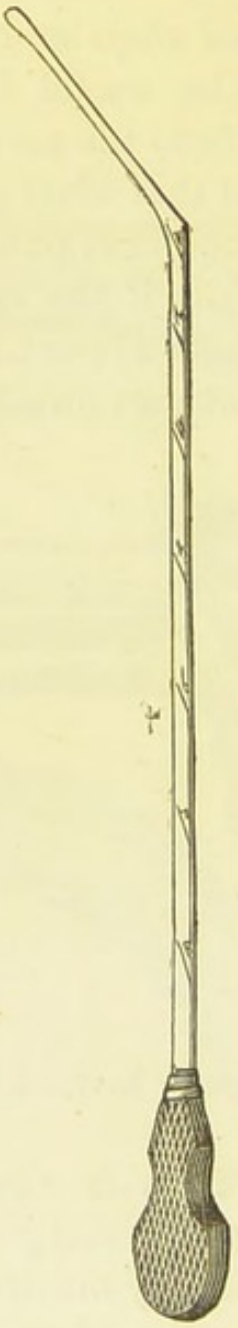

FIG. 9.—THE UTERINE SOUND (Simpson's).

The side of the handle corresponding to the concavity of the sound is roughened; the other side of the handle should be smooth. There is an angular projection 2½ inches from the point of the sound, this being what is called "the normal distance" for the sound to pass into the uterus.

First.—It is always well to ask when the patient menstruated last.

Second.—The examination of the abdomen will prevent the risk of passing the sound in advanced pregnancy.

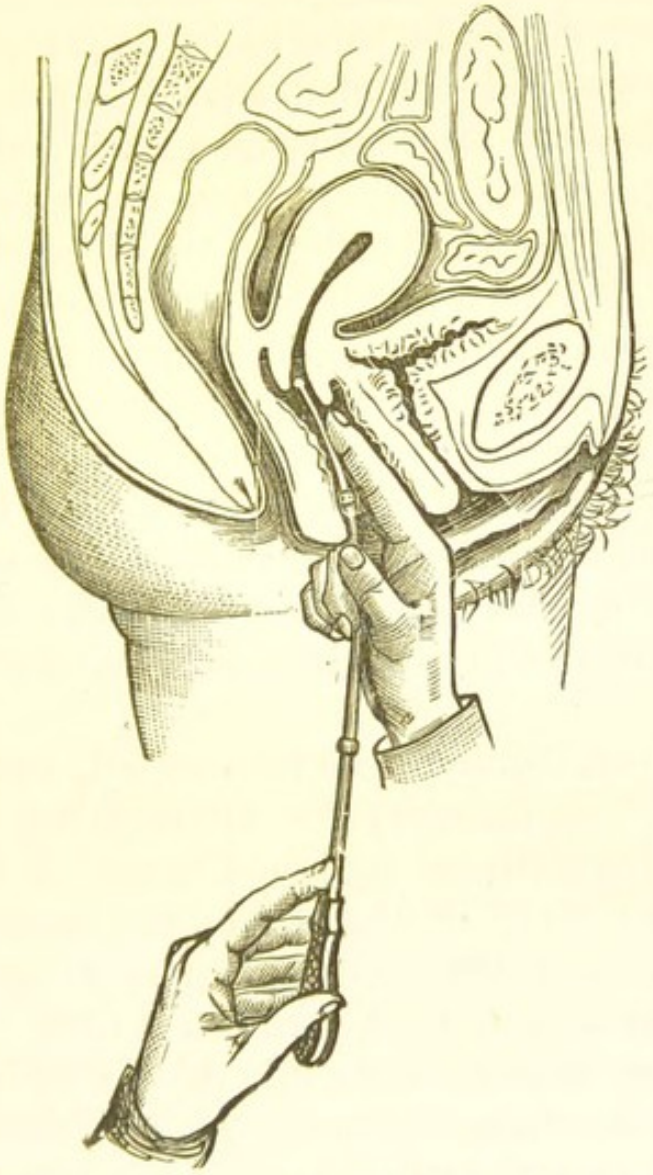

FIG. 10.—To illustrate the mode of passing the sound described in detail in the text (Hart and Barbour).

Third.—The bimanual examination, by enabling us to estimate the size of the uterus, will put us on our guard as to early pregnancy.

Dexterity in passing the sound should, in the first instance, be acquired by practice on the dead body.

There are many patterns of uterine sound. Simpson's is on the whole the one to be preferred. It is certainly as good as any, and better than most.

Directions for passing the uterine sound.—The forefinger of the right hand being on the external os; the sound, warmed and oiled, should be passed with its concavity looking backwards along the palmar aspect of the finger, keeping the point of the sound especially in close contact with the finger, till it reaches the external os. It is then gently slipped into the os; it will find its way easily as far as the internal os.

Here a slight check is usually met with. If the previous examination has shewn the body of the uterus to be in its normal position of slight anteflexion, the direction in which the concavity of the sound looks will have to be changed so that it may look forwards; then, steady, gentle, pressure will cause it to pass into the body of the uterus.

If, however, the uterus be retroverted, or retroflexed, there will be no necessity for altering the direction in which the concavity of the sound looks. It will only be necessary to carry the handle of the sound somewhat forwards towards the pubes as it passes into the uterus, its concavity looking backwards as at first.

It is very important to thoroughly understand the manœuvre for changing the direction in which the concavity of the sound looks.

The student should take a sound and follow the directions to be given, looking at Fig. 11.

Place the sound flat on the table in the position *a*, *b*, *c*.

Now hold the points *a* and *b* closely against the table; so that the part of the sound *a*, *b*, cannot be displaced laterally.

Now take hold of the handle *c* with the other hand.

Raise it off the table, and bring it down again to the position *c'*. It will be found that the handle *c* passes through a semicircle to the position *c'*, without causing any displacement of the part *ab*, which merely rotates on its own axis. This altering of the direction in which the concavity of the sound looks, without displacement of the terminal part *ab*, is called the "*tour de maître*."

Passage of the sound through the speculum.—When we

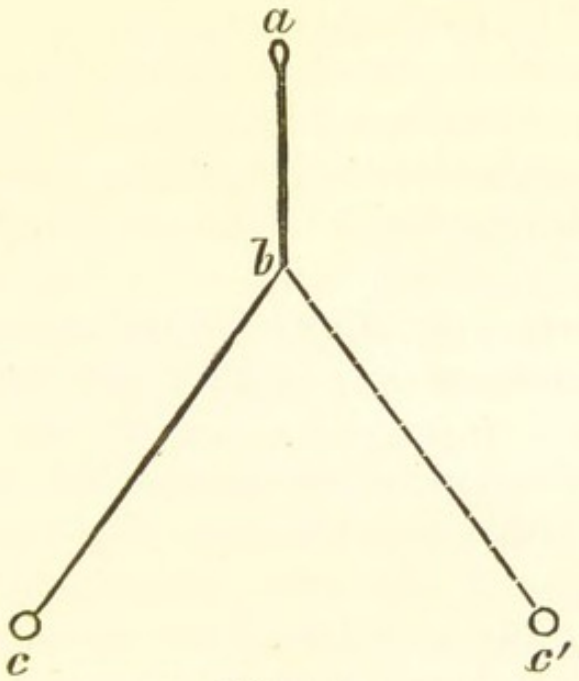

FIG. 11.

consider that there is often septic matter in the vagina, it is obvious that if we pass the sound in the manner described in the last paragraph, there is considerable danger of carrying some of it into the cavity of the uterus with the sound. If this is done, pelvic inflammation will probably be set up, and may even end fatally. The writer thinks it preferable therefore, with a view to avoid risk of this kind, to pass the sound through a speculum. Usually it is quite easy to pass it the full

distance while the speculum is in position, occasionally some difficulty arises, but it is always possible to pass the sound as far as the internal os through the speculum, or about the distance of an inch, and holding the sound where it is, on withdrawing the speculum over the sound, the latter can be passed the remaining distance in the ordinary way; in this case, the first inch of the sound is at all events absolutely clean, and as regards the remaining inch and a half, the lowest inch lies in the cervix, and the half-inch above this has at least been, as it were, wiped by passing through the cervix, so that the danger of carrying any septic material into the body of the uterus is reduced to a minimum.

Rectal examination.—Sometimes it is an advantage to examine with the finger in the rectum. In this way we notice:—

1. *Whether the rectum itself is diseased, e.g.*, stricture; or, as in a case I remember, impaction of a large gall-stone in the rectum.

2. It is ascertained for certain whether masses felt to the left and behind are fæcal, or due to some pathological condition of the pelvic organs, *e.g.*, distinction between fæces and an inflamed left ovary.

3. In young girls and unmarried women, where some examination is called for, examination should be made per rectum first; the condition of the pelvic organs can thus be ascertained without rupturing the hymen.

The catheter.—The frequent necessity of passing the catheter in the course of a physical examination of the pelvic organs has been already alluded to.

Moreover, after many operations, *e.g.*, ovariotomy, operations for ruptured perineum, supra-vaginal amputation of the cervix, etc., the catheter has to be passed every six hours.

It is therefore important to remember that cystitis is very apt to be set up by its use, unless special care is taken.

Precautions to be observed in using the catheter.—1. If there is any discharge about the external parts, the orifice of

FIG. 12.—The upper figure shows a male celluloid catheter with the eye at the end; the lower figure shows a catheter with the eye at the side, for comparison.

the urethra must be wiped with a pledget of cotton-wool soaked in 1-40 carbolic lotion to avoid carrying some of the discharge into the bladder.

2. The kind of catheter used is an important point. It is impossible to feel sure that the ordinary catheter with the eye at the side is clean, for it may be taken as certain that dirt will accumulate in the part beyond the eye. It is best to employ a male, celluloid, catheter *with the eye at the end*, not at the side. Such a catheter is simply a tube open at both ends. It is obviously easier to clean a catheter of this kind than one having the eye at the side.

3. Before use the catheter should be dipped in corrosive sublimate lotion (1-2000), then in terebene oil (1-6); after use it should be immediately washed by passing a stream of water through, if possible by holding it under a tap. Then it should be dipped once more in sublimate lotion, and again washed with water, and may then be allowed to dry.

On dilatation of the cervix.—There are two methods of dilating the cervix:—1. The rapid method

by means of Hegar's dilators. 2. The gradual (slow) method by means of tents.

1. *Rapid dilatation of the cervix.*—This method is much safer, and in many other respects also more advantageous, than dilatation by tents. Although it is familiar to gynæcologists, it is not by any means so generally well known as it deserves to be—probably because Hegar's dilators are not figured in any of the works on diseases of women commonly used in this country; and it may be said that when the necessity for dilating the cervix arises most practitioners still rely on the older method—slow dilatation by means of some form of tent. The disadvantages and dangers of tents are, however, so serious, that I think anyone who will give the rapid method a fair trial will be inclined to abandon the use of tents altogether. Dilatation by tents is not uncommonly followed by more or less severe attacks of pelvic inflammation, peri- or parametritis, and several deaths from their use have been recorded. Probably, if during the process of preparation all tents were impregnated with a powerful antiseptic, these bad results might be avoided. At present this is not done; and even if it were, we could never be personally satisfied that the particular tents about to be used had been efficiently rendered aseptic by the manufacturer. By using Hegar's dilators any danger of septic poisoning can be entirely avoided.

Hegar's dilators are slightly curved ebonite cylinders about three inches and a half long, the distal end forming a blunt cone, and the proximal being fitted with a handle. There are twenty-six sizes usually supplied, the transverse diameter varying from one-twelfth of an inch to one inch (see Fig. 13). The method of using them is as follows:—The patient is put in the lithotomy

position, and the vagina thoroughly syringed with some efficient antiseptic, such as 1 in 2000 corrosive sublimate solution. Sims's speculum is introduced, and the anterior lip of the cervix seized with a volsella, prefer-

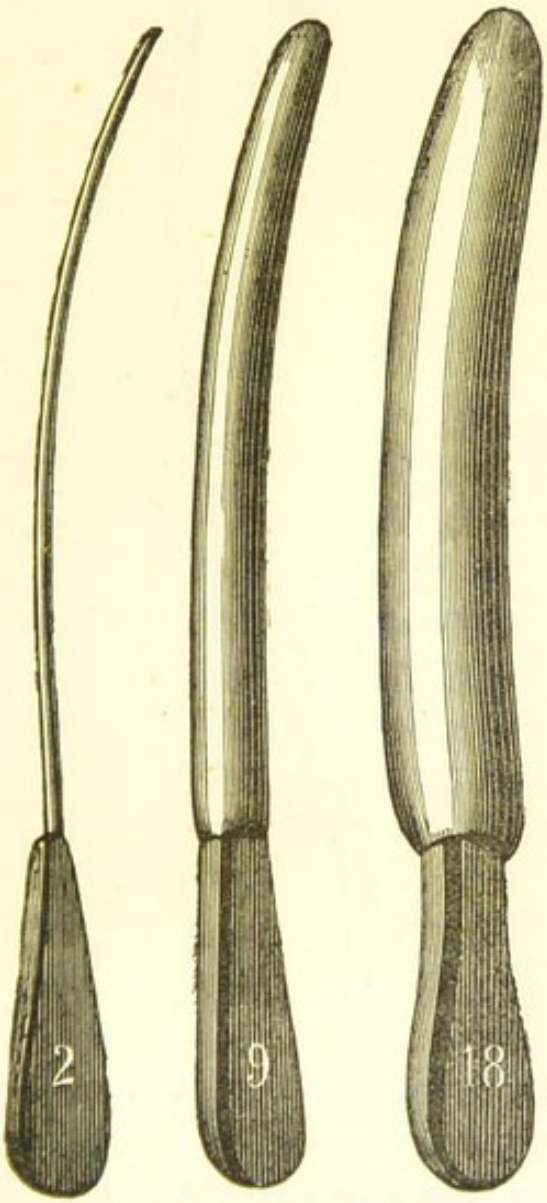

FIG. 13.—HEGAR'S DILATORS.

ably one having a catch at the handles, like Spencer Wells's forceps (Fig. 14). The direction of the uterine cavity is then ascertained with an ordinary sound. The dilators should have been previously placed, in numeri-

cal order, in a shallow porcelain tray and covered with 1 in 20 carbolic lotion. One of the dilators corresponding to the supposed calibre of the cervical canal is then

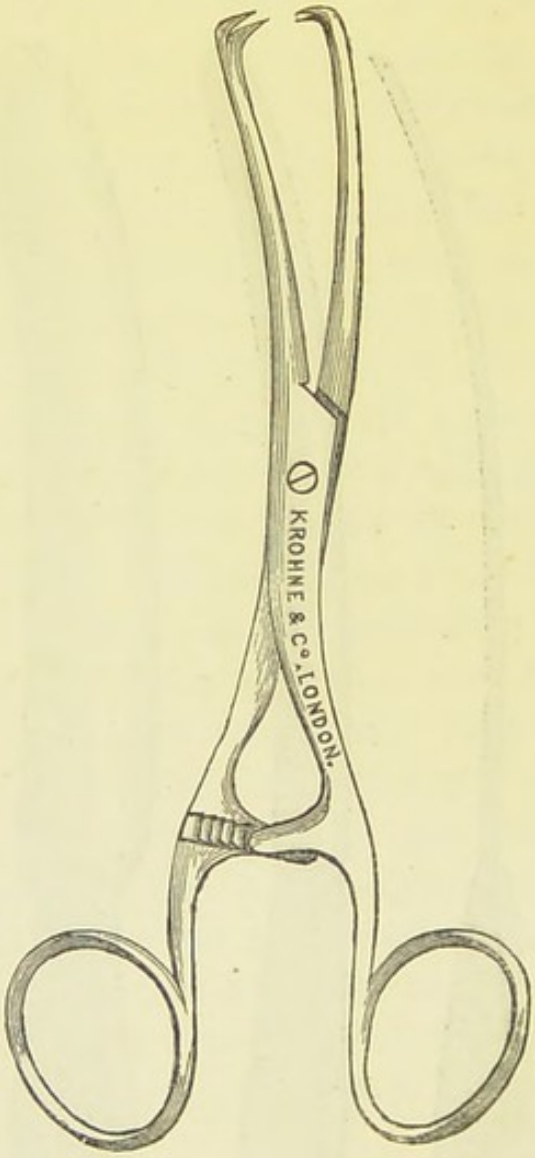

FIG. 14.—THE VOLSELLA.

The instrument figured has a catch at the handles like Spencer Wells's forceps.

dipped in carbolised oil, and passed through the cervix, which is held steady by the volsella in the left hand. If the dilator used only passes with difficulty, it is held in

position a minute or two before withdrawing it. It is important to have the next larger size ready to pass at once after withdrawing each dilator. In this way the dilators are passed, one after the other, till the cervix is sufficiently open to admit the finger. This degree of dilatation is usually obtained after No. 19 of the series has passed. If any morbid condition is discovered in the cavity of the body of the uterus, this is treated by suitable means. Polypi, for instance, or pieces of pla-

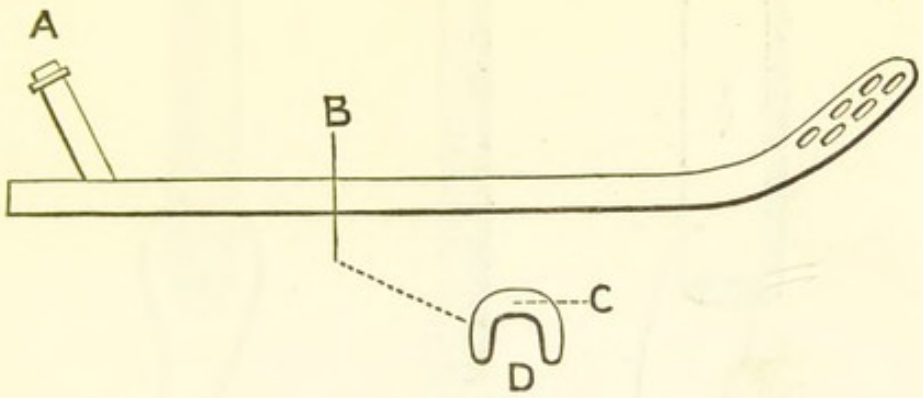

FIG. 15.—TUBE FOR WASHING OUT THE UTERUS.

The india-rubber tube of an ordinary Higginson's syringe fits on at A. The horse-shoe shape of the tube on transverse section at any part (say B) is shown. The fluid injected at A, passes between the walls of the tube as at C. This fluid, after escaping from the holes at the distal end, returns along the groove D, which runs on the under surface of the tube for its whole length.

centa can be removed. If a growth of doubtful character is discovered, a small portion may be removed for microscopical examination. Whether anything abnormal has been found in the interior of the uterus or not, it is of great importance to wash out that organ with carbolic lotion or iodine water. For this purpose nothing answers better than the double-channelled tube shown in Fig. 15. No matter how tightly the tube may be grasped by the uterus, the fluid injected readily

escapes along the deep groove on the under surface. These tubes are made of celluloid or glass. Those used in my cases were of celluloid. Subsequently the patient

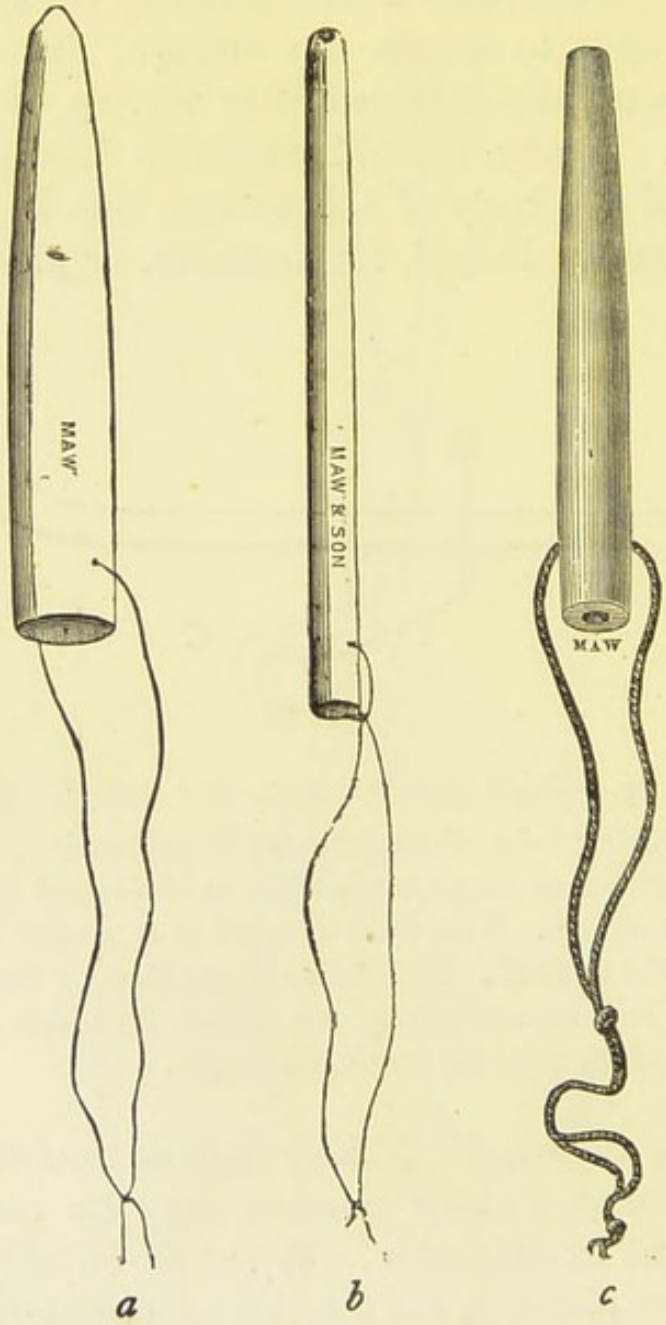

FIG. 16.—UTERINE TENTS.
a. Sponge. *b*. Laminaria. *c*. Tupelo.

should have antiseptic vaginal douches three times a day for a few days; iodine water is the antiseptic I

usually employ for this purpose. If the dilatation is performed soon after a miscarriage, or soon after labour, no anæsthetic is needed, but in other cases, it is

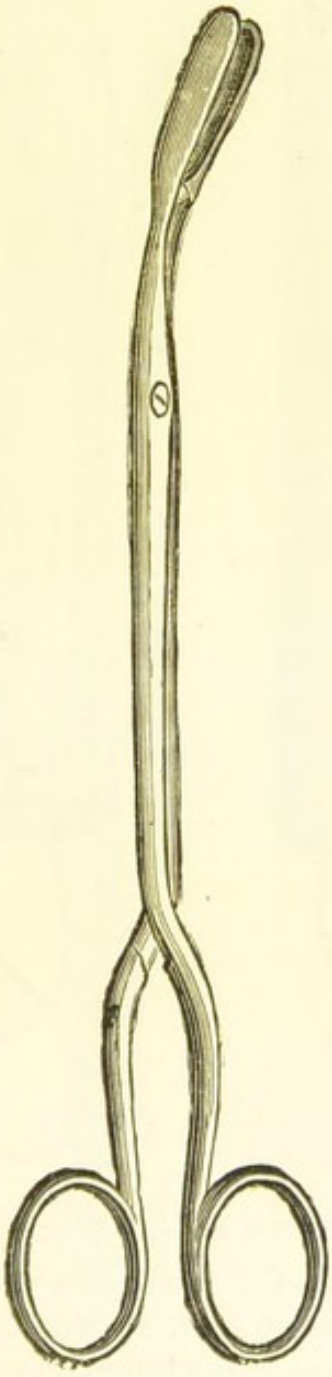

FIG. 17.—UTERINE FORCEPS.

necessary. The only objection of importance that has been made to the use of Hegar's dilators is, that they

are apt to cause deep lacerations of the cervix. I do not think this is an objection of much practical weight. I have used them in a good many cases, and seen them

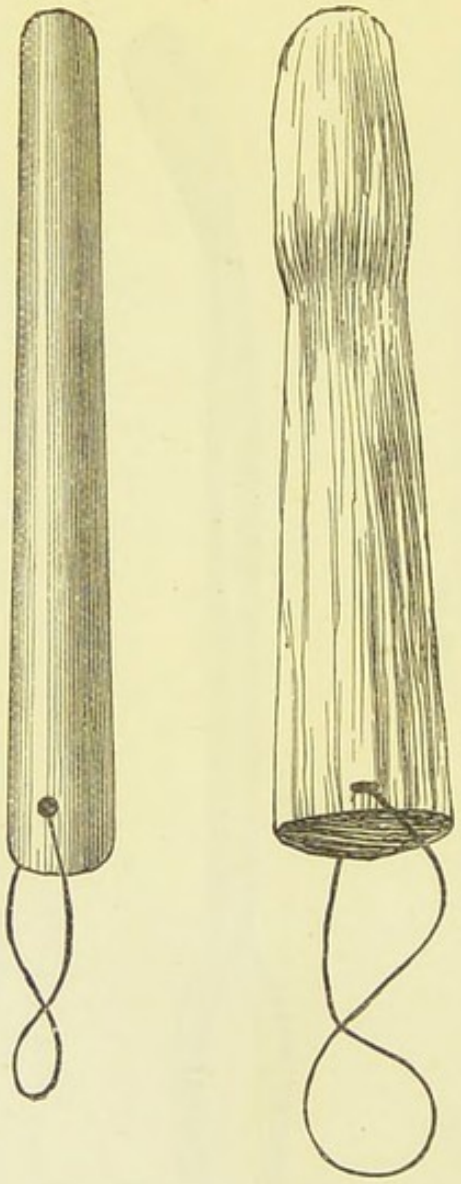

FIG. 18.—EXPANSION OF A TUPELO TENT (Mundé).

The larger figure shows the extent to which the smaller one has expanded. The constriction on the larger figure indicates where the tent has been in contact with the internal os uteri.

used in many others, without any laceration occurring, and I think this accident must be due to too great force having been employed. In appendix B notes are given of seven cases in which this method was used.

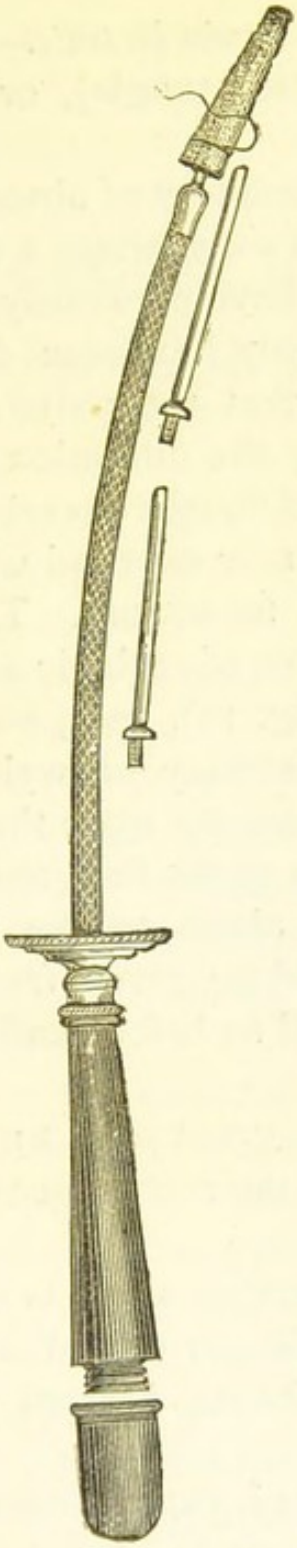

FIG. 19.—BARNES'S TENT INTRODUCER.

A Tent is seen fitted on the end ready for introduction. When the tent has been placed, the stylet on which it is mounted is withdrawn through the larger tube, which is held steady till the stylet is quite free from the tent.

2. *Dilatation of the cervix by tents.*—Tents are made of sponge, laminaria (sea-tangle), or tupelo, a kind of wood.

They possess the property of absorbing moisture, and expanding as they do so, exercise a dilating force on any part into which they have previously been tightly fitted.

If dilatation by tents has been decided on, it is, to begin with, essential that the patient should remain in bed, not only during the dilatation, but for some days afterwards. A vaginal douche of carbolic lotion, 1 in 40, is given. The cervix is now exposed with Sims's speculum, and steadied with a tenaculum. The tent, previously anointed with glycerine of carbolic acid, is held in a pair of uterine forceps (Fig. 17), and passed into the cervix so that its highest point may be well beyond the internal os. If there is room for more than one tent, another is inserted by the side of the first, and so on.

Tents are left in about twelve hours. Antiseptic vaginal douches should be given frequently while they are in position, as well as before and after withdrawing them.

As dilatation causes great pain, a morphia suppository should be passed into the rectum at the time the tent is introduced.

Another way of inserting a tent is to fit it on a special introducer—the tent is perforated nearly to its upper end to allow of its being carried on the introducer (Fig. 19).

All things considered, rapid dilatation by means of Hegar's dilators is the method to be preferred.

CHAPTER II.

Menstruation and its Disorders.

Normal type.—In this country menstruation usually first appears between the ages of fifteen and sixteen. It is not very rare for it to appear as early as ten, or to be delayed as late as twenty. In hot countries it appears a little earlier, and in cold countries a little later, than in temperate climates.

Menstruation ceases between forty-five and fifty.

When menstruation has become thoroughly established, it recurs every four weeks, *i.e.*, from the *beginning* of one period to the *beginning* of the next is four weeks; sometimes it recurs every three weeks without there being any abnormality.

Both at the time of the establishment of the function, and for some time before its cessation, some irregularity as to periodicity is commonly observed. For instance, after the first menstruation the girl often "sees nothing" for some months before it reappears, and there may be a similar interval before it recurs a third time, finally she becomes "regular" every four weeks. This is altogether within physiological limits.

Each period lasts from three days to a week. The quantity of blood lost each time is about three ounces. Normally there are no clots passed. If the discharge is only moderate in amount, clotting is prevented by the mixing of the acid vaginal secretion with the blood. If the quantity lost is much greater than normal, or if

the blood is retained in the cavity of the uterus for some time, clots are formed.

The blood discharged during menstruation comes from the body of the uterus, the mucous membrane of which undergoes fatty degeneration, and becomes disintegrated, with rupture of its capillaries, and consequent escape of blood.

After menstruation is over, a new mucous membrane begins to be developed, starting from the internal os, and gradually the whole of the cavity of the body of the uterus is once more lined by a mucous membrane. This attains its greatest thickness just before the next menstrual period; if pregnancy does not occur, it in its turn undergoes the degeneration and disintegration already described.

Ovulation, *i.e.*, the maturation of a Graafian follicle and discharge of it into the Fallopian tube is, as a general rule, associated with menstruation. It is at present uncertain whether the follicle ruptures before, during, or after the menstrual flow.

Exceptionally :—1. *Ovulation may occur without menstruation,* as when pregnancy occurs in women who have never menstruated, or who become pregnant during suckling.

2. *Menstruation may occur without the maturation and rupture of a Graafian follicle, i.e., ovulation,* for in some cases where death has occurred during, or soon after, a menstrual period, no Graafian follicle, either about to rupture, or recently ruptured, has been found.

At the time of menstruation there is congestion of the ovaries and uterus, and there is increased secretion from the glands of the cervical canal. This increased secretion is the only part taken by the cervix in menstruation. The breasts may swell and become painful.

General phenomena observed in connection with menstruation.—(*a.*) There is increased vascular tension for some days before the period, which falls during, and after it.

(*b.*) The temperature is a little raised (about half a degree) for some days before the flow, similarly falling again during, and after it.

(*c.*) Some feeling of fulness in the pelvis, perhaps slight backache, and some sense of fatigue, are usually met with, even in healthy subjects.

Abnormalities of Menstruation.

Menstruation may never appear, or having appeared, may become suppressed. If it has never appeared, we call the condition *Primary Amenorrhœa;* if it has appeared and subsequently become suppressed, we call it *Secondary Amenorrhœa.*

Again, menstruation may be attended with pain, and we have the condition called *Dysmenorrhœa.*

Lastly, either the quantity of blood lost at each period may be excessive, or menstruation may recur at too short intervals, in either case we have the condition termed *Menorrhagia.*

Amenorrhœa.—It has already been mentioned that menstruation begins in most cases between fifteen and sixteen, but that it may be delayed as late as twenty without there being necessarily anything wrong. At the same time it is to be remembered that the longer its first appearance is delayed beyond the usual time, the greater is the probability of there being some constitutional or local disease present.

Apparent Amenorrhœa.

Menstruation may seem to be absent where, in reality, the function is being regularly performed every month. This is due to some *physical obstruction preventing the escape of the blood.* Such cases are rare. The obstruction is either due to an *imperforate hymen, a congenital or acquired occlusion of the vagina, or occlusion of the external os.*

Acquired occlusion of the vagina occurs occasionally after severe specific fevers, such as scarlet fever; the vaginal walls slough, and the granulating surfaces left cohere, so as to close the canal. This may also occur after difficult labour. The possibility that the amenorrhœa may be due to one of these causes should always be thought of when a girl, who has arrived at the age of puberty, but who has never menstruated, experiences pain in the hypogastrium recurring every month. After a time gradual dilatation of the cavities above the obstruction occurs, and a tumour is noticed rising out of the pelvis. It is also found that the swelling so formed increases in size when the pains in the hypogastrium occur each month, and diminishes again after the pains subside.

The increase in size corresponds to the menstrual period, when more blood is added to that already in the dilated uterus, or dilated vagina, as the case may be; after the period is over, some of the blood is reabsorbed, and hence the diminution noticed in the intervals between the menstrual periods.

The *treatment* proper for such cases will be referred to in the chapter on Diseases of the Pudendum.

Amenorrhœa proper.

1. *In most cases true amenorrhœa is to be looked on, as an indication, and as a result, of a bad state of the general health.*— It is in this way that amenorrhœa results from *anæmia*, and particularly the peculiar form of anæmia called *chlorosis;* from *overwork*, especially *overwork indoors* (as in the case of domestic servants, shop girls, &c.); that it follows severe illnesses, and various organic diseases, especially *phthisis*.

In all these instances failure of the general health is the cause of the amenorrhœa.

2. *Sometimes, on the other hand, deficient ovarian activity, with which is associated amenorrhœa, is the cause of the failure of the general health, and resulting anæmia or chlorosis.*— Here the fault lies with the ovaries, which perform their functions sluggishly. The close connection between the functional activity of the ovaries and menstruation, is seen from the fact that girls whose ovaries have been removed before the age of puberty never menstruate at all; and that women, from whom both ovaries are removed, almost invariably cease to menstruate.

If the changes in the whole body, which occur at the age of puberty, are to be accomplished without injury to the general health, the demand made on the strength by the rapid development in progress must be met by a corresponding activity in the processes of nutrition.

It is generally agreed that the proper action of the ovaries gives an important impetus to nutrition at this juncture; if this impetus is not supplied, owing to sluggishness of the ovaries, nutrition is not sufficiently active, the strength is unequal to the demands made on it, the health fails, and chlorosis supervenes.

Sometimes when there is deficient ovarian activity and also amenorrhœa, there may be a condition of plethora, and this may after a time be replaced by chlorosis.

3. *There is an irregular group of cases where we cannot be certain what the cause of the amenorrhœa is.*

Thus amenorrhœa sometimes follows:—A change in the mode of living, particularly change of air from the country to London, and *vice versâ;* or some disappointment in love.

4. *Primary amenorrhœa may be due to congenital defects of the generative organs.* Such as the following:—

(*a.*) There may be no uterus, or only a rudimentary uterus, the ovaries being normal.

(*b.*) The ovaries may be absent or rudimentary, the uterus being normal.

(*c.*) The infantile condition of uterus and ovaries may persist throughout life.

(*d.*) The ovary and other appendages of one side may be absent.

5. *Local morbid conditions causing, or associated with, amenorrhœa.* Such are:—

(*a.*) *Ovarian tumours;* sometimes, however, there is menorrhagia in such cases.

(*b.*) *Pelvic inflammation* (Perimetritis, Parametritis) especially when ending in abscess. The amenorrhœa is partly, no doubt, due to the depression of the general health. Sometimes, however, there is menorrhagia in cases of pelvic inflammation.

(*c.*) *Exposure to cold during menstruation* is very apt to lead to pelvic peritonitis and amenorrhœa; cold may stop the flow, even if it does not set up pelvic inflammation.

(*d.*) *Ovaritis.*

(*e.*) *Superinvolution of the uterus.*

6. *Lastly, amenorrhœa is physiological during pregnancy, and while suckling.* When a healthy-looking girl complains of amenorrhœa, *having been quite regular up to the time of the last menstruation*, there is considerable probability that the cause of the amenorrhœa may be a physiological one.

Treatment.—A. *In cases of sudden suppression* by exposure to cold or wet during, or just before, menstruation, the patient should have a hot hip bath with mustard in it, and be put to bed, lying between the blankets. A glass of gin, or whiskey, in hot water will be useful as a diaphoretic.

If there is much pain, a morphia suppository (gr. $\frac{1}{4}$) may be ordered. Sudden suppression of menstruation by exposure to cold is very likely to result in an attack of pelvic peritonitis, and the patient should be kept in bed for some days as a precaution, even if no symptoms of peritonitis arise.

When the time comes round at which the next menstruation should appear, the patient should have a hot mustard and water hip bath for three or four nights running before the day on which the period is due; if this does not bring it on, three or four leeches may be applied round the anus, or to the inside of the thighs.

In between the dates when the periods are due, attention should be directed to the general health; and in most cases a mixture containing small doses of saline purgatives will be useful, such as the following:—

℞ Mag. Sulph., ℥j.
Sod. Bicarb., gr. xv.
Sp. Chlor., ♏v.
Infus. Gent. Co. ad ℥j.

twice or three times a day according to the effect produced on the bowels.

B. *In cases of chronic amenorrhœa associated with anæmia,* whether the anæmia has preceded and brought about the amenorrhœa, or whether we have reason to think that ovarian inactivity by failing to stimulate nutrition has led to the anæmia, the main thing is to improve the general health.

Outdoor exercise, cold baths, and a sufficiency of good food are of great value.

As regards medicine, if the tongue is furred, some such prescription as that given on the previous page is suitable to begin with; and as there is nearly always obstinate constipation, it should include a sufficient dose (for example, a drachm) of sulphate of magnesia, to make the bowels act regularly.

If however the tongue is clean, we may at once prescribe iron, and it is best to try a mild preparation at first, such as the ammonio-citrate. If this is well borne, we may soon change it for the astringent preparations of iron, which are far the best for anæmia as soon as the stomach can bear them.

Such are the sulphate of iron, and the liquor ferri perchloridi.

The sulphate is best given in the form of pill combined with a small quantity of watery extract of aloes.

℞ Ferri Sulph., gr. ij.
Ext. Aloes Aq., gr. j.
M. ft. pil. j., thrice daily after meals.

Or, if we wish to give the liquor ferri perchlor., a suitable combination is:—

℞ Liq. Ferri Perchlor., ℥xx.
Tr. Nuc. Vom., ℥v.
Mag. Sulph., ℈j.
Sp. Chlor., ℥v.
Aq. ad ℥j.
Thrice daily after food.

Occasionally, where iron does not effect our purpose, small doses of arsenic are useful, such as one or two drops of the liquor arsenicalis, three times a day, after food. The prepared black oxide of manganese, in twenty grain doses, is also highly spoken of. The cases, however, where iron fails are not many; especially after preliminary treatment with saline purgatives.

C. *Where amenorrhœa is only a minor symptom in the course of grave organic disease, such as phthisis, it of course requires no special treatment.*

D. In cases where there is no constitutional condition discoverable to account for the amenorrhœa, and where no local morbid condition, other than that the uterus is smaller than it should be, can be detected, it has been recommended that we should resort to local treatment. The local treatment referred to is the dilatation of the cervical canal by a series of bougies, as hereafter described under dysmenorrhœa, or the introduction of a stem pessary into the uterus, the stem being formed partly of zinc, and partly of copper—the galvanic intra-uterine stem pessary. Most of the cases, however, included in this class, if not all, had better be left entirely without interference.

CHAPTER III.

Bleeding.

One of the symptoms most commonly met with in organic disease of the pelvic organs is bleeding—using the term to mean bleeding other than that occurring in normal menstruation.

Excessive loss of blood at the menstrual periods is known as *menorrhagia*. Bleeding occurring between the menstrual periods, or not distinctly associated with menstruation is known as *metrorrhagia*. Clinically, however, these distinctions cannot always be made; practically what we must take account of is, whether the patient is losing too much blood—either because her periods recur too often, for example, every fortnight, or because although the periods do not recur too often, she loses an excessive amount each time; further, these conditions may be combined—the patient menstruating too often, and losing too much blood on each occasion.

Finally, bleeding may occur in the intervals between the periods.

Classification of the Commoner Causes of Bleeding.

I. **Bleeding in connection with Pregnancy.**

Abortion or *miscarriage*—threatened or inevitable.

Incomplete abortion, or miscarriage, portions of the ovum being retained and causing bleeding.

Subinvolution of the uterus.

Placenta prævia.

Accidental hæmorrhage, i.e., hæmorrhage from the detachment of a normally situated placenta.

Post-partum hæmorrhage. Primary. Secondary.

Extra-uterine pregnancy.

Malignant disease of the cervix complicating pregnancy.

Rupture of varicose veins of the vulva, or vagina, during pregnancy.

Molar pregnancy.

Placental Polypus.

Fibrinous Polypus.

Missed abortion, or miscarriage.

(*Note.*—When the fœtus dies in the earlier, or middle, periods of pregnancy, the ovum is usually expelled at no long interval after; exceptionally the ovum is retained in utero for a considerable time *after* the death of the fœtus, and during that time the patient is in a state of "missed abortion" or "miscarriage," according to the period to which pregnancy had advanced when the fœtus died—*abortion* being the term used to denote expulsion of the ovum up to the end of the third month,—*miscarriage*, its expulsion from the end of the third month to the end of the seventh lunar month—the 28th week).

II. **Bleeding not distinctly connected with pregnancy or labour.** Common causes of this are:—

Malignant disease of the cervix uteri.

Foreign bodies in the vagina (ill-fitting pessaries, hair-pins, pieces of sponge, &c.)

Fibroid tumours and fibroid polypi of the uterus.

Mucous polypi of the uterus.

Prolapse of uterus (from ulcers of the inverted vagina).

Vascular caruncle of the urethra.

The age of puberty, and of the menopause.

Less common causes of bleeding are:—

Malignant disease of the body of the uterus.

Malignant disease of the vagina, or of the external parts.

Ovarian tumours.

The stimulus of recent marriage causing congestion of the pelvic organs.

Pelvic inflammation, in some cases.

Diseases of the liver and heart causing venous congestion.

Endometritis of the body of the uterus.

Inversion of the uterus.

The hæmorrhagic diathesis.

Over-lactation.

I. Bleeding in connection with Pregnancy.

Clinically one of the most important facts to grasp is that in spite of menstruation occurring regularly, or rather in spite of the fact that the patient has bleeding recurring about every month, which she takes for menstruation, she may nevertheless be pregnant—perhaps as much as five or six months, as in the following case:—

C. P., age 37, married 18 years, three children, the last nine years ago, seven miscarriages, the last a year and a half ago at the end of the third month, was admitted to the London Hospital, complaining of bleeding for the last six weeks. Every day of the last six weeks she had lost something, and more the last three weeks than before. *She had been regular up to the commencement of the bleeding*, which began at one of her periods. On examination, a uniform, elastic swelling was found rising out of the pelvis, and reaching up to the umbilicus. A souffle could be heard to the right of the tumour, but no fœtal heart-sounds. The patient did not think she was pregnant. Vaginal examination found the cervix softened, and blood escaping from the os uteri. The bimanual examination showed that the swelling felt in the abdomen was connected with the uterus, in fact

felt like the pregnant uterus. The sound was passed six inches with the intention of emptying the uterus (this was justifiable because the patient had been losing blood for six weeks, and in considerable quantities for three weeks). Forty-eight hours later, as no progress had been made, and the patient was still losing, the membranes were ruptured with the sound. Six hours after, the patient miscarried. The fœtus was of about five months' development.

This case, not by any means an uncommon one, shews the necessity of keeping the possibility of pregnancy in mind, although the patient believes herself to have been menstruating regularly, and has no suspicion that she is pregnant.

Incomplete abortion.—The next case illustrates bleeding due to an incomplete abortion, parts of the ovum having been left behind.

E. G., age 39, married sixteen years, seven children, came to the London Hospital complaining of losing a large quantity of blood from time to time, ever since she had had a miscarriage five months previously.

She was three months pregnant when the miscarriage occurred. For some weeks before admission she had been losing blood three or four days out of every week.

Examination showed that the uterus was somewhat large, the sound passed three and a half inches. Some blood was escaping from the os uteri. Under ether, the cervix was rapidly dilated by means of Hegar's dilators (a method that has been already described, see p. 32), and the finger passed into the uterus. Several irregular prominences were felt scattered over the mucous membrane of the uterus varying in size from that of a split pea up to that of half a cherry. They were scraped away as completely as possible, chiefly with the finger nail. Pure carbolic acid was applied to the interior of the uterus. The little masses removed looked like pieces of placenta that had retained their vitality. After their removal the patient menstruated regularly, and not excessively.

Placenta prævia.—Bleeding due to placenta prævia usually occurs at an advanced period of pregnancy, when the fact of pregnancy existing is unlikely to be

overlooked. Exceptionally, and this is especially likely where the case is one of central placenta prævia, bleeding occurs comparatively early—as in the following case. Here the patient was unaware of the pregnancy.

Mrs. F., age 37, married thirteen years, four children, the last five years ago, no miscarriages, came to me on June 23rd, 1886, with the following history. She was regular till the first week in January when her last proper menstrual period occurred.

At the beginning of February, just when she was expecting her period, she caught a cold, and the period did not come on; she remained in bed, on and off, for two or three weeks. Early in March she had a hæmorrhage lasting five weeks, after that she was a month free from bleeding. Then it came on again, and from that time till she came to me the bleeding continued more or less. Since February she had also suffered from attacks of pain across the lower part of the abdomen. On examination the uterus was found reaching up to the umbilicus; bleeding was still going on in small quantity. The patient was anæmic; and, looking at the time bleeding had been in progress, I had no hesitation in advising her to have the cervix dilated. Under an anæsthetic I accordingly dilated the cervix with Hegar's dilators. As soon as I could get my finger in, I felt the placenta over the os; I detached it all round, ruptured the membranes, brought a leg down and completed delivery in an hour and twenty minutes from the time of commencing to dilate the cervix. The uterus was washed out afterwards with iodine water, and vaginal douches of the same were used twice a day for a week after. The patient never had a bad symptom.

Extra-uterine gestation.—Bleeding in connection with extra-uterine gestation is marked rather by *irregularity* than by profuseness. A common history in cases of tubal gestation (the commonest variety of extra-uterine gestation) before rupture of the gestation sac, is that the patient misses a period, and goes two or three weeks over her time, and then a hæmorrhage comes on, during which a decidual cast of the uterine cavity may be passed.

Such a history as that, especially if the patient had also had attacks of pain in one or other iliac region, would raise a presumption in favour of the case being one of extra-uterine pregnancy; and some approach to certainty in the diagnosis would be reached if the physical examination discovered a tense, elastic, more or less fixed swelling at one side of the uterus, the size of a hen's egg. It should be mentioned that some cases of extra-uterine pregnancy are attended, like ordinary pregnancy, by amenorrhœa throughout. In a case of interstitial gestation that came under my care at the hospital, the patient thought she was five months advanced in an ordinary pregnancy, and had seen nothing for five months. Then rupture of the sac occurred with a fatal result.

Malignant disease of the cervix complicating pregnancy.—It is important to bear in mind the not unfrequent association of these conditions. Otherwise during the early months the pregnancy is very likely to be overlooked. When a woman with malignant disease of the cervix says she has been bleeding for more than twelve months (as in a case which I remember where the patient was four months pregnant) one is apt to forget that she may be pregnant. A careful bimanual estimation of the size of the uterus as a routine method, in every case where any vaginal examination is made at all, is the best safe-guard against overlooking early pregnancy, in this and other cases.

Molar Pregnancy.—There are two varieties of mole:—

1. The vesicular or hydatidiform mole.
2. The blood-mole, and its later stage—the fleshy mole.

1. *The vesicular mole.*—This is produced by a cystic

degeneration of the chorion villi. Among the symptoms it gives rise to is bleeding. The patient has a red discharge, with white cysts in it, varying in size from that of a grape downwards. The presence of these cysts is the only thing by which an absolute diagnosis can be made; another point to which attention must be paid is, that the uterus is larger than would correspond to the supposed month of pregnancy.

Apart from the presence of the characteristic cysts, however, in any particular case where the size of the uterus on examination is greater than corresponds to the supposed period of pregnancy, it is much more likely that the patient is "out in her count" than that she has a vesicular mole.

2. *The blood-mole and fleshy mole.*—These are produced by blood finding its way between the layers of the membranes of the ovum—between the vera and reflexa, or the reflexa and chorion, or between the chorion and amnion. If the mole is expelled while the blood-clot is comparatively fresh, it is called a "*blood-mole.*" If not discharged till the blood-clot has become tough, and partially decolorised, it is called a "*fleshy mole.*"

A fleshy mole is usually the size and shape of an orange; on bisecting it, it is found to have a central cavity lined by the amnion, this is raised up into irregular projections by the clot underneath. The fœtus may either have disappeared, or be recognisable as a little body, an inch or less long, attached by a short stalk (the umbilical cord) to some part of the amniotic surface. The wall of the mole is about an inch thick, and is made up of the layers of the membranes with blood-clot, more or less altered, between them.

It is not always that a mole in utero gives rise to

hæmorrhage spread over any considerable period. I remember a case where a patient had not menstruated for seven months, and she thought she must be seven months pregnant. She had had some yellow discharge for two months. On examination the uterus was found to be of the size corresponding to the beginning of the fourth month of pregnancy. A few weeks later she passed a fleshy mole the size of an orange, its expulsion was only preceded by bleeding for a few hours, as in an ordinary abortion. Not unfrequently, however, the presence of a mole gives rise to irregular hæmorrhages, and if the mole is decomposing, the discharge is offensive.

Now as to diagnosis: whereas in the vesicular mole the size of the uterus is greater than corresponds to the supposed period of pregnancy; in the case of the fleshy mole, the size of the uterus is less, as in the case just recorded, where a woman who thought she was seven months pregnant had a uterus only the size of the fourth month. Again, examining such a case at intervals, *e.g.*, every fortnight, for a few weeks would show that the size of the uterus was stationary.

Placental polypus.—Bleeding dating from a particular confinement may be due to some portion of the placenta having been retained, the normal involution of the uterus being thereby interfered with. Layers of fibrin are deposited on the portion of placenta retained, and ultimately a sort of polypus is formed, which on examination is often to be felt presenting at the os uteri. This polypus is sometimes called also "*fibrinous*" polypus, but a fibrinous polypus may originate apart from pregnancy. I have known it develope on the slight irregular projection left in utero after the removal of a fibroid polypus with the écraseur.

II. Bleeding not Distinctly Connected with Pregnancy or Labour.

Malignant disease of the cervix uteri.—The commonest cause of bleeding in this category is malignant disease of the cervix uteri; in these cases careful enquiry will usually elicit that, besides periodical excessive losses, there is also more or less constant discharge stained with blood between the periodical losses. The patient rarely goes many days without seeing some red in the vaginal discharge.

Bleeding occurring some years after the menopause is almost certain to be due to malignant disease.

Fibroid tumours and Fibroid polypi.—These are another common cause of excessive bleeding. The interstitial and sub-mucous fibroids and fibroid polypi producing the most bleeding, and the sub-peritoneal the least, often none at all. Fibroid tumours range from the size of a pea up to masses weighing several pounds, as large as, or larger than, the pregnant uterus at term. A common size for fibroid polypi is that of a hen's egg, or an orange; they may, however, be much larger, or much smaller.

Mucous polypi grow from the mucous membrane of the cervix or body of the uterus. They are much smaller than fibroid polypi, a maximum size for a mucous polypus would be that of a large strawberry; an average one is the size, and somewhat the shape, of a small raisin.

Menorrhagia of puberty and of the menopause.—The time when the menstrual function is being established (puberty), and the time when the menstrual function is about to cease altogether, are both periods when excessive losses of blood are common, apart from any discoverable organic disease, local or general.

Vascular caruncle of the urethra.—This is another common cause of slight losses of blood at irregular times. Another much rarer disease of the urethra, malignant disease beginning round the orifice of the urethra, is also a cause of slight bleedings. If the patient happen also to have a yellow or white vaginal discharge, her account of it will be that there are streaks of red in the discharge from time to time.

Foreign bodies in the vagina (pessaries, pieces of sponge, hair-pins, etc.) may cause a more or less red (and often a more or less offensive) vaginal discharge. The bleeding comes in these cases from ulcerations of the vaginal mucous membrane, resulting from the pressure or irritation of the foreign body.

Excessive and irregular losses soon after marriage are not uncommon. The patient usually becomes regular spontaneously, as she becomes more accustomed to married life.

Over-lactation is another cause of excessive bleeding.

Hæmorrhage due to general venous congestion from disease of the heart, or liver.—It is only very rarely that uterine hæmorrhage can be satisfactorily traced to such causes.

Ovarian tumours.—More commonly the disturbance of menstruation caused by the development of ovarian tumours is in the direction of amenorrhœa, the intervals between the periods being lengthened, and the loss on each occasion less than formerly. Exceptionally, the growth of an ovarian tumour is attended with menorrhagia, or metrorrhagia.

Endometritis of the body of the uterus.—This is another cause of excessive loss of blood. The condition, however, is one not well understood, and it is not easy to be certain of its presence in actual practice. Points to be attended to as presumably indicating endometritis of the body of the uterus are, slight increase of the size

of the body ascertained on bimanual examination, tenderness of the body, and great tenderness on passing the sound. There is a yellow discharge from the os uteri, but this, of course, is also found in inflammation limited to the cervical mucous membrane, a far commoner affection.

It is not to be thought that endometritis of the body of the uterus is not a real disease, what is meant is, that in actual clinical work it is comparatively rare to be able to isolate it as *the* cause of the patient's symptoms. A villous condition of the mucous membrane of the body of the uterus has been termed *villous endometritis*, and this variety is especially likely to be a cause of bleeding.

Differential Diagnosis of the Various Affections Causing Bleeding.

Here only some remarks will be made on the general principles to be followed in forming an opinion in such cases.

In the first place, *always examine the abdomen*, in these as in all other gynæcological cases. If any tumour exist there, keep the possibility of pregnancy in mind, manipulate and ascertain if it has the feeling of the pregnant uterus, particularly noticing if the tumour hardens during manipulation. Listen over it at various parts, and determine whether the uterine souffle, or the fœtal heart-sounds, can be heard at any part of it, or not. Observe the condition of the external genitals, whether congested, blueish, and very moist as in pregnancy, or not; on vaginal examination, notice whether the cervix is hard or soft, and above all carefully employ the bimanual method of examination to ascertain the size, shape, and consistence of the body of the uterus.

In fact, in all cases in the first instance, consider the question of pregnancy, and endeavour to accumulate proof either of its presence, or absence; the latter conclusion will only be justified if you are certain that the uterus, as estimated bimanually, is not the least bit increased in size.

If pregnancy has been excluded, consider the various causes of bleeding not distinctly connected with pregnancy given above. Some of them are diagnosed by inspection, *e.g.*, vascular caruncle, or malignant disease of the external parts, others, such as foreign bodies, or polypi in the vagina, are detected at once by the examining finger, as also is malignant disease of the cervix uteri, if at all advanced.

The bimanual exploration of the regions at the sides of the uterus will show whether small ovarian tumours are present. The speculum will aid in settling whether the bleeding be due to some condition of the vaginal portion of the cervix, as for instance, malignant disease of the cervix in an early stage, and affecting the region round the os uteri. If neither inspection of the external parts, nor the vaginal examination, nor the bimanual examination, discover any sufficient cause for the bleeding, it will remain for consideration whether the cause is some condition in the cavity of the uterus itself; this can only be positively ascertained by dilating the cervix, and exploring the cavity of the uterus with the finger. The age of the patient should also be considered, if no local condition to account for bleeding has been discovered, as to whether it may be accounted for by the approach of the menopause.

It need hardly be said that in young, unmarried women, if nothing is found on examination of the abdomen, medicinal treatment should be fully tried before making any local examination.

- Primary post-partum hæmorrhage
  - Secondary post-partum hæmorrhage
    - Too early getting up after delivery, &c.
    - Mental excitement.
    - Subinvolution & its causes.
- Accidental hæmorrhage
  - Placenta prævia.
- Rupture of varicose veins
  - Molar pregnancy
    - Vesicular mole.
    - Blood mole—Fleshy mole.
- Cancer of cervix complicating pregnancy
- Extra-uterine pregnancy
  - Abortion or miscarriage
    - Threatened.
    - Inevitable.
    - Missed.
    - Incomplete.

HÆMORRHAGES CONNECTED WITH PREGNANCY.

- Some cases of pelvic inflammation
  - From ulcers of vagina in cases of prolapse.
- Hæmorrhagic diathesis
  - Corporeal endometritis.
- Diseases of heart and liver
  - Stimulus of recent marriage.
- Inversion of the uterus
  - Epoch
    - Puberty.
    - Menopause.
- Ovarian tumours
  - Mucous polypi of the uterus.
- Vascular caruncle
  - Over-lactation.
- Fibroid tumours of uterus
- Foreign bodies in the vagina
  - Malignant Disease of
    - The uterus
      - Of the body.
      - Of the cervix.
    - The vagina.
    - The vulva.

HÆMORRHAGES NOT CONNECTED WITH PREGNANCY.

Treatment.—From a consideration of the various causes of bleeding that have been enumerated, it will be evident that the treatment will depend on the cause. Here it is only intended to mention the management of cases where, so far as can be ascertained, there is no local organic disease, and where consequently no *special* local treatment is required. The menorrhagia of puberty and of the menopause are examples of such cases.

If the bleeding is at all considerable, rest in bed should be advised. Vaginal douches of hot water (as hot as the patient can bear it) should be given three or four times a day. For medicine, some preparation of ergot should be given; we may choose either ergotin (gr. ii.-v., in the form of pill, three times a day) or the liq. ergot. ammon. (Martindale) (ɱ xx. three times a day) or the ext. ergot. liq. B.P. (ʒ ss three times a day). It is often beneficial to give bromide of potassium or ammonium in scruple doses as well, particularly in the menorrhagia of the menopause.

Other drugs from which benefit may be expected are nux vomica, and quinine.

CHAPTER IV.

Dysmenorrhœa.

The patient complains of pain occurring at her menstrual periods. The pain may begin a few days before the period, or may only occur during the flow, or even only occur after the cessation of the flow. Usually the pain is not so distinctly limited as to occur only *before*, *during*, or *after* the flow. Enquiry should be made as to when the pain is at its worst.

Cases of dysmenorrhœa may be divided into three groups:—

I. *Cases where a careful local examination discovers no abnormality whatever in the uterus or its appendages, and where also there is no gross abnormality in the process of menstruation itself, such as the passage of a cast of the uterus or of pieces of membrane.* (N.B. Flexions of the uterus are not counted as abnormalities). The dysmenorrhœa in this group of cases is known as *spasmodic*, and also as *neuralgic* dysmenorrhœa.

II. *Cases where some abnormality is detected on physical examination.* This group includes, among others, the cases known as *inflammatory*, or *congestive*, dysmenorrhœa.

III. *Cases where some gross abnormality exists in the process of menstruation itself*, the only known instance of this being the passage of a membranous cast of the uterus, either in one piece, or broken up into several pieces—*membranous dysmenorrhœa.*

Diagnosis.—In considering into which group we must put any particular case of dysmenorrhœa, it will be easy to decide at once whether it belongs to Group III. or not—it is only important not to mistake a case of membranous dysmenorrhœa for an early abortion; the difficulty will be to decide whether it should go into Group I. or Group II.

If the most careful physical examination can detect no abnormality, the case must be classed in Group I. If, on the other hand, something abnormal is discovered, then the case goes into Group II. It will be evident that we cannot ever be *certain* that a case belongs to Group I., the most we can affirm is that our examination discovers nothing abnormal. Physical examination, even in the most skilled hands, is far from enabling us to discover every morbid condition during life that a *post-mortem* examination would detect. "Many cases have now been recorded where abdominal section showed the Fallopian tubes to be dilated with pus to the size of coils of small intestine, although the most careful bimanual had failed to detect their presence" (Hart and Barbour). And if so marked a degree of disease can escape detection by physical examination, we may be sure that morbid conditions of a less extensive character are frequently overlooked.

Filmy and filamentous adhesions, the remains of a previous attack of pelvic peritonitis, are especially to be thought of in connection with this point. I remember a case where the right ovary was enlarged and prolapsed, lying at the bottom of Douglas's pouch; on examining the patient under an anæsthetic, this ovary was so freely movable, that it could be chased from the situation mentioned to the neighbourhood of the internal abdominal ring without any difficulty at all.

Yet at the operation, undertaken to remove it, I found numerous adhesions of a stringy kind at various parts of its surface. It would certainly be going too far to assume that the presence of these adhesions had no share in causing the patient's symptoms.

To sum up:—The probability is that with the progress of knowledge, Group II. (cases of dysmenorrhœa associated with abnormal conditions) will be steadily increased at the expense of Group I.

For the present we must be content to take it, that cases of dysmenorrhœa exist apart from any physical abnormality, but we ought to regard such cases with suspicion, remembering that physical abnormalities may be present, though we cannot discover them.

The chief abnormalities alluded to, which at once place the case in Group II., are:—

Imperfectly developed uterus.

Interstitial inflammation of the uterus—metritis.

Pelvic inflammation (pelvic peritonitis and pelvic cellulitis), evidenced by feeling the mobility of the uterus impaired, perhaps so much so that the uterus is completely fixed, and by the presence of lumps in various parts of the pelvis; if at the sides, in the posterior quarters of the pelvis, such lumps are often really made up of distended Fallopian tubes, matted by adhesions to the ovaries and adjoining parts. (This subject will be considered in detail under Pelvic Inflammation).

Fibroid tumours.

Retroflexion, or retroversion, with incarceration of the body of the uterus in Douglas's pouch.

It remains to consider the theories of dysmenorrhœa, in other words, how we are to explain the fact that the patient has this pain; as regards Group I., so long as we are obliged to retain it, we really know nothing of

the causation of the pain. The mind can perhaps best realise the position of cases in this group by considering it as an affection analogous to bronchial asthma (spasm of the muscles of the bronchial tubes), as suggested by Dr. Matthews Duncan.

Passing on to Group II. (which comprises far the greatest number of cases of dysmenorrhœa), it may be premised that it may be taken as certain :—

1. That uterine contractions take place during the process of menstruation.

2. That at the menstrual period there is an afflux of blood to the reproductive organs, uterus and ovaries particularly, and that this afflux of blood causes these organs to be distinctly increased in size at this time.

Coming now to theory, it may be suggested that any condition which will prevent the uterus and ovaries readily accommodating this increased amount of blood sent to them, and any condition which will interfere with the alterations, in position and size, that the uterus undergoes during its contractions, will afford an intelligible explanation of the pain.

To take an example, if there is interstitial inflammation of the uterus (metritis), it may be taken that the excess of blood endeavouring to find its way into the vessels of the uterus at the menstrual period, will be less readily accommodated than if the tissues of the uterus were healthy. The uterine tissue being in a state of disease cannot easily permit the increase of size and change of shape needed to accommodate the excess of blood coming to it at the menstrual period. This view, so far as metritis is concerned, is not very different from the theory, modified from Fritsch, put forward by Hart and Barbour; viz., that the pain is due to the flushing of a diseased tissue with blood.

But I think that we must not only regard interstitial changes in the uterus as offering resistance to the afflux of blood, and so accounting for the pain; conditions of equal importance outside the uterus, and affecting the ovaries and Fallopian tubes, also offer resistance to the afflux of blood, and take their share in producing pain. More particularly, adhesions between the uterus and adjoining parts, or between the ovaries and the Fallopian tubes, require to be mentioned as causes acting in this direction. For the sake of argument take an extreme case, where there are dense adhesions, not only between the peritoneal coat of the uterus, the ovaries, and Fallopian tubes, but also running on to the walls of the pelvic cavity, matting the organs firmly together, and binding them also to the pelvic walls.

Imagine now that the vessels of the uterus and ovaries are suddenly called upon to accommodate a much larger quantity of blood than they have previously held. In order to do so the uterus and ovaries must swell up, so as to be obviously larger than before, and in doing so they will necessarily undergo some alteration in position, but the adhesions mentioned will prevent the changes taking place as they should do. The resistance offered to these changes of size and position, that the uterus and ovaries naturally ought to undergo at the menstrual period, may account for the pain.

Adhesions will also interfere with the contractions of the uterus that occur at the menstrual period, and some of the pain will be due to this interference. Similarly it is probable that interstitial inflammation of the uterus or ovaries by offering resistance to the menstrual afflux of blood will cause pain.

We may then state this theory in general terms as follows:—

Any condition, either in the tissues themselves of the uterus or ovaries, or external to them, which renders these organs less able to undergo the changes of size, shape, and position, necessary to accommodate the increased supply of blood coming to them at the menstrual periods, will be a cause of dysmenorrhœa, as also will be any condition impeding the contractions of the uterus that occur at the periods. Inflammation of the tissues of the uterus (metritis), and similar inflammation of the ovaries will be conditions in the former category; pelvic peritonitis producing adhesions in various parts of the pelvis is the cause referred to as external to the uterus and ovaries. Either metritis, or pelvic peritonitis producing adhesions round the uterus, are likely also to impede the contractions of the uterus, and so in that way cause pain.

Clinically we often meet with cases of dysmenorrhœa dating from a particular confinement, previous to which there had been no pain at the menstrual periods. We usually find evidence of old pelvic inflammation in these cases, thickening round the uterus, diminished mobility of the uterus, and so on. It is evident that such cases are explained by the theory just above referred to.

The presence of a growing fibroid tumour of the uterus, as is well known, is often associated with dysmenorrhœa; this might be explained partly on the view that the presence of a fibroid tumour in the wall of the uterus interferes with the uterine contractions, acting indeed somewhat like a foreign body, and partly on the view that a growing fibroid is a cause of an excess of blood, over and above what would normally come to the uterus at each period, coming to it, and that this excess cannot easily be accommodated, and hence we have pain.

As regards Group III., cases of membranous dysmenorrhœa, it is probable that the pain experienced is caused by the excessive uterine contractions necessary to expel the membrane, or fragments of it.

As to the obstructive theory of dysmenorrhœa, which

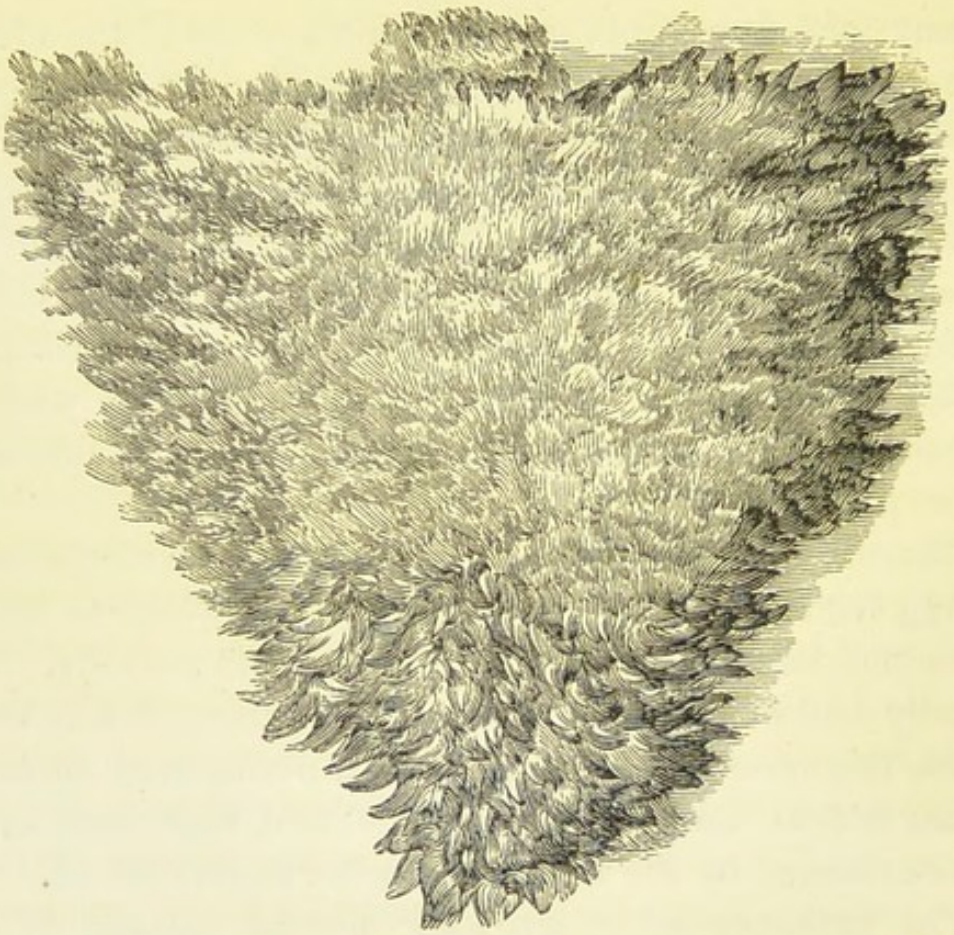

FIG. 20.—A Dysmenorrhœal Membrane as seen under water (Sir J. Y. Simpson).

Not to be mistaken for an early ovum. On microscopical examination no chorion villi, or other distinctive structures met with in a true ovum, would be discovered.

was formerly put forward as explaining most cases of dysmenorrhœa, it may be said that it is now to a great extent discredited by the best authorities. The theory was that, either on account of congenital stricture at the external or internal os uteri, or on account

of flexion, an obstruction existed to the flow of blood out of the uterus, and that consequently excessive and painful contractions were excited. Narrowing of the external os is met with, but it is not at all common; that stricture ever occurs at the internal os has not been proved.

As regards flexion producing obstruction, we may also say that it has not been proved that it does so, or at least only in the slightest degree; on the other hand it has been shown in many of the worst cases of dysmenorrhœa, by actually passing the sound at the time that no obstruction existed.

The present position of the question may be summed up as follows: that in some cases, as for instance, actual stricture at the external os, a slight degree of dysmenorrhœa may be caused by the obstruction met with; and that also where shreds of membrane, or a cast of the uterus, have to be passed, the difficulty in their passing out causes painful, but not very painful, contractions of the uterus. But that such cases of dysmenorrhœa are not bad cases, not the cases where a woman is completely laid up at each period from the intense agony suffered. Further, that among cases of dysmenorrhœa as a whole, cases of narrow external os, and cases of membranous dsymenorrhœa, are rarely met with; and that in some cases where there is narrow external os, "pin-hole os," and in others where a membranous cast is thrown off, there is no dysmenorrhœa at all.

Treatment.—In slight cases the patient should be advised to avoid over-exertion, and any exposure to chill at the menstrual periods. Care should be taken that the bowels are kept acting a little more freely than usual, when the menstrual period is at hand. Putting

the feet in hot water with mustard in it, and hot drinks at bed-time are also useful. For medicine we rely chiefly on cannabis indica (from ½ to 1 grain of the extract in pill) thrice daily for a few days before the period, and during it. Bromide of potassium and aromatic spirits of ammonia are also useful, gr. x. to xx. of the former, with ♏ xx. of the latter, thrice daily at the periods, at the same time doing all we can between the periods to improve the patient's general health by exercise, tonics, etc.

Whether cases are slight, or severe, the line of treatment sketched out is that to be fully tried first, more especially for obvious reasons in unmarried women. After it has been tried and failed, the next thing to think of is dilatation of the cervix by bougies. Starting from the size (No. 9) that will normally pass (Matthews Duncan), or a smaller one, if that will not pass, the bougies are passed, one after the other, going up two or three sizes on each occasion, the dilatations being continued at intervals of a few days. A simpler plan is to anæsthetise the patient, and dilate on one occasion as much as seems desirable, say up to No. 18 of Matthews Duncan's bougies, the instruments usually employed.* If necessary the cervix is fixed with a tenaculum, or volsella, during the dilatation. This measure must always be adopted before deciding that the ordinary sound will not pass the external os in any particular case. The treatment by dilatation is suitable for the cases in Group I., where there are no physical signs, and for cases of narrow external os. Sometimes the dilatation may be completed at one sitting without an anæs-

* Hegar's dilators are equally suitable for the purpose. Strict antiseptic principles should be observed in this, as in all other operations on the cervix.

thetic. In the cases associated with the presence of inflammatory conditions in the pelvis, as evidenced by feeling lumps, or thick firm bands, in the neighbourhood of the uterus, and by the mobility of the uterus being less than normal, dilatation of the cervix is of no use.

The choice here lies between being content with palliative treatment, and entertaining the question of removing the uterine appendages; it need hardly be said that the consequences—sterility—and the risks of the operation should be fairly laid before the patient; particularly she should be asked if she would not rather put up with the pain, than have an operation, to which some risk attaches, done to relieve it. This line of treatment is only indicated in really bad cases, when palliative treatment has failed, and where distinct physical signs, such as lumps at the sides of the uterus, are present, and lastly, where the operation is to be done by a specialist skilled in abdominal surgery.

It is possible that a sort of "massage" of the pelvic organs may give relief, where there are adhesions of only moderate strength around the uterus limiting its mobility. Manipulation under an anæsthetic by breaking and stretching some of the adhesions may give relief; this treatment would be unsuitable, and even dangerous, if there were distinct swellings to be felt at the sides of the uterus, as these might be Fallopian tubes distended with pus, or small suppurating ovarian cysts, which energetic manipulation might rupture.

As to treatment of the cases in Group III., it is to be remembered, that it is not always that the passage of casts of the uterus, or pieces of membrane, gives rise to any dysmenorrhœa. When there really is pain in these cases we know no satisfactory treatment. Dilata-

tion with bougies, as already described, may be tried, if the other conditions present do not contra-indicate it.

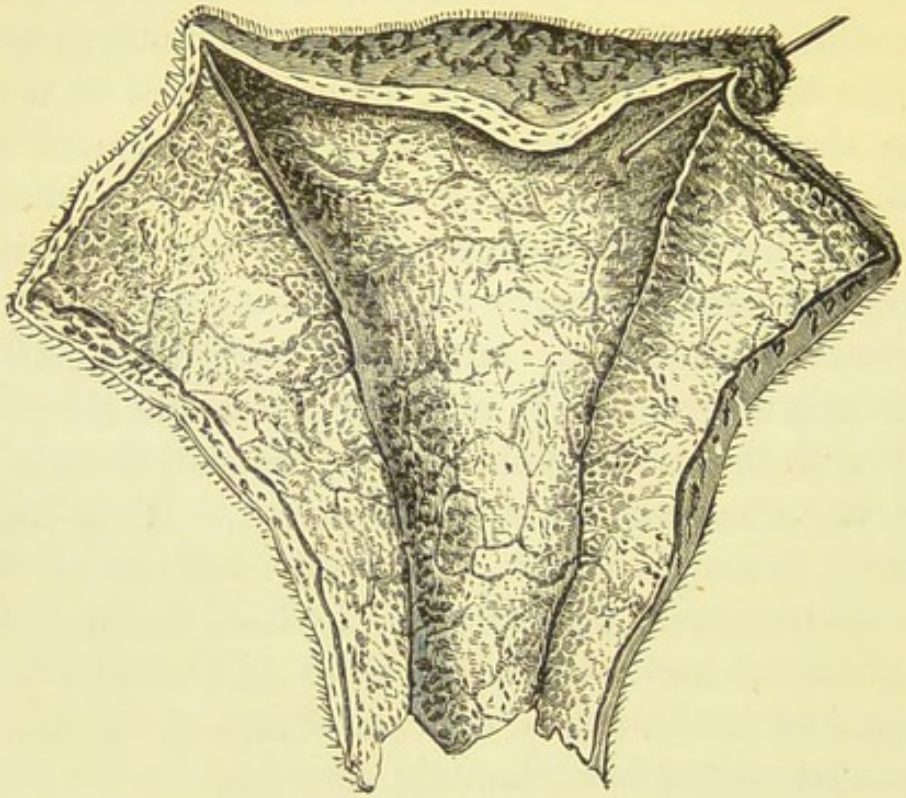

FIG. 21.—A Dysmenorrhœal Membrane laid open (Coste).

If a portion of such a membrane is placed on a slide, and looked at with a low power under the microscope, it will be found to be perforated with numerous small holes corresponding to the openings of the uterine glands.

CHAPTER V.

On Diseases of the Pudendum.

Vulvitis.

Definition.—An inflammation of the labia majora, and parts lying between them, the anterior limit of the inflammation being the Mons Veneris, and the posterior limit, the fourchette (*i.e.*, the anterior margin of the perineum).

Suppurative vulvitis, without any vaginitis, is the commonest disease of the genital organs met with in children. The mother brings the child on account of its having "a discharge from the private parts," and, as is well known, this may have raised a suspicion, usually without any foundation in fact, of the child having been criminally assaulted.

There is usually pain in passing water, owing to the orifice of the urethra being involved. On inspection, the surface of the external genitals is found to be redder than normal, and secreting pus. The parts are very tender. Occasionally more or less extensive ulceration of the inflamed surface is seen. The ulcers are shallow, well defined, and vary in size from that of a florin downwards.

In children, it is important to remember that the vagina is not implicated in the inflammation, or at most only the very entrance of it—there is vulvitis without

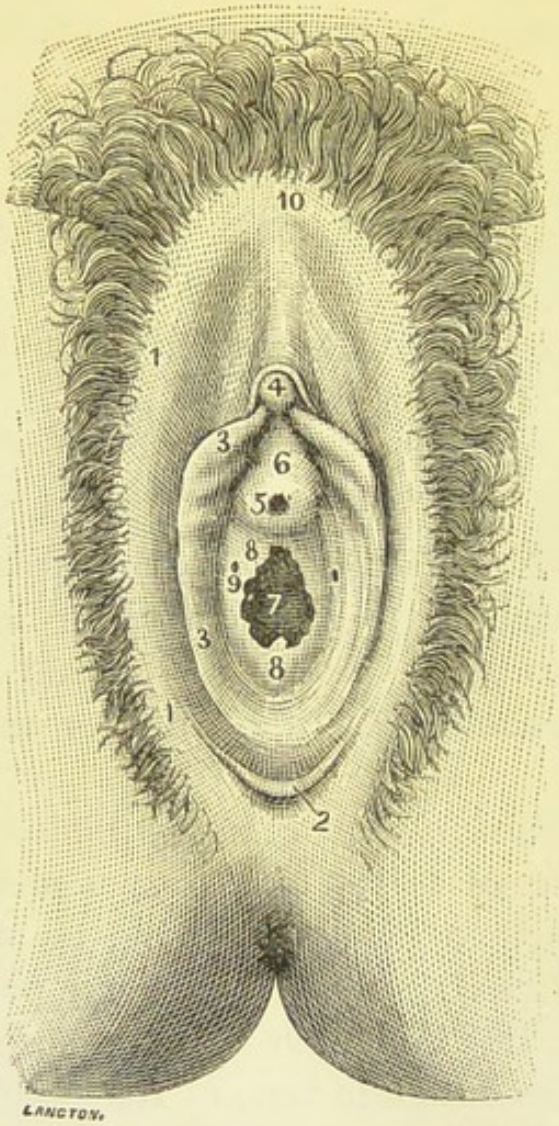

FIG. 22.—External Genitals in a Virgin.

1 1. Right labium majus; 2. The fourchette; 3 3. Right labium minus, or nympha; 4. Glans clitoridis; 5. Urethral orifice; 6. Vestibule (a triangular space, the sides of the triangle formed by the nymphæ, the apex by the clitoris, and the base by a transverse line, which is bisected by the urethral orifice); 7. Orifice of the vagina; 8 8. The hymen, running in this case all round the vaginal orifice, but still broader posteriorly; 9. Opening of the duct of Bartholin's gland on the right side; this is represented too far forward, it should be about as far back as the posterior 3 in the figure; 10. Mons Veneris (Thorburn).

vaginitis. This may be shewn by first wiping away all the pus from the surface, and then with the little finger in the rectum, pressing downwards and forwards, and observing that no pus can be squeezed out of the vagina.

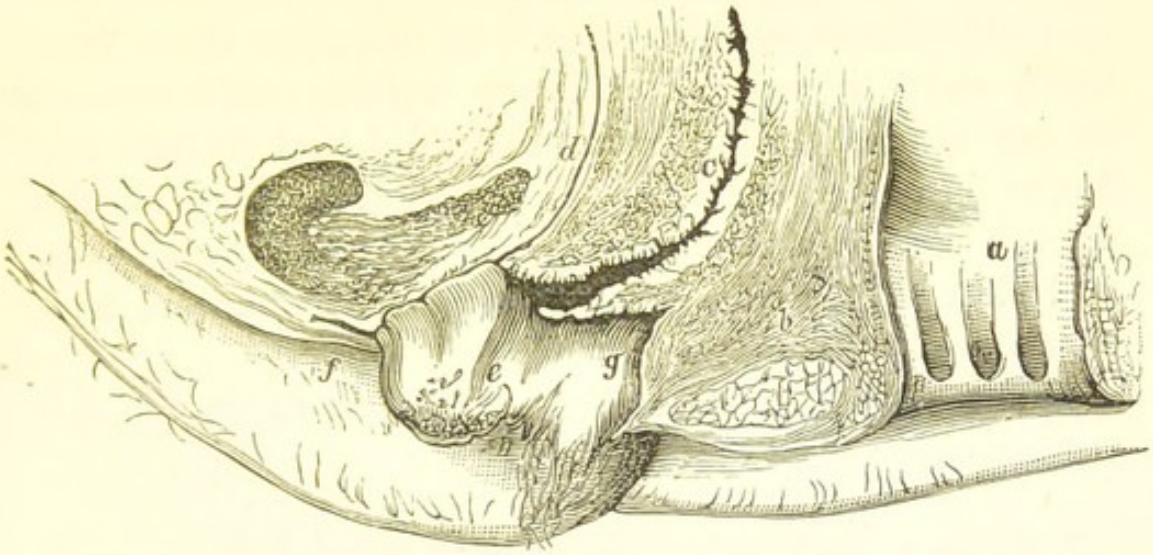

FIG. 23.—Vertical Antero-posterior Mesial Section of the External Genitals (Henle).

a. Rectum ; *b*. Perineal body ; *c*. Vagina ; *d*. Urethra ; *e*. Labium minus ; *f*. Prepuce of the clitoris ; *g*. The fossa navicularis, bounded in front by the hymen and behind by the fourchette (the anterior margin of the perineum).

Causation in Children.—The fact that almost invariably the hymen is seen to be perfect, and that there are no lacerations of the perineum, sufficiently disposes of the notion that the disorder is the result of an assault. If there were lacerations, the possibility of this would require careful consideration.

Vulvitis may be caused by cold, or by dirt, but not unfrequently it arises without any assignable cause in weakly children. Dr. Matthews Duncan is strongly opposed to accepting the presence of worms as a cause of vulvitis, though it is one commonly given. I have seen one case, where it seemed to me that indirectly the vulvitis was due to the presence of worms in the rectum. The orifice of the vagina was wider than normal, and less perfectly closed by the hymen. In this case there certainly were thread-worms in the rectum, and it seemed to me at least probable that the child had passed her finger into the vagina, in her endeavour to allay the uneasy sensations caused by the worms in the rectum, and that the vulvitis was due to this mechanical irritation.

Diphtheria sometimes affects the vulva, as in the following case :—

E. B., age 7, was brought to the London Hospital on Jan. 22nd. On January 18th, she had fallen over a heap of stones, and hurt herself in the private parts. Next morning her mother noticed that she screamed on passing her water, and that the parts were swollen. On January 20th the child complained of sore throat, and she had a cough. A "few spots" of blood were brought up with the cough ; on examination (January 22nd) the external genitals were found to be swollen, and the whole surface of the vulva was covered with false membrane of a greyish-yellow colour. On looking at the throat, the fauces were seen to be covered with false membrane also. The child died rather suddenly on January 28th, after seeming to be going on well.

Causation in adults.—*Suppurative vulvitis* in grown-up people is a part only of an inflammation affecting the vagina as well—there is vaginitis as well as vulvitis. An inflammation of this kind may be caused by gonorrhœa, or by injuries inflicted on the parts during a diffi-

cult labour. In acute cases the labia are enormously swollen, so as to be shining and œdematous, forming a

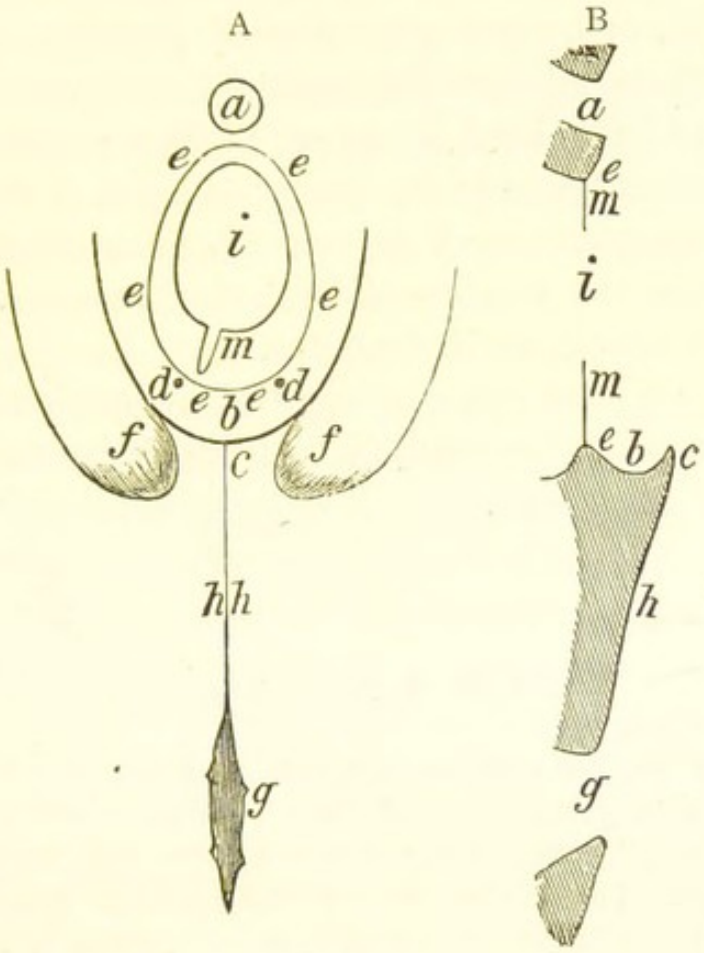

FIG. 24.—Diagram to illustrate the relations of the external genitals. A in front view, B in antero-posterior section (Matthews Duncan).

a. Urethral orifice; *b*. The fossa navicularis; *c*. The fourchette, the anterior margin of the perineum, *h h*; *d d*. The openings of the ducts of Bartholin's glands (sometimes they open rather farther forwards); *e e e e*. Margin of vaginal orifice, internal to which is seen the hymen, broader behind than in front, it has been torn near *m*; *f f*. Posterior extremities of the labia majora, which are not united posteriorly, but merely connected by the perineum; *g*. The anus. The lettering in both figures is the same. The "inevitable" laceration, *i.e.*, the one that occurs in every first labour, extends into the fossa navicularis, *b*, (*see* Chapter on Rupture of the Perineum).

sausage-shaped swelling on each side of the vulvar cleft.

Vulvitis without suppuration.—In these cases the inflammation is characterised by increased redness only (erythema), or by the presence of papules, or vesicles, as well, scattered over the inflamed surface.

Vulvitis of this kind is caused by the passing of irritating discharges over the parts; we get it, therefore, in cases of incontinence of urine; or, apart from incontinence, where the quality of the urine causes it to be unusually irritating, as in diabetes.

In this last case there being also a constitutional predisposition to inflammation of the skin, not only of the vulva, but elsewhere.

Case of Diabetic Vulvitis.

H. T., age 70, six children, the last 27 years ago, came to the London Hospital complaining of great irritation of the private parts, and "throbbing" there. She "does not know how to sit down" on account of it. The present attack has lasted a month, but she suffered from the same thing four years ago, when it lasted three months.

She is very thirsty, and drinks a great deal of water. Has been losing flesh for the last twelve months. She has scalding on passing water, and has to get up twice at night to pass it.

Patient is very fat; about a hand's breadth above the pubes the abdominal wall is thrown into a transverse fold; where the skin-surfaces are in contact there is a simple inflammation of the skin, its surface being red and moist, but there are no vesicles or papules on the affected surface. The labia majora are hypertrophied, the whole of the external genitals are purplish-red, and raw looking. In the fold between the labia and the thighs on each side, and in the fold of the nates, extending to about three inches behind the anus, there is similar inflammation of the skin.

Urine, sp. gr. 1040, contains no albumen, but a good deal of sugar.

Again, the discharge from the vagina in cases of cancer, uterine or vaginal, the presence of pediculi pubis, or any other source of itching causing the patient to scratch the parts, will set up the sort of vulvitis we are considering.

Treatment.—In children it is sufficient to have the inflamed surface bathed night and morning with weak lead lotion, and the mother should be instructed to separate the labia, so that the lotion may reach the whole area affected. Sitting in a hot bath for half an hour, two or three times a week, is also useful. If the child has thread worms, these should be got rid of by rectal injections of salt and water. The general health should be improved as much as possible by tonics, cod-liver oil, and proper diet. When ulcers are present, an effectual, but rather painful plan, is to rub them over with solid nitrate of silver or sulphate of copper.

In adults suppurative vulvitis requires similar treatment, but as vaginitis is also present, vaginal injections must be used (see VAGINITIS). In the non-suppurative vulvitis of adults, treatment will depend on the cause. Pediculi may be got rid of by smearing the parts well with terebene oil (1-6), or washing the vulva with corrosive sublimate lotion (1-1000). When the cause is incontinence of urine, or the discharge from malignant disease, the treatment of any co-existing vulvitis is a very minor matter, but soothing applications, such as lead lotion, zinc ointment, etc., may be used, if treatment seems desirable. The urine should always be tested for sugar in cases of non-suppurative vulvitis occurring in adults.

Vascular Caruncle of the Urethra.

This is a bright red body, either sessile, or more or less distinctly pedunculated, attached just within the margin of the urethral orifice, but projecting beyond it. Sometimes it does not project, owing to being some distance up the urethra, and it will then not be readily discovered by mere inspection. In size it varies from that of a pin's head to that of a small grape; on an average, it is about the size of a pea. There may be two or three of various sizes present in the same case.

Vascular caruncle is more common in women accustomed to sexual intercourse than in virgins; there is often some urethritis present, as evidenced by a discharge from the urethra.

The **symptoms** it causes are:—

Frequent desire to pass water, and pain in passing it. (It is noticed in some cases that the pain on passing water only occurs at the menstrual periods, that is, at a time when the pelvic viscera are specially congested).

Pain on connection (dyspareunia).

Sometimes a little bleeding from the surface of the caruncle.

Occasionally one accidentally discovers a caruncle during an examination that has not caused any symptoms.

Structure.—A vascular caruncle is composed of capillaries, nerves, and a small quantity of connective tissue.

Treatment.—The best treatment is to burn it away with Paquelin's cautery.

No general anæsthetic need be used unless the patient is nervous; if the caruncle and surrounding parts are

painted over with twenty per cent. solution of cocaine, the cautery can be applied after an interval of five minutes, without causing much pain.

Sometimes these growths recur after removal.

Labial Abscess and Cysts of the Pudendum.

These may conveniently be considered together. The glands of Bartholin are two in number, and lie one on each side of the middle line, the situation of each being

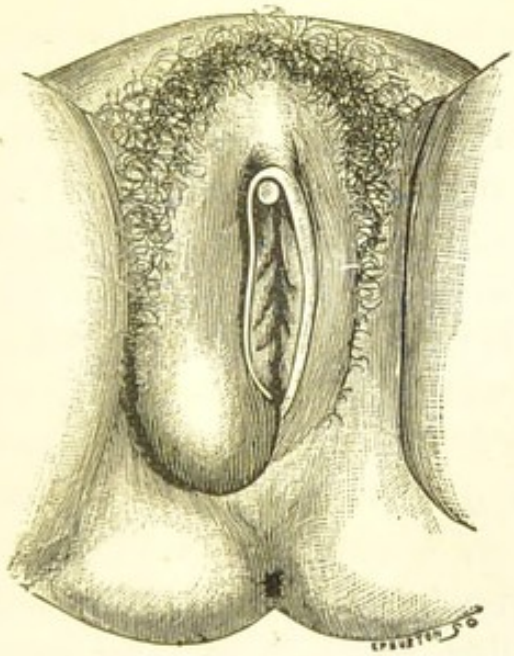

Fig. 25.—Abscess of the duct of Bartholin's gland on the right side (Huguier).

The drawing might also stand for a cyst of the duct, which causes a swelling of similar size and position.

marked by taking a point on the skin surface midway between the posterior extremity of the labium majus and the adjoining tuber ischii (Matthews Duncan). The duct is rather more than half an inch long, and runs forwards and inwards to open either in the fossa navi-

cularis (the space between the anterior margin of the perineum and the attachment of the hymen) or rather further forwards, in the angle made by the attachment of the hymen with the adjoining part of the vulva. The commonest abscess met with in the pudendum is an abscess of the duct just mentioned, and similarly the commonest cyst of the vulva is a retention cyst of the same duct.

Labial abscess.—Inflammation spreads from the vulva along the duct. The orifice of the duct may become occluded, or remain open; even if it remains open, it does not allow a sufficiently free escape of the pus, and consequently the part of the duct behind the orifice dilates. The swelling so formed is commonly as large as a plover's egg, and occupies the posterior half of the labium majus on the affected side (Fig. 25). Such abscesses are often a complication of gonorrhœa, but they may arise from a simple, non-gonorrhœal inflammation. If the orifice of the duct is open, pressure on the swelling will cause pus to ooze out.

Labial cysts arise by occlusion of the orifice of the duct, and accumulation of secretion in the duct, which dilates and forms a swelling in the same position as that caused by the labial abscess (posterior half of the labium majus) (Fig. 25). It may be mentioned that in addition to Bartholin's glands, there are smaller glands in the vulva, viz. mucous glands, very numerous in the vestibule, and sebaceous glands, very numerous on both aspects of the nymphæ; it is evident, then, how small retention cysts, either mucous or sebaceous, may originate in these situations.

Treatment.—In the case of an abscess a free incision should be made on the inner aspect of the swelling, and the cavity dressed with a piece of lint

soaked in terebene oil (1-6). In the case of a cyst, a piece the size of a sixpence should be cut out of the wall of the swelling on its inner aspect, and the cavity dressed as before.

In connection with this subject it must be remembered that rare forms of hernia are met with in the vulva. The one which is commonest is a hernia running along the unobliterated canal of Nück, that is, a finger-shaped prolongation of the peritoneum running along the round ligament into the labium majus. The practical point being, that before opening any swelling in the vulva, every care should be taken to make sure that it is not a hernia, *e.g.*, by trying if it can be reduced, by percussion, and so on.

Warts.

Warts are very commonly met with on the vulva and adjacent skin. They are sometimes found on the lower part of the vaginal mucous membrane as well. They may be caused by gonorrhœa, or be only due to dirt. The best treatment is to burn them off with Paquelin's cautery.

Mucous Tubercles.

These are frequently met with, and are invariably of syphilitic origin. They appear as flat, raised patches, more or less circular or oval, of a greyish-red colour and with a moist surface. They occur not only on the vulva but round the anus, as in the male sex. Mucous tubercles are distinguished from warts by the fact that they have no pedicle or any indication of one, no more

pedicle, in fact, than a penny laid flat on the surface of the skin would have. Locally, cleanliness and black-wash will cure them, but as they are only an evidence of syphilis in an active stage, constitutional treatment is necessary.

Ulcers.

It has already been mentioned that extensive superficial ulceration is occasionally noticed on the pudendum in the simple vulvitis of children. In the vulvitis of adults it is not at all uncommon to see more or less ulceration affecting the opposed surfaces of the inflamed labia.

Apart from vulvitis, we may find two, or three, or more ulcers on the inner surface of the labia, or in the fossa navicularis, as a result of secondary, or tertiary syphilis.

The Hymen.

The hymen is usually either:—

(1) Crescentic in shape with the horns of the crescent forwards;

(2) Or circular, and of the same width, or nearly so, all the way round the vaginal orifice.

Rarely:—

(3) It may be cribriform;

(4) Or imperforate;

(5) Or double.

Imperforate hymen (4).—In this condition the vaginal orifice is closed, owing to the hymen taking the form of a complete membrane stretched across it.

Symptoms.—Attention will probably not be called to the abnormality, till the age of puberty.

The girl will then have colicky pains in the hypogastrium every month, but will not "see anything." Ultimately if the case go on, a tumour will appear in the hypogastrium, and the patient may notice that this increases in size every month when she has the pain referred to, and diminishes in the intervals, some of the

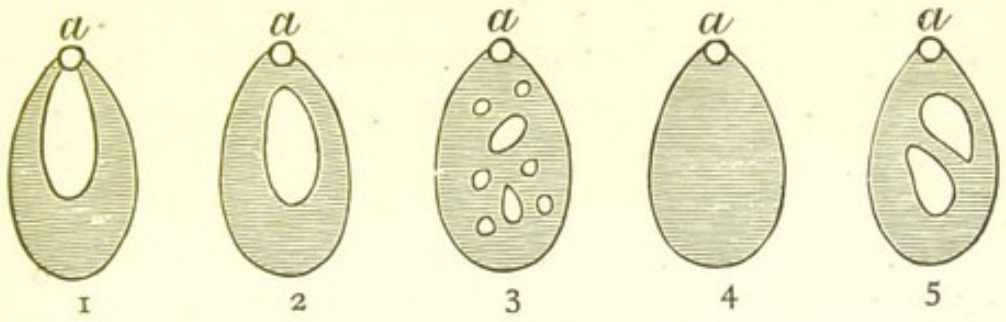

FIG. 26.—Diagrammatic representation of the various forms of hymen.

1. Crescentic form (the commonest); 2. Circular form, nearly as common as 1; 3. Cribriform hymen; 4. Imperforate hymen; 5. Hymen biseptus; 3, 4, 5, are all rare. *a*. The urethral orifice. The shaded part of each figure indicates the hymen.

fluid being re-absorbed. The tumour in the hypogastrium may be due either:—

(1) To the uterus, not increased in size, being perched on the top of the distended vagina, the menstrual fluid only occupying the vagina.

(2) To the uterus itself being dilated by backward pressure, so that the cavity of the uterus and vagina communicate much as they do in the second stage of labour. The retained fluid in this case occupies the vagina and uterus.

If the case go on long enough, the Fallopian tubes may also become dilated.

Diagnosis.—On inspection the hymen is seen to be bulged outwards, having much the appearance of half a purple plum.

Treatment.—It may either be treated by free incision with rapid evacuation, or by aspirating with a fine needle and slow evacuation.

The plan to be adopted depends on whether the uterus is dilated as well as the vagina, or whether the vagina alone is dilated.

In the latter case free incision with the knife, or Paquelin's cautery, into the hymen may be chosen, the blood being allowed to run out without any pressure being made above the pubes.

If the uterus is dilated as well as the vagina, it will be best to draw off a small quantity of the fluid with an aspirator needle, at intervals of a day or two, till the fluid has been nearly all removed, and then to make a free incision into the hymen. The object of this gradual withdrawal of the fluid is to enable the uterus to accommodate itself to its diminishing contents. If rapidly emptied, contractions are set up, some of the fluid, with septic matter from the air, may be forced along the Fallopian tubes into the peritoneum, and death from peritonitis result. Several fatal cases of this kind are recorded.

Fissure of the Vulva—Inflamed Portions of Hymen.

It is not uncommon to see one or more fragments of the hymen inflamed and painful, giving rise to dyspareunia, perhaps so great as to prevent coitus altogether. There may be noticed an unhealed fissure between the fragments of the hymen, or a fissure in the fossa

navicularis, giving rise to the same symptoms. These conditions should be treated at first by sedative lotions, such as dilute lead lotion; should the latter fail to relieve them, then, in the case of inflamed portions of hymen, these should be dissected off under an anæsthetic; in the case of fissure, forcible dilatation of the vaginal orifice with the thumbs of both hands will probably cure it.

Varicose Veins.

These are met with forming a swelling in one, or both, of the labia majora. The condition usually originates during pregnancy. They may be ruptured during labour, or even by slight injuries apart from labour. If the blood escapes only into the connective tissue, we have what is called "*thrombus of the labium;*" during labour the tumour so formed may obstruct the passage of the child, and may, on that account, require to be emptied; otherwise, unless it suppurates, it is best left alone. If, when the veins rupture, there is an external opening, profuse bleeding occurs, which may be fatal unless assistance is obtained promptly.

Adhesion of the Labia Majora.

This is an affection common in infants. The adhesion does not extend forwards so as to occlude the orifice of the urethra. The treatment is to break down the adhesions with the fingers, and direct the mother to separate the labia for some time to come, to prevent them re-uniting.

Hypertrophy.

This may affect the nymphæ, the clitoris, or the labia majora. Hypertrophy of the nymphæ is sometimes congenital, or it may be the result of masturbation. That of the clitoris is usually congenital. Hypertrophy of the labia majora to a moderate extent is common, as a result of chronic inflammation; an extreme degree of hypertrophy, affecting one, or both, of the labia majora so as to form large tumours, occurs in hot countries, and is called elephantiasis.

In some cases hypertrophy of the external genitals seems to be due to late syphilis.

Carcinoma.

Carcinoma of the vulva is much rarer than carcinoma of the cervix, its frequency would rather correspond to that of primary carcinoma of the body of the uterus. It may originate at any part of the vulva. In the following case it began round the urethral orifice:—

E. D., age 49, married, three children, the last fifteen years ago, came to the London Hospital complaining of a lump in the private parts varying in size at different times, also of difficulty and pain in micturition, and some constant pain in the left side, she had had these symptoms for seven weeks.

The catamenia ceased two years ago, but for the last two years she has had a yellow discharge streaked with blood.

Has been getting thinner lately.

On examination, in the situation of the urethral orifice there was an irregularly-shaped ulcerated cavity, admitting the tip of the finger. The walls of the cavity were formed by hard tissue, and induration extended up the anterior vaginal wall a distance of two inches. The surface of the cavity bled easily on touching it. The glands in both groins were enlarged.

Gangrene of the vulva is a rare complication of acute specific fevers in children; and in adults, is a rare complication of puerperal fever.

Fibroid tumours and fibroid polypi of the vulva are described, but are exceedingly rare.

Pruritus of the Vulva.

By this is meant itching of the external genitals.

Etiology.—Sometimes no cause can be discovered to account for it; more frequently it occurs in association with some one of the following conditions:—

1. Pregnancy.
2. Cancer.
3. Vulvitis and vaginitis, particularly the early and late stages of these affections. Even if there was no vulvitis to begin with, scratching the parts, from which, as a rule, the patient cannot refrain, will soon set it up.
4. Diabetes.
5. Pediculi pubis.
6. Threadworms.

Sometimes it only occurs at the menstrual periods. Again, at the menopause it is not an uncommon symptom.

The itching is always worse at night, and it may prevent the patient sleeping.

Treatment.—We try to remove any morbid condition that may be present, for example, vulvitis or vaginitis, pediculi pubis; when no local cause exists to account for the pruritus, or when it is due to some constitutional state, we have only to rely on empirical treatment. This consists partly of internal remedies, and partly of local applications.

The internal remedies that should be tried are:—bromide of potassium in scruple doses, and belladonna, best given as recommended by Dr. West in the form of pill with camphor (Ext. Belladonna, gr. ½, Camphor, gr. iij., M. ft. pil. j.), if dryness of the throat occurs, the dose of the belladonna is reduced.

Local applications.—Some one of the following may be tried:—

1. Chloroform and olive oil (℥ j. to ℥ j.).
2. A lotion containing acetate of morphia (gr. ij. to ℥ i.).
3. Borax lotion (℈ j. to ℥ j.).
4. Lead and opium lotion (4 grains of extract of opium to ℥ j. of dilute lead lotion).
5. Glycerine and belladonna (℈ j. of extract of belladonna to ℥ j. of glycerine).
6. Carbolic acid lotion (1 to 60).

The preparation used should be applied to the whole of the vulva frequently, or a piece of lint soaked in the application may be placed between the labia. In the few cases where I have tried cocaine for pruritus the result has been disappointing.

CHAPTER VI.

Rupture of the Perineum.

The inevitable laceration.—In every *first* labour there is a tear of the posterior part of the vaginal orifice, that is to say, there is a tear running into the fossa navicularis. This is the "inevitable" laceration. The tear *may*, of course, go much farther, but in every first labour it *must* go as far as that.

Partial rupture of the perineum.—By this is commonly meant a rupture not involving the sphincter ani, as contrasted with

Complete rupture of the perineum.—By which is understood a tear involving the sphincter ani.

All the ruptures above mentioned are caused by want of proportion between the size of the fœtal head and the size of the vaginal *orifice* at the moment the head is born.

The rupture to be next considered—*central rupture of the perineum*—is caused by want of proportion between the size of the fœtal head and the size of the vaginal *canal*. In a complete central rupture there would be a communication between the canal of the vagina, say at the point *a*, and the perineum say at *b*. A probe passed in at *b* would be felt in the vagina at *a*.

The rupture, however, may not be complete, and the cause acting may produce merely :—

(1) A tear in the vaginal mucous membrane in the neighbourhood of *a*;

Or (2) a tear of the skin of the perineum in the neighbourhood of *b*;

Or (3) a tear of the tissues of the perineal body between *a* and *b*, there being neither laceration of the vaginal mucous membrane, nor of the perineal skin.

From what has been said it will be clear that, in point of time, central rupture of the perineum occurs at an earlier stage of labour than ordinary rupture, for the former occurs while the head is still in the vaginal canal, while the latter does not occur till the head is passing the vaginal orifice.

Further, the conditions causing both central rupture and ordinary rupture may be present in the same case,

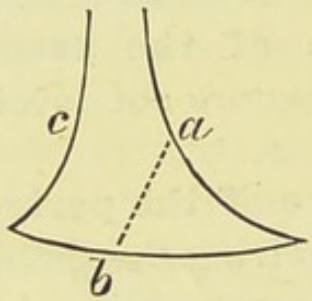

FIG. 27.—Diagrammatic antero-posterior section of the perineal body, to illustrate central rupture of the perineum.

a. Vaginal mucous membrane. *b*. Perineum. *c*. Rectal mucous membrane.

and there will first be produced central rupture, and when the head reaches the vaginal orifice, an ordinary rupture also, running back into the central one. Unless the case has been watched throughout, we shall not then be able to know whether, or not, a central rupture preceded the ordinary rupture.

Treatment.—The laceration, if of any extent, should be sewn up immediately labour is over. A sponge should be passed into the vagina to keep back the discharge while the raw surfaces are being united. The patient

should lie on her back in the lithotomy position with the legs separated. The raw surface should be washed with carbolic water (1-40) all clots particularly being cleared away. The simplest method of passing the sutures is to use a nearly straight needle in a handle, as recommended by Dr. Thorburn (Fig. 28).

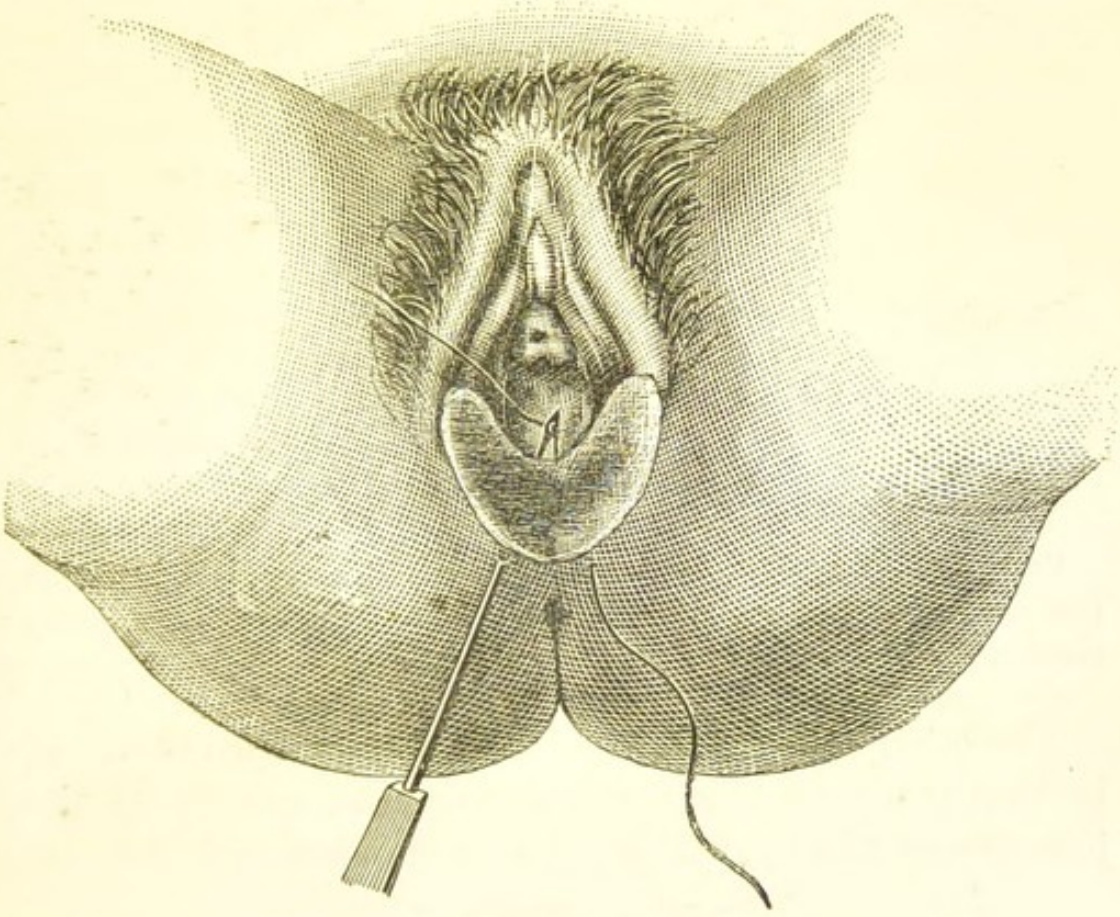

FIG. 28.—To illustrate immediate perineorrhaphy (Thorburn).

A B C D is the raw surface (Fig. 29).

Pass the needle unthreaded from a point a quarter of an inch from the edge of the skin (as suture 1 is passed) on the patient's left side beneath the raw surface, bringing it out at the point 2 on the same side.

Thread it now with silver wire, or fishing gut, and draw back the needle.

Now pass the needle similarly on the opposite side (the patient's right), bringing it out at 2, the operation has reached this stage in Fig. 28; then thread the free end of the suture hanging from 2 (on the patient's left) and draw back the needle. There will then be a suture in the position 1, 2, 2, 1, as seen in Fig. 29.

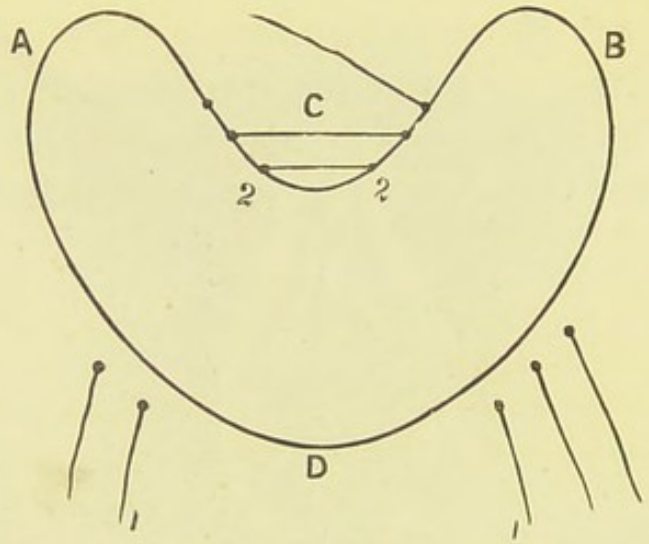

FIG. 29.—Diagrammatic representation of the raw surface in the preceding figure, to make the mode of passing the sutures clearer.

The other sutures are passed in a similar manner. It is important to bring the needle out exactly at the juncture of the vaginal mucous membrane and the raw

FIG. 30.—STRAIGHT NEEDLE FOR PERINEORRHAPHY.

surface in passing the sutures, or, when tying them, some of the vaginal mucous membrane will be tucked into the wound. Two, or at most three, sutures are sufficient in stitching up the perineum immediately after labour. The raw surface always seems to indicate a

much more extensive tear than has really occurred. The sutures are tied, beginning with the posterior one, care being taken to bring the surfaces into contact

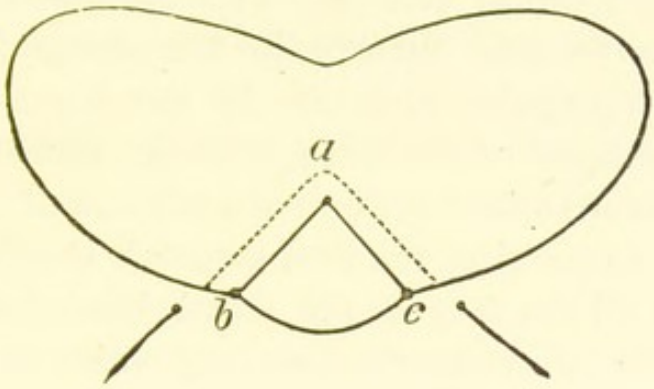

FIG. 31.—Diagrammatic representation of rupture of the perineum, involving the sphincter ani.

a b c. Triangular aperture in front wall of rectum; *b c* correspond to the ends of the torn sphincter. A suture (the purse-string suture) has been passed, as explained in the text, embedded all the way in the tissue bounding the triangular interval.

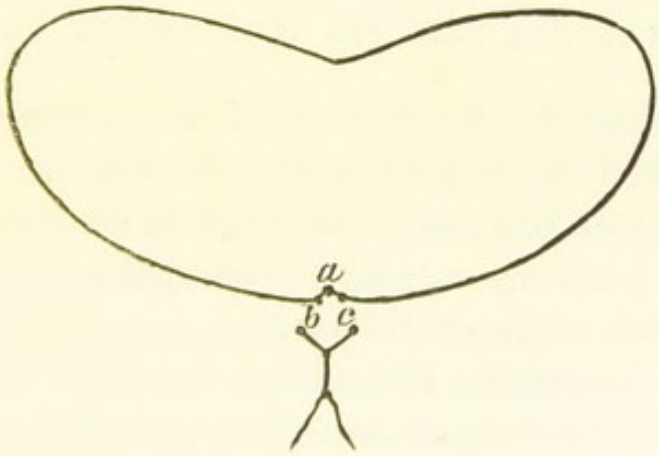

FIG. 32.—The suture tightened and twisted, the points *a b c* approximated so as to close the gap. The rest of the raw surface is then dealt with as in Fig. 29.

without unnecessary tightness. It is easier to judge of the proper degree of tightness, if silver wire is the

material used. The sponge is now withdrawn from the vagina; the patient's knees are kept tied together till union has taken place. The sutures are taken out in a week's time.

If the laceration has involved the sphincter ani, in addition to the raw surface in the above figure, there will be a triangular aperture in the front wall of the rectum, the apex of the triangle being upwards, and the ends of the torn sphincter one at each end of the base line (Fig. 31). In passing the first suture it should be passed embedded all the way in the tissue immediately bounding this triangular interval, so that, when it is tied, the three points of the triangle will be approximated, just as the mouth of a bag with a string running round it is closed by drawing on the string. This is sometimes known as the "purse-string" suture. The remaining raw surface is then treated as before described.

Secondary Operations for Rupture of the Perineum.

When extensive lacerations of the perineum have not been sutured directly after labour, or when, having been sutured, union has not occurred, it is desirable in certain cases to perform a plastic operation to restore the previous condition of the parts.

Such an operation should not be done until sufficient time has elapsed since the rupture for the parts to have passed into a quiescent condition, say at least six weeks after labour.

The indications for operation are:—1. Incontinence of fæces, or flatus, owing to the rupture having involved the sphincter ani. 2. When it is desirable on account of prolapse of the vagina, or uterus, for the patient to

wear a vaginal pessary, such as the ordinary india-rubber ring.

If there has been an extensive rupture of the perineum, such a pessary will not stop in. The object of the operation in a case of this kind is to narrow the lower end of the vagina, so as to enable the patient to retain a pessary.

Preparation of the patient.—She should remain in bed for some days before the operation, and should take a mixture containing sufficient sulphate of magnesia to ensure thorough evacuation of the bowels. If there is any discharge from the vagina, this should be cured, or at all events checked, by suitable treatment. The night before the operation she should take a draught, such as:—

℞ Mag. Sulph., gr. 160,
Infus. Sennæ ad ℥ i.
M. ft. haust., h.s.s.

On the morning of the operation a copious enema should be given.

The operation.—Three assistants are necessary, one to give the anæsthetic, and two to help the operator. The patient is secured in the lithotomy position by means of Clover's crutch (Fig. 33).

The vagina is now syringed out with carbolic water, 1 in 40. An assistant stands at each side of the patient. The next step is to mark out the surface to be made raw. The shape of this depends on the exact nature of the case. If the rupture has not involved the sphincter ani, Fig. 34 shows the shape and position of the surface to be freshened. The points B and C correspond to the posterior extremity of the labium minus on each side, and it is well to fix a pair of Spencer Wells's

forceps on B and C, where the skin and mucous membrane meet, to serve as landmarks.

The point A is taken on the middle line of the pos-

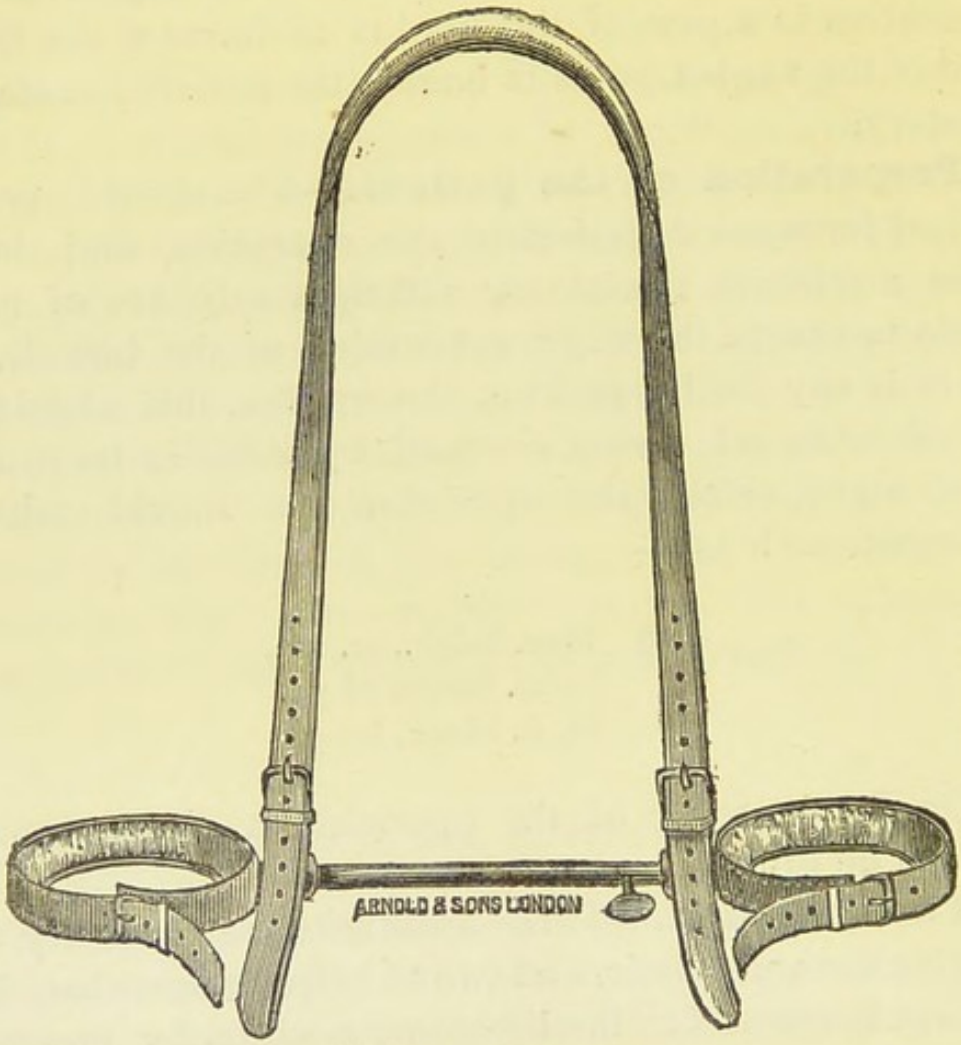

FIG. 33.—CLOVER'S CRUTCH.

The leg pieces fasten round the legs just below the knees. The long strap passes under the patient's neck, and is adjusted so as to flex the thighs on the abdomen to the required extent. The bar between the leg piece consists of an outer tube, and an inner rod sliding in it; the rod is drawn out of the tube till the knees are sufficiently separated, and is then fixed by the screw.

terior vaginal wall about an inch, or an inch and a half, up the vagina; a pair of Wells's forceps should be fixed on it also.

An incision, mucous membrane deep, is now made with a scalpel from A to B, and A to C, and also along the line B D C, just where the mucous membrane of the posterior vaginal wall meets the perineal skin. Beginning posteriorly, the mucous membrane is now dissected off the area marked out. During the whole proceeding the parts are made tense by each assistant pulling towards himself the labium majus and adjoining skin on his side. Sometimes it is convenient to put a pair of Wells's forceps on the point D; traction on this pair of

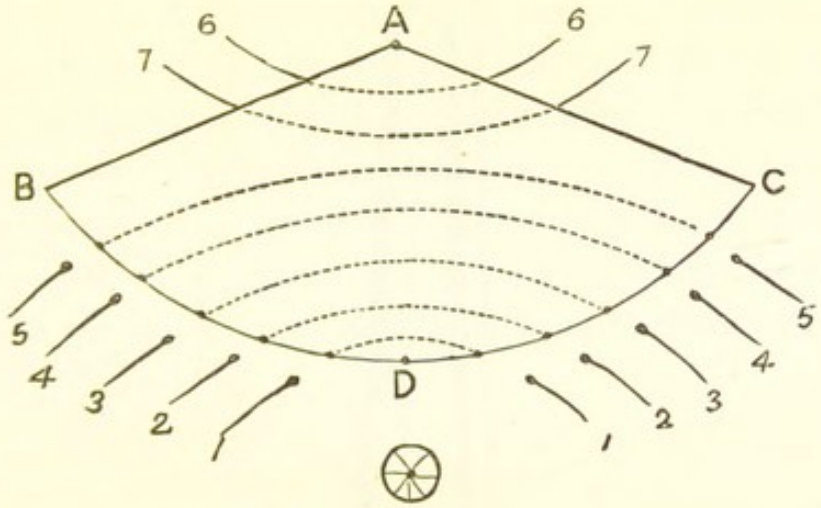

FIG. 34.

forceps helps to make the parts tense, and therefore facilitates the dissection. The sutures are inserted as in the figure beginning behind. 1, 2, 3, 4, 5 are passed by means of a nearly straight, or slightly curved, needle in a handle. For these, either fishing gut, or silver wire, may be used. It is an advantage to stain the fishing gut a purple colour, as it is then more easily seen. These sutures should be completely buried beneath the raw surface. While they are being passed the fore-finger of the left hand is in the rectum as a guide. Two or three sutures should be passed as at 6 and 7 in the

figure. These are inserted by means of an ordinary needle in a needle-holder (Fig. 35), and the material used for them should be catgut, as they will not then require removal. Sutures 6 and 7 should also, if possible, be

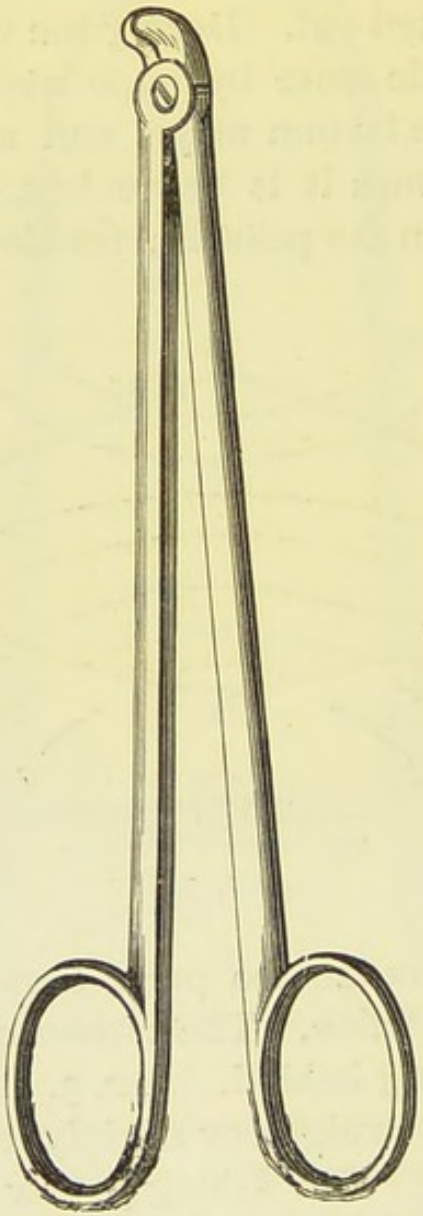

FIG. 35.—NEEDLE HOLDER.

buried completely under the raw surface; it is important that they should enter at the very edge of the cut mucous membrane to avoid any of it being tucked in when they are tied. All blood and clots being carefully

sponged away, sutures 6 and 7 are tied first, and then 1, 2, 3, 4 and 5 in numerical order. Before they are tied the screw of the crutch should be loosened, and the knees brought together. It is important not to tie the sutures too tight. The ends of the sutures should be left long, say two inches. The patient's knees are tied together, and she is put to bed. No T-bandage should be used.

When rupture has involved the sphincter ani the raw surface to be made is shown in Fig. 36.

In this figure A, B, and C are the same points as in Fig. 34. D and E correspond to the extremities of the torn sphincter. F indicates the apex of the triangular interval in the front of the rectum caused by the rupture of the sphincter. Incisions as before are made along the lines A B D and A C E; in addition, an incision is made from F to D, and F to E. The mucous membrane is then dissected off the whole surface marked out. The

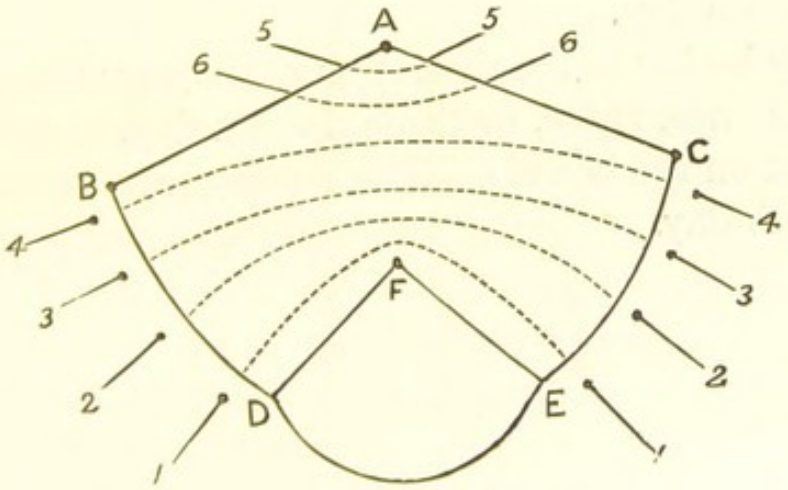

FIG. 36.

chief difference from the former case is in passing the first suture—the "purse-string" suture. It is passed, buried completely in the tissues, so as to take the course

of the dotted line in the figure. When it is tightened the points E, F, D are brought into contact, just as a bag is closed by drawing on a string running round its neck.

After-treatment.—The patient should lie on her side, not on her back, so that any discharge may escape more readily. The vagina may be gently douched two or three times a day with carbolic water, if we have a nurse who can be trusted to do this without any traction on the parts. The catheter is passed every six hours.

When the operation has been for a rupture involving the sphincter ani, it is desirable to wash out the rectum daily. This should be done by means of a glass funnel with an india-rubber tube attached. The end of the tube is passed into the rectum, and a few ounces of plain water allowed to run into it.

From the time of the operation the patient should take a mixture containing enough sulphate of magnesia, say one drachm to each ounce, to make the bowels act *easily* once a day.

It may be left to the discretion of the nurse to give the medicine once, twice, or three times a day, according to the effect on the bowels. The sutures are removed on the eighth day.

CHAPTER VII.

Diseases of the Vagina.

Vaginitis.

Inflammation of the vagina may be *local* or *constitutional*, that is to say, it may be due to strictly *local* causes, or it may occur as a complication, a mere subordinate part of some condition affecting the whole system.

Varieties.

Vaginitis may be :—

Specific, *i.e.*, due to gonorrhœa, or

Simple, *i.e.*, not gonorrhœal.

Simple vaginitis may be due to any of the following local causes :—

1. *Mechanical injury* produced by foreign bodies (hair-pins, pieces of sponge, ill-fitting pessaries, etc.) ; excessive coitus ; difficult labour, in this case more or less sloughing, with perhaps perforation into the bladder or rectum, is not uncommon.

2. *Irritating discharges*, *e.g.*, the discharges in cases of uterine cancer, or the lochia after delivery.

3. *Vaginal injections* used too hot, or of too great strength.

As examples of *constitutional states* in which vaginitis is likely to arise as a subordinate complication, may be mentioned :—*Diabetes*, *alcoholism*, *specific fevers*, *diphtheria*.

Further, in *old age* vaginitis is liable to occur, usually without other apparent cause, so that we speak of a "senile vaginitis."

Again, during *pregnancy* and *menstruation*, vaginitis is likely to be set up by slight causes, which often cannot be discovered.

Acute Vaginitis.

Symptoms.—The patient complains of:—

A sense of heat and throbbing in the vagina.

Pain in passing water, and frequent desire to pass it.

Often also of pain in walking, if there is co-existing vulvitis.

A greenish-yellow discharge.

A sense of general malaise.

Physical signs.—If there is vulvitis as well (as is usually the case) there will be the appearances described under Acute Vulvitis.

Great swelling, redness and perhaps excoriation of the external parts.

Tenderness on attempting to pass the finger into the vagina.

If a small speculum can be introduced the vaginal mucous membrane will be seen to be red and raw-looking, and secreting a greenish-yellow discharge, perhaps slightly blood-stained. The vaginal mucous membrane feels hot, and is greatly swollen, but its rugæ are not obliterated. The urethra will be found swollen, and pressure along it will probably cause pus to exude from the meatus.

The thermometer may show slight elevation of temperature.

Such are the characteristics of an acute vaginitis, whether simple, or specific (gonorrhœal), and it is

important to notice that we cannot yet distinguish between simple and specific vaginitis.

An acute vaginitis runs its course in ten days, or a fortnight, and either gets well, or lapses into a chronic stage.

Chronic Vaginitis.

Vaginitis may be chronic from the first, as in the senile variety, or chronic vaginitis may be the sequel of an acute attack.

Symptoms.—There may be slight itching or sense of heat in the vagina, and slight smarting on passing water; often, however, the patient complains of little except that she has a yellow discharge.

Signs.—The speculum shows the mucous membrane to be redder than normal, and we see the discharge. In old people the mucous membrane is often seen to have become smooth, the rugæ having been obliterated. There is little or no tenderness.

Variation in the distribution of vaginitis.—Whether the inflammation be acute or chronic, it will be found that sometimes the whole vagina is affected, sometimes only a part of it. For instance, the inflammation may affect only the lower half, or only the upper half of the vagina; or again, the summits of the ridges may be inflamed, while the depressions between them escape. Sometimes the appearance presented is that of red spots dotted over the surface, separated from one another by pale areas, "spotty vaginitis."

Granular vaginitis is the name given to that variety of vaginitis in which we find the surface of the vagina studded with hemispherical elevations, the size of a pin's

head. It may result from any of the other forms of vaginitis, but is rarely seen apart from pregnancy (Thomas). The elevations referred to are said to be hypertrophied mucous glands.

Ulcerous vaginitis.—Sometimes we find ulcers on the vaginal walls in cases where we have no reason for suspecting the presence of syphilis; as in the following instance:—

J. R., single, age 25, came to the London Hospital, August, 1886, complaining of pain across the lower abdomen, a sense of soreness in the vagina, and of a whitish-yellow discharge. There was no history of syphilis, nor any sign of it. On examination the hymen was found to be torn. Through the speculum two ulcers were seen at the upper part of the vagina, one on the anterior, and one on the posterior wall; these were about $\frac{1}{2}$ inch × $\frac{3}{4}$ inch in extent, and there were one or two smaller ulcers. She was given lead lotion as an injection, and general tonic treatment. Nov. 3rd, ulcers much as before described; she was given 5 grs. of iodide of potassium thrice daily, for the next four months. In April, 1887, the following note was made. "There is a semicircular ulcer, depressed $\frac{1}{16}$ of an inch, with a sharply defined edge on the anterior lip of the cervix, and a similar but rather triangular ulcer on the right lateral fornix, its largest side about an inch long. The base of this ulcer is dry and yellowish." The iodide of potassium was omitted, and she was given an injection of glycerine of subacetate of lead. A month later the patches had healed, the situation they had occupied being puckered and a little depressed.

Complications.—An acute vaginitis, particularly if due to gonorrhœa, is likely to be complicated by urethritis and cystitis; and the inflammation may also extend from the vagina to the cervix, thence to the body of the uterus, and so along the Fallopian tubes to the pelvic peritoneum; thus we may have cervical endometritis, endometritis of the body of the uterus, salpingitis, and pelvic peritonitis, all resulting from an acute vaginitis. There will also, almost certainly, be vulvitis, often also

abscess of the ducts of Bartholin's glands. Further, buboes may occur on account of the vulvitis.

In cases where the inflammation has spread to the pelvic peritoneum, the fimbriated ends of the Fallopian tubes will almost certainly be sealed up, so that no trace

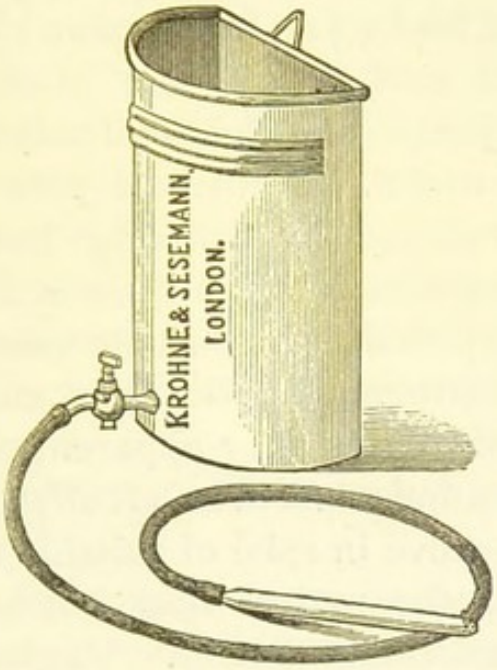

FIG. 37.—Hydrostatic Douche Tin for giving Vaginal Injections.

When the patient is to use it herself, it is necessary to have a second tap close to the glass vaginal tube.

The complete apparatus, with five feet of india-rubber tubing, is supplied by Messrs. Krohne and Sesemann for 8*s.* 6*d.*

While using an injection the patient should lie on her back with the hips somewhat elevated; if expense be no object, the ladies' bed bath may be placed under her; otherwise, an ordinary bed-pan may be used. The quantity of fluid injected should be at least a quart.

of the fimbriæ remains, the outer end of each tube having become permanently adherent to the corresponding ovary. When this happens on both sides (as it usually does when it happens at all) an incurable sterility is necessarily produced.

Treatment.—In acute cases hot hip baths and rest in bed for the first few days, with vaginal injections of warm water, or barley-water, with some laudanum (℥ i. to O j.), may be advised. A smart saline purge will also be useful. As the acute stage subsides astringent lotions may be used beginning with glycerine of subacetate of lead (℥ ss. to O j. water), followed later by alum, tannic acid, or sulphate of zinc (℥ j. to O j. water). An injection of sulpho-carbolate of zinc (℥ ii. to Oj.) is also useful. If there is pain on micturition, this may be relieved by drinking barley-water, and taking a mixture containing tincture of hyoscyamus and bicarbonate of potash. In chronic cases, we may proceed with the astringent applications enumerated from the first. In many cases after apparent cure the case relapses, when treatment has been left off; again, and many cases do not improve in spite of suitable treatment; this is often because the patient does not use the vaginal douche in an effectual manner. Vaginal douches are best given by means of the hydrostatic douche tin, fitted with india-rubber tubing and a glass vaginal pipe (see Fig. 37).

Vaginismus.

This name is given to a condition where painful spasm of the muscles round the vaginal orifice is set up by attempts at sexual intercourse. Coitus may thus be either rendered difficult, or impossible. Sometimes merely touching the vulva is sufficient to cause the spasm. In bad cases the spasm extends to the muscles of the body generally. Vaginismus may be either *primary* or *secondary*.

In primary vaginismus no local cause can be discovered to account for the condition. The disease is in fact a neurosis.

In secondary vaginismus some local cause is present.

On examination we find some one of the following conditions:—

Fissures in the neighbourhood of the vaginal orifice, *e.g.*, in the fossa navicularis.

An inflammation of part of the hymen.

A urethral caruncle.

Vulvitis, or vaginitis, or both.

Little ulcers round the vaginal orifice.

All these conditions may occur without causing vaginismus. It is only when the pain caused by touching the diseased part is so severe as to set up spasm of the muscles round the vaginal orifice, that we call the condition vaginismus.

The subjects are usually of an emotional temperament.

Treatment.—In secondary vaginismus we endeavour to remove the cause. Vulvitis, vaginitis, and urethral caruncle are to be treated as advised elsewhere. If there is a fissure, the patient should be placed under the influence of an anæsthetic, and the vaginal orifice forcibly dilated with the fingers, or by means of vaginal dilators. If little ulcers are present, they should be touched with the actual cautery; this may cure them, but in some cases they re-appear. In primary vaginismus forcible dilatation may be tried, but with only a very moderate expectation of a cure resulting; in some cases even the degree of dilatation incidental to the birth of a child fails to cure. Sometimes primary vaginismus disappears spontaneously.

Tumours of the Vagina.

All tumours originating in the vagina are rare, and we need do no more than mention that the following may be met with :—

Cysts, usually found on the anterior wall of the vagina, and about the size of a walnut. They contain a clear yellowish fluid. Sometimes the fluid is of a brownish colour suggesting that the origin of the cyst may have been an extravasation of blood.

Fibroid tumours of the vagina.—These are very rare. The writer happens to have met with one case.* The tumour was situated (as they generally are) on the anterior wall.

Primary malignant disease.—Either carcinoma or sarcoma may affect the vagina. More frequently when there is malignant disease of the vagina it is secondary to malignant disease of the uterus.

Treatment.—In the case of vaginal cysts, the treatment is to cut out a piece of the cyst wall, and apply pure carbolic acid, or tincture of iodine, to the interior of the cyst.

Fibroid tumours may be dissected out entire, as in the writer's case referred to.

When there is reason to think that malignant growths found in the vagina are the primary and only ones present, and their situation is such as to admit of their removal without much risk, this may be done.

* *London Obstetrical Society's Transactions*, vol. xxix.

CHAPTER VIII.

PROLAPSE OF THE VAGINA. PROLAPSE OF THE UTERUS.

Prolapse of the vaginal walls.—This is an exceedingly common condition. Either the anterior vaginal wall alone, or the posterior vaginal wall alone, may prolapse; or both may come down simultaneously.

Prolapse of the anterior vaginal wall is called *cystocele*, because the attachment of the bladder to the anterior vaginal wall is so intimate, that when the latter prolapses the bladder must descend at the same time.

Prolapse of the posterior vaginal wall, may or may not be *rectocele*, because the attachment between the posterior vaginal wall and the rectum is not so intimate as that between the anterior vaginal wall and the bladder; it is possible for the posterior vaginal wall to prolapse without carrying a pouch of the rectum with it.

When the vaginal walls prolapse, more or less *secondary prolapse of the uterus* occurs as a consequence, as will be explained further on.

Prolapse of the uterus. Procidentia.—By this is meant that the uterus occupies a lower position than natural.

As regards degree, when the uterus has partly, or wholly, passed the orifice of the vulva, the case is called one of "*procidentia.*"

When the uterus, though lower than normal, still lies wholly within the vagina, the case is one simply of prolapse.

In extreme cases of procidentia the whole uterus lies outside, the body being contained, as it were, in a bag formed by the inverted vagina. In such cases there is a mass, the size perhaps of a cocoanut, outside the vulva. The os uteri is seen somewhere near the middle

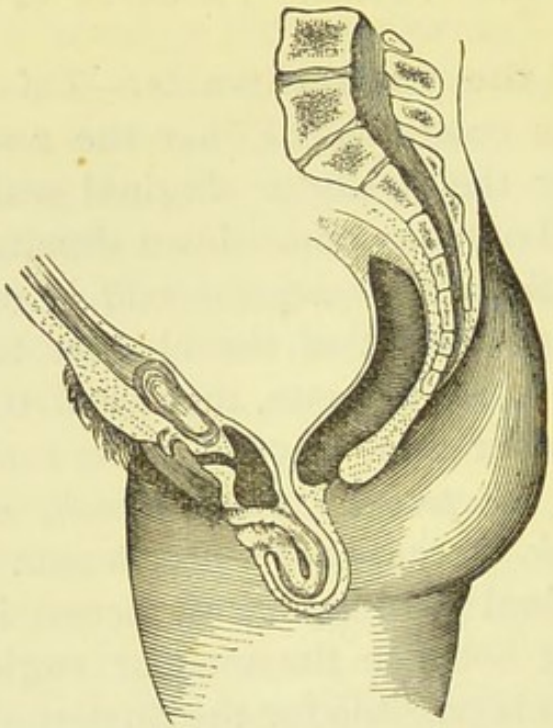

Fig. 38.—Complete Procidentia Uteri (Schroeder).

Note.—1. The retroflexed position of the uterus; this position is the invariable rule, except when the uterus has been fixed in a position of anteflexion previously by adhesions. Practically the uterus is always retroflexed in cases of procidentia.

2. The complete inversion of the vagina.
3. The position of the bladder.
4. The position of Douglas's pouch.

of the mass, and the body of the uterus can be felt in the hinder half of it, often both ovaries can be made out as well (Fig. 40).

Etiology of prolapse of the uterus.—Suppose we compare the peritoneal cavity to an oval elastic bag, with the uterus attached to the wall at the lower part of

the bag, then, on looking at the diagram, it will be evident that any force acting in the direction of the arrow will tend to cause descent of the uterus. Now the force acting in the direction of the arrow may be

Increased weight of the uterus, due, for instance, to fibroid tumours in its walls; or, it may be

Traction on the uterus from below, as when the vaginal walls are prolapsed, and tend to drag the uterus after them; or, again, force in the required direction may be produced by

Increase of the general intra-abdominal pressure, such as occurs in all acts of straining.

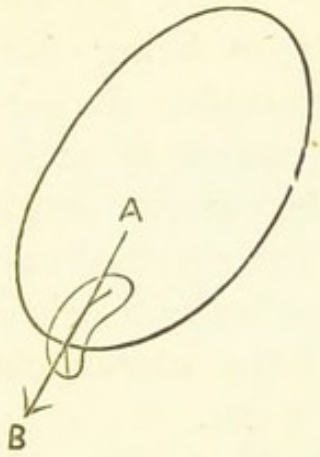

FIG. 39.

Obviously, any of these causes will act to greater advantage if the tissues round the uterus are in the lax condition incidental to labour.

Rupture of the perineum only facilitates prolapse, it is not an exciting cause. Dr. Matthews Duncan compares descent of the uterus in cases of prolapse, to descent of the head in the second stage of labour, after the os is fully dilated. In the latter case an intact perineum does not prevent the birth of the head, time

only is needed, if there are good pains, for the perineum to stretch sufficiently to allow the head to pass; and so it is in cases of prolapse of the uterus, an intact, unruptured perineum only delays the descent of the uterus, time is required for the perineum to stretch, but given this, it will do so, and the uterus pass out, just as the head does in labour. The motive power in the latter case being the uterine contractions; whereas, in cases of prolapse, it is some one of the three causes given above, as producing force in the direction of the arrow in the diagram.

Etiology of prolapse of the vaginal walls.—Similarly, rupture of the perineum only *facilitates* prolapse of the vaginal walls, the only essential *exciting cause* of their prolapse being *increased intra-abdominal pressure*, as, for example, during muscular efforts. Other predisposing causes of prolapse of the vagina are, in the case of the anterior vaginal wall, an habitually full bladder, and in the case of the posterior vaginal wall, an habitually overloaded rectum. Most cases of prolapse of the uterus are secondary to prolapse of the vaginal walls.

Symptoms and Diagnosis.—The symptoms are often slight and unimportant, there is usually more or less "bearing down," and feeling of weight in the pelvis.

But in extreme cases where the whole uterus and its appendages lie outside the body in the inverted vagina, the patient often complains of little, except the inconvenience of having a big lump between her legs. As Dr. Matthews Duncan points out, this fact (which any one can verify for themselves, as the cases are common enough) makes it very hard for us to believe that grave symptoms can be caused by comparatively slight dis-

placements of the uterus, for in this, the greatest of all displacements, symptoms are usually so slight.

Some difficulty in emptying the bladder is another symptom often met with.

The patient has not uncommonly found out for herself that she can manage better when she presses the lump up. It is remarkable that in cases of procidentia, con-

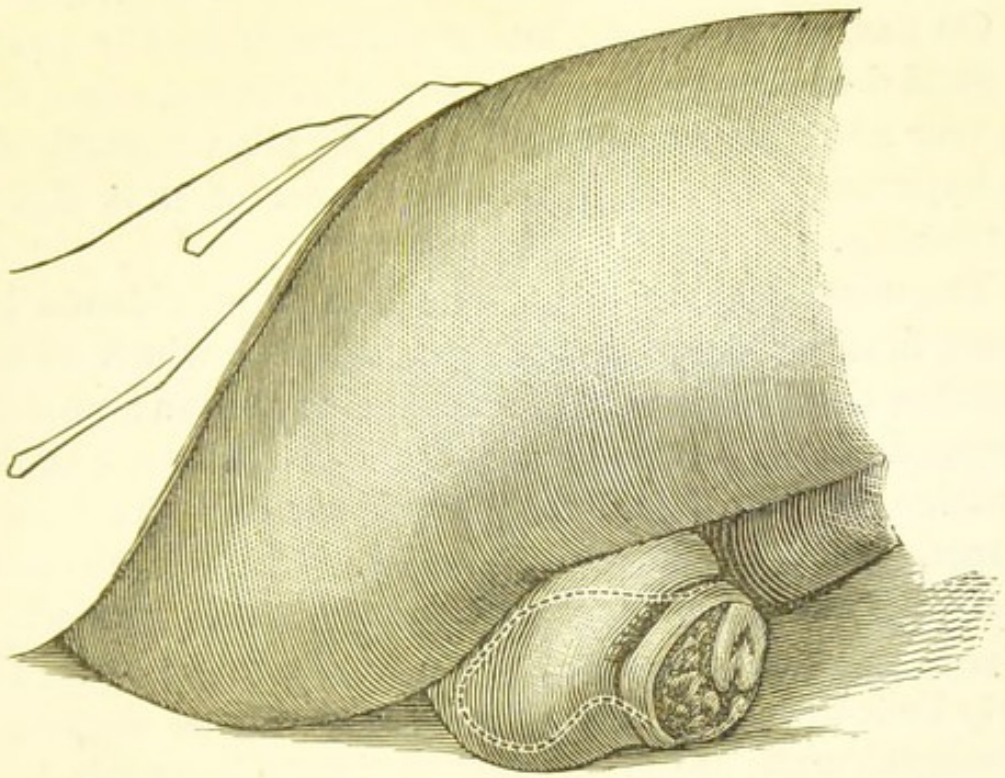

FIG. 40.—Complete Procidentia Uteri (Winckel).

The dotted line indicates the position of the body of the uterus. Note the somewhat crescentic ulceration posterior to the os uteri. The patient is lying on her left side.

trary to what we should expect, menstruation is not usually excessive.

As regards diagnosis, this is usually at once obvious. When there is a moderate prolapse of the anterior vaginal wall, it might possibly be taken for a cyst, or other tumour growing in the anterior vaginal wall, but

any doubt can at once be cleared up by passing the sound into the bladder, and being able to feel the point at every part of the swelling, with only the wall of the bladder and vagina between the sound and the finger.

In cases of procidentia, the presence of the os uteri makes the nature of the case at once evident. Often there are extensive ulcerations on the inverted vaginal walls from the friction against clothes, etc. (Fig. 40).

On passing the sound into the uterus it usually passes a good deal further than the normal distance, often four to four and a half inches. The elongation is partly due to hypertrophy of the uterus, but most of it is due to stretching.

The usual order of events in cases of procidentia has been, first prolapse of the vaginal walls, which causes traction on the cervix at the vaginal reflection; now the uterus does not descend freely under the influence of this traction, it is for a time held back by the broad ligaments, and utero-sacral ligaments. In time, however, these stretch to an extent sufficient to allow the whole uterus and its appendages to lie outside the vulva. The only limit to the descent of the uterus is the degree to which the walls of the inverted vagina will stretch.

On this factor it depends whether, in cases of procidentia, the whole uterus lies outside, or only part of it; if the vaginal walls are short, so that, when completely inverted, the vagina forms a bag of little depth, and the uterus is large, the sound passing four and a half inches or more, then there will not be room for the whole uterus in the bag; if, on the other hand, the vaginal walls are long, or the uterus small, the bag formed by the inverted vagina will contain the whole uterus.

Treatment.—In slight cases, either of prolapse of the uterus, or of prolapse of the vaginal walls, a ring pessary

of suitable size is all that is needed. In bad cases, such as cases of procidentia, a ring is not retained. The condition that must be satisfied for a ring pessary to suit the case is, that the vagina be narrower below than it is above; if either on account of rupture of the perineum, or by stretching of an unruptured perineum, it has come about that the vagina is as capacious below as it is above, it practically forms a cylindrical cavity,

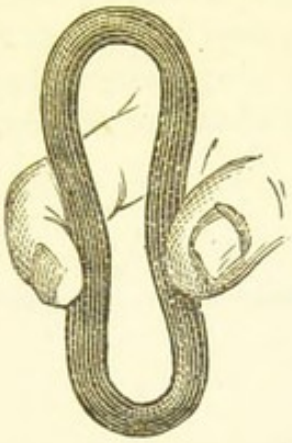

FIG. 41.—Ring Pessary, made of watch spring covered with india-rubber. In the figure it is seen compressed between the finger and thumb, as when about to be introduced. It is important to keep it compressed till it has passed the orifice of the vagina, and also to pass it well backwards. A ring pessary may be left in for three months at a time, the patient using douches night and morning.

like a cylindrical jar open at the bottom,and a ring that will just go easily into the top has nothing to prevent it falling out at the bottom. It will be noticed, when a ring is being inserted, that it is compressed, so as to pass it by artifice through the narrow vaginal orifice; now, so long as the vagina is normally capacious above and narrow below, force has to be exercised to make it come out, force that either compresses the ring, or

dilates the orifice; if no such force is in operation, or if the force in operation is insufficient, the ring is retained,

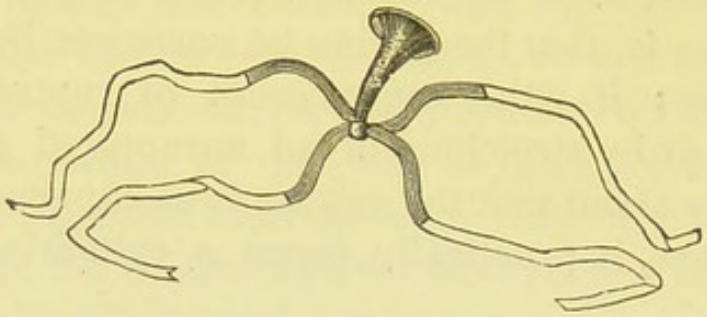

FIG. 42.—Cup and Stem Pessary (Vulcanite), with bands for attaching to the waist belt, seen in the next figure.

The patient takes out this pessary at bedtime, and washes it, replacing it in the morning when she gets up.

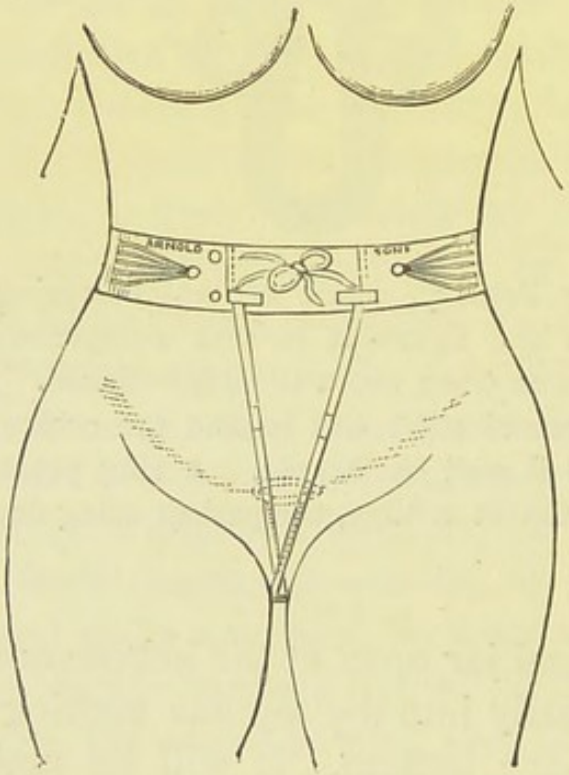

FIG. 43.—The waist-belt, with the bands seen in the preceding figure fastened to it. Two fasten behind, and two in front; only the last two can be seen in the figure.

and keeps up the prolapsed parts. Hodge's pessary may be used for prolapse in the same class of cases as

the ring, but it possesses no advantages over the ring.

For those cases in which a ring pessary, or Hodge's pessary, are useless, the patient has a choice of two things, either she may wear a cup and stem pessary (Fig. 42) which takes its support from a waist-belt, or she may have the original shape of the vagina restored

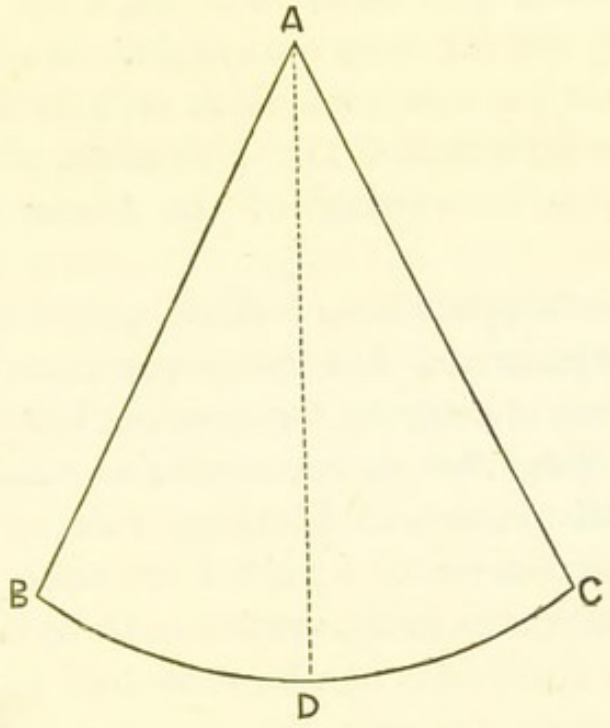

FIG. 44.—Diagrammatic representation of raw surface to be made on the posterior vaginal wall in the operation of posterior colporrhaphy.

by a plastic operation, so that it may once more be narrow below. When this has been done a ring pessary will stop in.

No plastic operation will *cure* cases of procidentia; no matter how complete the success of the operation may appear at the time, *unless the patient wears a ring, the displacement will only return as badly as ever.* If, however,

she wears a ring, a permanent condition of comfort is obtained.

The best plastic operation of the kind referred to is that known as *posterior colporrhaphy*. The patient being in the lithotomy position, a triangular piece of mucous membrane is removed from the posterior vaginal wall. The base of the triangle is, of course, at the junction of the posterior vaginal wall with the skin of the perineum, and the apex is high up the posterior vaginal wall, not far from the cervix. Stitches are then passed so that the raw surface A B D is in apposition with the raw surface A C D. The effect will clearly be a considerable narrowing of the lower half of the vagina.

Alexander's operation.—This operation, shortening the round ligaments, has been recommended (1) for prolapse of the uterus, (2) for retroversion of the uterus.

As regards doing this for retroversion we shall see in the chapter on Versions and Flexions that retroversion is only of importance *(a)* as a part of prolapse, *(b)* when the retroverted uterus is incarcerated in Douglas's pouch.

Both these conditions can be remedied by the use of a suitable pessary (usually the watch spring ring) the uterus being first replaced by the sound. If a vaginal pessary will not stop in, on account of wideness of the lower part of the vagina, this can be remedied by artificially narrowing the lower part of the vagina by a plastic operation.

As regards Alexander's operation for prolapse of the uterus. Take for the sake of argument an ordinary case of procidentia uteri, where there is a large mass outside the vulva—in such a case the sound passes four or five inches. The fundus of the uterus is no doubt to a greater or less degree below its normal level in the

pelvis, for it may be outside the vulva in the inverted vagina. Still, supposing the fundus of the uterus to be pulled up to its normal position by shortening the round ligaments (drawing them up through the inguinal canal, fixing them there, and cutting off the superfluous portions) this will not alter the fact that the uterus is four or five inches long. Therefore, though the fundus may be at its proper level, the cervix will still be low down, and the vaginal walls will still probably protrude outside the vulva; the operation, therefore, is far from being a complete remedy for the condition.

By far the strongest argument against doing this operation, however, is its danger. The conditions, for which the operation is suggested, have no tendency to shorten life, and at most make the patient uncomfortable; moreover, several harmless methods of treatment that will secure the patient's comfort are at our disposal. For these reasons I have never felt justified in recommending a patient to have the operation performed, and have never done it. I myself know of two cases ending fatally; one in two or three days after the operation.

Table Shewing the Etiology of Prolapse of the Uterus and Prolapse of the Vaginal Walls.

Prolapse of the uterus.

Exciting cause.—Force acting in direction AB in the diagram, page 115, which may be either:—

1. Increase of the general intra-abdominal pressure.

2. Traction from below, as by the prolapsing vaginal walls.

3. Increase of the weight of the uterus itself.

Predisposing causes.

Rupture of the perineum.

Relaxation of the soft parts by recent labour.

Absorption of fat from the soft parts in the pelvis in old age.

Laborious employments, chronic cough, etc.

Prolapse of the vaginal walls.

Exciting cause.—Increase of the general intra-abdominal pressure.

Predisposing causes.—

Habitually full bladder (the presence of a small ovarian tumour acts similarly).

Habitually loaded rectum, in addition to the predisposing causes of prolapse of uterus given above.

CHAPTER IX.

Diseases of the Uterus.

Inflammation.

Cervical endometritis. Corporeal endometritis.—Inflammation may affect the mucous membrane of the cervix only, when it is known as *cervical endometritis;* or it may affect the mucous membrane of the body of the uterus, and it is then called *corporeal endometritis.*

Cervical Endometritis.

Etiology.—This disease is much commoner in women who have had children than in nulliparæ, the starting point in most cases being injuries inflicted on the cervix during labour. In such cases the whole thickness of the cervix is necessarily more or less involved in the inflammation, whereas, in the cervical endometritis of nulliparæ, the inflammation is more strictly limited to the mucous membrane.

Predisposing causes are those which predispose to inflammation of mucous membranes in other situations, such as the strumous, rheumatic, or gouty constitution.

Exciting causes are :—

1. *Injury,* either during labour, or at some other time, by the use of instruments, the sound, tents, etc.
2. *Extension* from vaginitis, simple or gonorrhœal.
3. *Cold,* especially during a menstrual period.

Symptoms.—The only essential one is the presence of *a discharge*, which attracts the patient's attention. There may be many other symptoms present in the case due to associated morbid conditions, but the only symptom caused by the cervical endometritis itself is a discharge.

Normally, the secretion of the cervical glands is clear and viscid, like unboiled white of egg; when there is cervical endometritis, this secretion changes its character, and becomes either *(a)* opaque and white, in cases of slight catarrh; or *(b)* opaque and yellow, if the inflammation is more severe.

Diagnosis.—This is made by passing a speculum, and observing the character of the secretion *within* the external os. Often some opaque-white, viscid discharge will be seen *in the vagina*, when the secretion just within the external os is healthy, *i.e.*, transparent. It seems to be the case that when the healthy secretion of the cervical glands lies in the vagina it becomes opaque. Our diagnosis of cervical endometritis rests on the kind of secretion actually within the external os. If this be opaque and white, there is catarrh of the cervical mucous membrane; if opaque and yellow, the inflammation is more severe.

If the thickness of the cervix is much involved in the inflammation, the finger notices increased size of the vaginal portion, and, in chronic cases, induration of it. Little prominences, the size of shot, are often to be felt not only immediately round the external os, but also on the vaginal portion at some distance from the os. Through the speculum these are seen to have a pearly-grey colour. They are little retention cysts, and are called *ovula Nabothi;* their origin will be considered further on.

Erosion of the cervix.—In many women the speculum shows a red, slightly depressed area, of greater or less extent, immediately round the external os. This was formerly called "ulceration" of the cervix, and was vigorously treated with various remedies. It must be admitted that such areas are deviations from the normal type, and that, in many cases at least, they may be considered as originating in an inflammation affecting the area occupied by the erosion, and at the same time affecting the whole cervical mucous membrane.

On the other hand, slight erosions are very commonly observed where we have the secretion within the external os quite transparent, and therefore healthy.

The character of this secretion must be taken as a test of their importance in any particular case. If we see a slight erosion, but yet have the secretion within the external os healthy, we may, if we like, regard the erosion as an abnormality, but it certainly is not one that requires any treatment. If, on the other hand, the secretion is morbid, opaque-white, or opaque-yellow, (and in such cases the erosion is usually of greater extent than in the cases where the cervical secretion is healthy) we are justified in applying the local treatment about to be described, and such treatment must be directed, not only to the erosion, but to the whole of the cervical canal as far up as, but not beyond, the internal os.

Pathology of erosions.—Normally the cervical canal is lined by a single layer of cubical epithelium (ciliated on the summits of the ridges, but not in the depressions between them). The epithelium maintains this character till within a line or two of the external os. The epithelium immediately round the external os is squamous and stratified. Further, it is necessary to

remember that while there are numerous racemose glands opening into the cervical canal, there are no glands on the vaginal surface of the vaginal portion. When an erosion exists, however, we find that over the area occupied by it there is only a single layer of cubical epithelium, in place of the several layers of squamous epithelium normally found round the external os.

While opinions differ as to the origin of this single layer of epithelium found on erosions, (some thinking

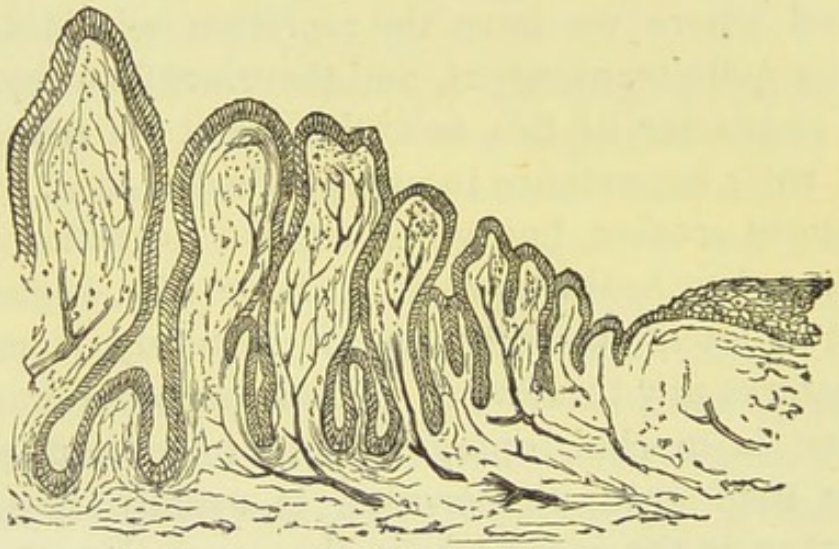

FIG. 45.—Papillary Erosion (Schroeder).

that it is derived from the glandular epithelium of the cervix spreading down over the erosion, *all* the epithelium normally there having been shed; others believing it to be the deepest layer of the epithelium of the rete Malpighi, only the epithelium superficial to this having gone), there is no doubt that the first step towards the production of an erosion is the shedding of the squamous epithelium in the neighbourhood of the external os under the influence of an inflammatory process, which at the same time is affecting more or less of the cervical

canal. Further, whatever its origin, the single layer of epithelium on erosions takes on a glandular function.

Varieties of erosion.—These are:—

1. *The simple.*
2. *The papillary or villous.*
3. *The follicular.*

1. *The simple* is that variety where the surface of the erosion is only slightly granular.

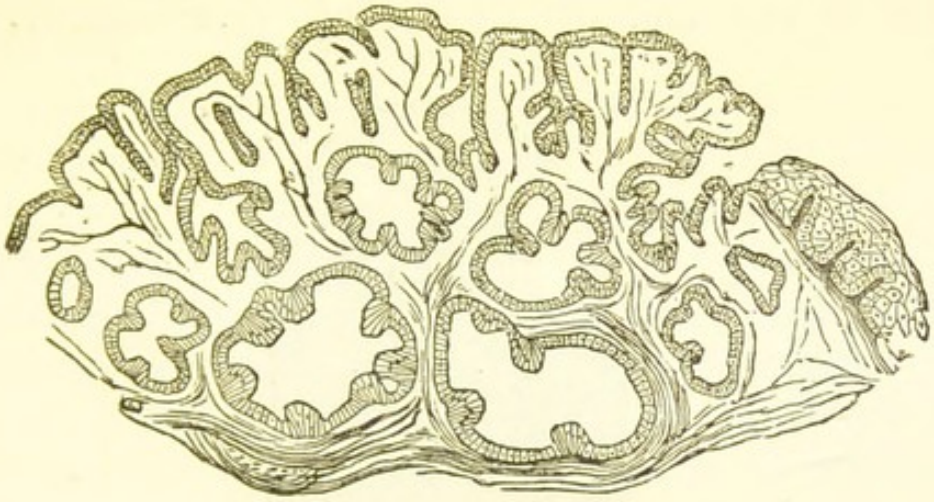

FIG. 46.—Follicular erosion (Schroeder).

2. *The papillary* is that where the epithelium dips down pretty deeply, so as to make the surface more or less villous (Fig. 45).

3. If the entrance to the depressions between the papillæ becomes obliterated, closed cavities are formed, these may become distended by the secretion of the epithelium (which, as just now remarked, takes on glandular functions) and the retention cysts resulting may burst. There is then *a follicular erosion* (Fig. 46).

Eversion of the Cervical Mucous Membrane.

When the vaginal portion of the cervix has been deeply lacerated during labour, the lips of the cervix gape, and expose the cervical mucous membrane. The greatest degree of eversion is reached when there has been laceration on both sides of the cervix reaching up to the vaginal reflection. The exposed mucous membrane is red, and the appearance presented is very

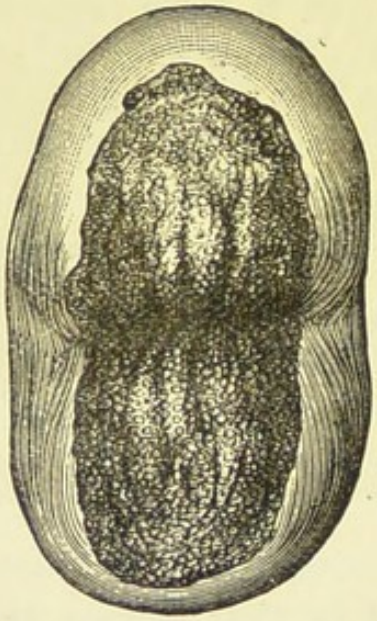

Fig. 47.—Bilateral laceration of the cervix with eversion of the cervical mucous membrane (Schroeder).

similar to that of a rather extensive erosion. Its true nature will be recognised, first, by noticing with the finger that there has been laceration. Suppose, for example, that there has been a deep laceration on the left side (the most usual position on account of the frequency of the first vertex presentation), then the finger, placed in the situation of the external os and adjoining part of the cervical canal, finds nothing between it and

the vaginal wall on that side. Secondly, we may draw together the gaping lips of the cervix with two hooks, using a Sims's speculum, and find that the apparent erosion has disappeared, if it was all eversion; but if there was erosion as well as eversion, then that the extent of the red surface exposed has greatly diminished.

The everted cervical mucous membrane is often in a state of chronic inflammation, and consequently in such cases there is a white or yellow discharge. There is no satisfactory proof that laceration of the cervix in itself causes any other symptom except this discharge.

Treatment.—First we have to decide that the case is one where treatment is justifiable; further, the patient's desire to be cured of the discharge ought to be pronounced before we undertake to treat, what is, after all, except for the annoyance that the discharge may occasion, a very trivial ailment in itself; it is well also to warn her, before commencing a course of treatment, that it is quite possible we may not be able to cure her, though we may pretty certainly diminish the discharge for the time to a great extent; and again, it must not be forgotten that after apparent cure a relapse often takes place. When active treatment has been decided on, we pass Fergusson's speculum and then ascertain the exact direction of the cervical canal with the sound. A solution of sulphate of copper* is then poured into the speculum, so as to cover the vaginal portion, next we pass through the fluid a Playfair's probe, thinly dressed with wool, several times up and down the cervical canal, not passing it further than the internal os. The wool on the probe takes up some of the solution each time;

* The strength of the solution recommended is ℈ ij. sulphate of copper to ℥ j. water.

FIG. 48.
PLAYFAIR'S PROBE.

Absorbent wool is wrapped tightly round the terminal inch or so: the probe is then ready for use.

the first time or two the copper solution thus carried up acts on the secretion in the cervical canal, coagulating it, and so rendering it easy to remove; afterwards any more of the solution introduced acts on the cervical mucous membrane laid bare by the coagulation and removal of the secretion previously in the canal. This is the best mode of applying local remedies. The ordinary method of exposing the cervix as before, then removing the secretion in the cervical canal with a series of Playfair's probes dressed with dry wool, and then applying some remedy, *e.g.*, pure carbolic acid, or tincture of iodine, to the canal is less satisfactory, because it is impossible by simple mechanical means to remove the viscid secretion completely, and to ensure the remedy reaching the mucous membrane.

Anyone can prove this on the dead body, when, if the uterus is cut open, it will be found difficult, by rubbing the cervical canal with wool, to get away the tenacious mucus. Such applications as have been described should be made twice a week for a time, and the patient should use hot

vaginal douches night and morning as well. If this treatment does not succeed in three or four weeks, we may try a rather more severe measure, for which the patient must remain in bed a few days. A stick of fused zinc sulphate and alum (equal parts) is passed into the cervical canal, but no farther, and left there to melt, the upper part of the vagina being packed with tampons soaked in carbonate of soda to neutralise the acid solution as it comes away; in three hours time (Matthews Duncan) the tampons are removed, and a vaginal douche given; if this treatment does not succeed, the case had better be set down as incurable, and the patient recommended to be content to keep the discharge from being very great by using hot douches containing some astringent, such as alum, or tannic acid.

It may be added that though cervical endometritis is regarded by some as the cause of sterility, it has probably little or no share in producing it. It is a common experience to find patients becoming pregnant in whom we know there is a cervical endometritis. Considering how often labour is the starting point of the disease, we may take it that, if cervical endometritis caused sterility, it would be rather a rare thing to find a woman who had had more than one child.

Corporeal Endometritis.

Etiology.—Inflammation of the mucous membrane of the body of the uterus may be due to:—

Labour or abortion, especially if some part of the ovum, or clots, are left behind.

Extension from inflammation, gonorrhœal or simple, lower down.

Direct Injury, e.g., by the sound, or other instruments, such as intra-uterine stem pessaries, or tents.

Intra-uterine growths.—Submucous fibroids, or mucous polypi.

Cold during menstruation.

Certain fevers.

Old age.

Diagnosis.—It is often impossible to say whether or not there is corporeal endometritis in any particular case. When really present it causes a discharge, white or yellow according to the severity of the inflammation, but we only see this as it comes from the external os, and, therefore, we cannot be sure that it does not come from the cavity of the cervix only.

Certain features in the case may, however, incline us to the opinion that there is corporeal endometritis. These are:—

1. A history of menorrhagia.

2. On bimanual examination finding the body of the uterus somewhat enlarged and tender.

3. Finding that the sound *passed gently* causes much more pain than usual, and that perhaps a blood-stained discharge follows its withdrawal.

All these, taken together, point to inflammation involving the mucous membrane of the body of the uterus.

In some few cases we can make the diagnosis certain by exploration of the cavity of the uterus with the finger, after, if necessary, dilating the cervix.

In the following cases there was no doubt of the presence of corporeal endometritis.

Case I.—M. W., aged thirty-five. Married sixteen years; twins a year after marriage; two miscarriages, the last eleven and a half

years ago. Admitted to the hospital on account of menorrhagia of fifteen months duration. She had been under my care in the out-patient department, but had obtained no relief. On examination the uterus was found to be enlarged, and the sound passed four inches. The uterus was freely movable. The vaginal portion of the cervix was healthy. The cervix was rapidly dilated under ether with Hegar's dilators. On passing the finger into the body of the uterus, soft, irregular projections, particularly extensive on the right side, were met with. These were thoroughly scraped away with a blunt-edged spoon, and tincture of iodine applied to the interior of the uterus. Portions of the substance removed, on microscopical examination afterwards, showed a glandular structure; very large irregularly-shaped cavities lined with columnar epithelium, in a single layer, were seen in the sections. The temperature after dilatation remained normal. I have seen this patient at intervals since; she is now regular, and does not lose too much.

This case is an example of that variety of endometritis called *villous*, or *fungous endometritis*, localised hypertrophy of the uterine mucous membrane giving rise to irregular projections, or fungosities, hence the name. Some authorities refuse to recognise this condition as an endometritis, regarding the condition as one produced by new growth, rather than by inflammation.

Case II.—S. J., a Jewess, admitted to the London Hospital in labour, ineffectual attempts at delivery having been made outside. Had been in labour from half past two on the afternoon of May 12th, 1886, till six p.m. on the evening of the 13th, when I saw her. The ring of the Bandl could be felt a hand's breadth above the pubes. Fœtal heart not heard. Forceps having failed, delivery by perforation and cephalotripsy.

May 31st. Ever since delivery there has been a lump to be felt reaching up to the umbilicus, at first of course taken to be the uterus, but latterly, as the patient has had more or less fever ever since the confinement, thought to be due, in part at least, to inflammatory exudation. To-day patient was examined on the couch, and it was then found that a large sound could be passed up to the highest point of the tumour in the abdomen, going in 5¼ inches, thus showing the

tumour to be the body of the uterus. The uterus was then washed out with carbolic lotion; the fluid that returned first was very foul.

FIG. 49.—RECAMIER'S CURETTE.
Useful when a blunt instrument is required for scraping.

FIG. 50.
Small serrated curette for scraping the interior of the uterus.

June 13th. To-day a yellow, leathery mass, having an intensely fœtid odour, two inches long by one broad, was found hanging from the cervix, it was twisted off with cervix forceps.

June 24th. The uterus still being much about the size it was on May 31st, and the patient's general condition unsatisfactory, fever still persisting, she was put under an anæsthetic, and the interior of the uterus thoroughly scraped with a Recamier's curette. Numerous yellow flakes, intensely offensive, about $\frac{1}{16}$ of an inch in thickness, were removed by this proceeding, perhaps altogether enough to fill two or three tablespoons.

From this time she improved rapidly, her highest temperature on 27th June being 100°, and from that time on quite normal.

By July 14th, just three weeks after the scraping, the uterus had involuted to its ordinary size, and the sound passed the normal distance. The uterus was freely movable.

This case illustrates endometritis of the body of the uterus dating from labour, and also the effect that a morbid condition of the endometrium may have in delaying involution of the uterus. It is not certain whether the yellow, leathery, offensive masses referred to were entirely clots, or whether they may not perhaps have been partly sloughs from the interior of the uterus, due to damage received in the very long labour. The membranes had been ruptured and the os fully dilated at least eighteen hours.

It remains to say a word on the diagnosis of corporeal endometritis from primary malignant disease of the body of the uterus.

In the latter disease the patient is usually old, most cases being between fifty and sixty years of age.

Then *the course of the disease* will help us; corporeal endometritis running a chronic course, and deterioration of the general health from accompanying menorrhagia being only very gradual, whereas in malignant disease there is rapid loss of strength and weight. Again, in malignant disease of the body of the uterus *severe pain* is

an early and marked symptom, whereas in corporeal endometritis, pain, if present, is much less severe. Further, whereas the starting point of corporeal endometritis is often labour, or abortion, malignant disease of the body of the uterus usually begins long after the menopause, and usually affects those who have been either actually sterile, or who have had only one or two children.

Lastly, in cases of doubt we can scrape away portions of the masses projecting into the uterine cavity, and examine sections of them with the microscope.

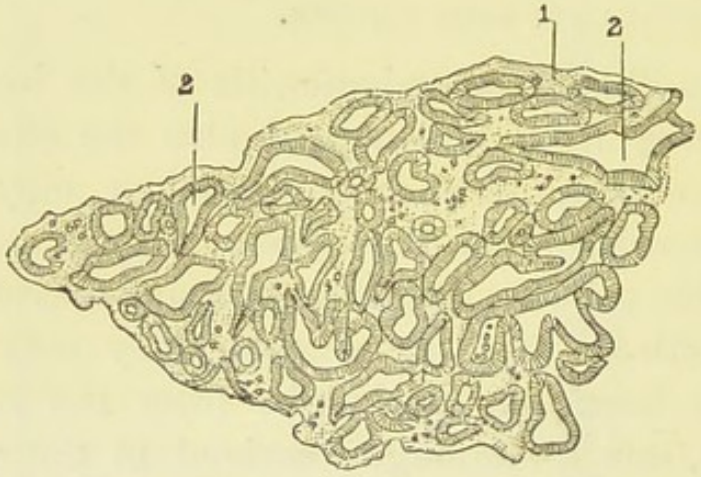

FIG. 51.—Section of a granulation, from a case of corporeal endometritis (De Sinéty).

1. Stroma. 2. Dilated glands.

In the corporeal endometritis of old women the surface of the mucous membrane of the body of the uterus is smooth; sometimes there is occlusion of the internal or external os; sometimes, even without occlusion, there is a considerable accumulation of purulent secretion, often intensely fœtid, in the cavity of the body of the uterus. This condition is known as *pyometra*.

Pathology.—*In acute cases* the mucous membrane is said to be swollen, and secreting pus.

In chronic cases, which are those we have most frequently to deal with in practice, there is *hypertrophy of the mucous membrane of the body of the uterus, either a localised hypertrophy as in Case I. above, or a general hypertrophy.* Localised hypertrophy would give the variety called "fungous endometritis," in these cases definite irregular projections can be detected with the finger after dilatation of the cervix.

The hypertrophy of the mucous membrane is said to affect all the elements of the mucous membrane, the glands, the blood-vessels, and the connective tissue. In Case I. (above) the glands were considerably dilated.

Treatment.—When the general features of the case lead us to determine on local treatment, *e.g.*, *persistent menorrhagia* for which no other cause can be found, and which resists ordinary treatment by ergot, hot douches, etc., or *recurring abortion*, for which no reason can be found, the best practice is to dilate the cervix with Hegar's dilators, and examine the surface with the finger to render our knowledge of the case as precise as possible; then, with a blunt-edged curette, to systematically scrape the whole of the interior of the uterine body, afterwards to apply carbolic acid, or tincture of iodine (pure), to the whole of the surface, and wash away any excess with a douche of weak iodine water through the intra-uterine tube. This was the treatment adopted in Case I., and she was permanently cured. *Corporeal* endometritis is certainly a cause of sterility, or, if pregnancy occurs, a predisposing cause of abortion. *Cervical* endometritis probably has little or no power to cause either sterility, or abortion.

Metritis.

By this is meant interstitial inflammation of the uterus, inflammation of the uterine tissue lying between the peritoneal surface on the one hand, and the mucous surface on the other. Although metritis is a real condition, it cannot be diagnosed apart from the inflammation of the mucous surface, or inflammation of the peritoneal surface, of the uterus. When either of these conditions is present in marked degree, it may be taken that there is more or less metritis present as well. The case is analogous to pericarditis and endocarditis in relation to myocarditis.

Subinvolution of the Uterus.

Immediately after delivery the uterus weighs about twenty-eight ounces.

Under normal conditions its weight falls in six weeks' time to about one ounce and a half. The process by which this change is accomplished is known as the *Involution of the Uterus.*

The uterus of a woman who has borne children always, however, remains permanently somewhat larger than the uterus of a nullipara.

Differences between the Uterus of a Virgin and the Uterus of a Woman who has borne Children.

The uterus of a virgin (Fig. 52).

Length.—Its whole length, measured externally from the highest point of the fundus to the external os, is about two inches and a half. A slight constriction,

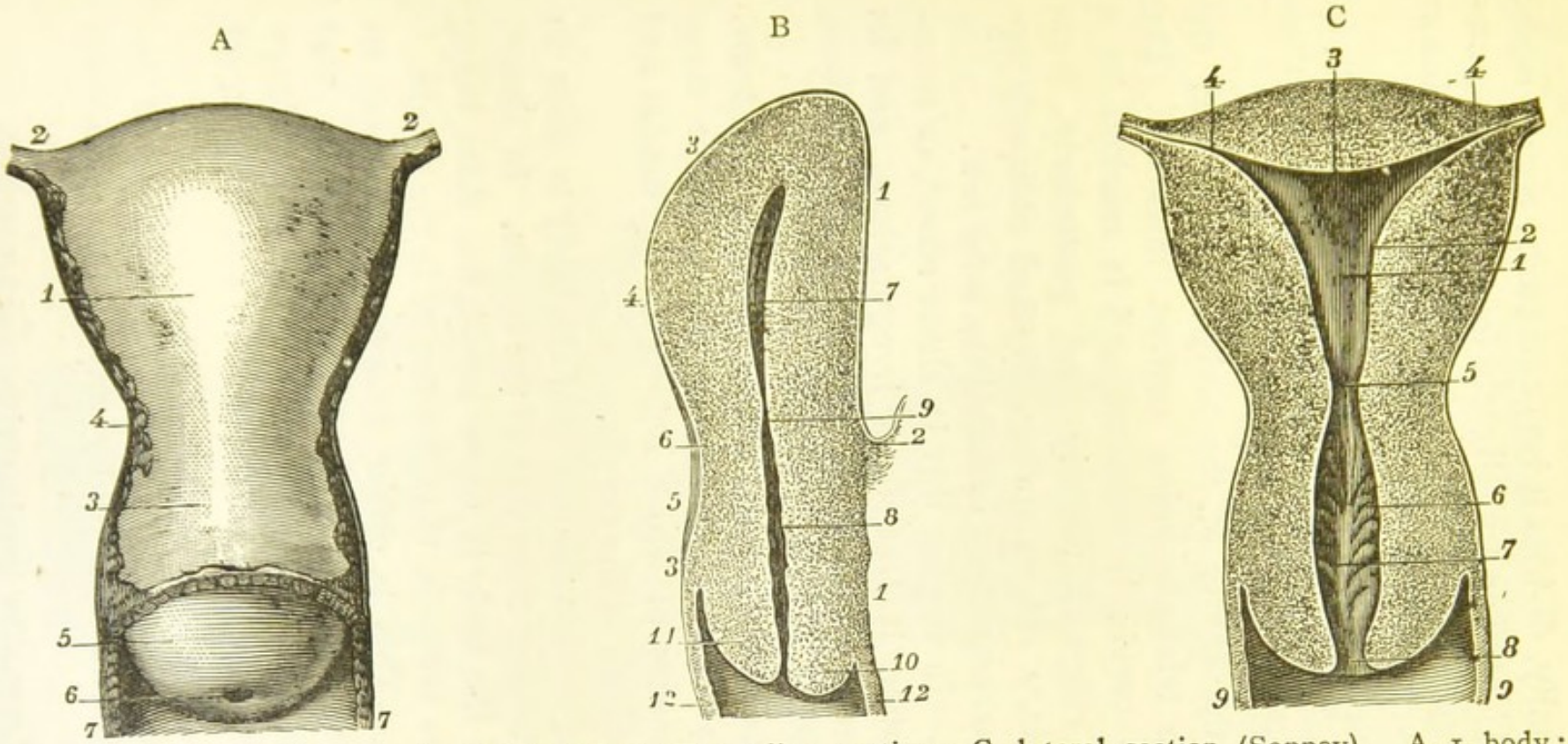

FIG. 52.—Virgin Uterus. A, anterior view; B, median section; C, lateral section (Sappey). A, 1, body; 2, 2, angles; 3, cervix; 4, site of the os internum; 5, vaginal portion of the cervix; 6, external os; 7, 7, vagina. B, 1, 1, profile of the anterior surface; 2, vesico-uterine cul-de-sac; 3, 3, profile of the posterior surface; 4, body; 5, neck; 6, isthmus; 7, cavity of the body; 8, cavity of the cervix; 9, os internum; 10, anterior lip of the os externum; 11, posterior lip; 12, 12, vagina. C, 1, cavity of the body; 2, lateral wall; 3, superior wall; 4, 4, cornua; 5, os internum; 6, cavity of the cervix; 7, arbor vitæ of the cervix; 8, os externum; 9, 9, vagina.

visible externally, divides it into two parts, nearly equal in length. The upper and slightly longer portion comprising the fundus and body of the uterus, the lower portion being the cervix.

Cavity.—On coronal section (Fig. 52 C) we see that, in the virgin, the cavity of the body is rather shorter than the cavity of the cervix.

In shape the cavity of the body is triangular, the sides of the triangle being convex inwards. The cavity of the cervix is fusiform, and is marked by a longitudinal ridge, anteriorly and posteriorly, from which secondary ridges spring, directed obliquely upwards; this arrangement is called the *arbor vitæ*.

External os.—In virgins this is either round, or transverse, its outline is free from irregularities, and its longest diameter varies from half a line to two lines, $\frac{1}{24}$ - $\frac{1}{6}$ of an inch (Lusk).

The uterus of a woman who has borne children.

Length.—Its whole length externally is about three inches, two inches of which belong to the fundus and body, and one inch to the cervix.

Cavity.—On section the cavity of the body is seen to be distinctly longer than that of the cervix. In shape, the cavity of the body is more ovoid, the sides being rather concave inwards, than convex as in the virgin.

External os.—This is either round, or transverse, its outline is irregular from the slight lacerations that occur physiologically in labour. The os is often large enough to admit the tip of the finger, and its longest diameter measures about half an inch.

Etiology of Subinvolution.—The process of involution is interfered with by any of the following causes:—

1. *Pelvic inflammation* (perimetritis, parametritis).

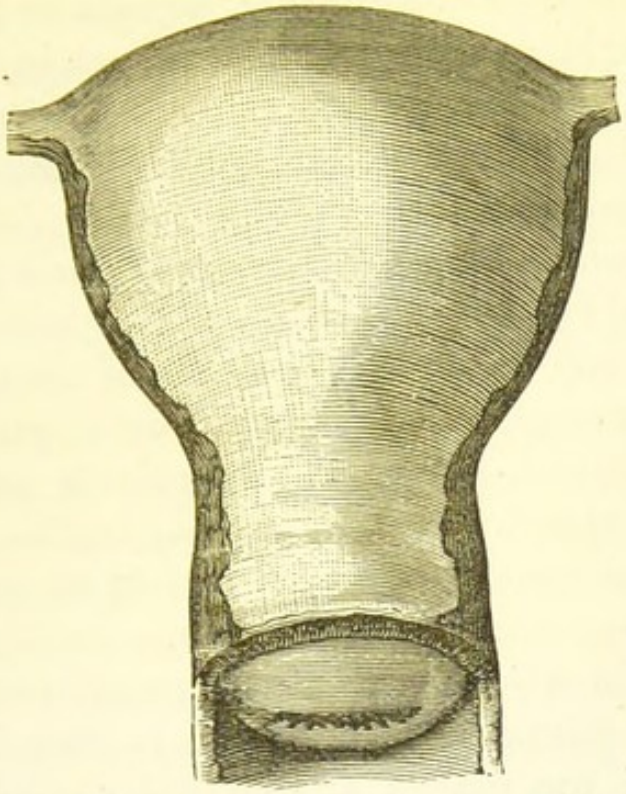

FIG. 53.—Multiparous Uterus, anterior surface (Sappey).

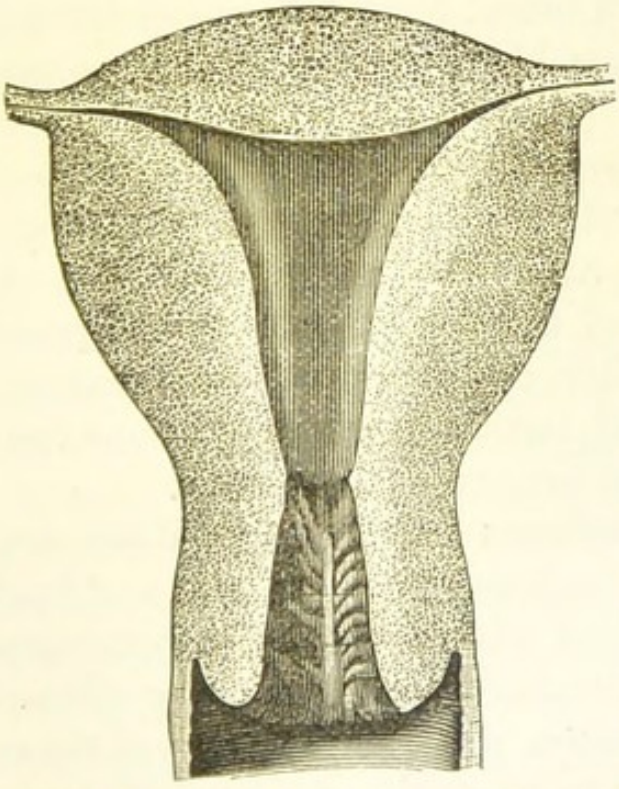

FIG. 54.—Multiparous Uterus, uterine cavity (Sappey).

2. *The retention of portions of placenta or membranes, or of clots,* after labour, or abortion. In such cases corporeal endometritis is likely to co-exist. (See page 135, for a very typical case of subinvolution in connection with corporeal endometritis).

3. *The presence of fibroid tumours of the uterus.*—I have seen several examples of subinvolution associated with, and apparently due to, the presence of uterine fibroids.

4. *Passive congestion of the uterus* due to getting up too soon after labour, and more particularly getting up too soon after abortion, or miscarriage—the patient not thinking it necessary to remain in bed so long after the latter, as after delivery at full term.

The way in which passive congestion occurs in such cases is as follows:—The uterus is still larger than normal, and the tissues around it lax. When the patient gets up, the uterus descends—there is a certain degree of prolapse—this of itself, by dragging on the veins in each broad ligament, causes increased difficulty in the venous blood passing off—*i.e.*, produces passive congestion.

The descent of the uterus is associated with some degree of retroversion, either alone, or combined with retroflexion, and owing to the size of the uterus the incarceration of the uterus in Douglas's pouch, described in the chapter on Versions and Flexions, is very apt to occur, still further increasing venous congestion, and retarding the process of involution.

The symptoms of Subinvolution are:—

More or less bearing-down pain, and backache.

Menorrhagia, and often also metrorrhagia.

A yellow discharge, which may be offensive.

On examination we find the body of the uterus larger than it ought to be, perhaps very much larger (as in the

case already referred to on page 135). Very often we find the uterus lower than normal, and retroverted, or retroflexed; and it is particularly in cases of this kind that incarceration of the uterus in Douglas's pouch is commonly met with. As this condition is fully described later on, it is unnecessary to say more about it here. Sometimes a polypoid mass may be felt just within the external os.

The sound passes an increased distance, $3\frac{1}{4}$, $3\frac{1}{2}$, or four inches. In bad cases it may pass five or more inches according to circumstances. It is important to notice that the bimanual examination often shows that the uterus is larger than it should be, that there is subinvolution, when the sound only passes the normal distance, or a very little more. Here the increased bulk of the uterus is due to excessive thickness of the walls.

Before passing the sound, it is of course necessary to make certain that the enlargement of the uterus is not due to pregnancy—as regards the history, the symptoms dating from a particular confinement, or miscarriage, will usually help us, and as regards physical signs the feeling of the body of the uterus in subinvolution is different from the feeling it has in pregnancy. In subinvolution though the uterus is enlarged, it feels firm and hard on bimanual examination, its shape is distinctly flattened from before back, although the thickness of the walls is increased. In early pregnancy, the shape of the enlarged body is more globular, its outline is less definite and it has an elastic feeling.

Other signs likely to be present in pregnancy, such as purple discoloration of the vaginal mucous membrane, and of the vaginal portion of the cervix—and softening of the cervix, will also aid us in diagnosis.

Treatment.—*Preventive Treatment.*—When we look

at the etiology of the disease, we see at once that it usually arises from preventible causes. Thus, as regards pelvic inflammation occurring after labour, or abortion, we know that this is usually, if not always, of septic origin, and moreover in most cases the septic element is introduced by dirty hands, finger nails, or instruments —careful regard to antiseptic principles in midwifery practice is therefore of the first importance. This is more fully discussed under Pelvic Peritonitis.

Careful attention to see that all the placenta and membranes have come away, is another element in the preventive treatment of subinvolution. Again, it is well to give ergot for a week after labour as a matter of routine in all cases. The patient should be advised to suckle, in the absence of any strong reason to the contrary. Another point is to see that the patient does not get up too soon after labour. The continued presence of a red discharge after delivery, or abortion, is to be looked on as an indication that the patient should remain in the recumbent position, although not necessarily in bed. When the time for preventive treatment has gone by, and a case of subinvolution comes before us, if there is no offensive discharge, and if there is nothing felt just within the external os, such as placental polypus, the treatment should consist of replacing the uterus if necessary, with the sound, and inserting a ring pessary to keep it in good position. The patient should remain in bed for a time. Hot vaginal douches should be given three times a day. For medicine, she should take some preparation of ergot thrice daily. Under this treatment many cases get well. If, however, the case does not improve after this treatment has had a fair trial, the next thing to do is to dilate the cervix, and examine the interior of the uterus for a piece of adherent

placenta, or other abnormality of the endometrium, and, if we find anything of the kind, to remove it.

If there is an offensive discharge from the uterus, with persistent subinvolution, as in the case described on page 135, the treatment adopted there is the right one, scraping the whole of the endometrium thoroughly with a spoon; if necessary, after previous dilatation of the cervix.

In all intra-uterine manipulations the vagina should first be douched with an antiseptic lotion, and the hands and instruments carefully rendered aseptic; after we have finished, the cavity of the uterus should be thoroughly washed out through a double channelled tube, with an antiseptic lotion.

When there is evidence of acute, or sub-acute, pelvic inflammation, this, rather than the subinvolution, must of course be regarded as the important element of the case, and treatment adopted suitable for it.

Superinvolution of the Uterus.

Definition.—Excessive involution of the uterus. The disturbance of the involution is here in the opposite direction from subinvolution, the process goes too far, and leaves the uterus atrophied.

We know little of the causes of this condition. The symptoms are amenorrhœa and sterility, and the diagnosis depends on finding by bimanual examination, and on passing the sound, that the uterus is much smaller than it should be.

Nothing can be done in the way of cure, and if the patient's general health is good, the case is best left alone.

Notes of two cases which came under the writer's care at the London Hospital, are appended:—

Case I.—A. S., age thirty-three, married nine years, three children, the last three years previously and still-born. No miscarriages. All the confinements difficult, forceps used in second confinement.

Has not menstruated since the last confinement. She lost more blood after her last confinement than after the others, "as the after-birth had grown to her side."

For the last five months has suffered from headache. There has been no epistaxis, or other loss of blood. Every month she feels as if menstruation were coming on, and has some yellow discharge.

The catamenia appeared when she was fifteen, and she was always regular, though the loss was scanty.

Has had sore throat, on and off, the last twelve months.

Bowels confined as a rule.

Pelvic measurements.—Between anterior superior spines = $8\frac{1}{4}$ in.; between iliac crests = $9\frac{1}{4}$ in.; external conjugate = $6\frac{3}{4}$ in.

On bimanual examination the uterus was found to be very small in all directions, the sound passed rather less than two inches.

(N.B. In women who have had children the sound passes at least $2\frac{1}{2}$ inches, often $2\frac{3}{4}$). Nothing else abnormal was found.

Case II.—S. C., age twenty-nine, married six years, one child, five years ago, no miscarriages. Confinement normal, no post-partum hæmorrhage. She suckled the child six months. The child died when it was ten months old. Has not menstruated since the confinement. She is well in herself, except that sometimes she feels "heavy in the head." The catamenia appeared at fifteen, she was regular every month, always losing very little, it lasted two or three days, and she had no pain to speak of at her periods.

V. E. Uterus quite small, as estimated bimanually.

Cervix projects very little into the vagina. Sound passes just two inches. Nothing else abnormal.

Remarks.—In both cases menstruation had always been scanty. In Case I. the patient had had three children, so that in her case scanty menstruation could hardly be taken as evidence of deficient ovarian activity, at least, as regards the highest function of the ovary—ovulation.

CHAPTER X.

Diseases of the Uterus.

Fibroid Tumours.

Etiology.—It is only during the period of menstrual life, between the ages of 15 and 45, that fibroid tumours of the uterus *begin* to grow.

Influence as regards conception and labour.—In general terms it may be said that a woman who has fibroid tumours in her uterus is less likely to become pregnant than other women (about one-third of married women with fibroid tumours are sterile). If she should become pregnant, she has a special liability to abort. If, however, she goes to full term, then special dangers may arise:—

1. *During labour*, from mechanical obstruction to the passage of the child, varying with the exact position of the fibroid, the greatest obstruction occurring with a large interstitial fibroid in the cervix.

2. *Immediately after labour*, from post-partum hæmorrhage.

3. *Later*, from secondary hæmorrhage, or septic fever if the fibroid should slough, owing to injuries received during labour.

Some persistent cases of subinvolution are due to the presence of fibroids, the uterus for weeks remaining about as large as it was immediately after labour. I have seen several cases of this.

During pregnancy, fibroids grow, sharing in the general hypertrophy of the uterus.

Very rarely after labour, under the influence of the process of involution, fibroids may disappear altogether, but well authenticated cases of this are on record.

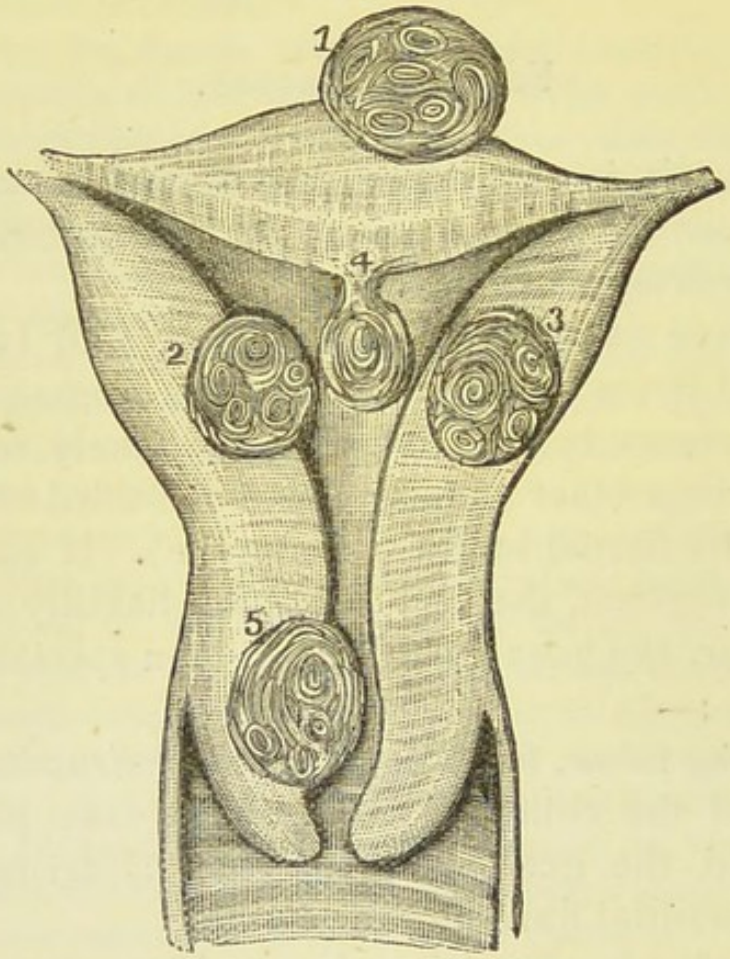

FIG. 55.—Typical Varieties of Fibroids (Thorburn). (Diagrammatic). 1. Subperitoneal; 2. Submucous; 3. Interstitial; 4 in the figure has a distinct stalk, *i.e.*, is a polypus. It is explained in the text that, so long as fibroid tumours are entirely in the cavity of the *body* of the uterus, and not partly in the cervix, they do not acquire a distinct stalk, though they may have a neck; 4 in the figure, therefore, being a fibroid still entirely in the cavity of the body of the uterus, should not have a distinct pedicle; 5. Submucous fibroid of the cervix.

Varieties.

As regards position.—All fibroids begin as *interstitial* fibroids, *i.e.*, at first they lie embedded in the thickness of the uterine wall. As they grow, they make their way either towards the peritoneum, or towards the mucous membrane of the uterus, and are then termed *subperitoneal* or *submucous* fibroids, respectively. A fibroid ceases to be *interstitial*, only when its largest diameter has passed beyond the uterine wall, and when its attachment to the uterus is by a more or less constricted part, or neck. Gradually, in many cases, more and more of the tumour is expelled from the uterine wall, till at last the original tumour hangs by a distinct *stalk;* it has then become a subperitoneal, or submucous, fibroid *polypus*, as the case may be. Dr. Matthews Duncan draws particular attention to the distinction between a submucous fibroid tumour of the uterus, and a submucous fibroid polypus. The former may lie wholly in the cavity of the body of the uterus; it is attached to the mucous membrane by a neck only, not a stalk.

When there is a distinct stalk to a submucous fibroid, when it has become a polypus, the tumour always lies, partly at least, in the cavity of the cervix, and not wholly in the cavity of the body.

Number.—Fibroids are usually multiple, it is exceptional for there to be only one.

Seat.—They most commonly grow from, or in, the walls of the body of the uterus, and are more common in the posterior, than in the anterior wall. Less commonly they grow from the supravaginal cervix, and still less commonly from the vaginal portion of the cervix.

Structure.—Fibroid tumours are composed of involuntary muscular fibre and fibrous tissue, in varying proportions.

As regards consistence they may be either:—

1. *Hard*, or
2. *Soft*.

1. *Hard fibroids.*—These are much commoner than soft, and in them there is an excess of the fibrous tissue

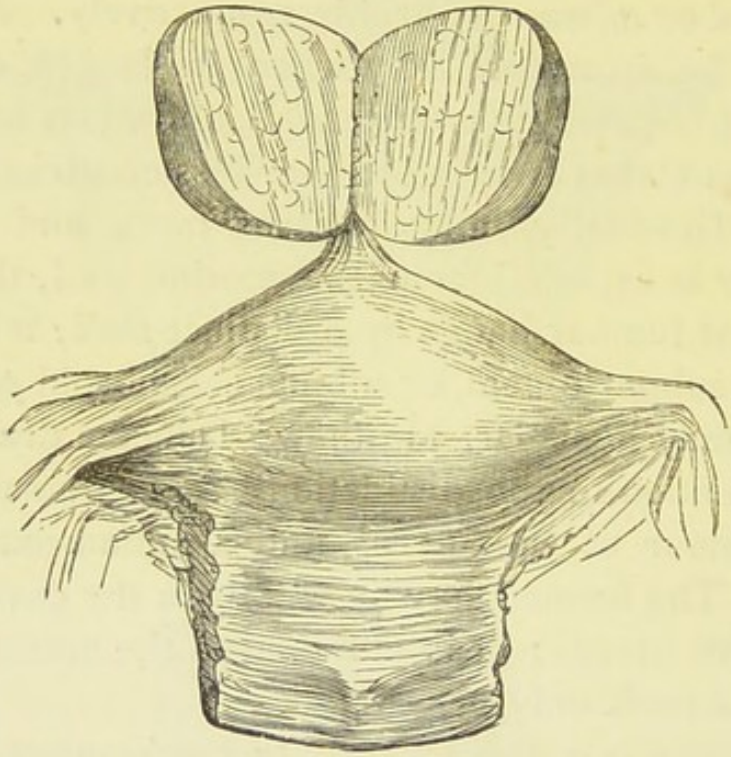

Fig. 56.—Subperitoneal Fibroid Tumour of the Uterus (London Hospital Museum). The tumour is only attached by a thin pedicle to the fundus uteri (Barnes).

element, with a comparatively small amount of involuntary muscle. To the naked eye, a hard fibroid has, on section, a greyish-white colour, with a pearly lustre, and, owing to the wavy arrangement of the fibres, its appearance has been aptly compared to that of a ball of cotton. As the bundles of fibres may be arranged

round several centres, an apparently single fibroid may, on section, have an appearance like several balls of cotton placed in contact with one another. Hard fibroids have a sort of capsule formed of the tissues of the uterus in which they are embedded, and they are connected with their capsules by a loose connective tissue, which permits a tumour of this variety to be easily shelled out when the capsule has been divided. The vessels supplying a hard fibroid lie under the capsule round the circumference of the tumour, few or none penetrating its substance (*see* Fig. 58).

2. *Soft fibroids*—the rarer variety—have no distinct capsule, their tissues being continuous at the circumference with the tissues of the uterus. They have a pale pink colour. Microscopically they are found to have an excess of involuntary muscular fibre, with but little fibrous tissue.

Natural history.—Fibroids may remain for years unaltered and stationary, or they may continue to grow.

There are certain changes which fibroid tumours are liable to undergo:—

1. *They may calcify.*

2. *They may soften* into a puriform mass, which may, in the case of interstitial fibroids, be discharged through an opening formed towards the mucous membrane.

3. *They may (in the case of submucous polypi) become gangrenous,* and be discharged if the patient survive, which is unlikely.

4. Occasionally they undergo malignant degeneration.

5. An opening may be formed in the capsule by ulceration, and the tumour be extruded through it *en masse.*

It is to be remembered that the natural tendency of fibroid tumours is not, as a general rule, to kill the

patient; they may cause great suffering, but they only rarely kill.

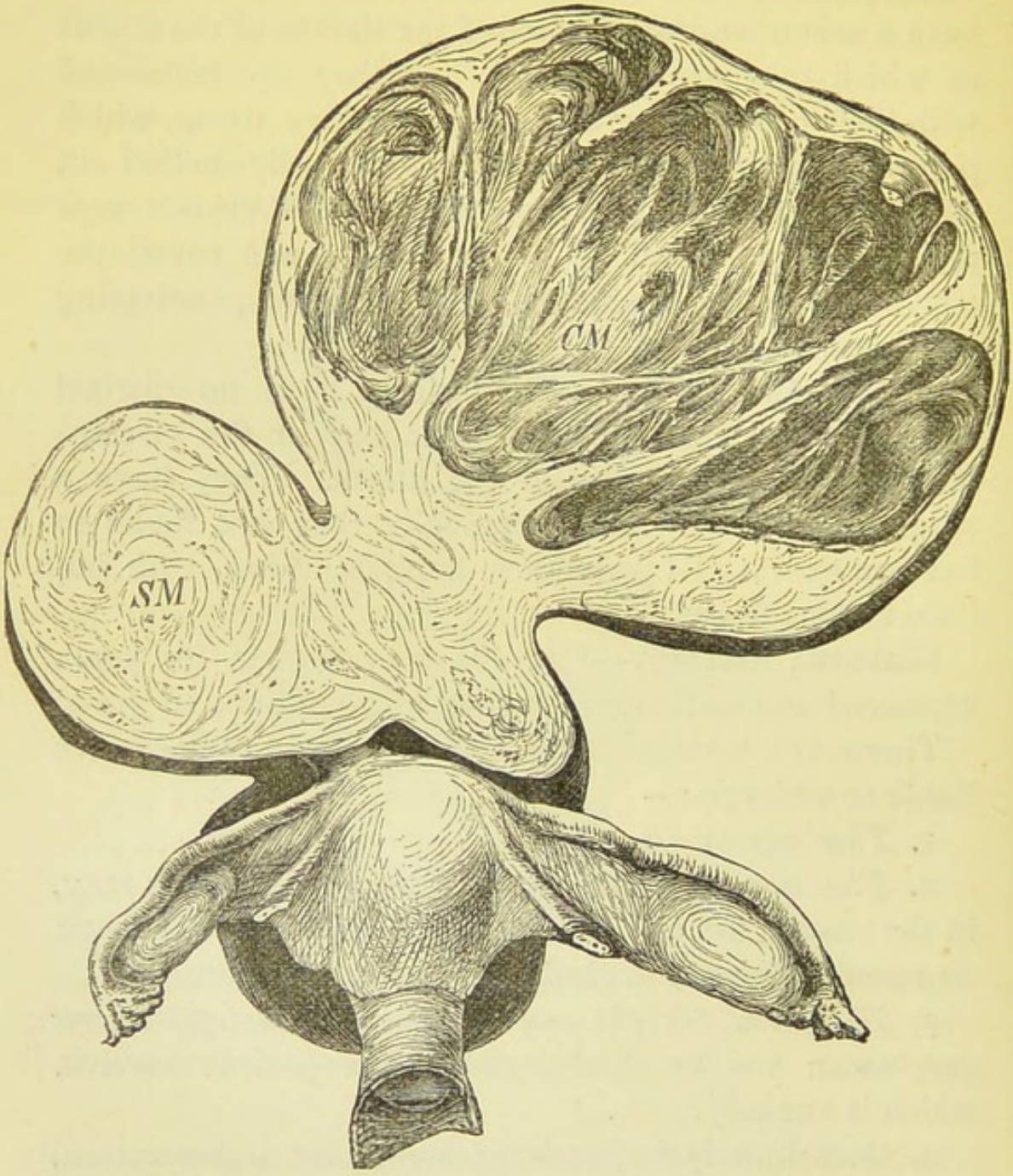

FIG. 57.—Uterine Fibroids, one of which has become cystic (Schroeder).

In this respect they stand in marked contrast to ovarian tumours.

6. They may become cystic. How this occurs is not yet settled.

Influence of menstruation on fibroids.—Fibroids are at their largest immediately before the commencement of the flow, and at their smallest at the end of the flow; between the periods they gradually enlarge, attaining a maximum just before the next period.

Symptoms.—There may be none, and it is more particularly in the case of subperitoneal fibroids that this occurs. Subperitoneal fibroids are more likely to have attention directed to them on account of their size than on account of symptoms, such as occur with the other varieties of fibroid tumours. These are:—

1. *Bleeding.* Menorrhagia and perhaps also metrorrhagia.
2. *Painful menstruation.*
3. *A yellow discharge.*
4. *Pressure symptoms.*

Pressure symptoms.—In slight cases there is merely a sense of weight in the pelvis, with a feeling of "bearing down." More severe symptoms may arise: *(a)* if the tumour be of great size, or *(b)* even with a small tumour, if on account of its original position it becomes incarcerated in the pelvis.

Micturition.—Frequency of micturition is a common symptom, particularly if the tumour is in the anterior wall. Retention of urine is not uncommon in cases of fibroids, whereas in cases of ovarian tumours it is rare.

Defæcation.—Very rarely complete obstruction may occur from pressure of an incarcerated fibroid on the rectum. If a woman is the subject of uterine fibroids, and intestinal obstruction occurs, there is a strong probability against the obstruction being due to the fibroids.

Pressure on veins may cause the veins of the lower extremities to become varicose, and there may also be some of the violet tinting of the vaginal mucous membrane from venous congestion, like that observed during pregnancy.

Pressure on nerves.—Severe neuralgic pains may occur, particularly in cases where the fibroid is incarcerated in the pelvis.

Pressure on the ureters occasionally causes them to become dilated, and ultimately hydronephrosis may be produced.

Finally, in the case of very large tumours, **respiration and digestion** may be interfered with.

Diagnosis.—Fibroid tumours have to be diagnosed from :—

1. Pregnancy.
2. Ovarian tumours.
3. Pelvic inflammation.
4. Pelvic hæmatocele.
5. Retroflexion and Anteflexion.
6. Some cases of Carcinoma.

(1) **Pregnancy.**

As regards the history.—In pregnancy there is usually complete amenorrhœa, whereas in fibroids there is menorrhagia. Sometimes, however, menstruation may go on during the first three months of pregnancy; and even as late as the fifth or sixth month, there may be hæmorrhages at intervals of a month, which the patient takes for ordinary menstruation. The explanation of hæmorrhages so late as this must be that there is really a threatened abortion each month, and that the bleeding occurs at intervals of a month on account of the monthly congestion of the uterus, which probably goes on even during pregnancy.

Again, there is a history of morning sickness, and if the pregnancy has reached the end of the fourth month,

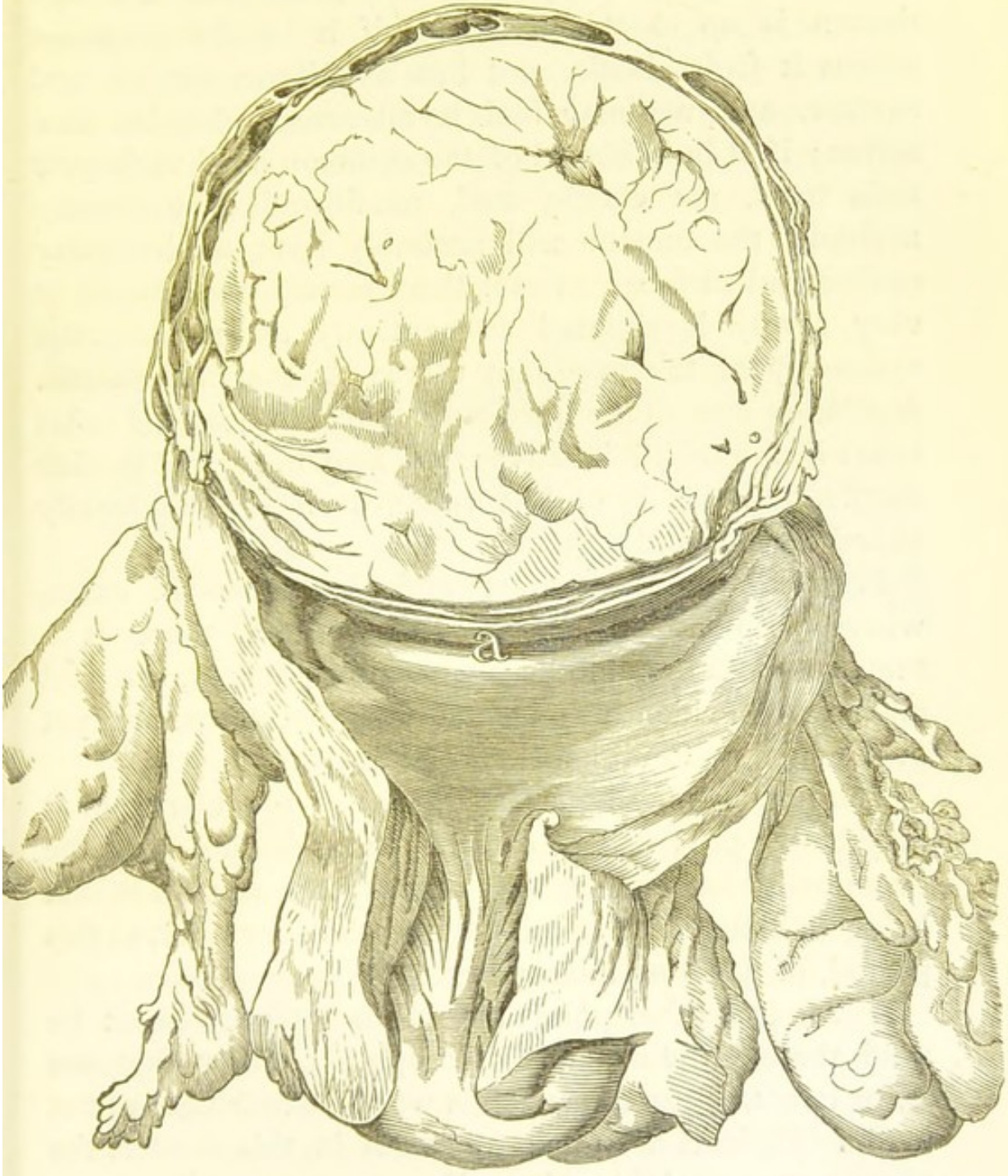

FIG. 58.—Uterus containing Fibroid tumour, from a case which terminated fatally through hæmorrhage. Large venous sinuses are seen in the capsule, one of which ruptured at the point (a) (Matthews Duncan). *Edin. Med. Jour.*, 1867, p. 634.

the history of quickening, whereas in fibroids these symptoms are absent.

Physical signs.—Supposing the tumour in the abdomen is up to the umbilicus, if it be the pregnant uterus it feels elastic, and has a uniform outline and surface, and we may feel it alternately harden and soften; if it be a fibroid of the common hard variety, it feels hard, not elastic, and, as fibroids are usually multiple, the tumour will probably have an irregular outline and surface; even if there is only one fibroid it very rarely is situated so centrally as to have the symmetry of the pregnant uterus at the fifth month. Again, on auscultation, we may expect to hear the fœtal heart if the child is alive; we also hear the uterine souffle, but this is of less value, as it is occasionally heard over fibroid tumours.

Practically, the greatest difficulty arises in cases, where with no history of amenorrhœa, there is a tumour up to the umbilicus, centrally situated, soft and elastic, and evidently connected with the uterus, and yet over which no fœtal heart can be heard.

The tumour may be a *soft* fibroid of the uterus, or it may be the pregnant uterus, the fœtus having died, the ovum being for some reason retained, the woman in fact being in a condition of missed abortion, or rather, at this period, of "missed miscarriage."

As regards other points to which attention must be paid, there is the woman's own opinion, either that she is, or is not, pregnant, which is worth something, but not much. Patients are often mistaken in this matter, the non-pregnant thinking herself pregnant, and the pregnant having no idea of her condition.

The condition of the breasts, the purple colour of the vaginal mucous membrane, and the vaginal portion of

the cervix, the softening of the cervix, are all signs to which due weight must be given, but it must be borne in mind that there may be milk in the breasts of a woman who is not, and never has been, pregnant; that the purple coloration of the vagina is due to pressure, and may, therefore, be caused by other tumours; and that the cervix may be softened in some exceptional cases of fibroid tumours.

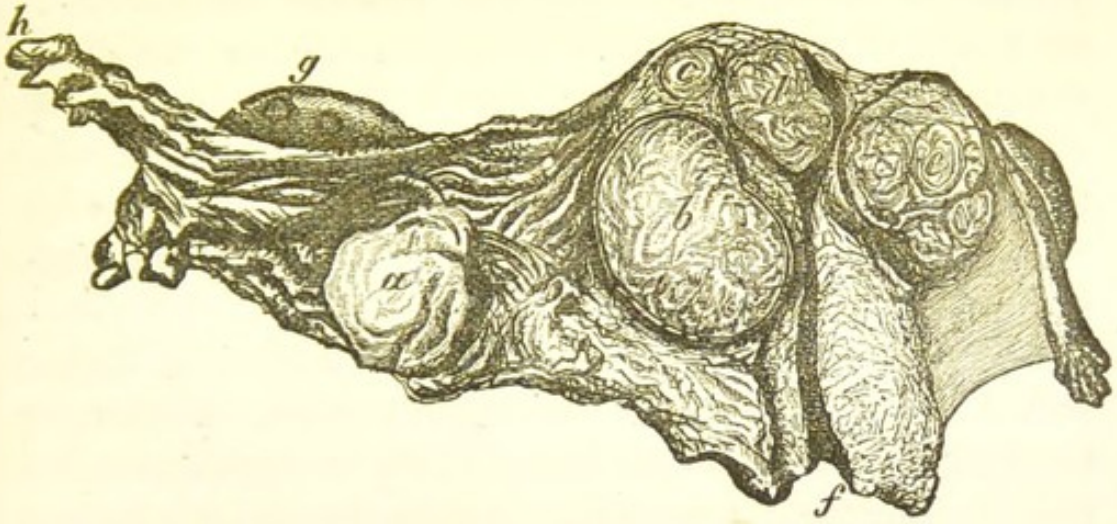

FIG. 59.—Multiple Fibroids of Uterus (Winckel).

a. Fibroid tumour in right broad ligament. *b* and *e*. Subperitoneal tumours. *c*. Interstitial fibroid. *d*. Submucous fibroid. *f*. External os. *g*. Right ovary. *h*. Right Fallopian tube.

As a matter of experience these cases almost always turn out to be cases of pregnancy—"missed abortion," or "missed miscarriage."

Finally, it must not be forgotten that both conditions may be present together, normal pregnancy and fibroid tumours of the uterus.

In such cases, there is amenorrhœa, the uterine tumour is probably irregular in outline and surface, and is larger than would correspond to the supposed period

of pregnancy; for certain diagnosis we must wait until the fœtal heart is heard.

I remember a case very well, where a woman who had been a widow for some years, and was over forty years of age, came with a history of three months amenorrhœa, and where there was an elastic, irregular tumour connected with the uterus, much larger than the uterus at the third month of pregnancy. The tumour rapidly enlarged, and finally when it was several inches above the navel, after about five months' amenorrhœa, we heard the fœtal heart. At this time the surface of the tumour was markedly irregular, some three inches of the upper part being hard, and separated by a deep transverse groove from a soft, and more uniformly regular, lower portion, which was presumably the body of the uterus.

Ovarian tumours.— It has already been said, that soft fibroids which feel elastic, and almost fluctuating (and which are therefore more likely to be mistaken for ovarian tumours) are rare. Again, hard, solid-feeling tumours of the ovary are rare, and when they do occur are likely to be mistaken for the common hard fibroid, especially the subperitoneal fibroid with a long stalk. Nevertheless, as a general rule, great importance should be attached to the consistence of the tumour. Dr. Barnes says: "if you find a smooth *solid* tumour, beware, it is uterine."

As regards history, while menorrhagia is the rule with fibroids, it is the exception with ovarian tumours, but still we must remember that in cases of ovarian tumour, both small and large, profuse menstruation does occasionally occur; more commonly menstruation in cases of ovarian tumour is not excessive, and either regular, or if its regularity is disturbed, it is in the

direction of amenorrhœa, the intervals between the periods being increased, and the flow lasting for a shorter time, or being less in quantity than formerly.

On vaginal examination, in cases of large ovarian tumour, the finger reaches the vaginal portion of the cervix easily, often more easily than usual, because the whole uterus is often somewhat pushed down by the pressure of the tumour; it is exceptional for the cervix to be drawn up, so that the os is only reached with difficulty, or not at all, though this does occur sometimes. In large fibroid tumours, on the other hand, it often happens that the vaginal portion of the cervix cannot be reached with the finger, sometimes being so drawn up that even when a full-sized Fergusson's speculum has been passed to its full extent, it is yet an inch or two too short to bring the os into view.

In less extreme cases the vaginal portion may be drawn up so that the os is flush with the vaginal roof.

I remember a case of Dr. Graily Hewitt's of this kind, where the sound could only be passed through a speculum, as the situation of the os could not be detected by the finger alone.

The sound held by the handle in a long pair of cervix forceps, then passed till only the handle was left projecting beyond the os uteri.

The sound.—As a rule in cases of ovarian tumour the sound passes only the normal distance, whereas in cases of fibroids it passes more than two and a half inches, often much more, as in the case just narrated. In rare cases the uterus is stretched upwards by the growth of an ovarian tumour adherent to it, and then we do have moderate lengthening of the uterine cavity, the sound passing three or four inches. This is, however, quite the exception.

The Bimanual examination.—In cases of large abdominal tumours this often gives no additional information.

When the tumour is of moderate size, say reaching up to the umbilicus, or small and entirely in the pelvis, and the abdominal parietes are lax, then, in cases of ovarian tumour we often isolate the uterus by the bimanual examination from the tumour; whereas in ordinary cases of fibroids we should not be able to do this; the whole tumour would move on giving an impulse to the cervix. Very rarely a sub-peritoneal fibroid may be met with having a long, thin stalk permitting us to isolate the uterus from it as completely as if it were an ovarian tumour.

3. **Pelvic inflammation.**

History.—The symptoms would be found to date from either labour, abortion, or exposure during menstruation, or to have followed an acute vaginitis, especially one of gonorrhœal origin, in fact to have arisen in circumstances where pelvic inflammation often occurs.

The symptoms would be abdominal pain, perhaps vomiting, and more or less high fever.

Physical signs. — *Abdominal examination.* — In cases of pelvic inflammation, large, hard swellings may be formed, by glueing together of the intestines and omentum by adhesive lymph. Such swellings have a less definite outline than swellings due to fibroids, they are also fixed, whereas fibroids usually admit of a certain amount of displacement; again, in pelvic inflammation the tumour is tender, whereas in fibroids it is not tender.

Vaginal examination.—*Bimanual examination.*—In pelvic inflammation the vagina will be found hot, and the uterus more or less fixed. Bimanual examination is often impossible on account of tenderness. In fibroids

the vagina is not hot, and the uterus is not fixed—unless it happens that there are adhesions, which are rarely sufficiently extensive to fix the uterus. In practice there is usually little difficulty in diagnosing fibroids from pelvic inflammation.

4. **Pelvic hæmatocele.**

History.—Here there is a history of sudden onset—pain in the lower abdomen coming on suddenly, often during a menstrual period, with cessation of the flow for some hours, and then reappearance of it, faintness, nausea, perhaps vomiting followed, after twenty-four hours, by more or less fever. In fibroids there is no history of this kind; such symptoms as are present have usually all come on gradually.

Abdominal examination.—Hæmatocele may, if large, form a swelling reaching a variable distance upwards in the abdomen according to its size, say three or four inches above the pubes. Here there is tenderness, and the swelling is fixed.

Vaginal examination and Bimanual examination.—The uterus, in hæmatocele, can often be isolated from the tumour, and is usually pushed close behind the pubes, and fixed there, partly by the pressure of the swelling, but chiefly by the adhesive peritonitis in the neighbourhood of the hæmatocele. After the first forty-eight hours, in hæmatocele, we usually have a hard swelling bulging down Douglas's pouch, and symmetrically situated as regards the middle line. The swelling cannot be displaced out of the pouch.

Here again the only case of fibroids likely to give rise to similar physical signs, is that where we have fibroids of the posterior wall incarcerated in Douglas's pouch, either by having grown so as to be fitted tightly in the pouch, or by having been fixed there by pelvic peritonitis.

In practice, cases of hæmatocele are more likely to be mistaken for solid ovarian tumours than for fibroids.

5. **Anteflexion and Retroflexion.**—We have to be careful not to mistake anteflexion or retroflexion for fibroids of the anterior, or posterior, uterine wall, respectively.

Anteflexion.—Here the body of the uterus forms a swelling felt on vaginal examination in the anterior fornix; bimanually, the body can be grasped between the internal and external fingers, and its size, shape, and particularly its outline, regular or irregular, may be pretty easily determined. If there were a fibroid in the anterior wall the thickness of the body of the uterus from before back would be greater than normal; again, the outline of the anterior surface of the body of the uterus would be irregular, according to the extent to which the fibroid projected towards the peritoneal surface.

On passing the sound, and holding it in position, if the case is simply one of anteflexion, the tumour in the anterior fornix will be found to form a much less obvious projection than before, if an assistant holds the sound in place while a bimanual examination is made, it becomes evident, on grasping the uterus between the fingers, that there is only the thickness of the uterine wall between the sound and the anterior aspect of the tumour; and, further, after recognising by gently tilting the sound whereabouts its point lies, we can make out that there is no convex swelling on the anterior surface of the uterus below this level. Careful attention to these points will make the case clear.

Retroflexion.—Here the body of the uterus forms a swelling felt in the posterior fornix. On passing the sound it will be found to enter with the concavity back-

wards, and its point may be recognised as lying in the centre of the tumour with no more thickness of tissue between it and the examining finger than would be accounted for by the posterior wall of the uterus.

Again, by raising the uterus with the sound, the tumour will disappear from behind the cervix, and by completing the replacement we can feel the body of the uterus bimanually through the anterior fornix; previously to using the sound we would have been able to make our fingers meet immediately in front of the vaginal portion, without anything like the body of the uterus between them.

If the tumour were a fibroid of the posterior wall:—

The sound would pass with the concavity more or less forwards, and by gently tilting the sound, we could make out its point through the abdominal wall, while the tumour was still to be felt, as distinctly as ever, in the posterior fornix.

Diagnosis of Fibroid Polypi.

A. **When they have passed the os uteri.**

Malignant disease of the cervix.—This sometimes takes the form of a polypoid mass, perhaps the size of a large pear, which seems to spring from the vaginal portion of the cervix by a sort of pedicle, thus simulating fibroid polypus of the cervix; if the mass is malignant, the pedicle is never so definitely circumscribed and distinct, as in a case of fibroid polypus.

Again, a malignant growth of this kind is soft, friable, easily bleeding when touched, whereas a fibroid polypus, unless sloughing, has a shining, pinkish capsule, and is of firm consistence; many other con-

siderations would make the diagnosis clear, such as duration of the symptoms, &c., but the physical signs referred to are quite sufficient; even a fœtid, sloughing fibroid polypus is not friable, the sloughing only affects the surface, the bulk of the tumour still remaining hard.

Inversion of the uterus.—It must be remembered that a fibroid polypus attached to the fundus may produce

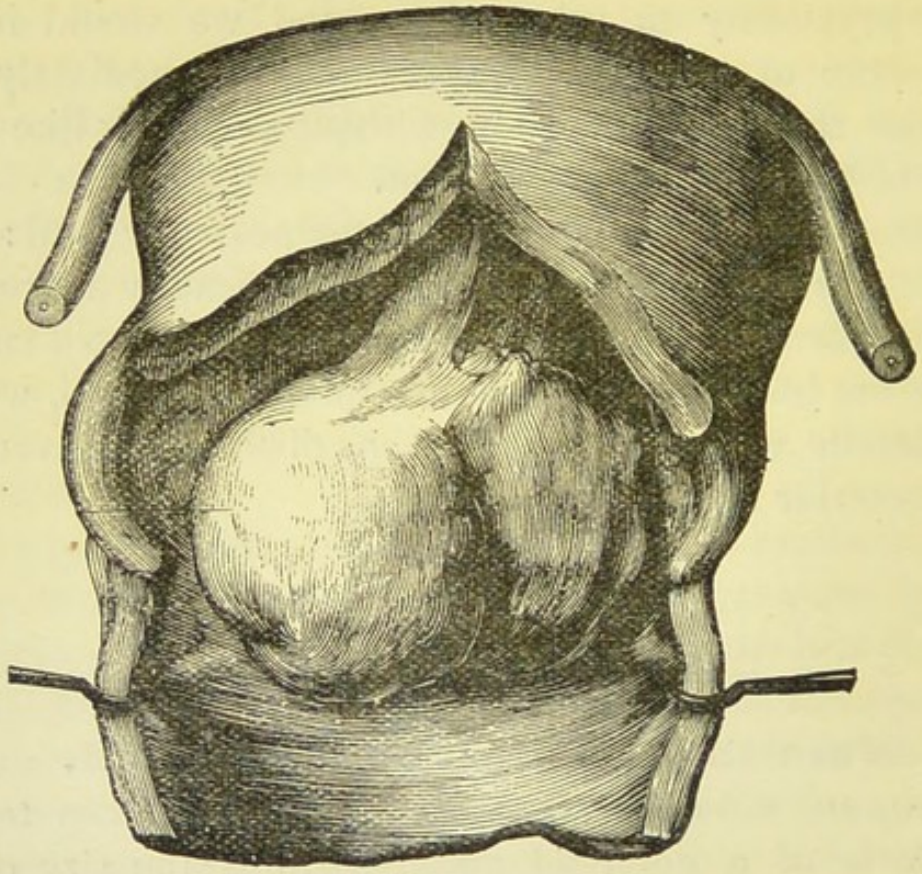

FIG. 60.—Fibroid polypus of the uterus (Churchill and Leblond).

an inversion. So that both conditions may be present.

From inversion simply, we diagnose a fibroid polypus:—

1. *By passing the sound.*—In fibroid polypus we shall be able with care to pass the sound at least the normal distance, and usually further. In inversion we shall be unable to pass the sound to the ordinary distance, no

matter on which side of the polypoid mass we try; this is mentioned because in some cases of fibroid polypi, the pedicle may become adherent at some part of its circumference to the os, but it is always free at some part, permitting the passage of the sound.

2. *Bimanually* if the case is one of inversion, we may make out absence of the body of the uterus from its usual position. With the sound in the bladder, and the finger in the rectum, *care being taken to keep the sound exactly in the middle line*, the absence of the uterus from its usual position can be made out.

3. *Inspection of the surface of the mass.*—The inverted uterus is red, and bleeds easily, and it may be possible to see the openings of the Fallopian tubes. There is a specimen in University College Museum where this could certainly have been done. The appearance of a fibroid polypus has been just mentioned above.

4. The mass formed by the inverted uterus is tender, while a fibroid polypus is not.

It is well to remember that inversion of the uterus is very rare, while fibroid polypi are common.

B. **When they have not passed the os uteri.**

If the os uteri is sufficiently dilated to admit the finger, the sensation imparted to it by coming on a hard, smooth, somewhat movable body within the uterus, combined with the presence of the fundus uteri in its usual position as ascertained bimanually, and also with the fact that the sound passes further than normal, will make the diagnosis clear.

If the os were not sufficiently open to allow the finger to pass, and a consideration of all the circumstances made it most probable that the enlargement of the uterus was due to the presence of an intra-uterine fibroid tumour, or fibroid polypus, the proper course to

pursue would be to dilate the cervix sufficiently to admit the finger, and so settle the question.

Treatment.—This may be considered under two heads:—

1. When there is a submucous fibroid tumour, or fibroid polypus (for distinction between them see p. 151).

2. When the tumour is interstitial, or sub-peritoneal.

1. **As regards fibroid polypi** there is no question that the right treatment always is to remove them, and the same is true of submucous fibroid tumours, which are attached by a narrow attachment, or neck, to the wall of the uterus, even though they have not yet acquired a distinct stalk.

When the polypus has passed the os uteri, it is a very easy matter to pass the loop of an écraseur wire over the tumour, and manipulate it over the largest diameter of the tumour, so that, as the wire is tightened, it shall find its way to the pedicle; this should be done *gradually* to avoid the risk of bleeding. (No traction is to be made in tightening the wire). If, however, the polypus is still within the cavity of the uterus, and the os is just large enough to admit the finger, the case is very different. In such cases it is recommended to dilate the os further with Barnes's bags, till it is sufficiently open to allow the tumour to pass. I can only say that in a very typical case, I gave a most thorough trial to this method, and found it quite useless.

In this case the cervix was stretched over the convexity formed by the lower surface of the polypus, and the os just admitted the finger easily.

A Barnes's bag was then introduced several times, but each time as soon as the bag was distended with water, it simply came out into the vagina. Finally I incised the thinned cervix posteriorly with Paquelin's

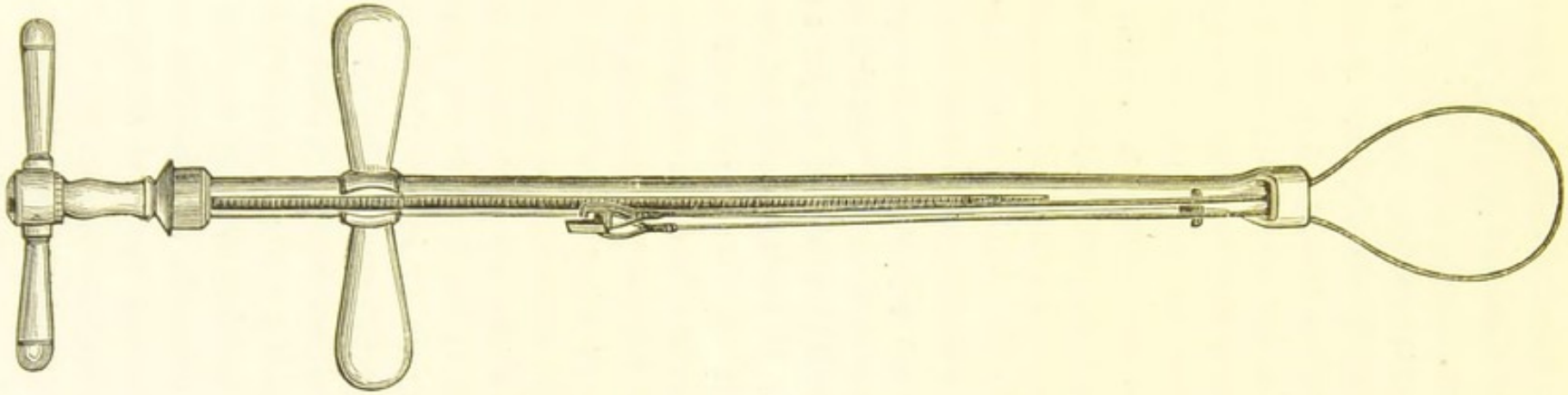

FIG. 61.—THE WIRE ÉCRASEUR.

The length of the wire is so adjusted that when the handle is completely screwed up, the loop has all been drawn back through the aperture at the end of the instrument.

One or two spare wires should always be at hand, as it is not uncommon for the wire to break ; also a pair of pincers, for adjusting another wire if the first one breaks.

cautery, till I judged there was sufficient room for the tumour to pass, and then removed the polypus with the écraseur in the usual way.

In all cases before commencing the operation, the vagina should be thoroughly douched out with an efficient antiseptic, *e.g.*, iodine water (℥ ij. Tinct. iodi to Oj. water), and if, as in the case just mentioned, the operation has been intra-uterine, the cavity of the uterus should be washed out with the same solution through the intra-uterine tube (Fig. 15, p. 35).

2. **When the tumour is interstitial or subperitoneal.**—Here the treatment will depend largely on the symptoms; if bleeding is the chief symptom, we should first try what rest in bed with large doses of ergot will do, preferably using ergotin gr. 2-5, in the form of pill, thrice daily. Hamamelis may also be tried,* at the same time using frequently a vaginal douche of water as hot as the patient can bear it. If such treatment control the bleeding, well and good; but if not, the next step is to dilate the cervix, and make certain that we are not dealing with a case of fibroid polypus, or submucous fibroid tumour, capable of removal with the écraseur. We will take it that after dilating the cervix, the finger in the uterus finds that the tumour forms a convex projection inwards towards the mucous membrane, but that the bulk of the tumour is in the thickness of the uterine wall, that it is an interstitial fibroid. Formerly the treatment known as *enucleation*, would have been considered proper for such a case; this operation briefly consisted of making an incision over the convex swelling formed by the tumour towards the mucous surface of the uterus, and endeavouring to "*get it out somehow*" through the opening made.

* Five to ten drops of the tincture thrice daily.

The operation was a very dangerous, and unsatisfactory one, and may now be considered obsolete. It remains to be seen whether the electrical treatment advocated by Dr. Apostoli will, in the future, to a great extent, take the place of removal of the uterine appendages in the class of cases under consideration. At the present time a case of this sort requiring operative treatment should be treated by removal of the uterine appendages, a much less serious operation than enucleation. The ovaries and a portion of the tubes are removed with the object of artificially bringing on the menopause. In most cases the desired result is attained, but in a few cases no benefit results. Removal of the uterine appendages is suitable only in cases where the abdominal tumour is of moderate size, for instance, not above the level of the umbilicus. In the case of very large tumours it will probably be impossible to find the appendages, or at any rate to remove them.

In such cases where the tumour is very large, if the hæmorrhages are so profuse that it is practically certain that the patient must die if left alone, all medicinal treatment having failed to stop the bleeding, there remains as a last resource removal of the whole tumour with most of the uterus—supravaginal hysterectomy—the cervix alone being left, and usually clamped in the lower angle of the abdominal wound. It is quite the exception to meet with cases where this operation is justifiable; it is a much more dangerous operation than ovariotomy.* In all but a very small proportion of cases ovarian tumours run a fatal course, whereas in all but a very small proportion of cases, fibroid tumours left to themselves do not end fatally.

* Mortality of hysterectomy about 25 per cent.; mortality of ovariotomy 5 to 10 per cent.

It is from this point of view that the question of hysterectomy should be considered. Is the case one where in all human probability nothing else can save the patient? Unless this question can be answered in the affirmative, an operation so dangerous as hysterectomy, even in the hands of the most distinguished operators, will not be justifiable.

The Electrical Treatment of Uterine Fibroids.

The treatment of fibroids by electricity has been reintroduced, with modifications, by Dr. G. Apostoli, of Paris.

Dr. Apostoli's method is as follows:—The patient being in the lithotomy position, a cake of clay, about ten inches by five, and one inch thick, is placed on the abdominal wall. The clay cake is made by working up potter's clay with water to a firm consistence, and

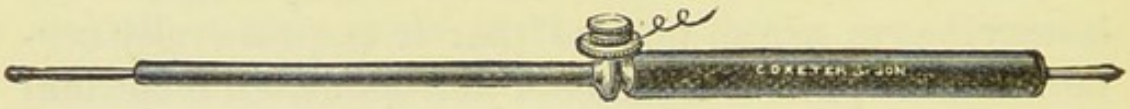

Fig. 62.—Platinum sound with insulated sheaths of different lengths, so that the length of the unprotected metal passed into the uterus can be varied according to the length of the uterine cavity. The reverse end of the sound is trochar-pointed for use when puncture is indicated.

enclosing it in muslin. A flat metal plate, about five inches by three, is embedded in the clay. One of the wires from the battery is attached to the metal plate. The clay thus forms one of the electrodes, and is, as nearly as possible, inert. It is important that the clay should everywhere be in close apposition to the skin,

and it is, therefore, well to fix it by a few turns of a broad bandage. The other electrode is either :—

1. A blunt-pointed platinum sound passed into the uterus, or

2. A sharp-pointed trochar made of steel, which is made to penetrate the substance of the tumour to a slight depth, *viâ* the uterus. In the instrument figured, (1) and (2) are combined in the same instrument (Fig. 62).

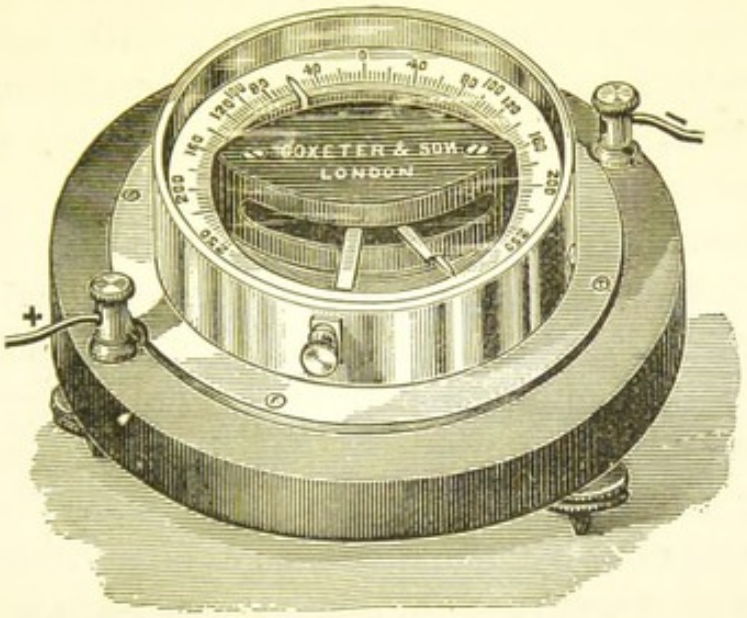

FIG. 63.—Horizontal Galvanometer, graduated to register 250 milliampères.

By means of a galvanometer (Fig. 63) the exact strength of the current employed can be measured; from 100 to 150 milliampères is that usually employed. The current should be gradually increased up to the highest intensity we mean to use, it is kept stationary there for a few minutes, say five or ten minutes, and is then *gradually* reduced again to 0; the electrodes are then removed, and the sitting is over.

The vagina must be syringed with an antiseptic lotion before and after the treatment on each occasion.

The current may be obtained from a Stöhrer's battery.

The intra-uterine electrode may be made either positive or negative at will.

For cases of fibroids where bleeding is the prominent symptom, the intra-uterine pole should be positive. For cases of fibroids not attended with bleeding, the negative pole is recommended.

Dr. Apostoli advises *puncture* (1) *as a matter of necessity*, when for various reasons the sound cannot be introduced; (2) *as a matter of choice*, "when we see that we can advantageously combine punctures with intra-uterine cauterisation, so as to expedite and make sure of the effects that, with the cauterisation only, we should tardily or perhaps imperfectly realise." The puncturing instrument is attached to the negative pole.

It is claimed that under this treatment fibroid tumours are markedly reduced in size, and as regards clinical results, "that ninety-five times out of every hundred they comprise the suppression of all the miseries constituting the fibroidal symptomatology, which may be thus categorically enumerated:—Hæmorrhages, the troubles of menstruation, dysmenorrhœa, amenorrhœa, nervous disturbances, the direct pains in the growth itself, and from mechanical pressure, and the harassing series of reflex actions."

The minimum time necessary for the treatment is one month, and the applications are made twice a week. All the instruments necessary are supplied by Messrs. Coxeter, they tell me that a recent improvement of importance is the use of the water rheostat, "which simplifies the whole operation and renders a *shock* impossible."

Present position of this treatment.—With results so successful as Dr. Apostoli's before us, the treatment

that has just been described will be carefully tested in this country.

I think it is desirable that the cases in which it is

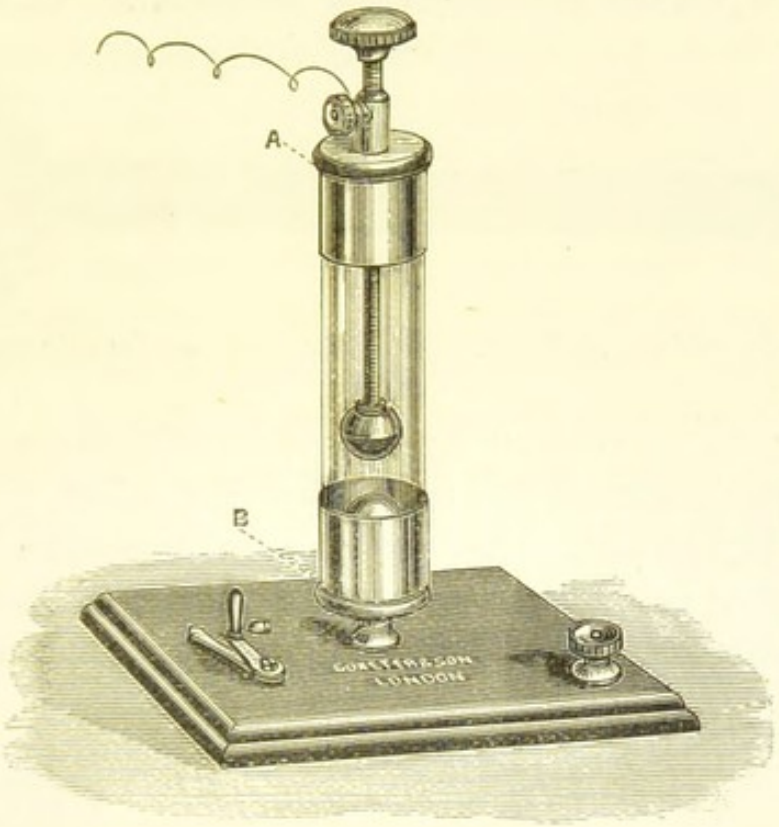

FIG. 64.—Water rheostat to be introduced in the circuit at an indifferent point for regulating the strength of the current (Coxeter).

The glass is filled with distilled water, and the current is first "turned on" with the poles of the instrument unscrewed to the utmost. As the poles are approximated, the galvanometer indicates the increase of current, which is slow at first, but rapidly increases as the poles are brought near together, necessitating as slow a movement of the screw as in using a microscope with a high power. The poles must be again widely diverged before the sound is withdrawn.

tried should, however, be carefully chosen; more particularly cases should be taken:—

1. Where the diagnosis of fibroid tumour is beyond question.

2. Where palliative treatment by rest, hot douching, and drugs has failed. The Apostoli treatment is obviously a more severe measure than palliative treatment of this kind, and it is our duty to relieve our patients by the least severe means at our disposal. Cases then

FIG. 65.—Vaginal Electrode for use with the faradic current.

should only be treated by Dr. Apostoli's method when palliative treatment has been tried and failed.

3. It is in cases where, owing to excessive hæmorrhages that cannot be checked by palliative means, we feel it our duty to recommend removal of the uterine

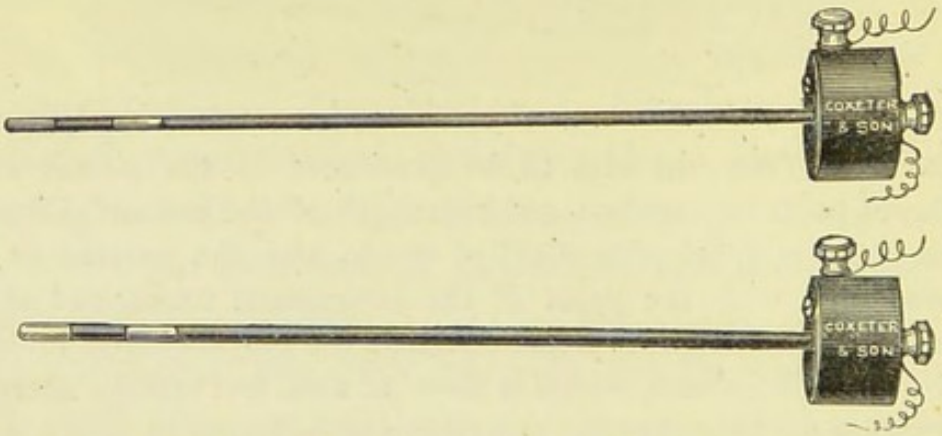

FIG. 66.—Uterine Electrodes, for use with the faradic current.

appendages that we have a fair field for testing the efficacy of this new treatment. Removal of the uterine appendages is an operation of some risk, and is distinctly a much more severe measure than the Apostoli treatment. If, therefore, the latter can make good its

claim to be considered as an alternative to removal of the uterine appendages, it will prove a valuable addition to therapeutics. As yet, proof of this kind is not forthcoming.

4. While the Apostoli treatment has still, therefore, to make its reputation, I think it should be tried in cases of fibroid polypi, particularly when the polypi are easy of access, *e.g.*, hanging down in the vagina. If the treatment can relieve the symptoms due to interstitial fibroids, and reduce their size, it ought also to be able to act similarly on fibroid polypi, the advantage being that in the latter the results will be visible, and unmistakeable. Success in such cases would convince the most sceptical; failure in them would justify doubts as to the efficacy of the treatment in cases of interstitial fibroids.

It may be added that Dr. Apostoli uses the *faradic* current applied either to the interior of the uterus, or merely to the vagina, for various conditions attended with pain; particularly pelvic inflammation, pains in the ovarian regions, and vaginismus.

As in the case of the electrical treatment of fibroids, so also here, Dr. Apostoli's methods have yet to stand the test of experience in this country.

Case of Pelvic Abscess in an unusual position, simulating Soft Fibroid Tumour of the Uterus.

E. M., aged thirty-six, married, having had eight children and three miscarriages (all before the fourth child was born), was admitted into the London Hospital on June 23rd, 1885, complaining of a swelling in the abdomen, and of a red discharge from the vagina. Her last labour (four weeks previously) was a quick one; she lost a good deal of blood after the child was born, but otherwise the labour

was quite normal, and she seemed to recover as usual, getting up on the tenth day, without having any pain, shivering, or feverishness since her confinement. On the tenth day when she got up she noticed the swelling in the abdomen for the first time; it was then much smaller than it was on admission, but had gradually increased to its present size. On the day she got up she felt so weak that she was obliged to return to bed. When she moved, even in bed, she had a dragging pain in the hypogastrium, but she had no pain as long as she lay still. She had had a red discharge from the vagina ever since her confinement.

On admission the patient was thin and anæmic. The abdomen was somewhat distended. A smooth, elastic swelling was felt rising up from the pelvis to the level of the umbilicus, it was not tender. The swelling was symmetrically situated with regard to the middle line. It was dull on percussion; laterally, beyond the limits of the swelling, the abdomen was resonant. Nothing could be heard on auscultation over the tumour. The patient was put under the influence of ether in order that the relations of the swelling might be more thoroughly determined. Through the speculum a sanious discharge was seen to be issuing from the os externum. A catheter having been passed to make certain the bladder was empty, a swelling was felt in front of the cervix depressing the anterior fornix.

Bimanually this swelling was found continuous with that already noted in the hypogastric region. The uterus was movable, every upward impulse given to the cervix moved the tumour with it. The body of the uterus could not be made out distinct from the tumour. It was thought that the latter extended rather further towards the left than to the right. The sound was not used on this occasion. The temperature was 101·4° on admission, and varied for some six weeks subsequently from 102° at night (on one occasion 103·5°) to 99° in the morning.

On *July 13th* the sound was passed, it reached a depth of three inches and a half, and passed towards the right. The tumour was thought to be a soft fibroid.

August 13th.—The patient had been treated since the last note with ergot, at first by the mouth, and afterwards hypodermically, without any alteration taking place in the size of the tumour. A catheter being passed into the bladder, it was found per vaginam that it would be impossible to puncture the tumour in that situation without puncturing the bladder. An aspirator needle was therefore

put into the swelling in the middle line, about midway between the umbilicus and the pubes, and a pint of extremely offensive pus drawn off, the tumour entirely disappearing. Five days afterwards the swelling was as large as at first; it was tapped again on August 22nd, and twenty-two ounces of pus were drawn off, similar in character to the last. After each tapping the abdomen was firmly bandaged.

29th.—The swelling has filled up again, and is, if anything, larger than ever. To day an opening was made under antiseptic precautions into the swelling, the edges of the abscess wall stitched to the skin, and a large drainage-tube five inches long inserted.

From this time to September 15th the patient went on without a bad symptom, the temperature only once reaching 100°. The wound was dressed about every other day, the cavity of the abscess being washed out at each dressing with iodine-water, and some iodoform placed in the deep end of the drainage-tube before re-inserting it. The discharge, which had at first been very offensive, became quite sweet. The abdomen was firmly bandaged after each dressing, large pads of lint being placed on each side of the wound.

On *September 15th*, at 9 a.m., the patient had a rigor lasting seven minutes, the temperature rising to 101°. She complained of pain in her limbs and sore-throat. The pulse was very small and frequent (148). There was no pain in the abdomen, and the wound was looking well. There was a slight erythematous rash on the chest and arms. In the absence of any other discoverable cause, it was thought that these symptoms were due to the absorption of iodoform, which had been very freely introduced into the abscess cavity. The cavity was therefore washed out with carbolic lotion, and iodoform and iodine-water omitted. The next day the temperature was normal, and all the symptoms had disappeared.

November 9th.—The temperature has remained normal since last note. The drainage-tube (which had been shortened from time to time, and replaced by narrower ones) was left off altogether to-day. Since October 5th the patient has gained eleven pounds in weight. She feels and looks very well. On November 4th the catamenia came on, and ceased to-day, no red discharge having previously taken place from the uterus for more than three months. The uterus is freely movable, the body of it being drawn to the left side. The sound passes two inches and a half. There is still a small sinus, an inch and a half deep, in the abdominal wall, but there is little or no

discharge from it. A fine probe, coated with silver nitrate, was passed into it.

December 31st.—The patient has had a fortnight at Eastbourne. The sinus is the same length as before, but only admits a very fine probe. She says the last menstrual period lasted a fortnight, but otherwise she has remained quite well, and has maintained her weight.

This patient came to me some months afterwards as she thought herself pregnant. She had been suffering from pains in the lower part of the abdomen, which she had never before had in her pregnancies.

On examination, she was found to be about four months pregnant. The sinus in the abdomen had completely closed. I consider the pains were due to stretching of inflammatory adhesions round the situation where the abscess had been, as the uterus enlarged, owing to the pregnancy.

Uterine Polypi.

These are:—

1. **Fibroid Polypi.**

2. **Mucous Polypi.**—Dr. Matthews Duncan distinguishes three varieties:—

(i.) *Adenomatous,* where the polypus is composed chiefly of the hypertrophied glands of the mucous membrane.

(ii.) *Molluscous,* where the polypus is formed chiefly by hypertrophy of the connective tissue element of the mucous membrane.

(iii.) *Cystic,* where retention cysts are formed from the uterine glands, either of the cervix or the body, and

where the little mass resulting composed of one or several retention cysts, acquires a pedicle.

3. **Placental Polypi.**
4. **Fibrinous Polypi.**
5. **Malignant growths of Polypoid Form.**

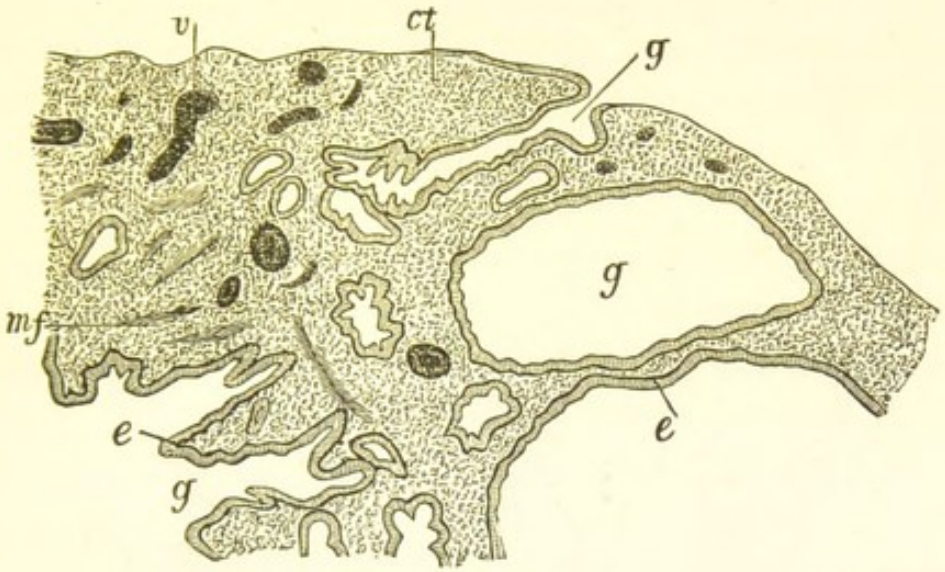

FIG. 67.—Microscopic section of a mucous polypus (De Sinéty). *g*. Dilated glands; *e*. Epithelium; *mf*. Muscular fibre; *v*. Blood-vessel; *ct*. Connective tissue.

FIBROID POLYPI.

These have already been sufficiently considered under fibroid tumours, of which they are only a variety.

MUCOUS POLYPI.

Position. Size. Number.

Cystic mucous polypi are merely Nabothian ovules that have become pedunculated, their mode of origin

and appearance have been described under Cervical Endometritis. They are mentioned here for the sake of completeness.

The *adenomatous* and *molluscous* varieties are what

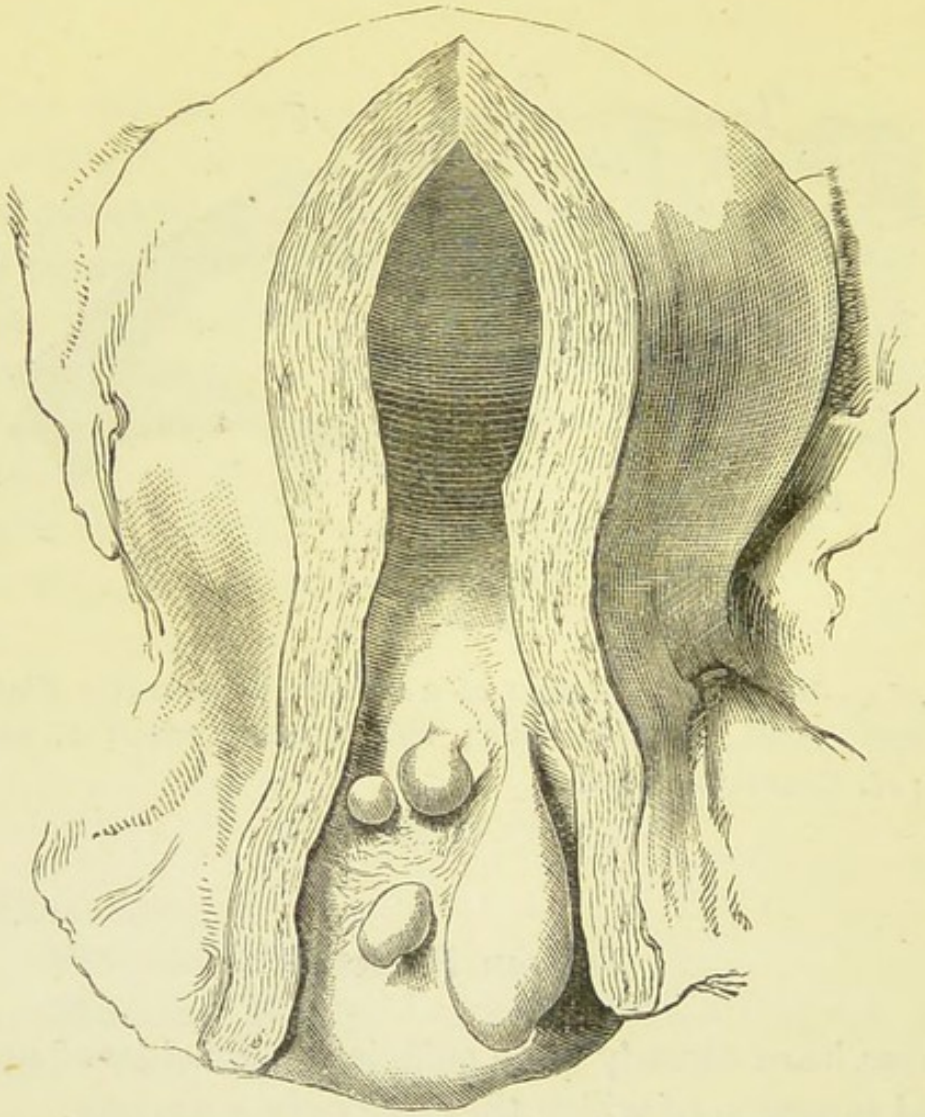

FIG. 68.—Four mucous polypi growing in the cervix uteri (Sir J. Y. Simpson).

are usually meant when mucous polypi are spoken of. They occur both in the cervix and in the body, but are commoner in the cervix, especially just within the os externum. They have a deep red colour during life,

and are extremely soft to the touch. Usually more than one is present at a time. They vary in size from that of a small raisin to that of a large strawberry.*

Symptoms.—Small mucous polypi of the cervix hanging from the os externum are often discovered accidentally, having given rise to no trouble.

The symptoms likely to be present are:—

1. *Bleeding.*
2. *A white or yellow discharge.*
3. *Sterility.*
4. *Dysmenorrhœa.*

And such symptoms, particularly the last two, may be considered due to mucous polypi with most confidence, when these are large, and situated in the body of the uterus.

The bleeding in the case of mucous polypi is said to come from the polypus itself, but probably it comes also in part from the general surface of the mucous membrane of the body of the uterus, at all events when the polypus is attached there. The white and yellow discharge is due to associated cervical, or corporeal, endometritis.

Diagnosis.—Mucous polypi hanging from the os externum are at once diagnosed by the finger, and brought into view with the speculum. Mucous polypi of the body of the uterus can only be recognised by dilating the cervix, and passing the finger into the uterine cavity. In fact in cases of hæmorrhage coming

* The largest I have met with was fusiform in shape; after several weeks in spirit its measurements were as follows:—Length $2\frac{3}{8}$ in., Breadth 1 in., Thickness, $\frac{1}{2}$ in. Before removal about half an inch of it projected beyond the vaginal orifice. It was attached to the cervical canal near the external os. There was a second one, the size of a cob-nut, attached near it.

from the cavity of the body of the uterus, apart from pregnancy, or any suspicion of malignant disease, we may say the general rule is:—(1) try rest, ergot, and hot vaginal injections, and if these fail after a fair trial, (2) dilate the cervix, and examine the interior of the uterus.

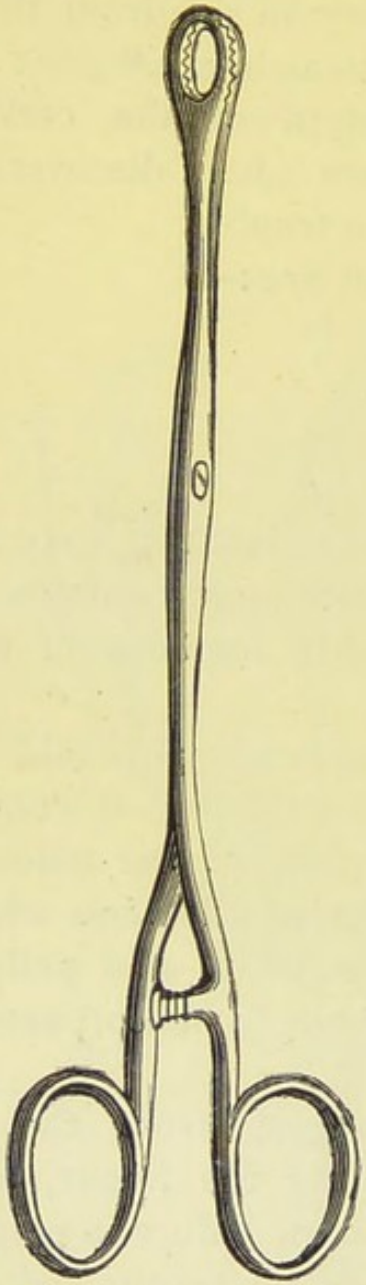

Fig. 69.—Tumour forceps for twisting off polypi.

Treatment. — Polypi hanging from the cervix may be twisted off with a pair of tumour forceps (Fig. 69), which should have a catch like Spencer Wells's forceps.

Intra-uterine polypi, recognised only after dilating the cervix, should be scraped away with a curette. Antiseptic douches being given before, and after the operation, and the uterus itself also washed out with a similar lotion through the intra-uterine tube (Fig. 15, p. 35).

Placental Polypi—Fibrinous Polypi.

These are not the same. A *placental polypus* no doubt is usually in part composed of fibrin as well as of placental remains, but it has its origin in labour or abor-

tion, some portions of the placenta or membranes remaining adherent to the uterus, and forming a base to which layers of fibrin attach themselves.

Fibrinous polypus may originate apart from labour or abortion, for instance, I have known it form after removal of a fibroid polypus attached to the body of the uterus, the fibrin being deposited on the stump left after section of the pedicle. In this case a highly offensive, yellowish, polypoid mass of fibrin protruded from the os externum some days after the fibroid had been removed. Often fragments of the placenta left behind are sessile, attached to the uterine mucous membrane without any stalk.

Symptoms—Treatment.—Bleeding is the symptom that usually leads to investigation, and if the polypus is decomposing, there will also be an offensive discharge. On examination the uterus will be found to be larger than normal, and we shall very likely feel the polypus presenting at the external os.

The treatment consists in dilating the cervix, and scraping away the polypus thoroughly, with all the precautions mentioned when describing the treatment of mucous polypi.

Malignant Growths of Polypoid Form.

These were referred to when considering the diagnosis of fibroid polypi. A simple, non-malignant, papillary growth from the vaginal portion of the cervix has been described; but practically a papillary growth of the vaginal portion of the cervix that is soft, and bleeds easily on touching it, is almost invariably malignant. Malignant growths from the body of the uterus sometimes assume a polypoid form.

CHAPTER XI.

Carcinoma of the Cervix.

Etiology.

Age.—It is to be noted that carcinoma of the cervix is not rare in comparatively young women, we meet with it not very unfrequently in patients of twenty-six, or twenty-seven, and after thirty it becomes quite common.

Taking Gusserow's statistics (quoted by Hart and Barbour) based on 2270 cases, the exact percentages are as follows:—

Between the ages of	20	and	30	...	3·5	per	cent.
,,	,,		30	,, 40	... 21·	,,	
,,	,,		40	,, 50	... 34·	,,	
,,	,,		50	,, 60	... 26·4	,,	
,,	,,		60	,, 70	... 11·35	,,	
Above	...	...	70		3·6	,,	

Fertility.—Most cases occur in those who have had large families. Winckel, basing his calculation on 130 cases, gives the average fertility at 5·6 children; and says, moreover, that only 1·7 per cent. of women with carcinoma of the uterus, are absolutely sterile.

How far, if at all, the lacerations of the cervix that occur during labour, predispose to carcinoma, is not yet decided.

Heredity.—The number of cases in which heredity can be traced is so small—only seven or eight per

cent.—that it cannot be regarded as proved to have much influence.

Depression of the General Health.—This is regarded as a predisposing cause; the fact that carcinoma is more common among the poor than among the well-to-do, is explained on this ground.

Race.—Carcinoma is much less frequent among the black races than among the white.

Pathology.

It would be out of place to enter into the question as to whether carcinoma originates from connective tissue cells, or from pre-existing epithelium. The view taken here will be that which obtains most acceptance in this country, viz., that carcinoma always originates from pre-existing epithelium. Accordingly, as regards the cervix, we may have it arising from the squamous epithelium of the vaginal portion, or from the cubical epithelium within the cervical canal, either that on the surface, or in the deeper parts of the cervical glands.

Clinical types.

The cauliflower excrescence.—This originates from the squamous epithelium of the vaginal portion, and in its early stages forms a flat, or somewhat papillary, growth from one or both lips of the cervix. These become thickened, and the growth tends to spread to the vaginal walls. Ultimately a mass, the size of the fist or larger, is produced, occupying the upper part of the vagina. The surface of it has a considerable resemblance to the

surface of a cauliflower, hence the name.* The position of the external os in such cases is often difficult to find. Sometimes a mass such as that described, has an indistinct pedicle.

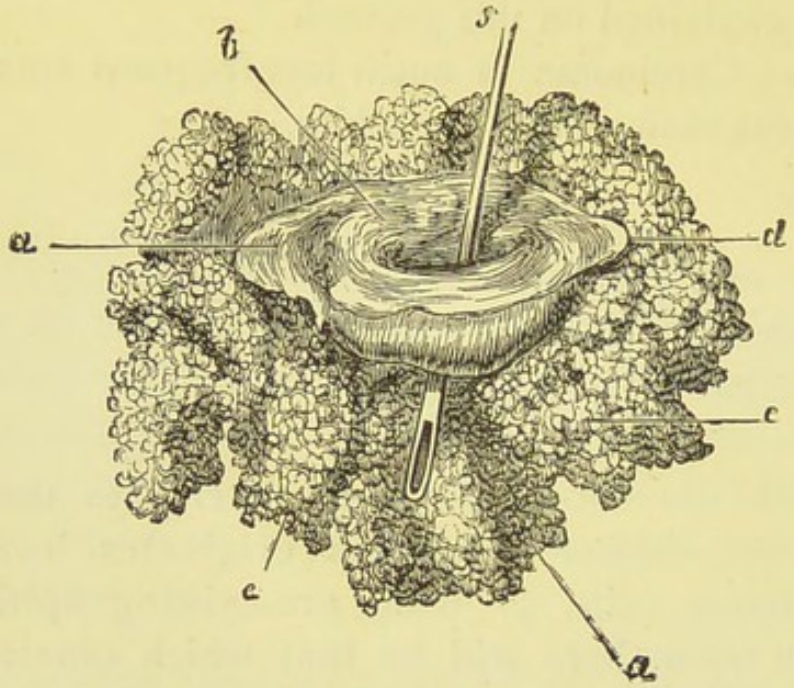

FIG. 70.—Cauliflower excrescence of the cervix (Simpson). (A more villous growth than those commonly met with). Compare this specimen where amputation of the vaginal portion of the cervix only has been performed, with figures at the end of the Chapter, where supra-vaginal amputation was done.

The mushroom-shaped variety.—This also is a squamous epithelioma, probably indeed, it is often a stage towards the production of the typical cauliflower excrescence. Still it is a variety often met with clinically. The

* The term "cauliflower excrescence" was originally given to malignant growths, where the papillary, or villous, nature of the surface was a prominent feature. Such growths are much rarer than the form to which the name cauliflower excrescence is given in the text, which moreover, is actually more like the white part of a cauliflower.

vaginal portion is enlarged at its lowest part by thickening of the lips of the cervix, and by the spreading over them of the flat, raised epitheliomatous growth from the neighbourhood of the external os outwards towards the circumference. The finger, passed outwards from the situation of the os, comes at the periphery of the growth to an overhanging margin, separated by a shallow depression from the part of the cervix not yet

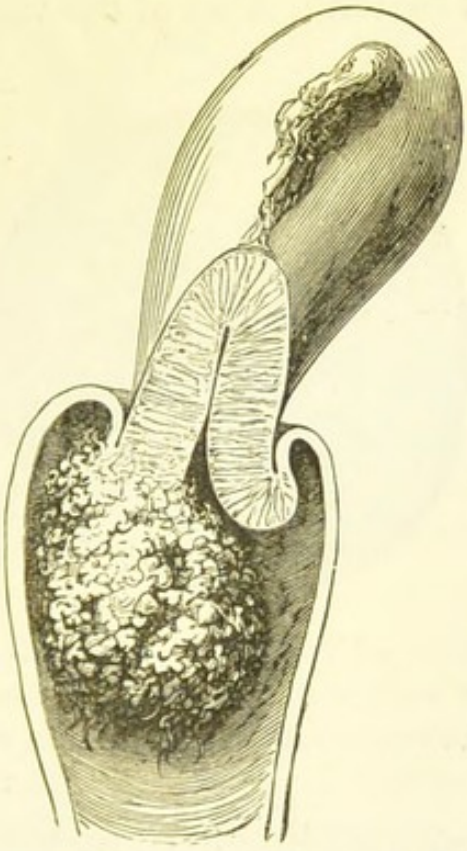

FIG. 71.—Cauliflower excrescence growing from one lip of the cervix uteri (Sir J. Y. Simpson).

affected. The whole vaginal portion, therefore, has a rough resemblance to an inverted mushroom (Fig. 73). Sometimes one lip only of the cervix is affected by a growth of this character.

The conical ulcer.—In the situation of the external os

and replacing it, the finger finds an ulcer, more or less conical in shape, its walls irregular, and formed of hard tissue. The diameter of the ulcer often exceeds considerably the diameter of the healthy vaginal portion. This is due to enlargement of the vaginal portion from the malignant infiltration, followed by ulceration spreading from the centre outwards in all directions. Sometimes indeed the whole vaginal portion has in this way been destroyed, and the ulcer is bounded by a hard ring of tissue formed by infiltration of the vaginal walls.

FIG. 72.—Carcinoma of the cervix (Schroeder) ulcerating form. The disease is in an early stage. Later, the conical, or crater-like, ulcer described in the text would be produced in such a case.

The nodular variety.—Little hard nodules form beneath the mucous membrane, and project either towards the cervical canal, or elevate the squamous epithelium of the vaginal portion in the neighbourhood of the external os. As they increase in size and reach the surface, they ulcerate. This variety is less common clinically, than the preceding, partly no doubt because it is a phase of the disease at an early stage.

When ulceration has taken place, it merges sooner or

later into the excavated form described in the last paragraph as the conical ulcer.

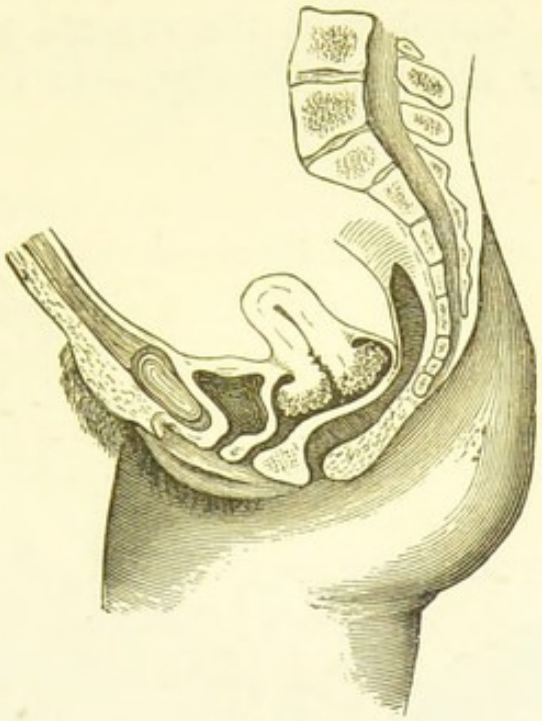

FIG. 73.—Carcinoma of the cervix (Schroeder) mushroom-shaped variety. The disease affects both lips of the cervix, so as to cause the vaginal portion to have a rough resemblance to an inverted mushroom.

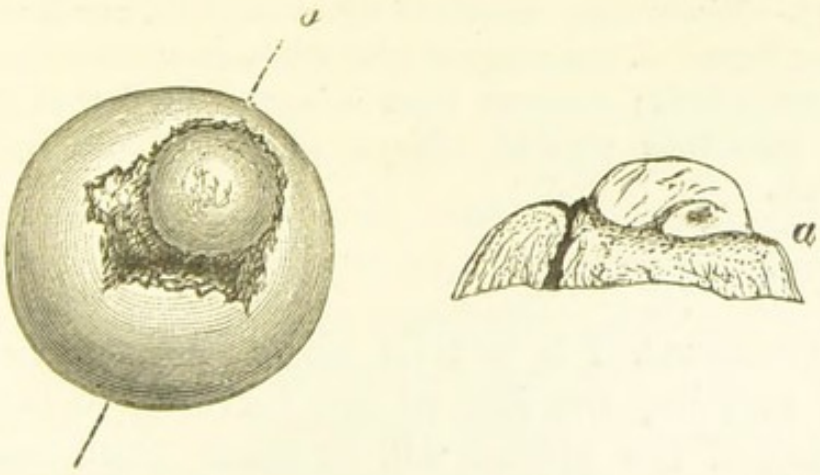

FIG. 74.—Carcinoma of the cervix (Schroeder) nodular variety. To the right is seen a section of the cervix through the nodule.

If the nodules project only towards the cervical canal, we have an example of carcinoma beginning within the canal, and such a case might, on hurried examination, easily escape detection, as the vaginal portion and os would appear normal. Usually, even where it begins

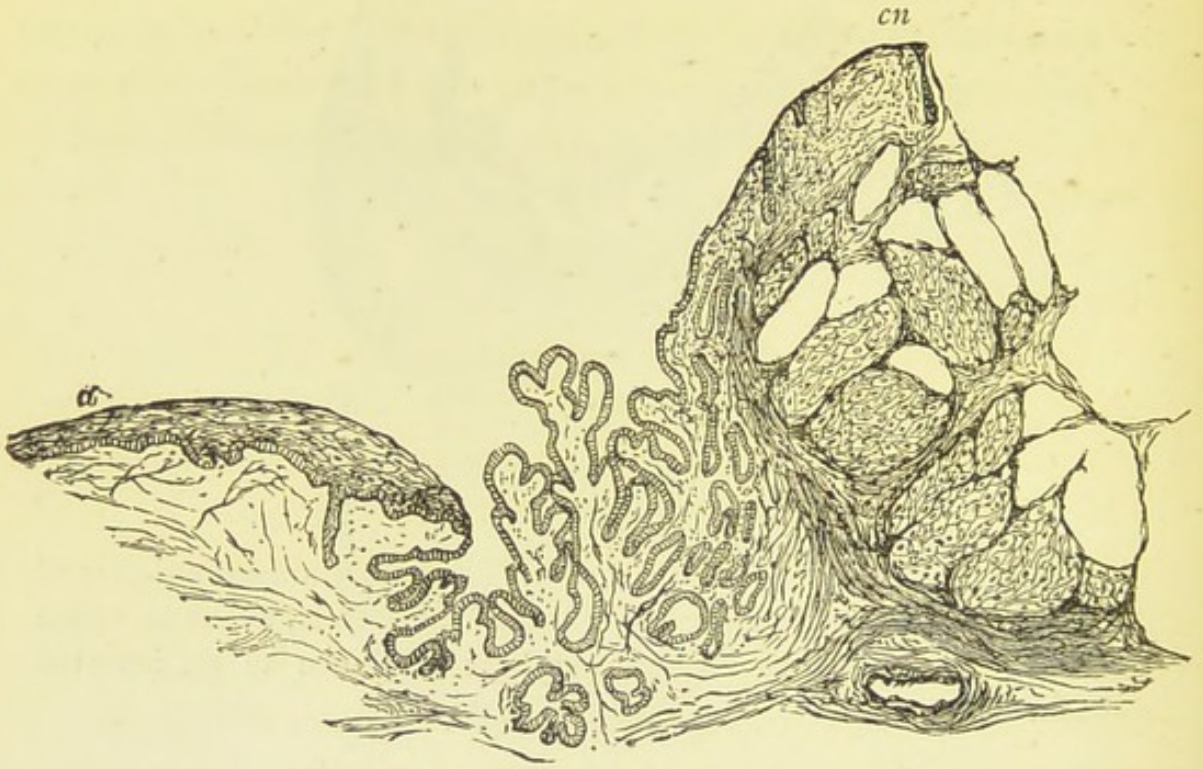

FIG. 75.—Microscopic section of a portion of the cervix uteri seen in the last figure. *a*. Squamous epithelium in several layers; *cn*. carcinomatous nodule; between these is seen a portion of inflamed mucous membrane covered with a single layer of epithelium (Schroeder).

within the canal, it is not far above the os externum, and on everting the lips of the cervix with tenacula, something of the disease will be seen. Such cases can rarely, if ever, be diagnosed, previous to the time when ulceration has begun.

Directions in which Carcinoma of the Cervix tends to spread.

It may spread :—

1. *Downwards* on to the vaginal wall.

2. *Outwards* into the connective tissue round the cervix, into the broad ligaments and utero-sacral ligaments.

3. *Upwards* along the cervical canal into the body of the uterus.

There is usually a greater tendency for the growth to spread to the vagina, and to the peri-cervical connective tissue, than to the body of the uterus. In a few cases the growth does extend upwards to the body of the uterus before it has spread to the vaginal walls, or the peri-cervical connective tissue; these cases are quite the exception, and it is in them alone that extirpation of the whole uterus for malignant disease of the cervix offers any advantages over supra-vaginal amputation of the cervix. In advanced cases the ureters become dilated from obstruction, partly due to pressure, and partly to the walls of the ureters themselves being infiltrated; ultimately hydronephrosis may be produced.

As the growth that has involved the anterior vaginal wall ulcerates, we may have a vesico-vaginal fistula; more rarely from similar processes involving the posterior wall—recto-vaginal fistula; still more rarely, perforation into the peritoneal cavity may occur.

In advanced cases where ulceration has been a prominent feature, the bladder and rectum may communicate freely with the vagina (Fig. 76).

Symptoms.—The special local symptoms of carcinoma of the cervix are:—

1. *Bleeding.*
2. *A discharge,* which sooner or later becomes offensive.
3. *Pain.*

Other local symptoms not unfrequently present are:—*painful, difficult,* or *frequent micturition, and pruritus of the vulva.*

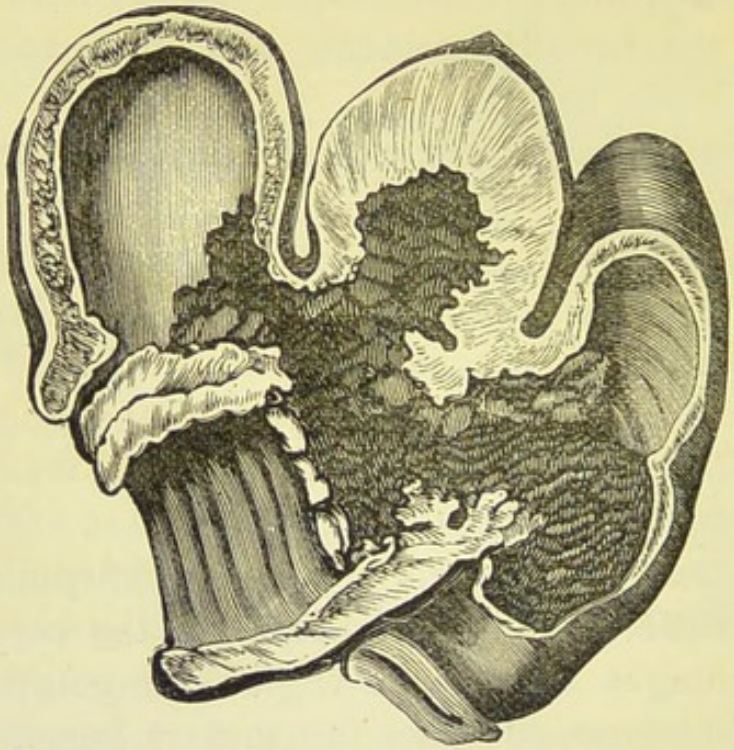

FIG. 76.—Carcinoma of the cervix, an advanced case where ulceration has been a prominent feature. The bladder and rectum communicate freely with the vagina (Farre).

Sometimes *wasting* precedes all other symptoms, the patient noticing that she is getting thinner without apparent cause. In any case, once local symptoms are present, she rapidly loses weight, and becomes conscious of a sense of weakness and general ill-health, till ultimately she presents the appearance known as the cancerous cachexia.

Bleeding.—In most cases hæmorrhage, occurring at some time other than a menstrual period, is the earliest symptom to attract attention. Hæmorrhage after coitus is particularly significant of carcinoma of the cervix. It may be taken as a general rule that hæmorrhage coming on some years after the menopause, is almost always due to malignant disease.

The discharge.—In early cases before ulceration has taken place, the discharge is not offensive; at this time it is likely to be yellowish, and more or less streaked with blood. Later, when ulceration has set in, the discharge does become horribly offensive, and at this time it is usually thin, and like dirty water. It should be especially noted that an offensive discharge is not pathognomonic of carcinoma. A sloughing fibroid polypus, for instance, produces a discharge every bit as offensive as any that occurs in cases of carcinoma; and on the other hand, as mentioned above, in early cases of carcinoma, the discharge is not offensive.

Pain.—This is a late symptom in carcinoma of the cervix; when at length it appears, it is extremely severe, and usually worse at night, so that the patient cannot sleep without morphia.

Fever.—When ulceration has occurred, and the discharge has become offensive, there is fever due to absorption of the chemical products of putrefaction, septic intoxication, or sapræmia. The result of scraping away the diseased tissue as completely as possible shows this; for, whereas, before the scraping, the temperature chart has shown the presence of moderate fever, after the scraping the temperature falls, and often remains normal till fresh portions of the growth necrose and putrefy.

In advanced cases a condition of one or both lower

extremities, indistinguishable from the phlegmasia dolens of puerperal women, is not uncommon.

Physical signs.—On vaginal examination with the finger and speculum, we may meet with any of the conditions already sufficiently described, *viz.*:—

The cauliflower excrescence.

The mushroom-shaped variety.

The conical ulcer.

The nodular variety.

Even gentle examination with the finger almost always causes some bleeding. The speculum should, as a rule, only be used in early cases; if it is desirable to pass a speculum in advanced cases, Sims's speculum, not passed very far, is the best for the purpose.

Mobility of the uterus.—In early cases the uterus is freely movable. Later, as the growth spreads to the vagina, and connective tissue round the cervix, it becomes less and less movable; finally in advanced cases, when the infiltration has advanced along the broad ligaments, and utero-sacral ligaments to the pelvic wall, the uterus becomes completely fixed.

When the disease has reached this stage, on abdominal palpation we can usually feel a hard mass in the hypogastric region occupying the brim of the pelvis.

Diagnosis.—In most cases the diagnosis is easily made, because most cases come under observation at a comparatively advanced stage when the physical signs are characteristic. In early cases, carcinoma of the cervix has to be distinguished from the following:—

Non-malignant erosions of the cervix, especially those that bleed easily when touched.

Chronic inflammatory induration of the cervix with occluded follicles.

Sloughing fibroid polypi of the cervix.
Condylomata of the cervix.
Chancre on the cervix.
Non-malignant papilloma of the cervix.
Small interstitial fibroid of the cervix.
Corroding ulcer of the cervix.

} These rarely give rise to any difficulty in diagnosis in practice.

The first two are the only conditions in which any real difficulty is likely to arise.

1. *Non-malignant erosions* usually improve rapidly, even if they cannot be completely cured, by suitable local treatment. In such cases also, attention to the weight will soon clear up any doubt.

2. *Chronic inflammatory induration of the cervix with occluded follicles.*—This may occasionally suggest the nodular variety of carcinoma, the little hard lumps formed by the ovula Nabothi simulating nodules of carcinoma. If such a lump is an occluded follicle, puncture gives exit to fluid, and the hard lump disappears. Again, the history is different, extending often over a long period. Here also in case of doubt, weighing the patient will settle the question very soon.

It is as well to say here that most cases, in which any doubt is felt by one familiar with the subject, turn out to be non-malignant. This is particularly worth noticing in connection with the two conditions just referred to, which are those in which temporary difficulty in diagnosis most often arises.

Chancre on the cervix or *condylomata on the cervix* are rare. Suitable local and constitutional treatment, *e.g.*, injections of lead lotion, and mercury internally, would soon make the diagnosis clear. In the case of condylomata there would probably be other evidences of syphilis present at the same time elsewhere, *e.g.*, round the vulva, anus, in the throat, etc.

Sloughing fibroid polypus.—I have known a polypoid malignant growth of the cervix taken for a sloughing fibroid polypus. The differential diagnosis has been described in the chapter on fibroid tumours. (See page 165).

Non-malignant papilloma—If there is such a thing, it is extremely rare, and certainly it is right to treat every case of papilloma of the cervix as if it were malignant.

Small interstitial fibroid of the cervix.—So long as no ulceration has occurred, a positive diagnosis could not at once be made. Watching the case for a short time, and paying attention to the weight of the patient, would soon settle the matter. Fibroids in this situation are not at all common.

Corroding ulcer of the cervix.—This is a very rare condition, the exact nature of which is doubtful, it would be right, however, to treat it as if it were a carcinomatous ulcer.

To sum up as regards differential diagnosis.—In practice diagnosis is seldom difficult, in cases where we are in doubt the condition almost always turns out to be non-malignant. When in doubt careful attention to the patient's weight at short intervals, with suitable local treatment to the suspicious surface, combined with constitutional treatment if there is a suspicion of syphilis, will soon clear up matters.

Duration of the disease.—The duration of life from the time the patient first seeks advice, may be taken on an average as from a year to a year and a half. Some cases only live a few months, others may live as long as three or four years. Winckel mentions three years and eight months as the longest duration he has met with.

Causes of death.—These are:—

Peritonitis in 25 per cent. of cases (Winckel).

Uræmia „ 45 „ „ „

Exhaustion in most of the remaining cases.

Rarely death may be immediately due to:—

Hæmorrhage.

Embolism.

Treatment.—In early cases.

The supra-vaginal amputation of the cervix.—At the present day when we meet with a case early enough to be able to remove the whole of the obviously diseased part, *plus* a surrounding shell of apparently healthy tissue (the broader the better), the right treatment is by the operation known as the supra-vaginal amputation of the cervix. The question is often a nice one as to whether in a particular case the disease is too far advanced or not, for this operation.

We may consider it indicated in cases where the disease is limited to the tissues of the cervix, and has not extended either on to the vaginal walls, or into the connective tissue round the cervix. Only those who are in the habit of performing the operation can decide in doubtful cases whether the disease is too far advanced for it to be possible to make the lines of section sufficiently wide of the disease.

Extirpation of the uterus.—In the small minority of cases where the disease has extended up the cervical canal to the body of the uterus, without spreading either to the vaginal walls, or into the peri-cervical connective tissue, the right treatment is extirpation of the whole uterus. This operation is, however, quite unsuitable for the large majority of cases of malignant disease of the cervix, where the tendency, as already mentioned, is to spread to the vagina, and connective tissue round the cervix, and not to the body of the uterus.

It is in fact performing a much more dangerous operation than the supra-vaginal amputation, for the sake of removing two or three inches of healthy tissue (the body of the uterus) to which the disease has no great tendency to spread. It would be more logical, were it possible, to make our incisions so as to remove a clear two or three inches of tissue at each side of the cervix, and the upper two or three inches of the vagina.

For most cases then, where any radical treatment is desirable, we perform the supra-vaginal amputation of the cervix, *i.e.*, removal of the whole cervix at about the level of the internal os.

When pregnancy complicates the case, and yet we feel confident that so far as the malignant disease is concerned, the case is one suitable for the supra-vaginal amputation, it is best to first induce abortion, and then in a fortnight's time, when the uterus has involuted to some extent, proceed to the operation.

The greatly increased vascularity of the parts during pregnancy, makes the operation very much more difficult, and hence I think it better to empty the uterus, and allow it to involute before operating (*see* case of L. E. M., at the end of this chapter).

Description of the Supravaginal Amputation.

The patient being in the lithotomy position, a vaginal douche of some efficient antiseptic (*e.g.*, iodine water) is given. Sims's speculum is then passed, and the cervix drawn down to the vulva.

Drawing down the uterus.—For drawing down the cervix, if the disease affects both lips, it is best to use some instrument that has its hold above the seat of

the disease, the volsella is not well adapted for such cases, as it is apt to break from its hold on account of the friability of the tissue. A single strong, sharp, hook answers well; it is passed up the cervical canal till we judge it to be well above the disease, it is then made to

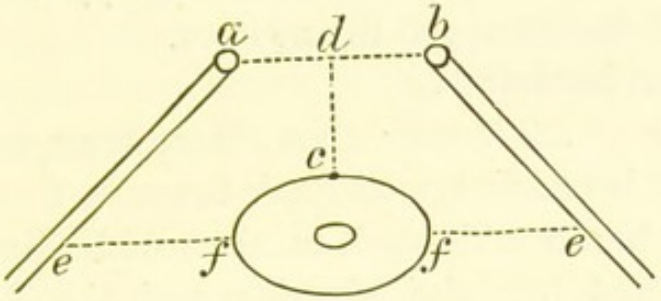

FIG. 77.—Diagram to illustrate relations of the ureters to the cervix when the patient is in the lithotomy position, with special reference to the operations of supra-vaginal amputation of the cervix, and extirpation of the uterus.

In seven specimens examined with reference to the distance *ab*, between the orifices of the ureters in the bladder, it was found that this varied from $\frac{9}{16}$ of an inch to 2 inches, average value of $ab = 1\frac{1}{14}$ inch.

In three specimens the distance *dc* was carefully measured, *i.e.*, the distance from the cervix to a horizontal line joining the orifice of the ureters, in two specimens it measured $\frac{3}{4}$ of an inch, and in one specimen one inch.

In two specimens the distances *ef* were carefully determined, *i.e.*, the distance from the side of the cervix to the ureter in a horizontal line passing through the middle of the cervix, in one specimen *ef* was $\frac{3}{4}$ and in the other "rather more than $\frac{3}{4}$ of an inch."

On referring to the figure, p. 202, illustrating the incisions for the supra-vaginal amputation of the cervix, it will be seen that there is ample room for them without any risk of injuring the ureters.

take a firm hold, and the cervix drawn down. It is very important that the traction should be as steady as possible, when once a good hold has been obtained. Double expanding hooks of the same pattern as Emmet's, but made much thicker in the shank, so as to be less

springy, are also good for the purpose, and are used in the same way.

When only one lip of the cervix is affected, a volsella with a catch like Spencer Wells's forceps, placed on the healthy lip answers well enough, but usually the hooks will be found better; a glance at Fig. 77 will show the relations of the cervix to the ureters.

Anterior incision.

Separation of the bladder from the supra-vaginal cervix.— The cervix is carried well back towards the perineum, care being taken to keep it in the middle line, a sound is now passed into the bladder, and the limits of the

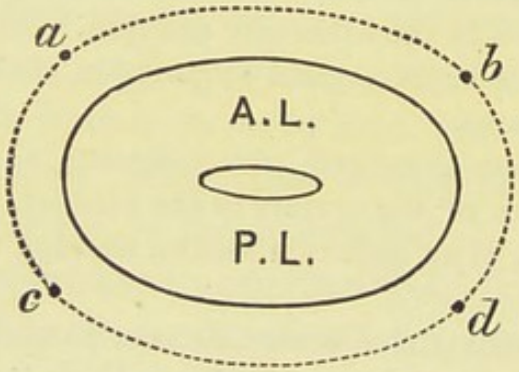

Fig. 78.

bladder towards the anterior lip of the cervix ascertained. Guided by this information, a transverse incision is made along the line *ab* (Fig. 78) through the anterior vaginal wall; the incision has a slight convexity towards the pubes. There should be at least 1 *cm.* ($\frac{2}{5}$ of an inch) of apparently healthy mucous membrane in each direction between the incision and the diseased area. The writer prefers to use blunt-pointed scissors for making the incision. It is important to feel one's way at frequent intervals with the sound in the bladder during this step of the operation. In some cases where the disease affects the anterior lip, the separation of the bladder

from the cervix is rendered easier by dilating the urethra, and passing the forefinger of the left hand into the bladder. There is an interval of comparatively loose connective tissue between the supra-vaginal cervix and the bladder, and when this has been entered, most of the necessary separation can be effected with the finger. When we judge that we have cleared the cervix sufficiently in front, we proceed to the next step.

Posterior incision.

Separation of the peritoneum from the posterior aspect of the cervix.—The cervix is now carried well forwards towards the pubes. A transverse incision along the line *cd* (Fig. 78) is then made through the posterior vaginal wall, and keeping close to the cervix, we dissect the peritoneum from its posterior aspect as high as is necessary to correspond to the height to which the anterior aspect has been cleared. At this stage it is very likely that the peritoneal cavity will be opened—button-holed—but this is not of much importance, and fear of doing it should not prevent a sufficiently high separation being made. The cervix has now been cleared anteriorly and posteriorly, but as yet the lateral attachments remain.

Preliminary lateral incisions.

Lateral incisions should be made on each side along the lines *ac*, *bd*, but they should at first be only mucous membrane deep; made in fact, merely as an indication where the actual separation is to be made when the time comes.

Lateral ligatures.—A strong, blunt-pointed pedicle needle armed with a strong silk ligature should then be passed from behind forwards, so as to include the whole lateral attachment. It should be made to encircle the whole lateral attachment of the cervix up to the height

at which it is proposed to amputate it. This is done on each side.

The ligatures are tied as tightly as possible, and as they are very apt to slip before the second hitch is made, the best plan is to hold the first knot with Wells's forceps while the second hitch is being tied. The cervix can now be freed from its lateral attachments without fear of hæmorrhage, if the ligatures have been properly placed, and securely tied. It is, however, not uncommon for the ligatures to loosen, and it is desirable to have Wells's forceps ready to seize any large vessel that bleeds as the lateral attachment is divided. Large branches of the uterine artery lie in this attachment, and it is to control them that the precautionary ligatures described are used. Instead of using ligatures, Wells's forceps may be used *before* cutting the lateral attachments; they may be left on for 48 hours.

Removal of the cervix.—The cervix has now been made clear all round. To remove it, we incise the anterior wall till the lumen of the cervical canal is seen, the part of the cavity exposed should be at the level of the internal os, we then pass one or two silver wire sutures with an Emmet's needle, from the anterior margin of the stump through the cut edge of the anterior vaginal wall, and twist them up. We have thus a hold on the stump. We now can complete the removal of the cervix, and stitch the posterior margin of the stump to the cut edge of the posterior vaginal wall in a similar manner.

The cervix removed should be slit up, and examined to make sure we have removed it sufficiently high above the disease.

Any Wells's forceps on big vessels may be left on for 48 hours. The vagina is once more douched out, and the patient sent back to bed.

She should have antiseptic vaginal douches every four hours for the first two days, after that three times a day.

The operation of extirpation of the uterus will be described in the treatment of carcinoma of the body of the uterus, for which condition it is more especially suitable.

Other modes of treatment.

The supra-vaginal amputation of the cervix just described—by far the best operation in early cases where any radical operation is to be done at all—is of comparatively recent origin. Before it was introduced amputation of only the vaginal portion of the cervix with the écraseur was considered the best that could be done.

When we remember that the whole cervix is on an average about an inch long, and the vaginal portion of the cervix only about $\frac{1}{3}$ of an inch long, it will be evident that any operation by which the vaginal portion only is cut off, can very rarely even remove all the obviously diseased tissue, let alone have a good width of healthy tissue between the line of section and the diseased structures.

So that, as the greater includes the less, so cases suitable for the supra-vaginal amputation include all in which amputation of the vaginal portion only would be suitable, and many others where the latter operation would be useless.

In certain cases the écraseur may be used merely *as a preliminary step* with advantage; for example, where a large cauliflower-like mass blocks the vagina, and yet appears to spring from the cervix by a constricted part, or spurious pedicle. Here it is convenient to first get away the bulk of the growth with the écraseur, and then examine the condition carefully, to see if all the diseased parts can be removed by proceeding to the

supra-vaginal amputation. When using the écraseur as described, it is important to make no downward traction on the mass, or a part of the bladder may be caught in the wire loop; similarly a portion of Douglas's pouch may be nipped in, and removed. In one case of mine, where a cauliflower growth had extended on to the posterior vaginal wall, this latter accident occurred, a piece of Douglas's pouch, an inch broad from side to side, was removed with the malignant mass. The opening was stitched with silver wire, bringing the edges of the peritoneum together, and no harm resulted. The supra-vaginal amputation is a difficult operation, but not a very dangerous one. Hofmeier (quoted in the *Year Book of Treatment*, 1884) gives statistics of 105 operations done in Schroeder's Clinique, with the mortality of 12·3 per cent. The writer has done the operation ten times, the patient in each case making a good recovery.

Cases of the Supra-Vaginal Amputation of the Cervix for Carcinoma.

In the following case the patient remained free from any sign of recurrence for a year and two months after supra-vaginal amputation of the cervix had been performed; then recurrence took place on the anterior part of the stump, and adjacent anterior vaginal wall, this was cauterised very freely with Paquelin's cautery, and now, two years from the date of the original operation, there is no evidence of disease to be seen, and the patient is quite well.

(*No.* 3 *in the series of* 10). E. H., aged 41, married twice, had two children by her first husband, no children by the second husband, to

whom she had been married fifteen years. She has never had any miscarriages. Admitted to the London Hospital on the 6th of February, 1886, complaining chiefly of a *thick yellow discharge*, which she has had for four or five years; during the last six months, however, this discharge has been coloured red, at times when she was not menstruating.

On examination, a soft, papillary growth was seen growing from the posterior lip of the vaginal portion of the cervix. The area occupied by the growth was about the size of a sixpence. The growth bled readily on touching it. The sound passed a distance of $2\frac{3}{4}$ inches.

Feb. 12th, 1886. Supra-vaginal amputation of the cervix was performed. The piece removed was $1\frac{1}{4}$ inch long. The patient recovered without any bad symptom, and went home. Subsequently she came up regularly to the hospital, and nothing suspicious was seen till April 25th, 1887. On examination then, I found a red patch on the scar, about $\frac{1}{8}$ of an inch wide, immediately to the left of the entrance to the uterine cavity; it had not been there previously. This was watched carefully, it gradually increased in size, and on October 8th, 1887, the patient was re-admitted. At this time there was a papillary growth over an area the size of a florin, the growth involved the anterior part of the uterine stump and adjacent anterior vaginal wall. The edge of the growth was overhanging. Gentle examination caused bleeding, and brought away fragments of the growth the size of shot.

On October 13th, 1887, a careful examination under ether was made. It was found to be impossible to cut out the recurrent patch, as most of it was on the anterior vaginal wall, and cutting it out completely would have involved cutting out a piece of the bladder. The whole area occupied by the growth, together with a margin of healthy tissue round it, was therefore, very freely cauterised with Paquelin's cautery.

On January 24th, 1888, she came up to see me; she has been regular since leaving the hospital, and has had no inter-menstrual discharge of any kind. On examination I found that the ulcer caused by the cautery had completely healed, and there was no trace of the disease either there, or elsewhere.

In the next case the disease was at a more advanced stage at the time of the operation.

(*No. 4 in the series of* 10). E. L., age 33, six children, the last about four years ago, and one miscarriage, which occurred four months ago, when she was six months pregnant, was admitted to the London Hospital on the 19th of July, 1886, complaining of having been losing blood ever since the miscarriage. The loss has never stopped more than a day or two during this time.

State on admission, July 19th, 1886. In the situation of the external os is a cavity admitting the finger as far as the root of the nail (Fig. 79). The walls of the cavity are formed by hard tissue. Examination causes a little bleeding, and the finger on withdrawal

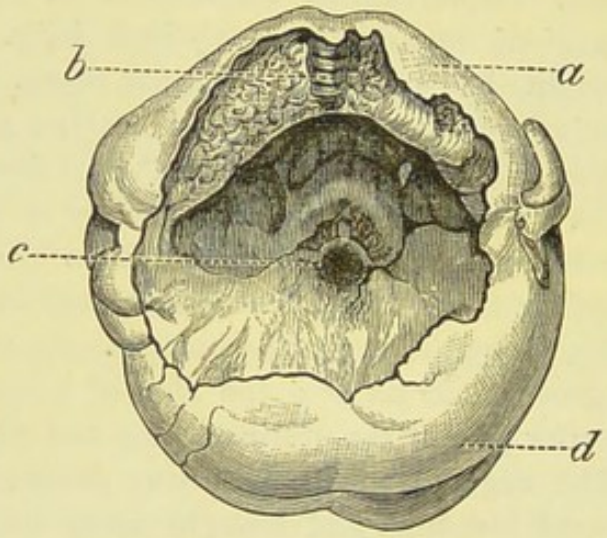

FIG. 79.—Cervix removed by the supra-vaginal amputation in the case of E. L. *a*. Points to the healthy mucous membrane on the anterior lip; *b*. To a mark left by Spencer Wells's forceps on the specimen; *c*. To the situation of the continuation of the cervical canal at the top of the conical uicer; *d*. The posterior lip.

has an offensive odour. In passing the speculum the appearance shown in Fig. 79 is seen. The uterus is freely movable. Most of the excavation is in the anterior lip of the cervix, but there is superficial ulceration of the posterior lip also.

Operation on July 20th.—The supra-vaginal amputation of the cervix was performed. At first sight it appeared as if the disease had extended so close to the bladder that separation would be impossible. I therefore dilated the urethra with Hegar's dilators, and held the wall of the bladder between my left forefinger and thumb, while the cervix was drawn backwards by an assistant; in this way

the bladder was dissected off the anterior aspect of the cervix. No permanent incontinence of urine resulted. In clearing the peritoneum from the posterior aspect of the cervix, Douglas's pouch was opened, the opening being a quarter of an inch long.

The operation was done at ten a.m. Soon after its completion the patient had a rigor, and at four p.m. the temperature rose to 103°, (the pulse, however, only being 76), falling to 98° by eight a.m. on July 21st; in the evening of July 21st the temperature was 100·2°, after that it remained normal.

FIG. 80.—Side view of the same specimen. Case of E. L. *a*. Anterior lip; *b* points by three lines to thickening in the anterior wall of the cervix corresponding to the extent of the excavation seen in the preceding figure.

The patient left the hospital on August 17th, her weight then was 11 st. 9½ lb. November 18th, weight 12 st. 2 lb. December 2nd, weight 12 st. ½ lb.

The patient was seen in January and March, 1887. The cicatrix was perfectly healthy, and her general health good. She next came on July 16th, 1887, and complained that she was suffering from great pain in the right hip, and down the right leg. This had come on quite recently, and was preceded by numbness in the leg. The cicatrix was perfectly healthy, and the remaining part of the uterus freely movable. In the right posterior quarter of the pelvis there

was felt a lump the size of a cherry, hard and fixed. There was an inch or more of healthy tissue between this lump and the uterus.

Re-admitted to the Hospital, September 11th, 1887. Has continued to suffer severe pain in the right hip and leg. For some weeks past the right lower extremity has been swollen. On admission it was seen to be considerably larger than the left; great tenderness in the region of Scarpa's triangle. There was in fact phlegmasia dolens of the right lower limb. The scar left by the operation was still quite healthy, and the uterus freely movable, the lump in the right posterior quarter of the pelvis was, however, now the size of a walnut, but there was an interval of healthy tissue between it and the uterus.

From this time she gradually went down hill, and was never free from pain except when under the influence of morphia. She often required as many as five injections of one-third of a grain each in the twenty-four hours. On October 18th she weighed only 8 st. 13 lb.

November 7th. A little hard nodule was noticed in the skin on right side below the breast, freely movable over the subcutaneous structures, but adherent to the skin, which was red over it.

On Nov. 14th she weighed 8 st. 5½ lb. December 20th, left hemiplegia, and facial paralysis of left side. Sensation apparently normal. Patient has not been noticed to be unconscious. She is not very clear in her understanding. December 29th, 1887, *died*. No post-mortem. There was never any recurrence in the scar left by the operation, nor any lump perceptible on simple abdominal palpation alone, but the lump in the right side of the pelvis became somewhat larger before her death. She had been troubled with occasional vomiting since her re-admission.

The next case illustrates the treatment of cancer of the cervix complicated by pregnancy, the malignant growth not having passed beyond the reach of radical treatment. It also shows that Douglas's pouch may be opened freely with impunity, if proper precautions be observed.

(*No.* 10 *in the series.*) L. E. M., age 39, married twelve years, has had seven children, and one miscarriage at the sixth month of pregnancy. The miscarriage was nine months ago. A month afterwards menstruation appeared, it occurred again after an interval of three weeks, and again after an interval of two weeks. Since

then she has been bleeding every few days. There have been floodings which last a day or two, and between the floodings she has had a brown, watery discharge. She has had no pain to speak of. There has been no trouble with micturition or defæcation, and the appetite has been good. Latterly she has got thinner. She

FIG. 81.—Case of L. E. M. Cauliflower excrescence removed in the preliminary operation with the écraseur, December 29th, 1887.

This specimen is an example of the common variety of cauliflower excrescence, which has a convex, slightly irregular surface. The tissue is soft, and can easily be broken down by the finger.

was admitted to the London Hospital on the 21st of December, 1887. On examination, a globular swelling, reaching a hand's breadth above the pubes, was felt rising out of the pelvis.

It may be said at once that this was the pregnant uterus, the

pregnancy having advanced to about the end of the fourth month, though the patient had no idea she was pregnant.

A large cauliflower-like mass was felt in the vagina, springing from the posterior lip of the cervix, its attachment being rather to the left of the middle line. Anteriorly the mass was attached to the cervix

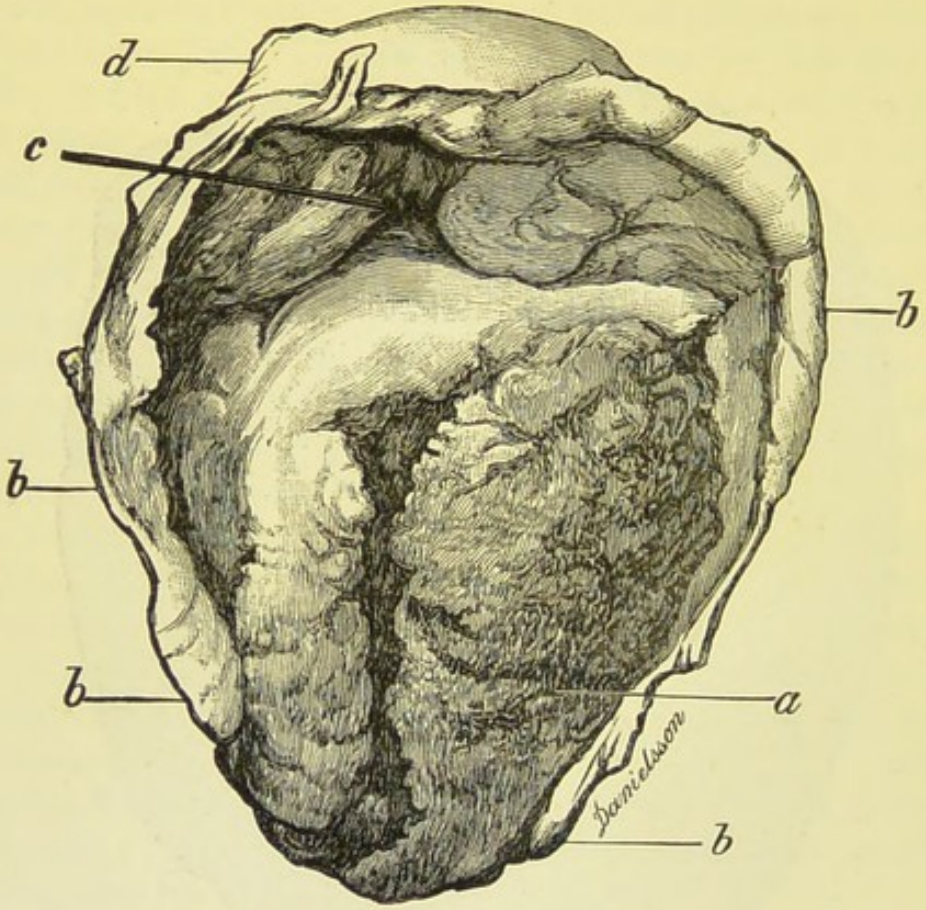

Fig. 82.—Cervix removed by the supra-vaginal amputation. Case of L. E. M. *a*. The diseased part to which the cauliflower growth seen in the preceding figure was attached. The disease affects the posterior lip. *b b b b*. Cut edge of healthy vaginal mucous membrane. This edge is continuous all round, but it cannot be seen posteriorly owing to the oblique position of the specimen. *c*. Bristle passed into the cervical canal; *d*. Upper end of the specimen corresponding to the level of the internal os.

by a sort of spurious pedicle, but posteriorly it was continuous without any constriction with the posterior lip of the cervix. The growth bled very freely on touching it. The vaginal portion, where not involved by the growth, was of a purple colour.

December 29th, 1887. I removed the greater part of the mass in the vagina with the écraseur, with the intention of proceeding at once to the supra-vaginal amputation. The vascularity of the parts was, however, so great, that I judged it would be safer to empty the uterus first, and allow time for the involution of the uterus and vagina to diminish the blood supply. Accordingly I dilated the

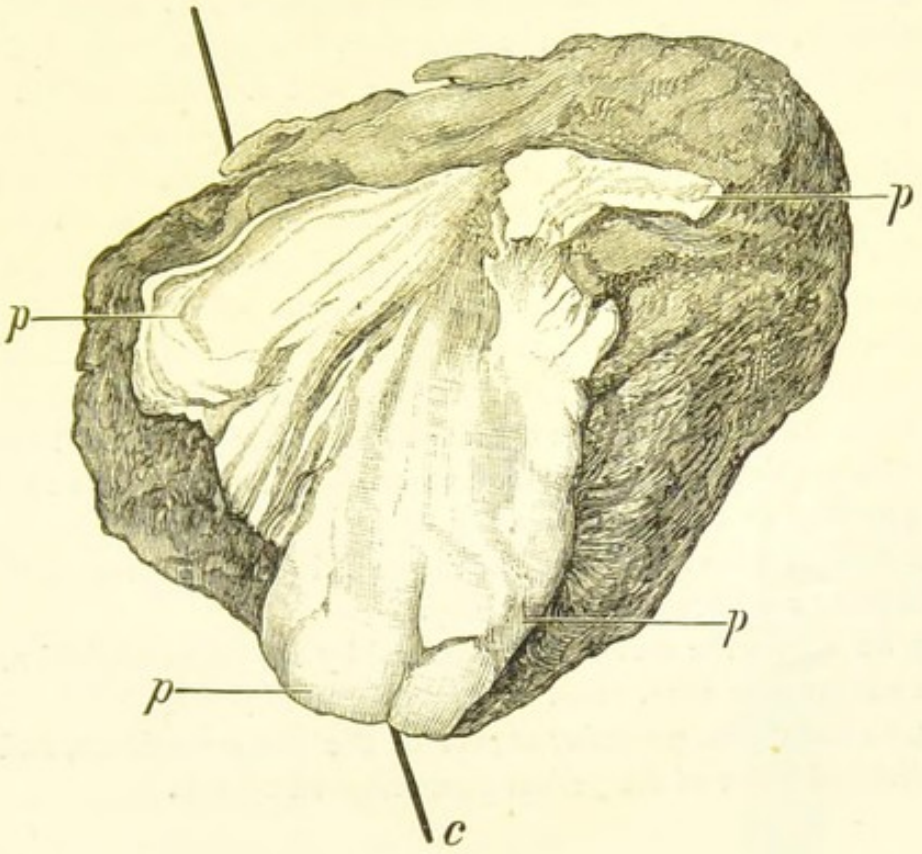

FIG. 83.—Cervix removed by supra-vaginal amputation. Case of L. E. M. Posterior aspect of the specimen. *p p p p*. Quadrilateral piece of peritoneum removed with the cervix. This piece of peritoneum formed part of Douglas's pouch. *c*. Bristle passed through the cervical canal.

cervix rapidly with Hegar's dilators, and removed the fœtus, placenta and membranes, at the same sitting; altogether the patient was about an hour under the anæsthetic. Antiseptic douches were used before, during, and after the operation, the uterus also being washed out. No bad results followed. To promote involution the patient took ergotine, and had hot douches.

On the 16th of January, 1888 (eighteen days after emptying the

uterus) I performed supra-vaginal amputation of the cervix. I opened Douglas's pouch to an extent of about two inches in a transverse direction, and was thus enabled to get well above the disease. A somewhat quadrilateral piece of the peritoneum covering the posterior aspect of the supra-vaginal cervix was removed, adherent to the specimen (Fig. 83).

The interval allowed for involution to proceed before undertaking the operation, must no doubt have diminished the blood supply; nevertheless, at the time of the operation, the parts were still very vascular, this will be evident from the fact that the patient went back to bed with three pairs of Spencer Wells large pressure forceps, and six pairs of the ordinary size, left on. These were removed forty-eight hours later. It should be mentioned that the opening in Douglas's pouch was closed with three silver sutures. Great care was taken to do everything as antiseptically as possible, but of course the spray was not used. I am satisfied that the lines of section were in every direction made in healthy tissue. The patient had moderate fever for a few days after the operation, but after the first two days there was nothing in her condition to occasion anxiety. The sutures were removed on the tenth day.

Fig. 81 shows the appearance of the cauliflower mass removed with the écraseur on December 29th, 1887.

Fig. 82 shows the cervix after removal by the supra-vaginal amputation on January 18th, 1888.

Fig. 83 shows the posterior aspect of the same specimen, and the quadrilateral piece of the peritoneum removed with it.

Treatment in advanced cases.—Here we can only treat symptoms, that is to say, our treatment is directed :—

1. To checking the hæmorrhage.
2. To diminishing the offensiveness of the discharge; and
3. To relieving the pain.

To check the hæmorrhage.

General treatment.—Ergot, either in the form of ergotine pills, or of the liquid extract, may be prescribed; the patient should remain in bed whenever the bleeding is considerable.

Local treatment.—Plugging. If the bleeding is very profuse, it will be right, as a temporary measure, to plug the vagina. This should be done through a Heywood Smith's speculum, not passed in far.

The vagina is then filled with tampons of salicylic wool, dipped in glycerine of tannic acid, each tampon having a string attached; or ferrodised cotton may be used instead of salicylic wool.

The curette.—When there is a soft growth, such as a cauliflower excrescence, even when it has advanced too far for the case to be suitable for supra-vaginal amputation and complete removal of the diseased tissue, much temporary improvement may be secured by thoroughly scraping away all that the curette can be made to remove. Simon's sharp spoon (Fig. 84) answers well for this purpose. After using the curette we may obtain somewhat better results by :—

(*a*) Applying the actual cautery to the surface that has been scraped; or,

(*b*) By applying caustics to it.

Marion Sims recommended chloride of zinc solution (300 gr. to ℥ j.) for the purpose.

FIG. 84.
SIMON'S SHARP SPOON.

Tampons of wool squeezed fairly dry out of this solution are packed into the cavity; below them other tampons are packed, soaked in bicarbonate of soda to prevent the caustic injuring the vagina. All the plugs are removed in twenty-four hours. Subsequently the vagina should be douched thrice daily with an antiseptic lotion, till the slough caused by the caustic separates, this occurs in about a week's time.

The following case illustrates both the kind of case suitable for the application of caustics, and the details of the method.

J. P., age 47, married 26 years, one child, 23 years ago, no miscarriages, was sent up to me by Dr. Corner, on February 4th, 1888, as a case of advanced malignant disease of the cervix, with a request that I would do whatever could be done for her in the way of local treatment.

History of the present illness.—Menstruation has been irregular during the last seven years, severe floodings alternating with periods of amenorrhœa. During the early months of 1887 she had no discharge between her periods. Since June 1887, she has been losing some blood every day, and there have been floodings also during this time.

Some time between June 1887 and Christmas 1887, she began to have pain in the left iliac region, which has persisted. She has noticed herself getting thinner since June 1887. There has never been any offensive discharge.

Note on admission.—In the situation of the vaginal portion of the cervix, there is a mushroom-shaped, soft growth, convex downwards. It bleeds freely on touching it. The uterus is much less movable than it should be, and the growth has evidently extended to the vaginal walls. The case was, therefore, too far advanced to be suitable for the supra-vaginal amputation.

February 14th, 1888. Under ether I scraped away all the soft part of the growth with Simon's sharp spoon; the result of this was to leave a crater-like cavity in the situation previously occupied by the growth. I now applied Paquelin's cautery freely to the whole of the diseased surface, and painted it over with pure carbolic acid.

On February 20th, as the patient had experienced no inconvenience from the treatment, I was encouraged to apply caustics. The cavity left after the scraping, was packed with plugs soaked in chloride of zinc solution (300 grains to ℥j.) and the vagina filled with plugs squeezed out of strong solution of carbonate of soda. The plugs were removed in about thirty hours (having, indeed, been accidentally left in rather longer than was intended).

February 27th. A yellowish-white slough was removed from the vagina. It was in one piece, and formed a complete cast of the ulcerated cavity in the situation of the cervix, and of the upper part of the vagina. Its measurements were as follows:—Length $3\frac{3}{4}$ inches, breadth $2\frac{3}{8}$ inches, thickness $\frac{1}{4}$ to $\frac{3}{8}$ of an inch. *The weight* of the slough was 1 oz. 165 grains. It had no smell whatever. The diseased area from which it had separated had the appearance of a healthy granulating surface.

The patient had exceedingly little discomfort following the application of the caustic, but from the 20th of February to the 27th of February, she had moderate fever, the temperature reaching 101·4 at night.

After separation of the slough the temperature became normal.

Weight on February 4th, 1888, 7 st. $5\frac{1}{2}$ lb., weight on March 5th, 7 st. $4\frac{1}{2}$ lb. (allowing for the fever, and the hæmorrhage inseparable from the scraping, this is satisfactory). Before the present illness began she weighed 9 st.

By the use of the curette, followed either by cautery, or by the application of caustics, the bleeding is diminished, and the discharge either ceases to be offensive, or becomes much less offensive, till enough time has elapsed for fresh portions of the growth to die, and become putrid.

The fever, from which these patients suffer, also disappears till the discharge again becomes offensive.

To diminish the offensiveness of the discharge.—Injections of iodine water (℥ ij. to Oj. water) two or three times a day, or of weak carbolic (one to sixty), or merely of lead lotion, will be useful for the purpose. As already mentioned, scraping with the curette, or

sharp spoon, while it checks the hæmorrhage, is also the most effectual means of lessening the offensiveness of the discharge.

To relieve pain.—For this purpose we use either suppositories of morphia (containing $\frac{1}{4}$ grain of morphia), or hypodermic injections of morphia. It is well to postpone the use of morphia as long as possible, till in fact the pain is really severe, because the doses have soon to be increased, or repeated at more frequent intervals, to obtain relief.

Soreness of the external parts produced by the irritating discharge may be relieved by applying Ung. zinci oleati (B.P.), or some similar soothing preparation.

CHAPTER XII.

Carcinoma of the Body of the Uterus.

This is a much rarer disease than carcinoma of the cervix. Less than two per cent. of cases of carcinoma of the uterus are cases of primary carcinoma of the body (Schroeder).

Origin.—1. It may begin in the deeper parts of the glands, and so form nodules which are at first in the thickness of the uterine wall; as they grow, they form projections either towards the peritoneum, or towards the mucous membrane.

2. It may begin more superficially, and then produces usually *papillary masses* projecting into the cavity of the uterus; this is the form that the disease most commonly assumes (Fig. 85).

Rarely, it causes a general thickening of the mucous membrane.

Etiology.—*Age.*—Most cases occur in women between the ages of fifty and sixty.

Fertility.—Most cases with this disease have either had no children, or been relatively sterile, having had perhaps only one child.

Symptoms.—These are the same as in carcinoma of the cervix.

Hæmorrhage.

A discharge, which sooner or later becomes offensive; and,

Pain. But, whereas in carcinoma of the cervix, pain

is a late feature, in cases of primary carcinoma of the body, it occurs early and is extremely severe.

Physical signs.—*In comparatively early cases* we find the vaginal portion of the cervix normal; on bimanual examination, the body of the uterus is found to be enlarged, and the uterus is freely movable. The speculum will show a sanious discharge from the external os, and portions of brain-like material are often mixed with

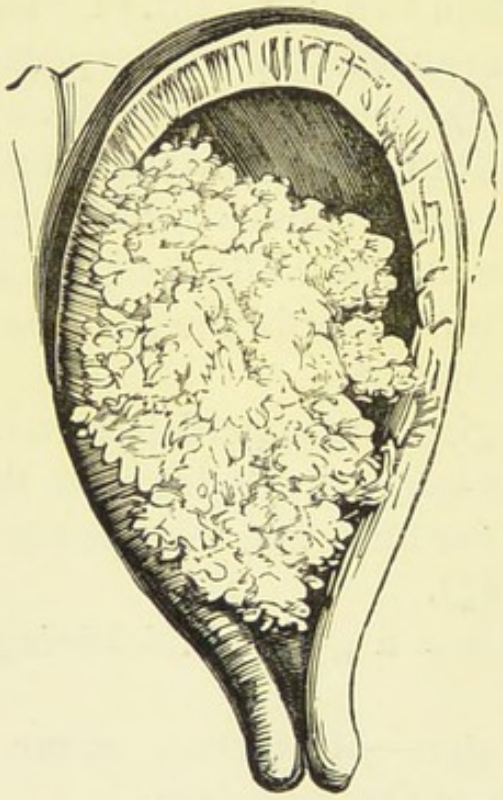

FIG. 85.—Carcinoma of the body of the uterus (Sir J. Y. Simpson).

it. The discharge at this stage is usually offensive. *Gentle* passage of the sound shows that the uterus is enlarged, and its withdrawal is followed by a little more bleeding than was taking place before using it. Even at this comparatively early stage, the patient may present the appearance of the cancerous cachexia.

In advanced cases.—The uterus is fixed, partly by peri-

tonitis, but also by extension of the disease along the broad ligaments.

Diagnosis.—Certainty in diagnosis can only be attained by dilating the cervix. The finger is then passed into the cavity of the body of the uterus, and recognises some one of the conditions described above—usually soft, friable, papillary masses. If doubt exist as to their nature, a portion can easily be removed for subsequent examination with the microscope; to be of any use such a piece must be large enough to be hardened, and to allow of sections being cut. In practice, taking the history, the age of the patient, and so on, with the presence of such masses as those mentioned in the body of the uterus, there can be little doubt as to their being malignant.

Among conditions which might be mistaken for malignant disease of the body of the uterus are :—

In old people.—Senile endometritis.

In younger people.—

Retained products of conception.

Fungous endometritis.

Sloughing intra-uterine fibroids.

Senile endometritis.—This is the condition in which clinically, a differential diagnosis is most frequently required. In such cases there is a purulent discharge, which may be slightly blood-stained from time to time, and the discharge may be offensive.

But in senile endometritis :—

As to the symptoms.—There is no wasting. Pain is either absent, or slight.

As to the physical signs.—The body of the uterus is slightly, if at all enlarged, and indeed it may be quite small; after dilating the cervix, the finger finds the surface of the mucous membrane quite *smooth*.

In younger people there is always a strong probability against the presence of malignant disease of the body of the uterus.

As to retained products of conception.—The mere fact that the patient has been pregnant establishes a probability against malignant disease of the body of the uterus, a probability which is stronger the more children she has had. There will not be the rapid wasting, and probably not the severe pain of a carcinoma of the body. Nor will the discharge be found to contain the débris of brain-like appearance and consistence common in carcinoma of the body.

Dilating the cervix and removing the mass thoroughly with the finger or curette (with all the precautions essential in every intra-uterine manipulation) will be followed by a rapid recovery. Whereas, if the intra-uterine substance had been malignant, this treatment would produce only an improvement of a very temporary nature.

Fungous endometritis.—A doubt occurred at one time in the case narrated at page 134, as to whether it might not be malignant disease of the body; the age of the patient, the duration of the symptoms, and the absence of offensive discharge and pain, were the points relied on in excluding it.

Subsequently a microscopical examination of the material removed (and the complete recovery of the patient) showed that it was a non-malignant formation.

Sloughing intra-uterine fibroids.—Apart from points of difference in the history, on dilatation of the cervix, the firm consistence and well-defined outline of an intra-uterine fibroid would exclude carcinoma of the body.

Treatment.—As in the case of carcinoma of the

cervix, the treatment differs according as the disease is in a comparatively early stage, or in an advanced stage.

In early cases.—Given that the case is in an early stage, that is to say, that we are as certain as a careful examination under an anæsthetic can make us:—

1. That the uterus is freely movable.

2. That no thickenings can be felt in the direction of the broad ligaments, or utero-sacral ligaments, such as would probably mean extension of the growth in those directions; and

3. That the enlargement of the body of the uterus is not so great as to preclude its removal per vaginam.

I think there can be little doubt at the present time that the right treatment is to extirpate the uterus through the vagina.

The late Dr. Thorburn, quotes the *Lancet* of March 14th, 1885, as of opinion that "no evidence is as yet forthcoming that total extirpation of the uterus for cancer of the body either prolongs life or relieves suffering, while on the other hand the mortality after the operation is known to be large, and early recurrence extremely frequent. The facts known unequivocally condemn total extirpation for cancer of the cervix, and are decidedly unfavourable to its practice for cancer of the body of the uterus."

I agree with this opinion as regards cancer of the cervix, except in the small number of cases where the tendency is for the disease to spread upwards to the body of the uterus, before involving the vagina, or peri-cervical connective tissue. Such cases are only a very small fraction of the total number of cases of carcinoma of the cervix we meet with, and for them, removal of the whole uterus is at the present time regarded as the right treatment.

In cases of carcinoma of the body in an early stage, professional opinion as represented in the extract from the *Lancet* in 1885, quoted above, has undergone a change, and now in 1888 there are, I think, few gynæcologists who would hesitate to recommend removal of the whole uterus in such cases.

The mortality of this operation, according to Dr. W. Duncan's statistics, published in 1885, is 28·6 per cent.*

A greatly diminished rate of mortality for this operation has been reported since then by different operators; *e.g.*, 10·5 per cent. by Bokelmann; but many of the cases (all Bokelmann's) were cases of carcinoma of the cervix; in such cases the difficulties of the operation are very much less, because the body of the uterus is of normal size. Probably the mortality in Duncan's statistics, viz., 28·6 per cent., closely represents the mortality of removing the whole uterus per vaginam in cases of primary malignant disease of the body. If the patient recovers from the operation, even if the interval before recurrence be only a matter of months, I think she is well repaid for the risk she has incurred. The following is an account of the only case in which I have had the opportunity of removing the whole uterus for primary malignant disease of the body.

A. R., age 58, a washerwoman, married in 1859, the husband left her three and a half months after marriage; had one child still-born. No miscarriages. Admitted to the London Hospital Feb. 26th, 1886 complaining of having been constantly "unwell" for ten months, and for the last two months of having had very severe pain at the bottom of her stomach, reaching down the thighs to the knees. Also she had had a watery discharge slightly coloured with blood, and a little offensive at times.

Family History.—No history of cancer, or phthisis.

History of present illness.—The symptoms first appeared ten

* *Trans. Obst. Soc.*, London, vol. xxvii.

months ago, as above mentioned. Shortly before the commencement of her illness she had lost some money in her business, and fretted a good deal about it.

In May, 1885, the first thing she noticed was that she became "unwell" very suddenly, the discharge was of a deep-red colour, and came away in clots. She had no pain, and the discharge continued for six weeks, or two months; it then left her for a day or two, but came on again as badly as ever. She lost flesh, and latterly has lost her appetite. The pain and the watery reddish-yellow discharge came on about two months before admission, the pain a little before the discharge. For the last month the discharge has been offensive.

The pain soon became very severe indeed; she felt it most in the hypogastric region, and down the inside of her thighs as far as the knees.

First of all it was of a throbbing character, and latterly like something cutting her severely. The pain was always much worse at night, and kept her awake; she was often "doubled up" with the pain, it was never relieved by lying down, but, if anything, worse.

Menstrual History.—The only feature of interest was that the menopause occurred comparatively early, in 1866, when she would be only thirty-eight. Since then she had "seen nothing" till ten months ago.

Present state, Feb. 26th, 1886.—Abdomen a little prominent below umbilicus; a little, but not very, tender; abdominal examination detected nothing else abnormal.

Vulva.—Some erythematous vulvitis such as is produced by irritating discharges. On asking patient to strain, a watery, yellow discharge escaped from vagina.

Vaginal examination.—Vagina short, one very sharp "bridle" runs from the left side of the cervix to adjacent vaginal wall. Vaginal portion of cervix normal. An irregular, hard lump the size of a cob-nut felt posteriorly, apparently in supra-vaginal cervix. Examination causes a great deal of pain. Chloroform was therefore given, and a thorough examination made. The uterus is freely movable. The body can be felt bimanually lying to the right of the middle line, the position being one of anteversion; body enlarged. Through the speculum, before passing the sound, some blood-stained discharge was seen escaping from the external os. Small fragments of soft, brain-like material appeared in the discharge escaping *after* passing the sound.

March 1st, 1886.—Uterus extirpated per vaginam. The operation lasted one hour and forty-eight minutes. The uterus on removal was found to weigh seven ounces (the weight of the uterus in a woman of fifty-eight would be normally one ounce or less), on opening it an extensive papillary growth was seen projecting into the cavity of the body (Fig. 86). Sections of the growth in the uterus were examined by Professor Victor Horsley, and pronounced to be carcinomatous. Sections of the nodule felt in the supra-vaginal

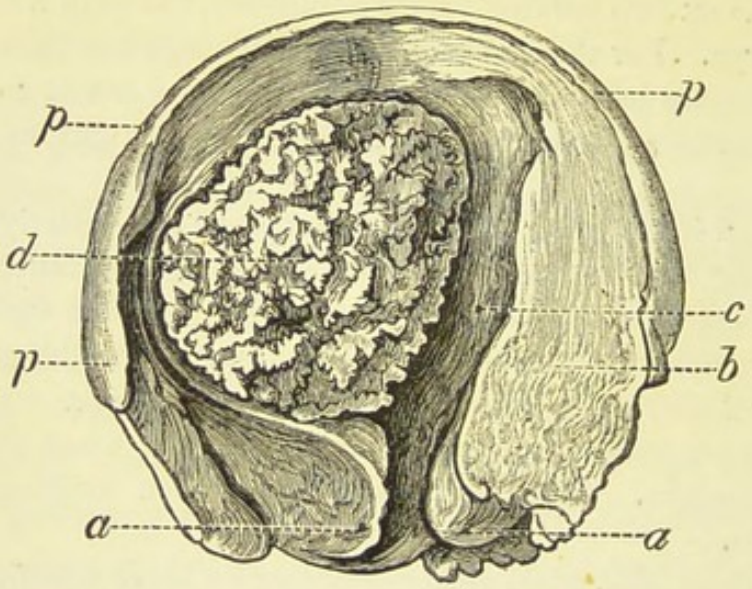

FIG. 86.—Primary carcinoma of the body of the uterus. This is a drawing of the uterus extirpated per vaginam in the case of A. R. The uterus has been laid open along the left side. The growth in the cavity of the body has a papillary surface. The cervix is healthy. *a*. Vaginal portion of cervix; *b*. Cut surface of uterine wall; *c*. Part of the mucous membrane of the body that has not been involved by the growth; *d*. The malignant growth; *p p p*. Cut edge of peritoneum.

cervix were also examined by him. It proved to be an ordinary fibroid.

Subsequent progress.—Highest temperature on the evening of March 2nd, 102·2°. From, and including March 5th, temperature was normal, and patient made an uninterrupted recovery.

Previous to the operation the temperature reached about 100° at night, falling to normal in the morning.

The patient was seen from time to time subsequently. She en-

joyed good health, and was free from pain. In October, 1886, an examination was made and no return was found. She was not seen again until the end of January, 1887, when, though about her work as usual (mangling) she had been getting thinner again, and for about a month had had bad pains across lower part of the back, and down the left leg, and a profuse watery discharge, at times red; but she has not lost much blood; she has been suffering from boils. She would not be examined on that occasion, and it was not for some week or two after that an examination could be obtained. On vaginal examination then, a lump the size of an orange was felt filling the upper part of the vagina, it was fixed, and the surface towards the vagina was ulcerated, and bled readily.

Patient was re-admitted to the Hospital, and gradually went from bad to worse, dying on July 7th, 1887—Sixteen months and seven days after the operation.

For some weeks before her death a hard mass could be felt in the umbilical region.

Post-mortem.—There was found some recent adhesive peritonitis in the pelvis; a hard mass occupied the greater part of the pelvic cavity particularly on the left side. The mass in the umbilical region was found lying on the lumbar vertebræ, and was the size of an orange, it appeared to be due to secondary deposit in the lumbar glands. Hydronephrosis of the left kidney. No secondary deposits in the liver, lungs or other organs.

Right kidney fairly normal, but its capsule could not be separated without causing some tearing. There had been no symptoms of uræmia.

Remarks.—This patient then, had about ten months of renewed health and comfort, such as enabled her to resume her ordinary work (mangling). The pain had been exceedingly severe before the operation, and the complete relief afforded from it by the operation was a very gratifying feature in the case. It will be seen that symptoms had been present for ten months before the operation, so that the case was not by any means an early one. I certainly think that her life was prolonged by the operation, for during the period of non-recur-

rence, she was freed from the continuous loss of blood, from the pain that kept her from sleeping, and her appetite returned; and I think it fair to conclude that, if she had not had the operation performed, she would have died much sooner. Further, as a matter of choice, there can be no question that, if any of us were compelled to suffer from certain symptoms at some time or other, we should choose to postpone the evil day as long as possible; and most of us would be willing to run some risk to secure an immunity from such symptoms as those of cancer, even for a period of ten months.

In advanced cases.—Palliative treatment such as was recommended for carcinoma of the cervix is all that can be done.

Sarcoma of the Uterus.

This is a rare disease; it is impossible to distinguish between carcinoma and sarcoma of the uterus, except by the microscope, so that clinically these two diseases may be grouped together as malignant disease of the uterus; similar treatment is required whether the disease be sarcoma or carcinoma. Sarcoma of the body of the uterus is commoner than sarcoma of the cervix. When it occurs in the body of the uterus it may be found as circumscribed nodules in the uterine walls, or as a diffuse growth, forming more or less irregular projections on the surface of the mucous membrane.

Etiology.—*Fertility.*—Twenty-five out of sixty-three in Gusserow's series of cases were sterile.

Age.—In the same series the ages were as follows:—

2	under	20		
3	between	20	and	30.
14	,,	30	,,	40.
26	,,	40	,,	50.
14	,,	50	,,	60.
2	,,	60	,,	70.
1	over	70.		

The Symptoms in advanced cases are the same as in carcinoma.

In early cases the discharge is said to be less offensive, and pain less marked.

Diagnosis.—The question will be, in each particular case, is the disease malignant? (*i.e.* carcinoma or sarcoma) or non-malignant? and the non-malignant conditions from which sarcoma has to be diagnosed, are the same as those mentioned under carcinoma. The following rare case was one of circumscribed sarcoma of the body of the uterus with secondary nodules in the vagina.

E. L., æt. 50, married twenty-nine years, eight children, the last eleven years ago, no miscarriages, was admitted to the London Hospital, June 27th, 1885. She complained of having had a sudden attack of flooding about a month ago, it lasted an hour, and she lost a pint of blood. Two days after she had another similar attack; since then she was confined to bed till she came to the Hospital. She once tried to walk across the room about a week after the second attack of bleeding, but the exertion was immediately followed by a third flooding. After each flooding she fainted and vomited, but the attacks were not attended by any pain. She has been losing flesh the last three months, and for the last three or four months has had a watery discharge from the vagina of a "dirty" colour. A month ago (that is, about the same time the flooding came on) she noticed a lump protruding from the vulva.

Previous history.—Patient began to menstruate at sixteen; she was quite regular till her marriage; the flow lasted a week, and she had no pain at her periods. During the last nine years, patient says

she had altogether six attacks of profuse flooding; the one which began a month ago is the sixth. The *first* attack of bleeding occurred nine years ago, and confined her to bed for five weeks. The *second* attack was three years after this. Between the attacks the patient says she was quite regular.

Present condition (June 29th, 1885).—*Vulva.* On inspection, without separating the parts, a greenish-black mass is seen between the labia

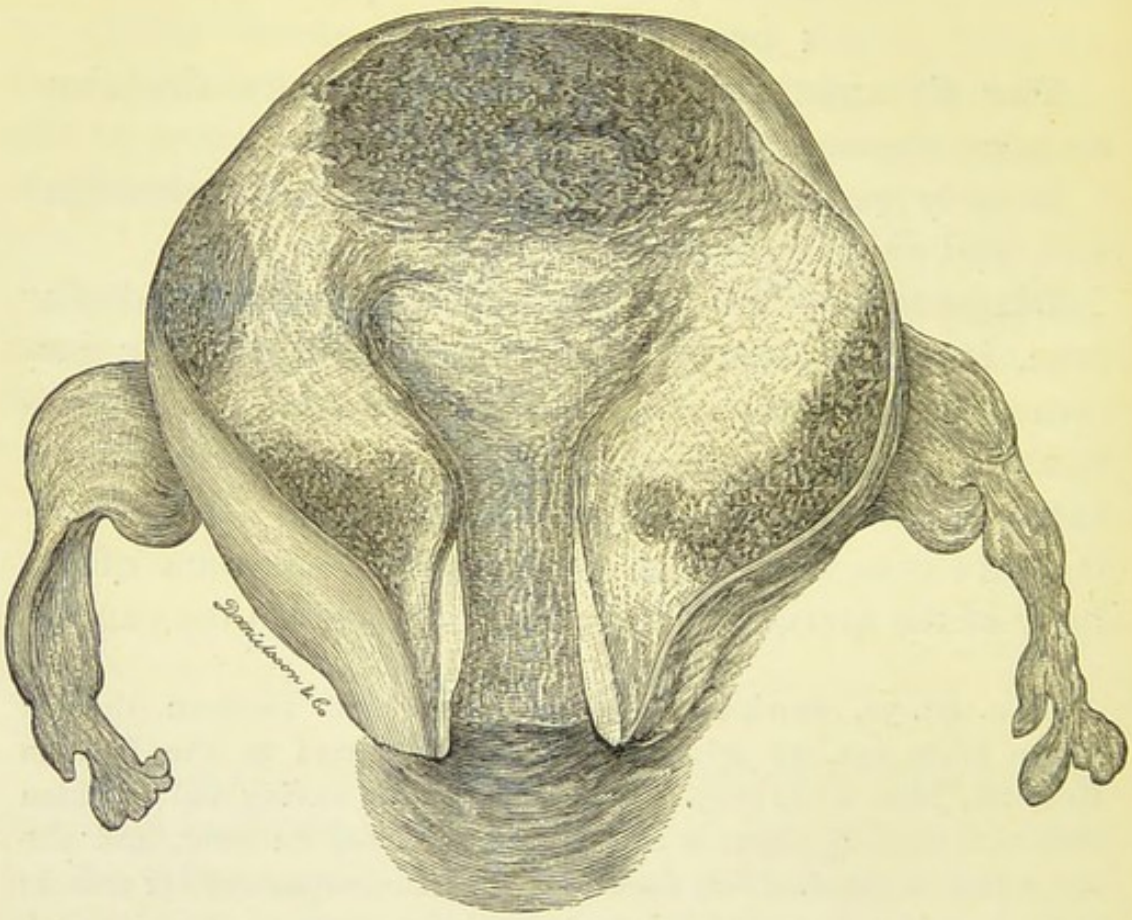

FIG. 87.—Circumscribed sarcoma of the body of the uterus (Author's case). The uterus is laid open from behind. In the recent state the sarcomatous masses were dark red.

majora posteriorly. By separating the labia the mass is seen to be oval, with its long diameter from before back, measuring 1⅝ inches; transversely one inch.

The exposed surface of the mass is indistinctly divided by radiating furrows into three lobes. On tracing it up, the mass is found to be attached to the posterior vaginal wall by a broad pedicle which extends downwards as far as the posterior edge of the vaginal orifice.

The part of the tumour that is within the vagina is covered with vaginal mucous membrane of a pale pink colour, like that elsewhere in the vagina. But this covering ceases abruptly where the mass is exposed to the air, and, as already mentioned, the surface of the exposed portion is of a greenish-black colour.

About half an inch up the vagina on the right side, a second mass the size of a walnut is to be felt beneath the mucous membrane. At the most prominent part of this mass is an area the size of a three-penny piece, of a dark purple colour. Here the vaginal mucous membrane has become attached to the subjacent growth, and has ulcerated. Elsewhere the mucous membrane covering the tumour is normal. The mass has an elastic, semi-fluctuating feeling.

Uterus.—The condition of parts in the vagina interferes with a satisfactory examination of the uterus, but it feels heavier than normal, and freely movable.

The temperature since admission has varied from normal to 100·4°. Patient is thin and sallow; her general appearance suggests malignant disease, a gland can be felt in each groin, but neither of them is enlarged.

On July 2nd, 1885, the growths were removed, and after their removal (which was easily effected) a careful examination was made, the patient being still under the influence of an anæsthetic.

The uterus was freely movable; its surface appeared smooth, and free from any irregularity. The sound passed three and a half inches without causing any bleeding.

After the operation the patient had an attack of septicæmia, from the effects of which she sank on July 7th.

Post-mortem.—Three distinctly circumscribed growths, of a deep red colour and soft consistence, were found in the walls of the uterus. The largest occupied the thickness of the uterine wall at the fundus. It measured vertically 1¾ inches, and horizontally 2½ inches. The peritoneal surface of the uterus opposite this growth was discoloured, and of a purple tint, but was quite smooth. The lowest growth was partly in the wall of the cervix, partly in that of the body of uterus (see Fig. 87). There was no peritonitis. There were numerous secondary growths about the size of peas, but individually varying considerably in size, in both lungs. None elsewhere. The kidneys were granular.

Microscopical examination of the growths showed that they were mixed round and spindle-celled sarcomata.

CHAPTER XIII.

Diseases of the Fallopian Tubes.

Congenital Peculiarities.—The chief one is the existence of two or more openings surrounded by fimbriæ, two or more accessory fimbriated extremities, instead of one. In the 100 cases I examined, this condition was met with six times, in most of these, but not in all, the accessory opening communicated with the main tube.

Inflammation of the Fallopian Tubes.—Salpingitis.—This is an extremely important affection as proved by post-mortem room investigation; during life we can only, as a rule, infer that it is playing a part, or has played a part in producing the morbid condition that is present. For example, in cases of pelvic peritonitis following labour, it is certain that in most, perhaps in in all cases, the sequence of events is—endometritis, salpingitis, and extension of the inflammation from the tube through the open fimbriated extremity, producing pelvic peritonitis. If the patient recovers, we cannot prove the existence of the salpingitis; but if she die, we may actually see it, as I remember doing in a case of puerperal fever, fatal a short time after delivery. There was evidence post-mortem of corporeal endometritis, the fimbriated ends of the tubes were open, pus could be pressed out of them, and patches of lymph were seen distributed over the pelvic peritoneum generally. In this case it is to be noticed that the fimbriated ends of the tubes were open. This must have been because the in-

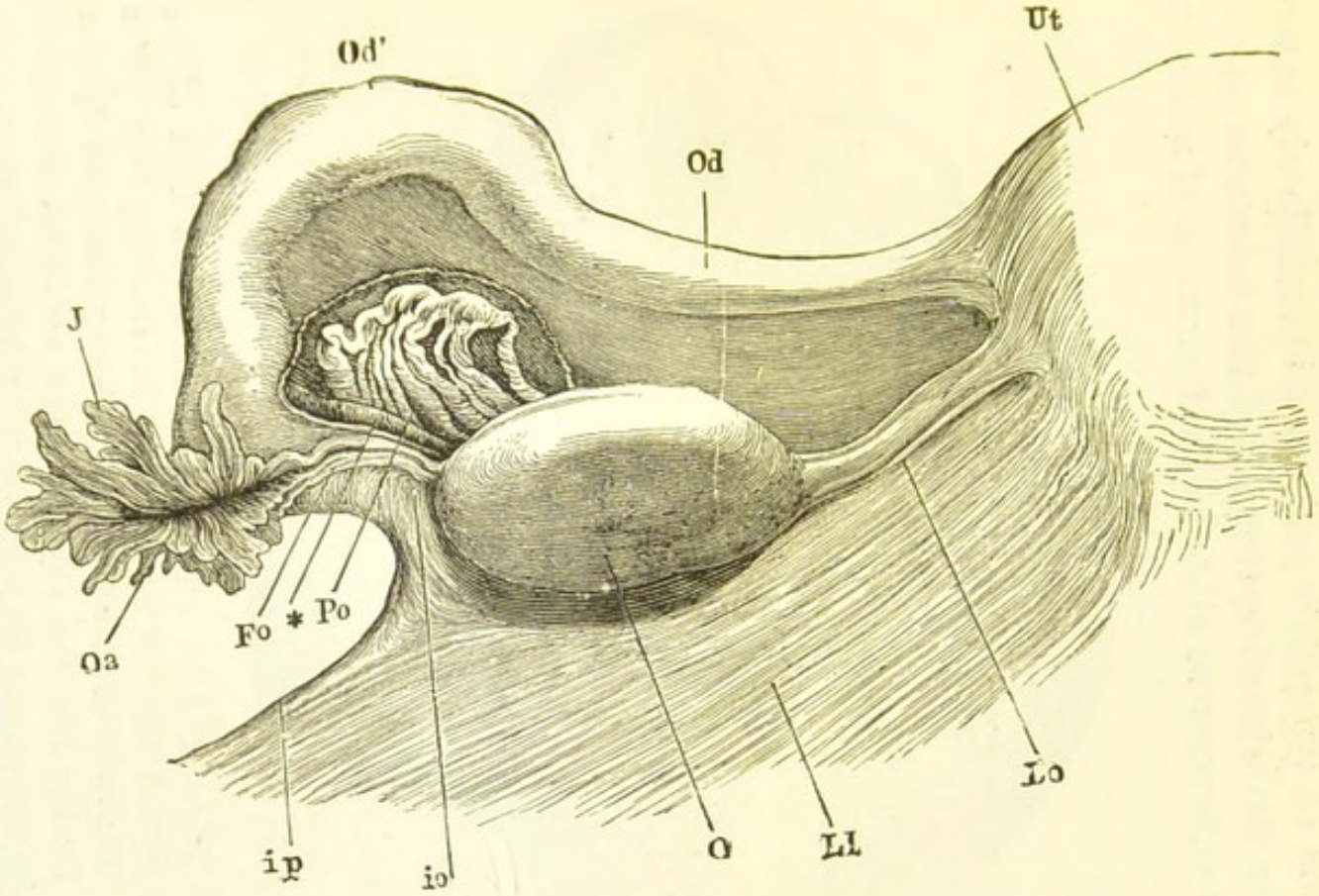

FIG. 88.—Uterus with the appendages of the left side seen from behind (Henle). Ut. Uterus; Od. The inner narrower part of the Fallopian tube called the *isthmus;* Od'. The outer wider part called the *ampulla;* J. The fimbriated extremity of the tube, the fimbriæ surround Oa, the abdominal orifice of the tube; Fo. The ovarian fimbria attached to the outer end of the ovary O; Lo. Ovarian ligament; Po. Parovarium; LI. Part of the broad ligament. "The broad ligaments are formed on each side by a fold or double layer of the peritoneum, which is directed laterally outwards from the anterior and posterior surfaces of the uterus to be connected with the sides of the pelvic cavity" (Quain). The peritoneum covers the anterior surface of the uterus as low as the level of the internal os; it covers almost the whole of the posterior surface, and extends on to the upper fifth of the vagina. ip. The infundibulo-pelvic ligament, *i.e.*, that part of the upper free border of the broad ligament not occupied by the Fallopian tube. It runs outwards to the brim of the pelvis.

flammation of the pelvic peritoneum immediately external to the fimbriated extremity of the tube was of too intense a character to allow of the formation of adhesive

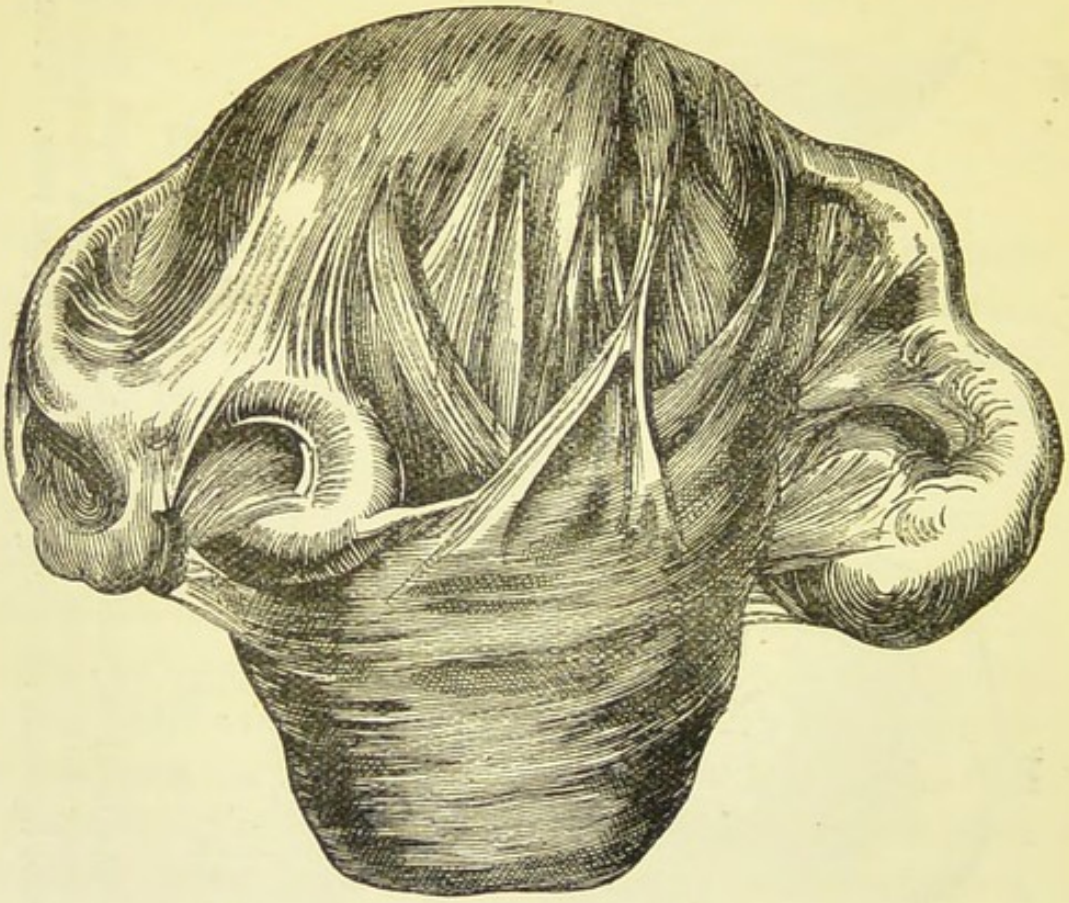

FIG. 89.—Uterus and its appendages shewing the state of the latter when matted together by the adhesions resulting from pelvic peritonitis. The ovaries are not visible, being concealed by the adhesions. During life, the physical signs would be, diminished mobility of the uterus, and the presence of "thickening" at the sides of the uterus. As the fimbriated extremities of both tubes are sealed up, a patient whose organs are in the condition represented is incurably sterile (Heitzmann).

lymph in the neighbourhood of the opening of the tube, which would have sealed it up.

In chronic cases the fimbriated opening has always become obliterated by adhesive pelvic peritonitis glueing it to surrounding parts. Had this occurred in the case

mentioned, the inflammation might have remained a local affair, and the patient have recovered.

Etiology and Morbid Anatomy.—From what has been said it will be evident that the etiology of salpingitis is to a great extent, if not entirely, that of corporeal endometritis.

Therefore, we may expect to meet with salpingitis:—

1. Following labour or abortion.

2. In cases of gonorrhœal or simple vaginitis, by extension.

3. In cases where the endometrium has been directly injured by tents, or other instruments.

4. As one of the morbid conditions produced by cold during menstruation.

5. In certain fevers.

In fact, whenever there is corporeal endometritis, salpingitis is likely to occur by extension of the inflammation along the tubes.

When the inflammation has reached the fimbriated extremity of the tube, pelvic peritonitis is set up in its neighbourhood. Provided the pelvic peritonitis be of the adhesive variety, what happens is, that the fimbriated end of the tube is closed up, being as it were glued to the ovary, and all trace of the fimbriæ is usually lost.

Subsequently the tube may become dilated by accumulation of the inflammatory secretion. Whether in a particular case dilatation occurs, or not, seems to depend on whether there is free escape for the secretion towards the uterus, or not.

In many cases of dilated tubes, we do find that there is a communication open towards the uterus—that the canal is not closed in this direction, but in such cases we find the channel of communication very fine and tor-

tuous, so that there is practical occlusion. When the channel towards the uterus is narrow we can easily un-

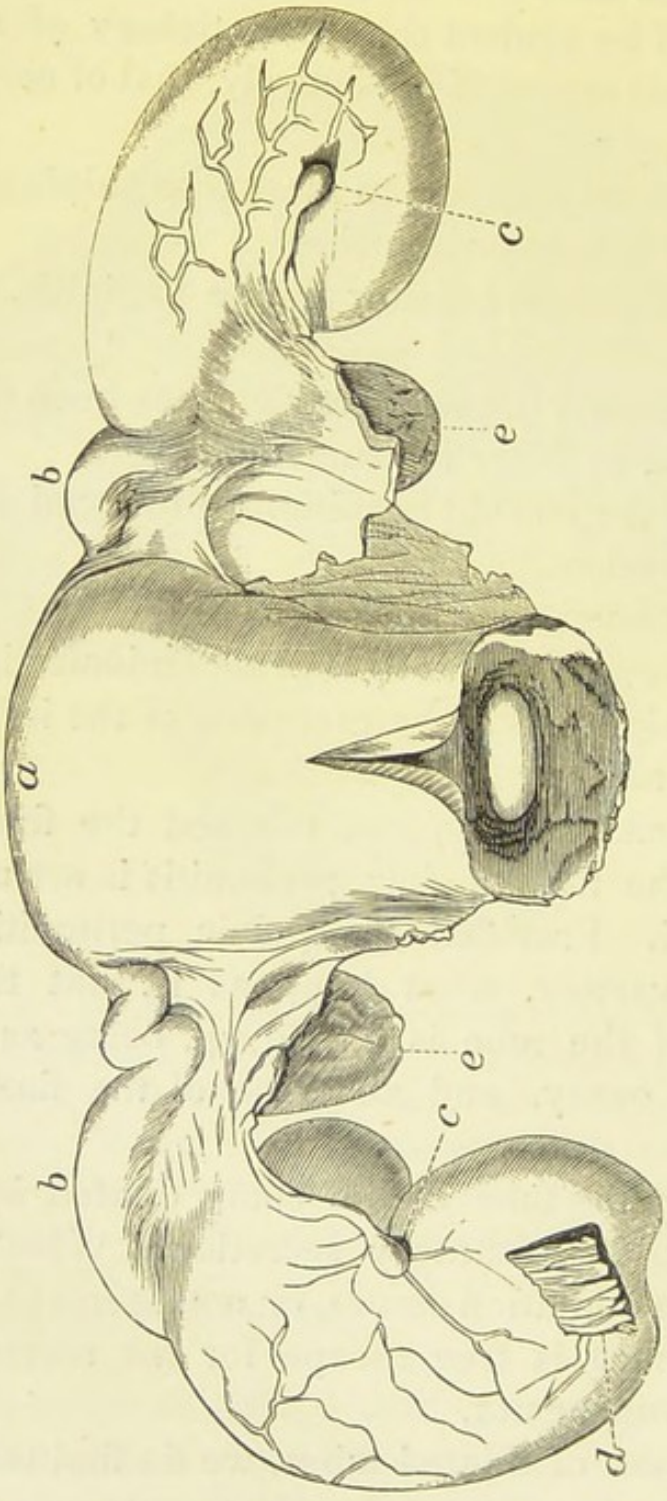

FIG. 90.—Double hydrosalpinx (Hennig). *a*. Uterus; *b b*. Fallopian tubes; *c c*. Dilated portion of the tubes; *d*. Part of an adhesion indicating previous pelvic peritonitis; *e e*. Ovaries.

derstand that there is little tendency for the secretion to escape into the uterus; for as the Fallopian tube be-

comes dilated, it tends to fall behind the uterus into Douglas's pouch; the escape of the fluid is then hindered partly by gravity, and partly by the kinking of the channel. The outer two-thirds of the tube is the part most liable to become dilated; the sausage-like swelling formed is largest at its outer part, and the whole swelling is usually more or less distinctly sub-divided by annular constrictions into two or three compartments, which, however, communicate freely with one another.

Dilated tubes are classified as either *Hydrosalpinx*, *Pyosalpinx*, or *Hæmatosalpinx*, according to the nature of their contents.

In hydrosalpinx the fluid is usually clear and yellow, occasionally it is milky. So long as the contents are not distinctly purulent, and are not composed of blood, it is best to classify a specimen as one of hydrosalpinx.

In pyosalpinx the dilated tube contains pus.

In hæmatosalpinx the tube contains blood.

Frequency.—The writer examined the condition of the pelvic organs with special reference to this question in a series of a 100 bodies taken as consecutively as possible in the post-mortem room of the London Hospital; *dilatation of the Fallopian tubes was found in seventeen of these cases.*

In 5 cases there was pyosalpinx.
In 8 „ „ „ hydrosalpinx alone.
In 4 „ „ „ hæmatosalpinx.

There was evidence of pelvic peritonitis in *all* the cases. Whatever be the cause of salpingitis, it is a cause which tends to affect *both* tubes. In thirteen out of the seventeen cases both tubes were dilated, and of the remaining four (where there was dilatation only on one side), in two only was the Fallopian tube on the undilated side normal; taking as the essential characters

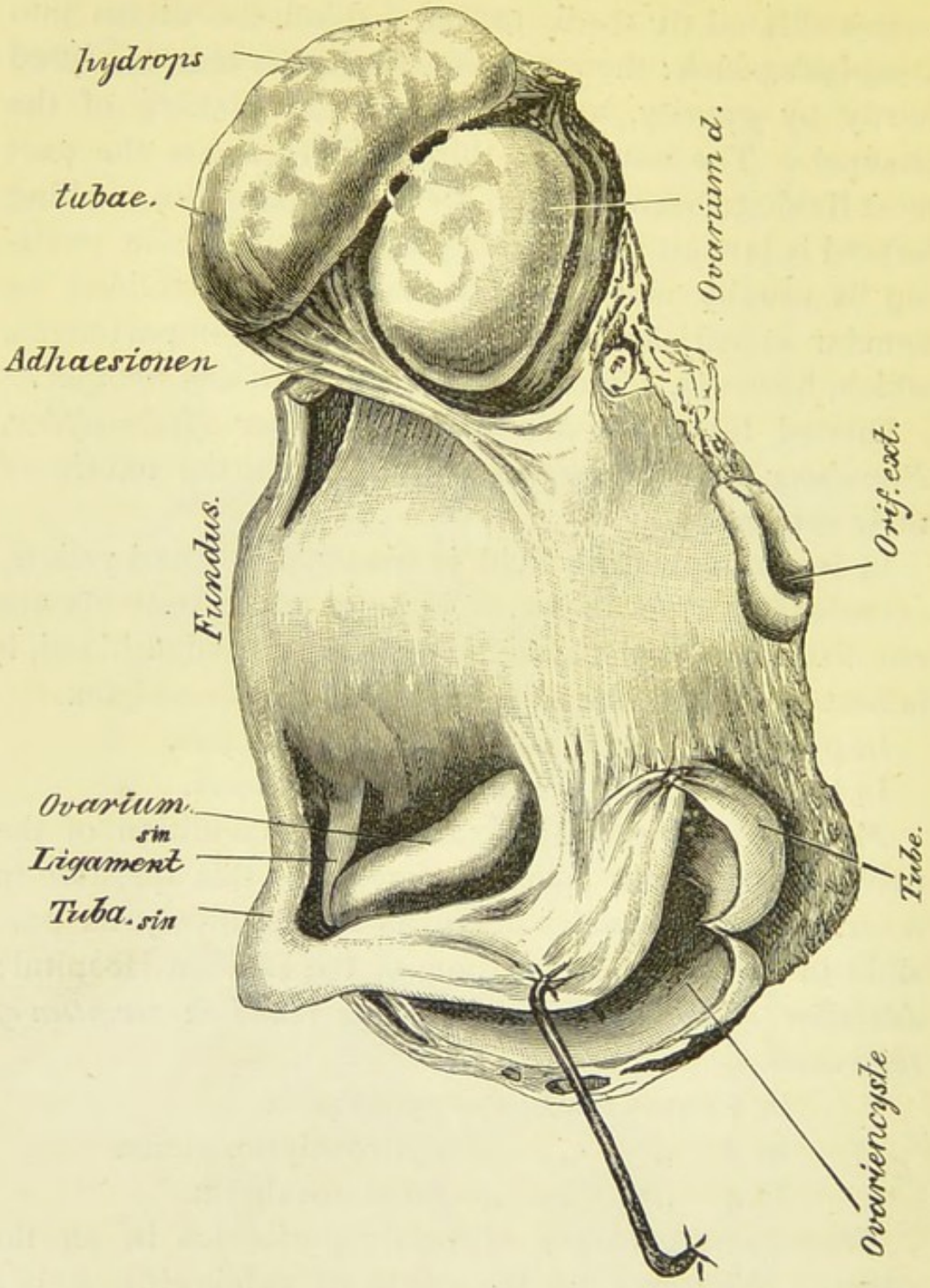

FIG. 91.—Double hydrosalpinx with broad adhesions between the dilated tubes and adjacent parts (Winckel). The uterus and its appendages are seen from behind. On the left side there is a small ovarian cyst as well as a dilated Fallopian tube. *Tub. sin.*, Left tube; *Ovarium sin.*, Left ovary; *Ovarien cyste*, Ovarian cyst; *Adhesionen*, adhesions; *hydrops tubae*, Dropsy of the tube; *Ovarium d.*, Right ovary.

of a normal Fallopian tube the presence of an open fimbriated extremity, and of a channel in communication with the cavity of the uterus.

Relation of Hydrosalpinx to Pyosalpinx.—These conditions are probably merely stages of the same disease; the fact that in some cases we find that on one side there is a hydrosalpinx, and on the other a pyosalpinx favours this view.

Relation of Hæmatosalpinx to Hydro- and Pyosalpinx.—Hæmatosalpinx may be produced by hæmorrhage into a tube, the fimbriated extremity of which has been previously obliterated, or by an accidental hæmorrhage into a pre-existing hydro- or pyosalpinx.

Importance to be attached to these conditions.—This is a point which cannot yet be regarded as determined.

As to the facts, in the writer's series, in one case certainly, and probably in another, the dilated tubes were the cause of death.

Both these were cases of pyosalpinx, and the patients died of acute peritonitis. In one of them the place where the wall of the dilated tube had given way, allowing its contents to escape into the peritoneal cavity, was clearly seen.

In one case, that of a woman age 62, the tubes contained cheesy masses, this probably should be classified as a case of pyosalpinx that had undergone natural cure.

The condition of a patient who is the subject of a pyosalpinx is certainly a serious one. How far hydro- or hæmatosalpinx constitute a danger to life, we are not yet in a position to say. The diagnosis of pyosalpinx from hydro- or hæmatosalpinx is always difficult, and may be impossible. The presence of slight chronic fever would be in favour of pyosalpinx.

Diagnosis.—*Symptoms.*—These are not very defi-

nite, but a case presenting the following group of symptoms may, with a good deal of probability, be set down as one of dilated Fallopian tubes.

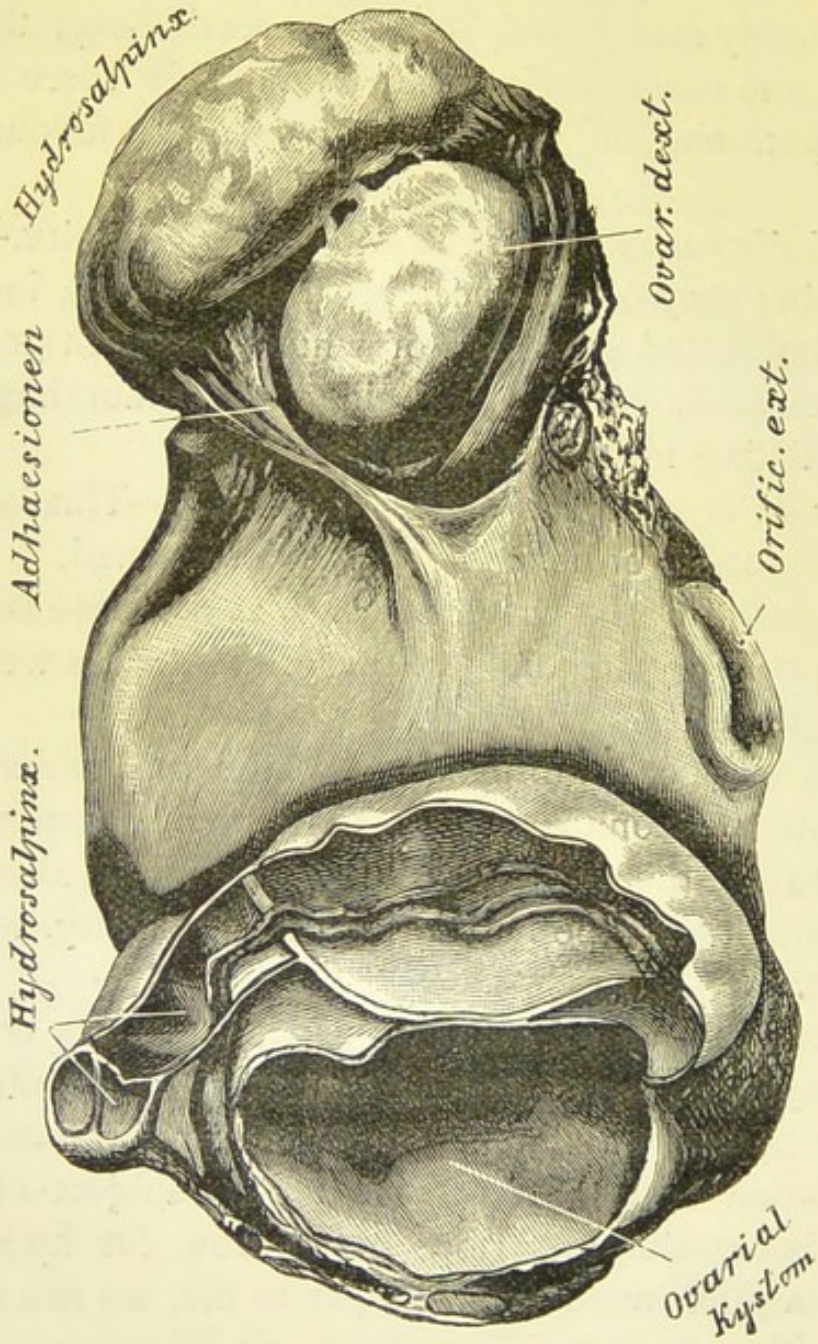

FIG. 92.—Double hydrosalpinx (the same specimen as in the preceding figure, Winckel). Showing the communication between the ovarian cyst on the left side, and the dilated tube.

The patient complains of pain across the lower part of the abdomen, and it may, or may not, be worse on one side. She has dysmenorrhœa, and the regularity of the catamenia is disturbed. If the dysmenorrhœa dates

from a particular confinement, or abortion, or if a history of gonorrhœa can be obtained, the probability of the tubes being diseased is strengthened.

Physical signs.—In some cases where the swelling formed by the dilated tube is very small, particularly if the part of the tube affected is that just external to the uterus, it may be impossible to recognise any swelling. Such a case is, however, exceptional; dilatation usually affects the outer part of the tube, leaving a portion of undilated tube between the uterus and the tumour. Again, in most cases both tubes are dilated, and in all cases there is pelvic peritonitis, varying in extent. We have mentioned that the tumour formed by a dilated tube tends to fall behind the uterus, still, however, keeping rather to its own side of the middle line.

Given the history such as that sketched out above, if we find the uterus less movable than normal, (on account of the accompanying pelvic peritonitis), and if we find a sausage-like tumour lying in Douglas's pouch, a little to one side of the middle line, that feels as if it contained fluid, and is partially fixed, still more if this condition exists on both sides, the probability is that the case is one of dilated tubes.

Diagnosis by puncture is dangerous, and would not be conclusive, *e.g.*, the fluid might come from a small ovarian cyst. Considering the frequency of dilated tubes among the general population, as evidenced by the frequency they were met with in a consecutive series of bodies coming from all parts of a general hospital in my series (17 per cent.), it is, I think, a fair inference that, if it were possible to examine the organs in a series of patients *attending the gynæcological department in any of our Hospitals*, we should find the tubes diseased in a still larger proportion. For instance,

where there is lessened mobility of the uterus with the presence of either a distinct lump, more or less fixed, in one or both posterior quarters of the pelvis, or even where there is "thickening" such as is usually taken as evidence of a previous pelvic inflammation, peri- or parametritis, such cases would, I think, if it were possible to examine the organs, yield a high percentage of dilated tubes (see Fig. 89).

Treatment.—If it were possible to be certain of the presence of a pyosalpinx, as distinguished from a hydro- or hæmatosalpinx, there would be no hesitation in recommending an operation for its removal by a skilled specialist. Pyosalpinx certainly constitutes a danger to life; whether hydrosalpinx or hæmatosalpinx do so is as yet undecided.

When there is very severe dysmenorrhœa, as well as more or less pain between the periods, associated with the physical signs of dilated tubes, removal of the diseased tubes (and ovaries) by one specially skilled in abdominal surgery is a justifiable operation; provided the exact nature of the operation is explained to the patient, and, if she is married, to her husband. In such cases the dilated tubes and ovaries may be found so densely matted together, and to the surrounding parts, that the operation for removing them would be an exceedingly dangerous one (*e.g.*, involving risk of tearing some of the big veins, or the ureters), or may even be altogether impossible.

In my series of seventeen cases removal of the diseased organs would have been absolutely impossible in one case, and in another could only have been done by removing at the same time the body of the uterus; in the remaining fifteen cases removal would have been possible in all, and easy in most.

The best thing to do when an operation has been decided on, is to commence the operation merely as an exploratory abdominal section, with the full understanding that, if the organs are found so densely adher-

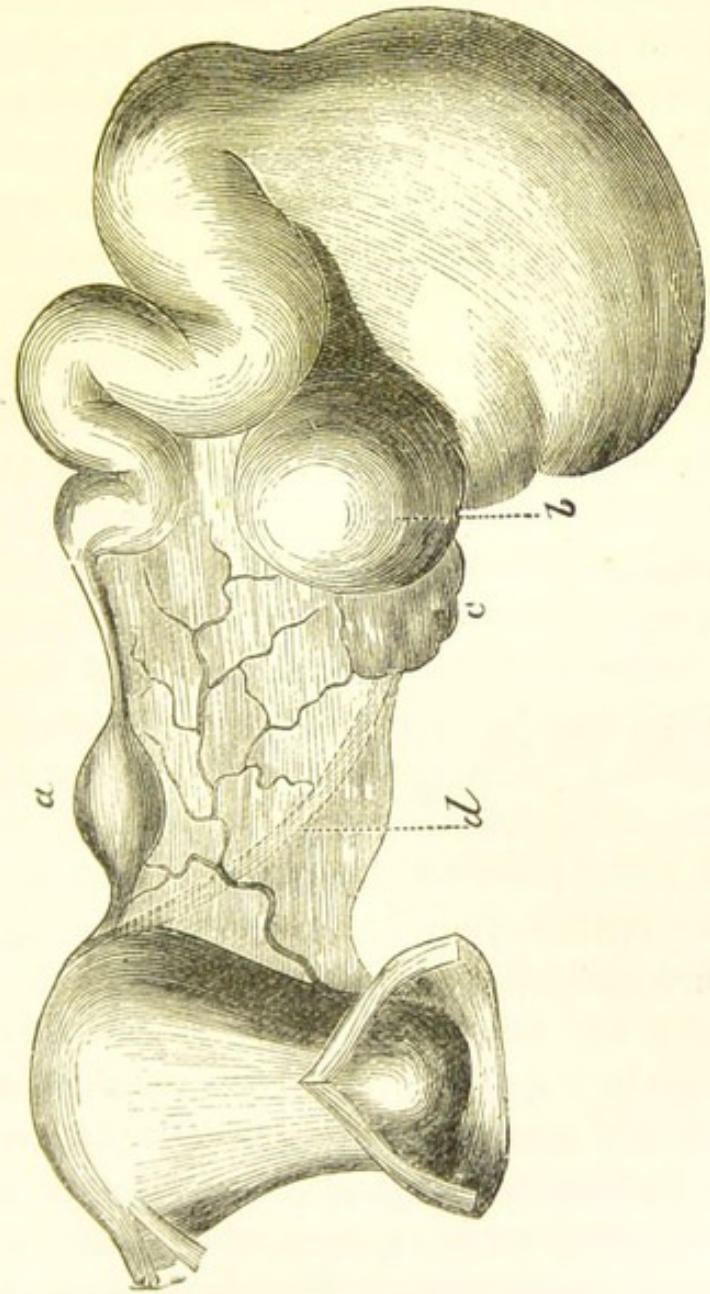

FIG. 93.—Dilated Fallopian tube (Boivin et Dugès). The outer part of the tube is chiefly affected; there is a second smaller dilatation at *a* near the uterus.

ent that their removal would be a very hazardous matter, the operator is not to attempt removal, but to close the wound. It sometimes happens that after such an operation, *i.e.*, merely an exploratory abdominal sec-

tion, the patient's pains are relieved to a greater or less extent; such a case occurred to me at the London Hospital. The patient had swellings on each side of the pelvis such as may be caused by dilated tubes; on opening the abdomen the organs on each side were so firmly adherent in the pelvis that I decided it would be unjustifiable to attempt to remove them, and I closed the wound. The patient made a good recovery from the operation, and, singularly enough, *although she was informed that the tumour we had hoped to remove had not been removed*, she has on several occasions since assured me that the pain she has had since the operation is not worth speaking of as compared to what she had before it. Possibly in examining the relation of the organs during the operation some adhesions may have been broken down that had something to do with her pain.

Abnormal Patency of the Inner End of the Fallopian Tube.

As a rule the inner part of the Fallopian tube is so narrow that an extremely fine bristle is needed, and some expenditure of time and patience to pass it from the uterus along the tube. This is the rule in dead bodies; very rarely a specimen may be met with where the inner end of the tube is much more open than this, and may allow a common surgical probe to pass along it even post-mortem, as in a case narrated by Dr. Matthews Duncan where, during life, there was reason to think the sound had passed along the Fallopian tube. During life the inner part of the tube has not probably an unvarying calibre, but may dilate to some extent, perhaps sufficiently to allow an ordinary uterine sound

to pass along the tube. It is in this way that cases are explained where the size of the uterus, as ascertained by bimanual examination, is not increased, and yet the sound can be passed several inches in the direction of one of the tubes. In rare cases this may be the true explanation, but in most cases where it happens it is far more probable that the sound has perforated the walls of the uterus, and passed along *under* the peritoneum between the layers of the broad ligament, and is not in the tube at all. Out of the body I have several times tried pressing the point of an ordinary uterine sound against the uterine end of the tube in the direction of the tube. What happens is, that when the pressure has reached a certain point, the sound perforates the mucous and muscular coats of the uterus, and slips into the space between the layers of the peritoneum forming the broad ligament, outside the Fallopian tube altogether. The peritoneum is loose in this situation, and unless the sound is pressed with great force, or passed for an extreme distance, the peritoneum is not perforated, which may account for no serious mischief resulting when this has been done during life.

CHAPTER XIV.

Pelvic Inflammation (Pelvic Peritonitis, Pelvic Cellulitis).

The expression "pelvic inflammation" includes pelvic peritonitis and pelvic cellulitis, for though in a particular case we are usually able to say it is a case of pelvic peritonitis, or a case of pelvic cellulitis, according to circumstances, they are usually present together, the one, however, predominating over the other, and giving its name to the case.

Pelvic peritonitis is also known as *perimetritis*, and pelvic cellulitis as *parametritis*.

Pelvic Peritonitis. Perimetritis.

Etiology.—Cases of pelvic peritonitis can always be placed in one of the following groups:—

1. Cases starting from *labour* and *abortion.*
2. Cases arising in connection with *menstruation.*
3. Cases following *gonorrhœa.*
4. Cases due to *traumatic causes,* the injury permitting the entry of septic matter, *e.g.*, rough use of the sound, etc.
5. There remain some cases of pelvic peritonitis which do not belong to any of the above groups, such are:—

Cases of pelvic peritonitis arising in connection with:—

a. Ovarian tumours.
b. Fibroid tumours.
c. Carcinoma and tubercle.

It will be seen that the etiology of pelvic peritonitis, as regards the first four groups of cases, is identical with the etiology of corporeal endometritis; and indeed, in these four groups, with the doubtful exception of the cases arising in connection with menstruation, there is no doubt that the pelvic peritonitis arises by extension of the inflammation from the body of the uterus along the tubes to the peritoneum—the sequence being corporeal endometritis—salpingitis—pelvic peritonitis.

As regards the group of cases arising in connection with menstruation.—In these pelvic peritonitis may arise either:—

(*a*) By extension from the endometrium, exposure to cold having set up corporeal endometritis, or

(*b*) Simultaneously with corporeal endometritis.

We have to remember that at the menstrual periods the whole of the pelvic viscera are intensely congested physiologically; and it is easy to see how exposure to cold may in such a case cause a general pelvic peritonitis, and at the same time an inflammation of the whole mucous tract of the genital organs, *i.e.*, salpingitis, corporeal endometritis, cervical endometritis, vaginitis.

(*c*) There is another way in which to account for pelvic peritonitis occurring during menstruation. There may be an escape of a small quantity of blood into the pelvic peritoneum, either regurgitating from the uterus along the Fallopian tubes, or coming from the ovary, when the Graafian follicle ruptures, and this will set up pelvic peritonitis.

Of course when the quantity of blood in such cases is considerable, we have what is known as *pelvic hæmatocele*, the symptoms and signs of which are well defined. But when the quantity of blood escaping into the peritoneum is small, the characteristic symptoms of hæma-

tocele, on which we chiefly depend for diagnosing it, will be absent, but yet the quantity of blood may be quite sufficient to set up pelvic peritonitis. This is probably the way to explain cases arising during menstruation, where there has been no exposure to cold, or other discoverable cause.

Morbid anatomy. — Pelvic peritonitis may be either :—

1. *Simple.*—Here the peritoneum is injected, and the surface has lost its lustre, but there is no perceptible exudation of lymph upon it.

2. *Adhesive.*—Here there is a layer of lymph exuded on the surface of the inflamed peritoneum. Such a layer is commonly as thick as a piece of thickish blotting paper.

3. *Serous.*—This is similar to the last variety, except that the lymph-covered surfaces are separated by serous fluid to a variable extent.

4. *Purulent.*—In this variety the fluid separating the inflamed peritoneal surfaces is pus.

In serous perimetritis and purulent perimetritis, the fluid is encysted, its boundaries being formed partly perhaps by some natural boundary, *e.g.*, Douglas's pouch, and elsewhere by adhesive peritonitis, between the neighbouring coils of intestine and other adjacent organs, shutting off the fluid from the general peritoneal cavity.

It should be noticed that a pelvic abscess may be due to a perimetritis as well as to a parametritis (pelvic cellulitis).

Symptoms.—*In acute cases* there is pain across the lower part of the abdomen, vomiting, and the ordinary symptoms of fever, anorexia, thirst, headache, and so on; there may be rigors; frequent desire to pass water,

and pain in passing it, are common symptoms, and there may be pain on defæcation.

In chronic cases the prominent symptom is pain across the lower part of the abdomen, either right across the abdomen, or more or less localised in one or other iliac region, and backache. Dysmenorrhœa is common in such cases, and there may be sterility.

There is usually disturbance of the regular course of menstruation, either in the direction of amenorrhœa, or of menorrhagia.

Dyspareunia is often present in the chronic form, such as produces adhesions. In cases arising in connection with ovarian tumours, there is sometimes no pain.

Signs.—*In acute cases.*

General.—There is rapidity of the pulse, and a high temperature. The patient lies on her back with her legs drawn up.

Local.—*The abdomen* is more or less distended, and is very tender on palpation; owing to the rigidity of the muscles we may not be able to make much out by abdominal examination. In other cases, as soon as sufficient time has elapsed to allow of adhesions taking place (say forty-eight hours) we may feel a lump, perhaps reaching up to the umbilicus or higher; such a lump is fixed, hard, tender, and may be more or less resonant. It is formed by matting together of the intestines by adhesive peritonitis.

Vaginal examination.—During the first few hours of the attack we only find great tenderness on examination, and that the vagina is hot; perhaps an indistinct fulness in the posterior fornix may also be detected at this stage.

Later, say after 48 hours, when the exudation has had time to coagulate, and the adjacent parts have

become fixed by adhesive peritonitis, the physical signs in typical cases are either:—

1. The uterus is fixed, and occupies the centre of the pelvis; all round it we feel hardness, so that, to quote the usual simile, it feels as if plaster of Paris had been poured into the pelvis, and had set.

2. In another equally characteristic condition, we find

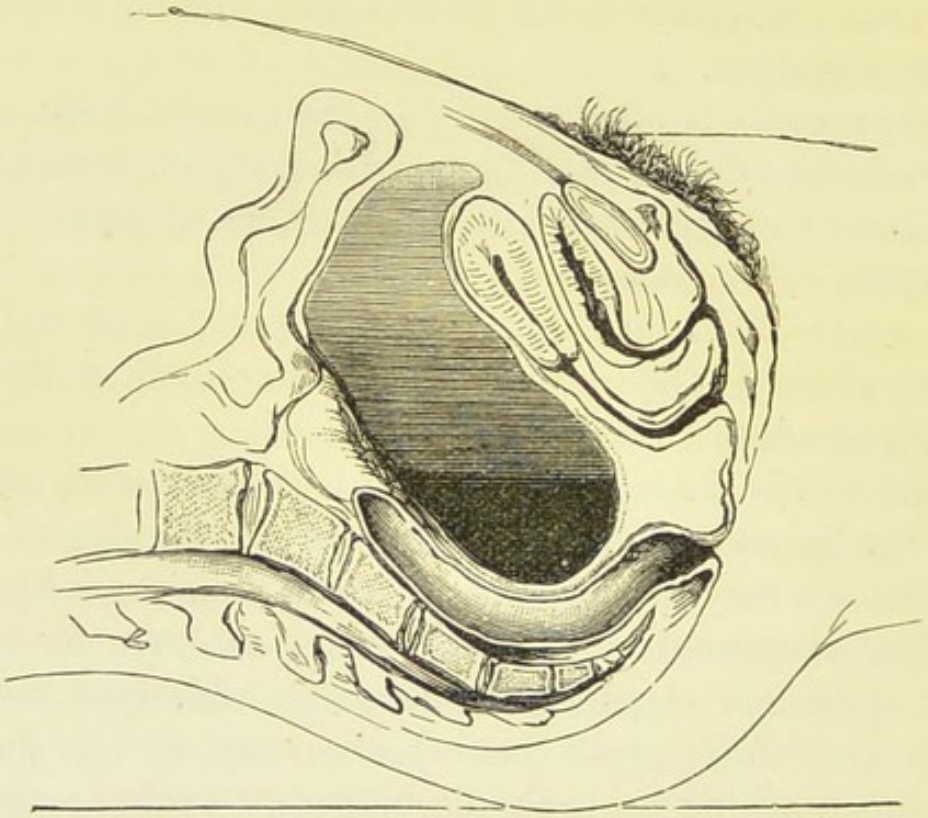

FIG. 94.—Successive accumulations of lymph in Douglas's pouch in pelvic peritonitis, shown in section (Thorburn).

as before, the uterus fixed, but pushed forwards so as to lie close to the pubes; as before, there is hardness all round, but behind, the hardness takes the form of a definite lump, which has pushed the uterus forwards.

This lump is formed by accumulation of the exudation while still fluid in Douglas's pouch, owing to the action of gravity (Fig. 94).

In chronic cases.—One of the most constant physical signs is *lessened mobility of the uterus;* considerable experience is necessary to say when the uterus is less movable than it ought to be.

It is observed by endeavouring to tilt the uterus as a whole upwards, and noticing whether it moves as much, and as easily, as it does when the parts are healthy.

More or less thickening may be felt at some part of the vaginal roof, either behind, or in the right or left posterior quarter of the pelvis. It has already been mentioned in the account of diseases of the Fallopian tube, that judging both from post-mortem room experience, and the experience of abdominal surgeons, such "thickenings" are in many cases composed of a more or less dilated Fallopian tube matted by adhesions to the ovary, uterus, and parts around. This probability is increased if the thickening is felt in one or other posterior quarter of the pelvis, and is still greater if it occurs in both posterior quarters.

Course.

It is said that the inflammatory products may be entirely absorbed, and no doubt this is true of the greater portion of such products in each case; but judging from the frequency with which adhesions are met with in the post-mortem room between the various parts of the pelvic viscera, it is difficult to believe that the inflammatory products, once the adhesion stage has been reached, are ever so entirely absorbed as to leave no trace whatever in the form of adhesions.

When the fimbriated extremities of the Fallopian tubes are closed by adhesive peritonitis we have neces-

sarily an absolute sterility; and we have the condition established for dilatation of the tubes to occur, according as the secretion in the tube can escape easily through the uterine end of the tube or not.

In the chapter on dysmenorrhœa it has been explained how the persistent adhesions after an attack of pelvic peritonitis may cause painful menstruation.

If the inflammation goes on to suppuration, we have a pelvic abscess, the contents of which may occasionally be absorbed; much more frequently, the abscess bursts externally, or into the vagina, bladder, or bowel.

Prognosis.

Pelvic peritonitis usually ends in convalescence, but from what has been said, it is clear that the patient will be unusually fortunate if she escape some of the common sequelæ of pelvic peritonitis—*chronic pelvic pain*, *dysmenorrhœa*, *dyspareunia*, and *sterility*. Further, relapses are common; particularly from imprudence during menstruation, over-exertion, exposure to cold, and so on.

Certain cases following labour illustrate the tendency for the inflammation to be lighted up again by slight causes. It is not uncommon to see a case where after labour, nothing of sufficient importance occurred to attract attention till the patient got up, probably about the tenth day, and that then well-marked symptoms and signs of pelvic peritonitis developed. The explanation of such cases is probably that a slight pelvic peritonitis really existed from the first, but so long as the patient remained at rest in bed, the symptoms were ill-marked, pain perhaps being absent, or

being taken for after-pains. When she got up, the tendency to congestion accompanying the upright position, and the exertion, caused the pelvic peritonitis to become more severe, and to be accompanied by definite symptoms. When the inflammation becomes general —when general peritonitis results from pelvic peritonitis —the prognosis is very grave.

Diagnosis.

In acute cases.—The chief conditions from which pelvic peritonitis has to be distinguished are:—

Pelvic cellulitis.

Pelvic hæmatocele.

Extra-uterine fœtation.

In all these cases there is pelvic peritonitis as a minor complication, but there are usually sufficient grounds for enabling us to decide which is the most important condition present.

Pelvic cellulitis.—As regards *etiology*, this more often follows wounds of the cervix, by laceration during labour, or in gynæcological operations.

Symptoms.—Pain, nausea, and vomiting are less marked. The patient lies with only one leg drawn up.

Physical signs.—In pelvic cellulitis there is usually a lump at one side of the uterus pushing it to the opposite side. The finger feels, *on the unaffected side*, the normal arching of the lateral fornix, while *on the affected side* it comes on a mass bulging downwards, and so producing a convexity in the lateral fornix, instead of the normal concavity. Thus the vaginal portion of the cervix appears shortened on the affected side. The

uterus and tumour formed by the exudation are less absolutely fixed than in typical cases of pelvic peritonitis.

Pelvic hæmatocele.—The history here is the chief point—sudden onset—sudden pain in the pelvis, with a sense of nausea, faintness, and perhaps vomiting. Such conditions are particularly significant if they occur during a menstrual period, especially if the flow is in progress, and stops for a few hours, and then recommences.

Physical signs. — In intra-peritoneal pelvic hæmatocele, the one we are now considering, the lump in Douglas's pouch is, as a rule, much larger than that formed in simple pelvic peritonitis, and the uterus is pushed further forwards.

Extra-uterine fœtation.—Many cases of extra-uterine fœtation have in their earlier progress been mistaken for pelvic peritonitis. The history in such cases usually helps us—the patient has probably gone two or three weeks over her proper time without being poorly, and then comes on bleeding again—a decidual cast of the uterus may be passed. A tumour formed by the sac of an extra-uterine fœtation, before rupture is usually more to the right, or left, of the middle line than the lumps formed by pelvic peritonitis.

Treatment.

Preventive Treatment.—A consideration of the etiology will suggest many precautions for guarding against pelvic peritonitis.

As regards labour and *abortion*—the utmost care should be taken to avoid introducing septic matter on the examining finger—the nails should be kept short, the

greatest care should be taken to cleanse them thoroughly *with a nail-brush* before making a vaginal examination; a knife should never be used for this purpose, as one constantly sees done. The point of the knife merely produces a naked-eye appearance of cleanliness, and is utterly useless for producing the absolute cleanliness which is alone efficient. The use of a knife in this way deepens the space under the nail, and increases its capacity of collecting dirty material, while it can only remove the more obvious portion of such material. It may seem unnecessary to dwell upon this apparently small matter, but it is in reality one of great importance, first, because the practice referred to is a common one, and second, because the writer has himself noticed a series of cases of puerperal peritonitis, which occurred in the practice of one individual, who adopted this means of cleansing his nails. Then, when the hands and nails are thoroughly washed, they should be dipped for a minute in some efficient antiseptic solution before making a vaginal examination. This should be done each time before making examinations; for this purpose the best in many ways is iodine water of a strength of ʒ ij.- ʒ iv. to Oj.; but practically it is sufficient to make the water a pale sherry-, or dark sherry-colour, according as one wants a moderately strong antiseptic, or a very powerful one. Again, over-frequent examinations during labour should be avoided. When possible an antiseptic vaginal douche should be given before labour, and after delivery.

Acute vaginitis, gonorrhœal or other, should be cured as soon as possible. In using injections for vaginitis care should be taken to see that there is a free return for the fluid used. I think the hydrostatic douche a much safer apparatus than Higginson's syringe. I

have seen three cases where a rigor, and a sudden high temperature, with pain across the lower part of the abdomen, followed soon after the use of a Higginson's syringe in vaginitis; it seems at least possible that some small quantity of the injection mixed with some of the secretion in the vagina may have passed into the peritoneum along the Fallopian tubes. There is obviously much greater danger of this accident happening if an intra-uterine injection is being given; a tube with a double channel attached should always be used in such cases, and the hydrostatic douche apparatus not Higginson's syringe. Some air always gets in when douches are given with the latter. This can be shown by using a glass vaginal pipe fitted on to a Higginson's syringe; during the "diastole" of the bulb air will be seen in the upper inch of the glass tube.

As regards all intra-uterine operations, passing the sound, dilating the cervix, scraping the endometrium, etc., all possible antiseptic precautions should be taken.

Treatment in acute cases.—The patient must be kept at perfect rest in bed, and the treatment must be chiefly symptomatic. If there is *vomiting* the patient should have small pieces of ice to suck; bismuth, and hydrocyanic acid may be prescribed. Vomiting is often best relieved by giving small quantities of weak brandy and soda-water iced, or small quantities of iced champagne.

Pain.—If the patient can bear to lose a little blood, half a dozen leeches applied to the hypogastrium will often relieve it; otherwise, small quantities of morphia hypodermically ($\frac{1}{5}$ of a grain), and hot fomentations to the abdomen should be ordered.

Diet.—Beef-tea, milk and soda-water, toast-water, should be given if they can be retained; if not, nutrient

enemata should be tried till the vomiting subsides. Brandy is often necessary, and the state of the pulse will be a guide as to the quantity; it may be given either by the mouth, or in the nutrient enema.

The temperature.—Quinine in powders stirred up with a drachm of milk should be given, *e.g.*, gr. iij. every four hours. Sometimes an ice-bag to the head is useful in reducing the temperature.

Surgical treatment.—There are some cases where probably the best thing to do is to open the abdomen, and wash out the peritoneal cavity. It is impossible to say precisely in what cases this would be right. There are some, however, where there should be no hesitation in adopting it, *e.g.*, if a patient is known to be the subject of an ovarian tumour, or if there is considerable probability that she has dilatation of the Fallopian tubes, and if in either case sudden symptoms of acute peritonitis arise, there should be no hesitation in opening the abdomen.

It is rather in cases following labour or abortion that difficulty arises. Probably some cases of puerperal peritonitis that die might have been saved by opening the abdomen; on the other hand, many apparently very severe cases recover; at present we have not sufficient data to enable us to lay down any rule. Each case must be judged on its own merits. It is well, however, to remember that the risk of an exploratory incision, performed by someone experienced in abdominal surgery, is not great, and in the cases of puerperal peritonitis that would be benefited, probably nothing more than opening the peritoneal cavity, washing it out, and draining it would be necessary.

Treatment in chronic cases. Here the pain and dysmenorrhœa are the chief symptoms requiring treat-

ment. For the pain, blistering over the seat of the pain produces improvement, usually, however, only of a temporary character. Painting with iodine paint (Tr. iodi, lin. iodi, āā partes æquales) is useful in a similar way. Hot vaginal douches, the douche being as hot as the patient can bear it, usually about 110° F., are also useful. The use of the glycerine plug every night may be recommended.* In a large number of cases, however, improvement is only temporary, and the symptoms return. In some of these cases where the symptoms and physical signs point probably to disease of the Fallopian tubes, it becomes a question whether removal of the uterine appendages (ovaries and Fallopian tubes, which in such cases are usually more or less adherent to one another) may not be the right treatment.

Pelvic Cellulitis—Parametritis.

Etiology.—Injury, especially to the cervix, but also to the vagina and perineum, is the fundamental antecedent to pelvic cellulitis. Septic matter gains an entrance at the point of injury, and inflammation is set up in the connective tissue; the connective tissue of the pelvis is primarily affected, though by extension the inflammation may spread to connective tissue far away from the pelvis, *e.g.*, behind the kidney.

The injuries referred to are usually produced *during labour or abortion.* Laceration of the cervix being the most important. It is not the laceration in itself that

* A glycerine plug is simply a piece of absorbent cotton-wool the size of a walnut, with a string five or six inches long tied round it. The plug is dipped in glycerine, squeezed rather dry, and passed into the upper part of the vagina.

causes the cellulitis, but the laceration, inasmuch as it admits septic matter, which sets up the inflammation.

Wounds of the cervix during operations are a frequent cause of pelvic cellulitis, unless the operations are done with every antiseptic precaution. For instance, in performing the supra-vaginal amputation of the cervix, where the connective tissue at the sides of the cervix is opened up in a most extensive manner, provided the operation is done antiseptically no pelvic cellulitis follows; in ten cases of my own where this operation was done no cellulitis followed. In a case of fibroid polypus too big to remove through the os, where I incised the cervix posteriorly with the cautery, a phlegmon of the right broad ligament followed; I think, because the slough caused by the cautery could not be kept antiseptic; parametritis is very similar to whitlow, clean punctures and cuts on the fingers heal without any cellulitis, but if dirt (*i.e.*, septic matter) gets into them, whitlow will probably be the result.

Morbid anatomy.—There are three varieties of pelvic cellulitis, that is three conditions in which we may see it in the post-mortem room.

These are:—

1. Phlegmon.
2. Abscess.
3. Gangrene.

1. **Phlegmon.**—When the exudation has not passed into the stage of suppuration, it is called *phlegmon*.

It is exceedingly rare to have an opportunity of seeing parametritis in the stage of phlegmon in the post-mortem room; cases of parametric phlegmon are common enough, but either the patients recover, or if they die, the cellulitis has usually by that time passed from the stage of phlegmon to that of abscess. The

following is an account of a case, and a description of a specimen of parametric phlegmon, which I had an opportunity of examining post-mortem.

Post-Mortem Appearances of a Phlegmon of the Broad Ligament.

S. H., age 39, was admitted to the London Hospital a few days after her confinement suffering from mania and parametritis.

The physical signs of parametritis were well marked, there being a well-defined lump in the situation of the right broad ligament, displacing the uterus to the opposite side. The patient had also a good deal of bronchitis, and I think her death, which occurred on the tenth day after delivery, was chiefly due to the bronchitis.

On post-mortem examination the layers of peritoneum forming the right broad ligament were found to be separated by exudation between them, so that from before back the broad ligament from peritoneal surface to peritoneal surface measured one and a half inches. The separation of the layers of peritoneum forming the right broad ligament began at the lower border of the Fallopian tube, and extended downwards as far as the broad ligament extends. Externally the separation by exudation extended to the pelvic wall. The Fallopian tube was, as it were, stretched over the convex upper surface of the swelling formed by the exudation between the layers of the broad ligament.

On cutting into the swelling, the cut surface had an appearance like that of a somewhat coarse sponge, there being seen holes of various sizes separated from one another by solid tissue.

The cavities referred to were filled with a sero-sanguinolent fluid, but none of them contained pus.

The largest holes would admit a No. 16 catheter.

The right ovary measured two and a quarter inches long, one and a quarter inch high, and three-eighths of an inch thick. Its surface was adherent to the adjacent peritoneal surface of the broad ligament by recent lymph. On section the ovary was found to contain an abscess, holding about half a drachm of pus.

On the left side the broad ligament was normal; when held up to-

the light, and looked at from before back, having its normal translucency.

The left ovary was two and a quarter inches long, five-eighths of an inch high, and three-sixteenths of an inch thick. It did not contain the corpus luteum.

The uterus was about six and three-eighths inches long, and measured about four and a half inches between the points of entry of the Fallopian tubes. The placental site was on the posterior wall, and presented a mammillated appearance. Elsewhere the surface of the uterine cavity was nearly smooth.

The exudation takes place into the connective tissue at the side of the cervix, from this situation it passes between the layers of the broad ligament to the side of the pelvis. Normally the layers of the broad ligament if held up to the light are found to be translucent; when phlegmon of the broad ligament occurs, the layers of the peritoneum forming the broad ligament are separated for a considerable distance by the exudation, so that the broad ligament may measure from before back an inch or two inches in thickness.

The phlegmon forms a convex lump over the upper surface of which are spread in order from before back, the round ligament, the Fallopian tube, and the ovary. The appearance on section has been already described in the account of the case just narrated. It is to be noticed that some pelvic peritonitis affects the peritoneum overlying the inflamed pelvic connective tissue as mentioned in that case. Sometimes the connective tissue in the utero-sacral ligaments is implicated—utero-sacral cellulitis; and sometimes there may be a cellulitis of the connective tissue between the bladder and cervix.

2. **Abscess.**—If the inflammation go a stage further than phlegmon, an abscess is formed.

3. Lastly, the inflammation may be of so intense a

character as to produce sloughing of the tissues affected —gangrenous parametritis. This is very rare.

Directions in which pelvic cellulitis spreads.—Here we must distinguish between the course taken by a *phlegmonous* cellulitis, and a *purulent* cellulitis.

A phlegmon starting at the side of the cervix affects the connective tissues between the layers of the peritoneum forming the broad ligament; it may stop here, but if it spreads, it passes either (1) downwards along the round ligament to the groin, or (2) upwards to the connective tissue round the kidney, or (3) into the iliac fossa, or (4) sometimes it may extend upwards in the subperitoneal tissue of the abdominal wall.

A parametric abscess may spread in almost any direction; as contrasted with phlegmon it is important to remember that it may spread over the brim of the pelvis down the thigh, or pass through the sciatic notch to the buttock, or through the obturator foramen to open at the upper and inner part of the thigh. Thus, the spreading of a parametric abscess is a mechanical process, while the spreading of the inflammation in the stage of phlegmon, is a vital process not to be explained by mechanical considerations.*

Parametric abscess may open externally, commonly in the groin, above or below Poupart's ligament, or into the vagina, rectum, or bladder, very rarely into the peritoneum. Sometimes it may open in two directions, *e.g.*, there being one opening into the vagina, and another above Poupart's ligament, this is often due to separate foci of suppuration.

Remote parametritis.—When a cellulitis has spread to some distance from the pelvis, it may happen, that while

* See *Clinical Lectures on Diseases of Women* (Matthews Duncan), 3rd edit., p. 236.

the inflammation, and the signs of it at a distance are still evident enough, yet all signs of the cellulitis in the pelvis have disappeared. The distant cellulitis is known in such cases as "remote" pelvic cellulitis, or "remote" parametritis (Matthews Duncan).

The term "remote" is applied in the same way in cases of perimetritis.

Symptoms.—The symptoms are similar to those met with in pelvic peritonitis, with the exception that pain

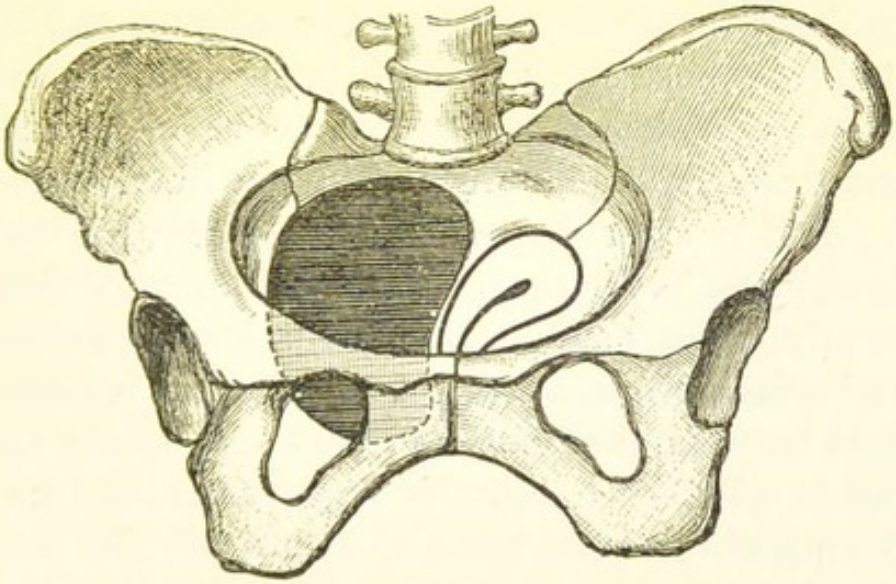

FIG. 95.—Diagrammatic representation of the lateral position of the exudation in parametritis (Thorburn).

is less marked, and vomiting occurs less commonly. The patient lies with only one leg drawn up.

Physical signs in recent cases.—The exact signs vary according as we are dealing with the disease in the stage of phlegmon, or in the stage of abscess; in either case the markedly unilateral, asymmetrical, character of the signs, should be observed.

In the stage of phlegmon.—There is a lump on one side of the cervix, pushing the uterus over to the unaffected side. The lump obliterates more or less

completely the concavity of the lateral fornix on the affected side, and produces an apparent shortening of the cervix on that side. The lump can very probably be reached on bimanual examination, and differentiated from the body of the uterus. The uterus and the lump have a certain small amount of mobility, differing from the absolute immobility in typical cases of pelvic peritonitis.

In the stage of abscess.—There are the physical signs of fluid, fluctuation and dulness, that is in cases where there is sufficient formation of pus, and it is so situated that these signs can be made out. In certain cases, where at one stage we have recognised a phlegmonous inflammation, say in the iliac region, we notice, as it reaches the suppurative stage, a softening, a "bogginess," over the area of the lump which had previously been hard, rather than actual fluctuation. As regards dulness, it may happen that intestine intervenes between the lump and the abdominal wall, and then there will be a tympanitic note on percussion.

After an abscess has burst a fistula remains open for a long while, weeks or months. A probe may often be passed two, three, or more inches, along a fistula of this kind, for a long time after all acute symptoms have passed away, and when convalescence is well established; in time it will close up by itself, and is best left alone. I have several times tried passing a probe, coated with nitrate of silver, along such fistulæ to hasten their healing, but have not been satisfied that it had much effect. Sooner or later, however, they have always healed.

Complications.—Acute inflammation may attack the knee-joint on the affected side, or on the opposite side, and the fluid in the joint may be serous or puru-

lent. Phlegmasia dolens is a common complication of parametritis, affecting the leg of the side corresponding to the parametritis.

Late Results of Parametritis.

As absorption proceeds, the uterus is gradually drawn over towards the affected side, in cases where there has been cellulitis in one broad ligament. In the less common cases, where there is cellulitis of the utero-sacral ligaments, contraction in this situation pulling on the uterus somewhere near the junction of the cervix and body of the uterus in a backward direction, causes a marked anteflexion.

Clinically it is extremely difficult, if not impossible, if a case is seen at this stage for the first time, to be sure if we find the uterus a little to one side of the middle line, that its position is not due to one broad ligament being congenitally shorter than the other, a condition that is common enough, rather than to previous cellulitis. Laceration of the cervix on the side towards which the uterus deviated, would be in favour of a previous cellulitis. As regards old cellulitis in the utero-sacral ligaments producing anteflexion, a difficulty of a somewhat similar character arises. For what is the evidence of old cellulitis of the utero-sacral ligaments? Merely feeling bands running in the situation of these ligaments, and concluding that the bands are a little thicker and more defined, and perhaps shorter than usual. I have noticed in many cases where a retroflected uterus was found incarcerated in Douglas's pouch and replaced, that after replacement these bands, the utero-sacral ligaments, were particularly easily defined, and

this in cases where there was no reason to suppose there had been any previous utero-sacral cellulitis; so that, while admitting that cellulitis in this situation, as absorption proceeded would cause anteflexion, it must also be said that in practice we can rarely be certain that we have before us a case of old cellulitis of these ligaments.

Post-mortem room evidence in the case of old cellulitis is on quite a different footing from the same evidence in cases of old pelvic peritonitis; in the case of the latter the evidence in the shape of adhesions, instead of the uniform shiny character of the peritoneum is unmistakeable; if we find adhesions, there has been peritonitis; but in the case of cellulitis, long after the acute stages have passed, and absorption is as complete as it ever will be, the nature of the case renders it almost impossible to say there has at some time or other been cellulitis. Take for instance a case where there has been cellulitis years before on one side of the cervix, the question would be as to whether the connective tissue found in that situation was more abundant and denser than in the normal condition; and anyone who will examine the connective tissues normally present there, will see the difficulty, or impossibility of deciding such a question. In the 100 specimens I examined I was unable to say positively in a single case that there had been *old* pelvic cellulitis. Undoubtedly there had been pelvic cellulitis years ago in many of them; the only thing was, its traces were not definite, and unmistakeable, as they are in pelvic peritonitis.

Treatment.—The treatment is similar to that in pelvic peritonitis with such slight modifications as are at once obvious (see page 254). Pelvic cellulitis terminates in abscess much more frequently than pelvic peritonitis.

Whether a pelvic abscess has resulted from a pelvic cellulitis or peritonitis, in most cases it is well not to be in any hurry to interfere with it. Take for example an abscess in the right iliac region; even when we feel fluctuation distinctly, it is quite possible that coils of intestine may overlie the abscess, and the risk of opening it is obvious. It is best to foment it well, and wait till it is actually pointing, and having waited till then, we may as well wait a very little longer till it bursts of itself. Occasionally when a large abscess has been stationary for months, and shows no sign of opening spontaneously it is right to open it. Even then aspiration should be tried first, as the abscess may not refill; though it does as a rule. What has been said applies chiefly to abscesses forming swellings in the lower abdomen. Of course there would be no hesitation in opening a suppurating parametritis that had extended along the round ligament beyond the external ring—as in the following case.

Case of parametritis following labour, illustrating extension of the inflammation along the right round ligament to the labium majus, and complicated with suppuration in the left knee-joint.

S. A. H., age 35, nine children, the last eight days ago. The last confinement was difficult, and instruments were used; this had never been the case before. Admitted to the London Hospital, Dec. 20th, 1886, complaining of pain in the right iliac region, and of great weakness since the confinement.

Temperature on admission 102°.

On the day after her confinement she was seized with shivering fits, which occurred twice the same evening, and on the three succeeding nights. She has also had pain on defæcation, and trouble on micturition; twice the urine has had to be drawn off.

December 23rd.—Rigor. Temperature 101·8°. The left knee-joint is very painful, and contains fluid. A swelling is felt in the hypogas-

trium reaching two inches above the pubes, and extending outwards about equally on each side of the middle line.

The right labium majus is swollen, so as to form a sausage-shaped swelling $1\frac{7}{8}$ inches across, and $4\frac{1}{2}$ inches long. The swelling reaches upwards in the direction of the inguinal canal. Left side of the vulva is normal.

Vaginal Examination.—Most of the swelling in the hypogastrium is the uterus. Some indistinct thickening is felt to the right of the uterus, much less than was found in that situation on admission. Uterus fairly movable. Sound passes three inches. The swelling in the right labium was aspirated, and, as pus came out, a free incision was made into it antiseptically.

December 29th.—Left knee-joint aspirated, pus came out. The case was now transferred to Mr. Tay. Further treatment consisted of keeping the joint at rest on a splint, and aspirating it twice. The patient did well, and the joint recovered completely.

Case of suppurative parametritis following labour.—Abscesses opening into the vagina, and above Poupart's ligament.

S. J., age 32, seven children; the last a month ago, admitted to the London Hospital, June 7th, 1887.

Confinements have all been difficult. Last child delivered with forceps.

When a month pregnant in her last pregnancy had rheumatic fever (there is a well-marked mitral systolic murmur), and had to remain in bed seven months. The joints chiefly affected were those of the left leg and arm.

On admission, temperature 101° (see chart for subsequent temperature). Complained of forcing pain on passing her water.

Note on June 9th.—Abdomen distended. Umbilicus level with the skin. A distinct hard mass is felt occupying the left iliac region reaching three fingers' breadths above Poupart's ligament, the mass does not extend beyond the middle line.

Measurements of pelvis.—Between ant. sup. il. sp.=$9\frac{1}{2}$ inches. Maximum distance between the iliac crests=$10\frac{1}{2}$ inches. External conjugate=$6\frac{3}{4}$ inches.

It was therefore a slightly generally contracted (or justo-minor)

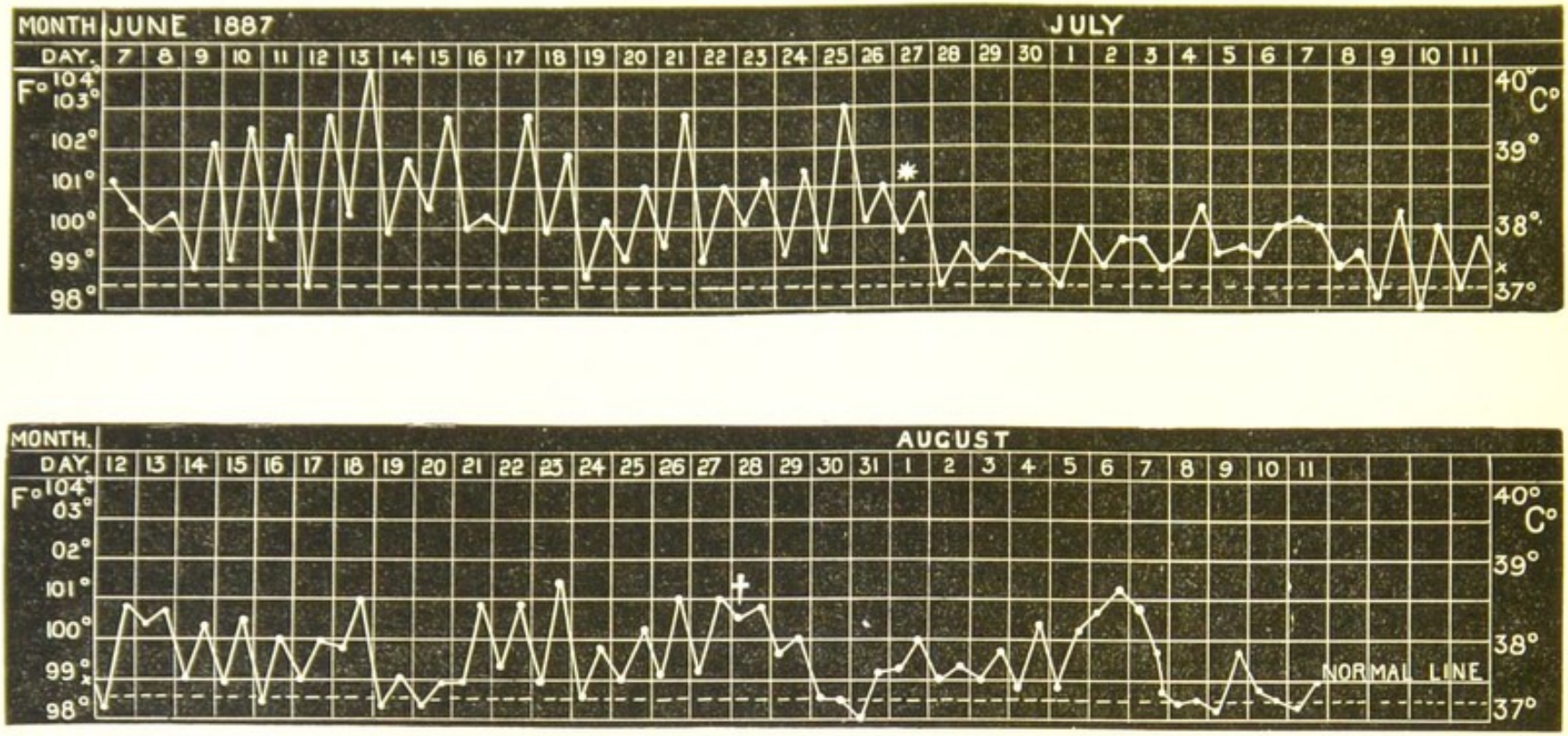

FIG. 96.—Temperature chart of S. J., case of suppurative parametritis following labour. The case was one of about the average duration. June 27th.*—Discharge of pus from the vagina, the temperature then remained much lower till the middle of July when the abscess in left iliac region was forming, this was opened on July 28th.† After August 11th the temperature remained normal (the word "line" is a misprint).

pelvis. Patient cannot extend the left thigh. Says she has not been able to do so for eight months.

Left labium majus larger than right.

Uterus nearly fixed. Cervix lacerated on both sides. Hardness extends outwards from the left side of the cervix to the pelvic wall, and is continuous with the lump felt in the left iliac region.

The finger in the vagina feels a somewhat cylindrical swelling, posteriorly parallel to the vagina, this is not satisfactorily accounted for by fæces in the rectum, and seems to be due to a cellulitis of the connective tissue between the vagina and rectum.

July 2nd.—On June 27th, a discharge of very offensive pus in considerable quantity came from the vagina during the night. On June 29th the pus became sanious, and has continued so since.

July 4th.—With Sims's speculum the opening from which the pus is coming can be distinctly seen; it is situated on the posterior wall of the vagina, about an inch up. The swelling in the left iliac region is softer than before.

July 28th.—Where the hard mass had been in the left iliac region there is now an abscess on the point of bursting; it was therefore opened, and a drainage tube inserted.

September 5th.—The temperature has been normal since the 9th of August. Patient is looking fat and well. Uterus is still nearly fixed, and there is still difficulty in extending the left thigh.

CHAPTER XV.

Pelvic Hæmatocele.

There are two varieties of pelvic hæmatocele:—

1. The intra-peritoneal and
2. The extra-peritoneal.

In the intra-peritoneal variety the blood is effused into the peritoneal cavity; in the extra-peritoneal into the sub-peritoneal connective tissue.

Causation.

Age, most cases occur between the ages of 25 and 35 (Schroeder).

Fertility.—It is more common in women who have had children.

Mode of production.—1. *Rupture of an extra-uterine gestation sac* is one of the commonest causes of it; if we take, for example, the case of tubal gestation, we know that, as a rule, the sac will rupture before the end of the third month of pregnancy. According to the position of the rent there will result either an intra-peritoneal, or an extra-peritoneal, pelvic hæmatocele. If the rupture occurs in the part of the expanded tube covered by peritoneum, then the hæmatocele will be intra-peritoneal; if, on the other hand, at the lower part of the tube, the part not covered by peritoneum, the blood will be poured into the connective tissue between the layers

of peritoneum forming the broad ligament, and the resulting hæmatocele will be extra-peritoneal.

2. *Reflux of blood along the Fallopian tubes during menstruation. The menstrual group of cases.*

The general congestion of all the pelvic viscera that occurs normally at each menstrual period acts as a powerful predisposing cause to the occurrence of hæmatocele, and we are not, therefore, surprised to find that many cases occur in connection with menstruation. In most cases of this class blood regurgitates from the cavity of the uterus along the Fallopian tubes into the peritoneal cavity. Why it should do so, rather than escape as usual into the vagina, we cannot explain in a satisfactory manner. Certain considerations render the occurrence more intelligible, such are :—

a. The fact that the inner ends of the Fallopian tubes are in very rare cases, even post-mortem, found much larger than usual, admitting the ordinary sound, instead of only a fine bristle.

b. The polarity of the uterus; when the lower part is in a state of spasm, the body and fundus are in a state of relaxation; now it is very likely that such relaxation may also affect the inner ends of the Fallopian tubes, causing them to be abnormally patulous.

Causes which may produce hæmatocele during menstruation are :—

Violent exercise.

Lifting heavy weights.

Fright. (I saw a case where there were well marked signs of hæmatocele and a history pointing to it, the onset having occurred during the earthquake at Nice).

Coitus.

Exposure to cold.

Rupture of a Graafian follicle may be attended by a more abundant escape of blood than usual, and so cause hæmatocele.

3. *Rupture of a vein either in the broad ligament or under the peritoneum covering the uterus* may be the source of hæmatocele, either intra- or extra-peritoneal. Such a rupture would be more likely to occur if the vein was varicose, and during the congestion of a menstrual period. This group and the next one probably comprise the fewest cases of hæmatocele.

4. *Rupture of an ovarian cyst, rupture of the uterus.*

Morbid Anatomy.

Intra-peritoneal hæmatocele.—When the blood is effused into the peritoneal cavity it gravitates into Douglas's pouch and coagulates; in twenty-four hours the coagulum has become enclosed by adhesive peritonitis set up round it. The boundaries, for instance, of a hæmatocele just big enough to fill Douglas's pouch would be *below* of course the pouch, *above*, coils of intestine glued to one another and to the edge of Douglas's pouch by adhesive peritonitis. If the effusion is considerable, the blood not only fills Douglas's pouch but the rest of the cavity of the pelvis, and may, when coagulated and surrounded by adhesive peritonitis, form a lump that can be felt a variable distance above the pubes, for example, as high as the umbilicus. It is certain that such is the course of events when no peritonitis, old or recent, existed previous to the escape of blood; but it is a matter of dispute whether in many cases peritonitis has not existed previously and led to adhesions, so that when the blood escapes, it finds itself

limited by the adhesions. Probably both varieties occur, *i.e.*, probably in one set of cases the first thing is the escape of blood into the cavity of the peritoneum and its coagulation there, and that then follows adhesive peritonitis in the neighbourhood of the clot; and in another set of cases probably there has been at some previous time a pelvic peritonitis leading to adhesions which cut off a part of the general peritoneal cavity from the rest—then, if the causes producing hæmatocele come into operation, blood is effused into the small compartment of the peritoneum so shut off.

Extra-peritoneal hæmatocele.—The blood here escapes into the connective tissue at some part of the pelvis, usually into that of the broad ligament, or at the back of the supra-vaginal cervix. The potential space being obviously limited, the quantity of blood so effused cannot be great. Exceptionally after the effusion has occurred into the sub-peritoneal tissue the tension of the peritoneum over it becomes so great that the peritoneum itself ruptures, and bleeding then occurs into the general peritoneal cavity.*

Symptoms.—It has been already mentioned that apart from the history, it is impossible in many cases to distinguish between pelvic peritonitis and pelvic hæmatocele. What then is the history?

As regards the menstrual group of cases we find that during the menstrual period the patient was *suddenly* seized with severe pain in the lower part of the abdomen, that she became at the same time faint, perhaps actually unconscious. There may have been a sense of nausea only, or nausea followed by vomiting. Such a history points strongly to there having been a

* I have seen an instance of this in a case of partial rupture of the uterus, limited to the peritoneal covering occurring during labour.

pelvic hæmatocele, and it becomes even more suggestive if the external flow ceased for a few hours at the time the sudden pain was experienced, and subsequently recommenced. From the time of onset to the time the patient is seen there will have been the ordinary symptoms of pelvic peritonitis, pain in the lower part of the abdomen, and very likely trouble in connection with micturition, or defæcation. Sometimes bleeding from the vagina persists for some time after the onset. Sometimes, on the other hand, menstruation is diminished or suppressed for a time after the occurrence of hæmatocele.

As regards the cases due to rupture of an extra-uterine gestation.—The history to be sought is something of this kind, the patient had gone two or three weeks over her time for being poorly, and fancied she might be pregnant, she then became as she thought poorly again. She may have passed a decidua from the uterus. There will have been more or less pain in one or other iliac region. So far the history is only that of an extra-uterine fœtation previous to rupture of the sac, and has nothing to do with hæmatocele, but if now the sac ruptures, so as to produce intra-peritoneal hæmatocele, there will be the symptoms mentioned above, sudden pain in the pelvis, faintness, nausea or vomiting, collapse. If the hæmorrhage is profuse, death follows; if the bleeding ceases before a fatal quantity has been lost, the blood poured into the peritoneum behaves as in the other cases, and becomes encysted by surrounding pelvic peritonitis. Sometimes the sac ruptures, not into the peritoneum, but into the subperitoneal connective tissue, and the symptoms are then much less definite.

As regards the cases dependent on rupture of a vein.—If the

result is a subperitoneal hæmatocele, the symptoms are vague, if on the other hand it causes an intra-peritoneal hæmatocele, they are well marked, and the same as those produced in other cases by escape of blood into the peritoneal cavity.

Physical signs.—*Intra-peritoneal hæmatocele.*—At first,

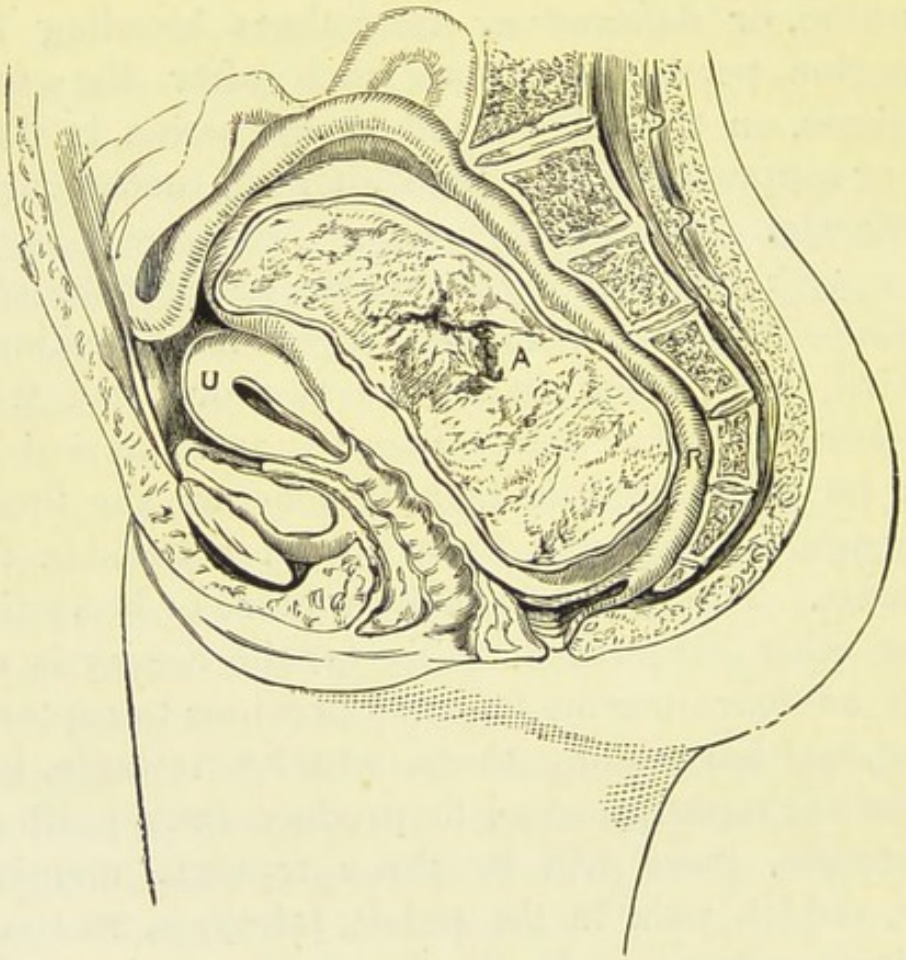

FIG. 97.—Retro-uterine hæmatocele (Barnes). U. Uterus; R. Rectum; A. Blood-clot. Note how the uterus is pushed forward and elevated.

within a few hours of the occurrence, there can only be felt a sense of fulness in Douglas's pouch. In one case, seen while the blood was not enclosed by adhesions, I was able distinctly to feel fulness in this position. In another, where a copious intra-peritoneal effusion of blood oc-

curred from rupture of the uterus, abdominal palpation gave one a sense of their being something unusual in the general peritoneal cavity, without one feeling sure what it really was (till the post-mortem examination). After forty-eight hours the coagulated blood is enclosed by adhesive peritonitis, matting together the viscera in the immediate neighbourhood. Now on abdominal examination we shall feel a lump rising out of the pelvis to a variable distance above the pubes. If the hæmatocele be only a small one, we may not detect any lump by mere abdominal palpation. The abdomen is somewhat distended and tender.

On vaginal examination we find the uterus pushed forwards, close behind the pubes, but not displaced laterally. Behind it, through the posterior vaginal wall, we feel a lump more or less hard, and symmetrically situated as regards the middle line. The uterus is fixed. It is usually quite easy on bimanual examination, to identify the fundus of the uterus just behind the pubes. It will be seen on referring to the physical signs of pelvic peritonitis, that they may be precisely the same, hence the importance of the history on which alone we can found a diagnosis.

General condition.—At the time the hæmatocele occurs, and for twenty-four hours after, the patient's temperature will not be higher than normal. After that time there will be the ordinary symptoms of fever due to the peritonitis set up. If the hæmorrhage has been considerable the patient will be anæmic.

Extra-peritoneal hæmatocele.—The position of the lump formed by the thrombus is similar to that of the exudation in cases of pelvic cellulitis, *i.e.*, at one side of the uterus, displacing it to the other side.

Diagnosis.—As regards the intra-peritoneal variety

it will be seen that diagnosis depends on a distinct history of sudden onset being obtained, in the menstrual group of cases at a menstrual period; in the group due to extra-uterine fœtation, with the history of previous missing of a period, and the symptoms pointing to the presence of that condition.

As regards the extra-peritoneal variety, it is impossible to diagnose the existence of it with any certainty.

Prognosis.—If the hæmorrhage is considerable, and the blood escapes freely into the general cavity of the peritoneum, death may follow in an hour: if the quantity of blood lost is not so great as to cause death from hæmorrhage, the clot as we have seen becomes enclosed by adhesions, and the prognosis is the same as in pelvic inflammation (perimetritis, parametritis). Ultimately, after a period of some months, in most cases the clot becomes absorbed, exceptionally, suppuration may occur, and the case become one of pelvic abscess, and as regards prognosis and treatment, what has been said under suppurative para- and perimetritis applies.

Treatment.—If the case is seen soon after the escape of the blood, very careful consideration should be given to the question as to whether the case is really one of ruptured extra-uterine pregnancy. Here the history may help us, the patient having perhaps gone some weeks over her time without menstruating, having suffered from pain in one or the other iliac regions, having herself thought that she was pregnant. If on vaginal examination, within twelve hours after the onset of the symptoms, a tumour can be felt at one or other side of the uterus, and if the tumour is more or less fixed, there is considerable probability that the case is one of rupture of an extra-uterine gestation, because such a tumour

cannot be due to the hæmatocele, sufficient time not having elapsed for one to form.

In such a case an exploratory abdominal section with strict antiseptic precautions, if it can be done by some one of experience in abdominal surgery, is the best practice.

If on the other hand, both on account of the history and on account of the physical signs (absence of a tumour in the pelvis, and merely a feeling of fulness in Douglas's pouch) we conclude that it is not a case of ruptured extra-uterine gestation, the patient should be merely kept at rest in bed, with an ice-bag over the hypogastric region; stimulants must be given according to the degree of collapse present, and if they cannot be given by the mouth, may be given by enema (℥ i. of brandy, with ℥ ij. of water or with ℥ ij. of beef-tea). Pain must be treated by hypodermic injections of morphia.

Later treatment.—It is best not to interfere with the tumour formed by the hæmatocele unless very clear evidence of suppuration is present; then the case becomes one of pelvic abscess, and the remarks made as to treatment of this condition at p. 267 apply equally here. Opening a hæmatocele that has not suppurated is unnecessary, and indeed adds dangers of its own, one of which is recurrence of bleeding from some part of the interior of the hæmatocele; and another is, that if the coagula inside the cavity of the hæmatocele are interfered with, there is some risk of breaking down adhesions that separate it from the general cavity of the peritoneum.

The following case is an example of hæmatocele due to the rupture of an extra-uterine gestation-sac. I think it would have been better not to have opened the hæmatocele.

P. R., age 27, married eight years, two children, the last four years ago, no miscarriages, was admitted to the London Hospital on April 17th, 1886, complaining of pain in the right iliac and lumbar regions, also in the hypogastrium.

History.—Patient was last poorly on March 28th, 1886; the period lasted seven days, and she passed a clot one and three-quarter inches long. Before this she had seen nothing for two months. She had a dull aching pain in the lower part of the abdomen, on and off, like that which she had three years ago. The pain was somewhat relieved on March 28th, when the period began.

It seems that the pain referred to first came on three years ago when she was suckling her second child, which she did for twelve months.

She thinks it was caused by catching cold just before she expected to be unwell.

The period did not come on, and she saw nothing for six or seven weeks; then she became "poorly," and passed a clot exactly like the one she passed recently in March last.

Catamenia first appeared when she was thirteen, occurred regularly every four weeks, lasting three or four days, and were unattended by any pain till three years ago.

Since then she had had a pain for two or three days before each period.

Since marriage, has menstruated every three weeks, and has lost much more than before.

State on admission.—(April 17th, 1886).

Uterus movable, but less so than normal, an elastic swelling the size of a large egg, somewhat fixed, is felt occupying the right posterior quarter of the pelvis. Sound passed three inches. Cervix torn bilaterally; there is a granular erosion, or eversion, round the external os. Temperature 100°.

From April 17th to April 24th temperature normal.

April 24th.—Temperature rose to 101°. Patient was nearly doubled up with severe pain in the lower part of the abdomen. Twelve leeches were applied to the hypogastrium, after which the pain was relieved considerably; no marked collapse.

April 26th.—Patient began to lose blood from the vagina. Still some pain at short intervals in the same place as before.

May 3rd.—Since April 24th the temperature has gone up at night to 100° or 101°, falling to normal in the morning.

Vaginal examination—(May 3rd).—The uterus is very low down, and pushed close behind the pubes. A tumour is now felt behind the uterus, bulging down the posterior vaginal wall, and extending laterally across the pelvis.

May 6th.—Temperature at night has been high since the last note. It was thought that suppuration was taking place. An incision an inch across was made into the tumour through the posterior vaginal wall close to the cervix. Some dark, blackish fluid and chocolate-coloured clot escaped from the opening.

May 10th.—The finger was passed cautiously into the cavity to see if any loose pieces of clot were present. What was thought to be a large piece of loose clot was hooked out, but on subsequent examination it was seen to be a fœtus.

Great difficulty was experienced in keeping the cavity sweet in spite of frequent irrigation of carbolic acid lotion (1-40) and the introduction of iodoform into it; and on May 16th, the temperature having been 104° for the preceding two nights, an attempt was made under ether to remove any portions of the decomposing clot that seemed ready for removal. While doing this a very sharp attack of hæmorrhage from the cavity of the hæmatocele occurred; it was only controlled by plugging the cavity with gauze. The gauze was removed two days after.

Subsequently the patient did very well, and left the hospital in the second week of July. A shallow depression in the posterior fornix with rather sharp edges remains to indicate the position of the incision. There is a little thickening round it. The uterus is freely movable.

CHAPTER XVI.

Diseases of the Ovaries.

Ovarian Tumours.

Tumours of the ovary may be divided into:—

1. *Solid.*
2. *Cystic.*

1. **Solid ovarian tumours.**—All solid tumours of the ovary are comparatively rare:—It is sufficient here to mention that they are occasionally met with.

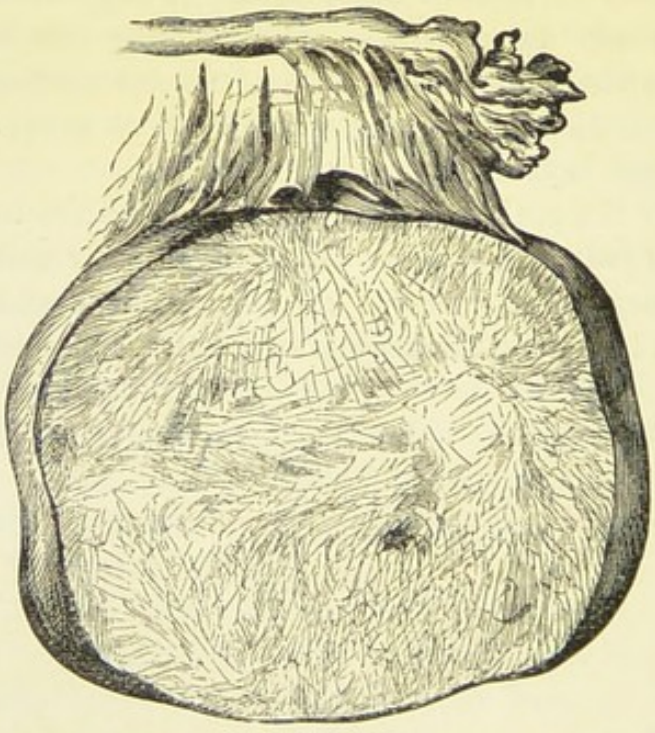

Fig. 98.—Myoma of the ovary (Doran).

Non-malignant solid tumours are fibro-myomata. (Fig. 98).

Malignant solid tumours are either sarcomata, or carcinomata.

2. **Cystic ovarian tumours.**—*Origin.*—It would be out of place here to discuss the various theories that have been put forward regarding the origin of these tumours. Small cystic tumours of the ovary may certainly originate from fully-developed Graafian follicles by a process of dropsical distention. Most probably, however, though not certainly, that is not the way in which the ordinary large cystic tumours are formed. Considering the enormous number of Graafian follicles that may be seen in the parenchyma of the fœtal ovary, and the much smaller number that can be recognised in the ovary at puberty, it seems certain that by far the greater number of these follicles are destined to undergo a process of atrophy, without ever becoming mature, and rupturing. Certain appearances are seen in sections of an adult ovary under the microscope which are probably due to relics of those follicles that have atrophied without passing through the stages of maturation and rupture. It is highly probable that the ordinary multilocular ovarian cyst originates from some disturbance of the process of atrophy that normally affects the majority of the Graafian follicles seen at birth in the ovary. Certain of the follicles that should atrophy, instead of doing so take on a process of growth, and give rise to ovarian cysts. *This theory, then, supposes some failure or defect in the process of involution.*

In a paper in the *Pathological Society's Transactions* for 1886, Mr. F. Eve suggests that cystic disease, or cystic adenoma, of the ovary may originate from certain remains of the germinal epithelium of the ovary, which are not immediately converted into Graafian follicles. In regard to these remains Klein writes:—All appearances are in favour of the view that these masses of epithelium increase in the adult, and that their cells

change into ova sometime after birth. Eve supports his suggestion by reference to a specimen of small cystic ovary in which he thought the development of cysts from such groups of epithelium was observable. According to this view the epithelial growth stops short of the formation of Graafian follicles, but cysts are produced from whose walls tubular prolongations spring; these become dilated and form secondary cysts. *This theory supposes the fault to be something erratic in the process of evolution.*

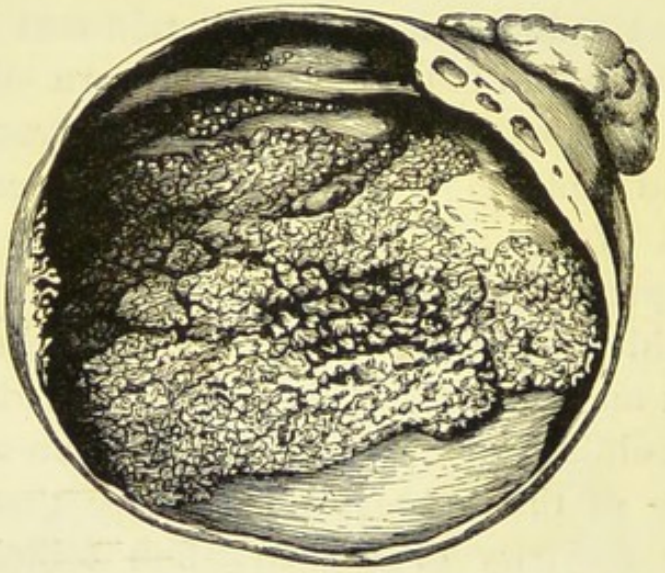

FIG 99.—Incipient papillomatous cyst of the hilum of the ovary. The free portion of the ovary projects above, posteriorly (Doran).

There are reasons for thinking that ovarian tumours, in the interior of which papillary growths develop have originated from the remains of the Wolffian body found in the hilum of the ovary (see Figure 99). In small tumours of this kind the parenchyma of the ovary can be recognised at some part of the circumference of the tumour little, if at all changed.

Dermoid cysts are produced by an abnormal inclusion of the epiblast.

Either the connective tissue elements in the walls of the cysts, or the epithelioid elements on the inner surface, may take on a malignant development; speaking generally, the more solid tissue there is entering into the composition of a cyst, the more it tends to be malignant.

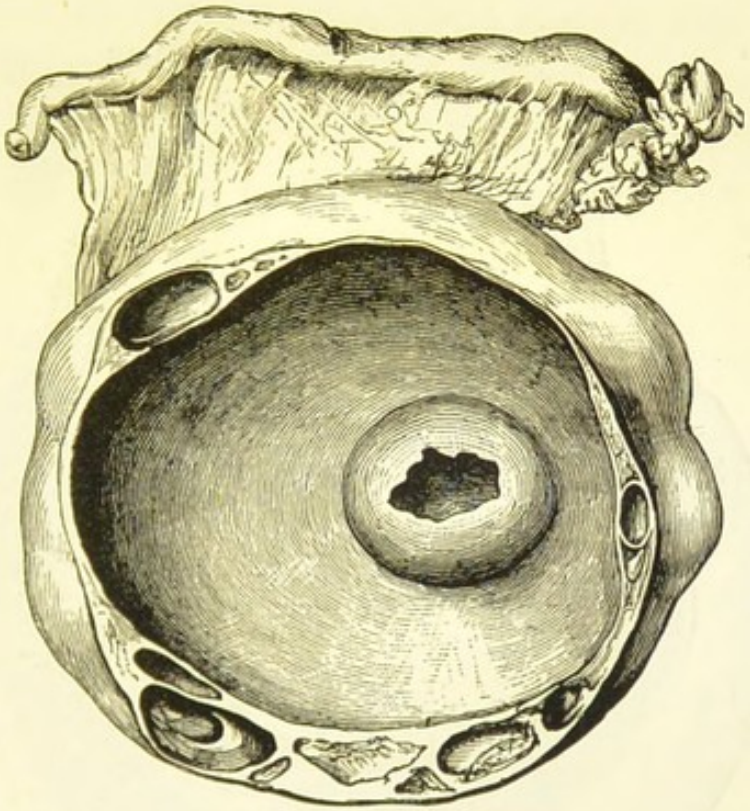

FIG. 100.—Small multilocular ovarian cyst slightly reduced from natural size (Doran). The Fallopian tube and its fimbriated extremity are seen at the upper part of the figure.

Varieties.

1. *The variety due to dropsy of the Graafian follicles.*
2. *Proliferating ovarian cysts.*

A. Those originating in the parenchyma, with no papillary growths on the inner surface of any of the cavities, are known as *proliferating glandular cysts.*

B. Those originating in the hilum of the ovary, and

showing papillary growths in the interior of the cysts are called *proliferating papillary cysts.*

3. *Dermoid cysts.*
4. *Malignant cysts.*

As has been mentioned, it is certain that some small ovarian cysts originate by dropsical distention of fully-developed Graafian follicles, while it is highly probable

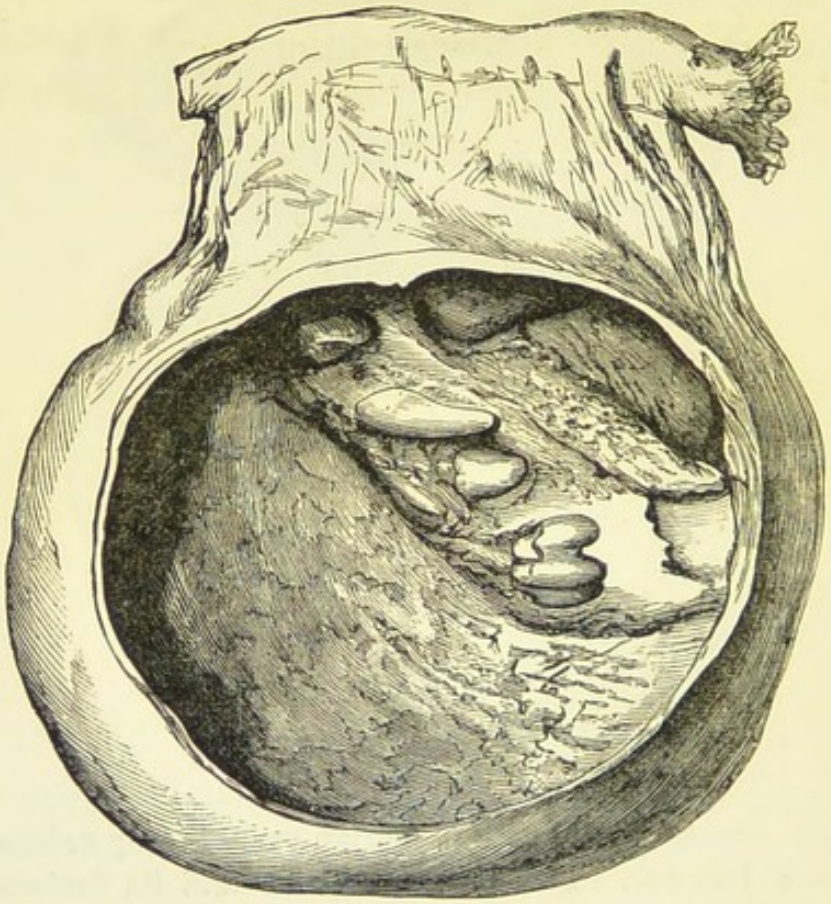

FIG. 101.—Dermoid cyst of the ovary (Doran).

that this is not the mode of origin of the common multilocular ovarian tumours (proliferating glandular cysts).

According to Doran, small tumours due to dropsy of the Graafian follicles are distinguished on inspection from small multilocular ovarian cysts of the proliferating glandular kind by the fact that, in the former variety

"the cysts bulge from the free border of the ovary," while in the latter "the ovary enlarges in an uniform manner." Again, according to the same authority, cysts originating from the remains of the Wolffian body in the hilum (proliferating papillary ovarian cysts) differ from proliferating glandular cysts, in that in the former the parenchyma of the ovary, comparatively unaltered, can be recognised at some part of the circumference of the tumour; while in the latter it cannot so be recognised. The enlargement of the ovary in the last case having been uniform.

The Fluid contained in Ovarian Cysts.

This is usually glairy in consistence, and as regards colour it may be either almost colourless, grey, or yellowish-grey; green or reddish-brown, or dark and tarry. The material may be of a colloid consistence, that will not run through a canula.

According to Doran, secondary cysts in which papillary growths are found, contain a clear non-glairy fluid.

Cells found in Ovarian Fluids.

Cylindrical epithelium cells may be found, and these are the most important microscopical constituents as indicating that the fluid is ovarian. Small corpuscles (*Drysdale's corpuscles*) about the size of pus cells, with granular contents, but no nucleus, are found in ovarian fluids; they are now believed to be free nuclei of epithelium cells that have undergone fatty degeneration. They have been found in other fluids than those

taken from ovarian cysts, and are not pathognomonic, although suggestive.

Microscopic structure.—A section of the cyst wall of an ovarian tumour shows a single layer of epithelium on the peritoneal surface, flat in the case of large cysts, cubical if the cyst is small. The substance of the cyst wall is composed of fibrous tissue, either mature or immature, and on the inner surface is a layer, in the case of large cavities of flattened, or in the case of smaller cavities, of cylindrical, epithelium cells. The

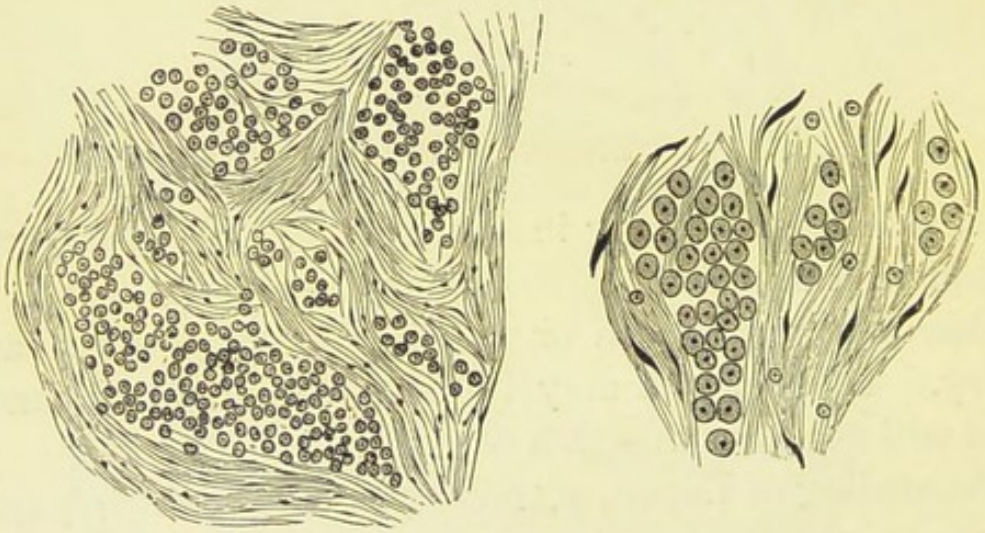

FIG. 102.—Section from a carcinomatous ovary (Doran). 2 inch and $\frac{1}{8}$ inch objectives.

papillary growths found in the interior of some ovarian cysts are mainly formed of connective tissue, covered towards the free aspect of the papillæ with cylindrical epithelium cells. Whether we find cylindrical, or flattened epithelium, appears to be chiefly a question of pressure.

Dermoid cysts are generally unilocular. The inner surface is lined by a tissue like skin provided with sebaceous follicles, sometimes with sweat-glands, and hairs. The cavity of the cyst is filled with a putty-like

material, in which are loose hairs that have been shed. The hairs are usually reddish or light, rarely dark.

In the tissue of the cyst wall, bones are often found; teeth also may be present, either attached to bones, or isolated in the connective tissue of the cyst wall. Teeth are also found loose in the cavity of the cyst. Dermoid cysts may also contain cholesterine crystals, nerve and brain substance, and non-striated muscular fibre; according to Winckel striped muscular fibre and nails have not been found in them.

Dermoid cysts are usually unilateral, sometimes bilateral. In size they vary from that of a walnut to that of a football. Sometimes dermoid cysts are found co-existing with ordinary cystic degeneration in the same ovary.

Ordinary ovarian tumours may be composed of one large cyst, or a few large cysts, or of a great many cysts. Certainly ovarian tumours are met with clinically where there is only one cyst, as far as can be discovered by the naked eye. This has occurred either from the tumour being formed by the growth of one cyst; or, by the tumour having, at an earlier stage of its existence, been formed of several cysts, the septa between them having at a later period become broken down. Traces of this are sometimes to be seen in apparently unilocular tumours.

Changes that may occur in an Ovarian Tumour.

It may inflame.
Its pedicle may become twisted.
Hæmorrhage may occur into its interior, or
It may rupture.

Inflammation may occur, and if it affects the outer surface of the tumour, lead to peritonitic adhesions; adhesions to the omentum, and to the parietal peritoneum are most common; if it affect the interior of the cyst it may lead to suppuration. This is particularly likely to occur after tapping, especially if air gain entrance into the cyst.

Twisting of the pedicle.—This may, in rare cases, be sufficient to cause gangrene of the tumour.

Hæmorrhage into the interior of the tumour, either spontaneously, or after twisting of the pedicle, may occur.

Rupture.—Ovarian cysts occasionally burst, either from mere distention, or from mechanical violence. The contents escape into the peritoneum, and in most cases quickly set up fatal peritonitis; *rarely* if the fluid contained in the cyst was thin and unirritating, it may be absorbed, and in that case rupture is to be regarded as a process of natural cure.

Symptoms.—The symptoms that commonly attract the patient's attention in cases of ovarian tumour are:—

Increase in the size of the abdomen.

Pain at some part of the abdomen.

Disturbance of menstruation.

Usually the first thing noticed is the increasing size of the abdomen.

Sometimes, however, pain in the abdomen is the first thing noticed, and sometimes some disturbance of menstruation. Sometimes trouble connected with micturition or rarely even retention of urine, may be the first symptom, and in one of my cases prolapse of the vaginal walls occurring in an unmarried girl of twenty-three, was the first thing to lead to an investigation.

Menstruation is frequently disordered in cases of

ovarian tumour, usually the disturbance is in the direction of *amenorrhœa;* the quantity lost on each occasion being less than formerly, or the intervals between the periods being increased, or both of these conditions may be present. But it is not so very uncommon to meet with cases where the disturbance of the menstrual function is in the other direction, *i.e.*, where there is *menorrhagia*. I have seen several instances of this. Sometimes again, in cases of ovarian tumour, menstruation is painful; sometimes on the other hand, whereas menstruation had been painful from the time when the function became established, from the time the tumour was first observed, menstruation was performed painlessly. This was so in one of my cases, and it was also one where there was menorrhagia. Sometimes we meet with cases where menstruation continues to be performed in a perfectly normal manner.

In ninety-four cases referred to by Dr. West, there were twenty-nine where menstruation continued quite undisturbed; in fifty-six cases there was some disturbance of the menstrual function; in the remaining nine cases, in two the disease was noticed during pregnancy, and in seven it began, or attracted attention, after the menopause. Roughly speaking then, we may say that menstruation is disturbed in about two-thirds of all cases.

Pressure symptoms.—As the tumour attains a large size, its pressure on various organs leads to disturbance of their several functions.

Pressure on the bladder causes frequent and painful micturition, and this arises because the bladder cannot become distended in the natural way; rarely retention of urine may occur. Scanzoni, quoted by Dr. West, records a case where this was due to obstruction of the

ureters, so that the retention of urine could not be relieved by a catheter. The tumour in this case was a cystic sarcoma, *i.e.*, a sarcomatous tumour, partly solid, partly cystic, the solid part pressed on the ureters, and obstructed them, so that they became greatly dilated, one being 2 inches, the other 1½ inches in diameter.

I have seen retention of urine occur in a case of small ovarian tumour that had developed downwards and outwards between the layers of the broad ligament, so as to become fixed, although there were no adhesions between it and surrounding parts.*

Pressure on the rectum may cause obstinate constipation, and even prevent the escape of flatus (West). Occasionally even intestinal obstruction may be produced. When this occurs it may be a mere pressure symptom, or it may be due to compression of the gut by the dragging of peritoneal adhesions formed during the growth of the tumour.

Pressure on the stomach causes dyspeptic symptoms, and sometimes vomiting. Wasting necessarily follows the interference with the functions of the stomach.

Pressure on the lungs and heart.—Difficulty of breathing is thus produced, and even asphyxia, as in a case recorded by Dr. Barnes. In that case a young woman with a large ovarian cyst died suddenly, with symptoms of lung distress, in the hospital, while awaiting further treatment. At the post-mortem "the diaphragm was driven up so as to confine the heart and lungs within the narrowest space." Dr. Barnes concluded "that under the impetus of some excitement or exertion, the heart and lungs were suddenly taxed beyond their feeble powers of adaptation, and that thus asphyxia was induced."

* The same case is referred to later in this chapter.

Pressure on large veins in advanced cases may lead to œdema of the legs; sometimes even thrombosis of the main vein of a limb may occur, as in one of my cases.

In that case œdema of the left lower limb, from the groin downwards, occurred suddenly, with pain in the limb and fever, while the patient was in the hospital awaiting operation. At the same time a number of superficial veins on the left side of the abdominal wall became dilated, that had not previously been so, and could be traced as communicating with a plexus in the skin over Scarpa's triangle.

Thrombosis in one of the trunk veins had no doubt occurred. The patient had a moderately high temperature for about a week. The leg was kept well raised; it remained considerably enlarged for some two or three weeks longer, after which it diminished in size, and in six weeks from the time when œdema first occurred, it had returned nearly to its previous condition. Measurement, however, showed that it was still a little larger than the right. I then allowed her to get up, and as in a few days she seemed none the worse for doing so, decided to operate. At the operation I was agreeably surprised to find no complication of any kind in the pelvis. The tumour was a moderately large one, about the size of the pregnant uterus at the eighth month. It contained a fluid of a dark brown colour, and the consistence of treacle. The patient made a typically good recovery.

Prognosis.—This depends greatly on the nature of the tumour.

Dermoid cysts may remain quiescent for many years. Probably *the variety due to dropsical distention of Graafian follicles* has little tendency to grow beyond a moderate size, or to destroy life. *The proliferating glandular and proliferating papillary ovarian cysts* will on the average run

on to a fatal termination within three years from the time they first attract attention. *Malignant ovarian tumours* run a course to be measured by months.

Non-malignant solid tumours (fibroids) of the ovary grow very slowly, and may not endanger life for many years, or perhaps not at all.

Since, however, the determination of the exact variety of ovarian tumour present cannot, as a rule, be made with certainty till after its removal, and since by far the larger number of ovarian tumours tend to destroy life within a fixed time, the rule is that every ovarian tumour ought to be removed.

Diagnosis.—We consider the question of diagnosis either in :—

(1) *The early stages*, before the tumour has grown sufficiently to form an abdominal swelling, or in

(2) *The later stages*, when the tumour has caused a more or less considerable enlargement of the abdomen.

I. In the Early Stages.

The conditions from which a small ovarian tumour has to be distinguished are :—

Fæcal accumulation (more likely to give rise to mistake if situated to the right of the uterus).

Subperitoneal fibroid of uterus.

Dilated Fallopian tube.

Pelvic peritonitis.

Pelvic cellulitis.

Pelvic hæmatocele.

Retroperitoneal cyst of congenital origin.

Malignant tumours when small.

Extra-uterine fœtation.

It may be said at once that in most cases the diagnosis of small ovarian tumours is easily made.

As a rule they are globular, elastic, freely movable, and can be, as it were, chased about the half of the pelvis to which they belong backwards and forwards with great ease, particularly if the patient is under the influence of an anæsthetic.

In such cases we can easily define the uterus as separate from the tumour, there being a distinct interval between them.

The only other tumour that gives physical signs at all like these is a subperitoneal fibroid with a long pedicle, allowing it to have a great range of mobility; but subperitoneal fibroids are characteristically *hard*, whereas small ovarian *cystic* tumours are elastic. Moreover, we know that fibroid tumours of the uterus, are as a rule multiple, there is usually more than one present; if no irregularity of outline could be made out as regards the uterus this would be of some value in excluding fibroids; occasionally a hydro- or pyosalpinx may be so little adherent as to have as much mobility as a small ovarian cyst. As a rule it is only in the case of small ovarian cysts, partly or completely adherent, so that they are either quite fixed, or at least not freely movable, that real difficulty arises.

As regards pelvic peritonitis, or cellulitis, or pelvic hæmatocele, the history will be of great assistance. If we rely on the physical signs alone, there may be much difficulty; it may be said in general terms that the outline of an ovarian tumour, even with a number of adhesions around it, is more definite than the outline in peritonitis, cellulitis, and hæmatocele. When there is encysted serous effusion, or encysted purulent effusion, as a result of peritonitis, cellulitis, or suppurating

hæmatocele, we must rely chiefly on the history, but even here the more diffused character of the physical signs will help us; for instance, in the case of a suppurating pelvic peritonitis, the pus being encysted in Douglas's pouch, there will probably be hardness around the uterus occupying the pelvis pretty generally except where the pus is actually present, *i.e.* in this instance, in Douglas's pouch. Again, in peritonitis, cellulitis, and hæmatocele there will usually be fever, whereas in most cases of ovarian tumour there is no fever; even when an ovarian cyst contains fœtid pus there may be little or no fever.

Dilated tubes.—*Hydrosalpinx. Pyosalpinx. Hæmatosalpinx.*—These form swellings in the right and left posterior quarters of the pelvis, perhaps encroaching to a greater or less extent on Douglas's pouch. They are more often bilateral, than unilateral; as there is always some peritonitis in their neighbourhood, it is usual for the swellings they give rise to to be more or less fixed; only exceptionally are they found as freely movable as a small ovarian cyst. When there is an elastic, somewhat sausage-shaped swelling felt in the posterior fornix just reaching the middle line and then a vertical groove, and then another elastic swelling on the other side of the middle line, the swellings being little if at all movable, there is considerable probability that they are dilated Fallopian tubes.

Extra-uterine fœtation.—Here the history, usually at first some interval of amenorrhœa, and then irregular hæmorrhages, perhaps with passing of a decidual cast of the uterus, the pain in one or other iliac region, and some of the sympathetic symptoms of pregnancy, *e.g.* vomiting, help us; as regards physical examination, the presence of a tumour in the pelvis, somewhat elastic,

usually more or less fixed, and situated in the posterior half of the pelvis; the enlargment of the uterus with blue discoloration of the vaginal portion and vaginal walls, and arterial pulsation in the vicinity of the tumour, enable us to arrive at a very probable diagnosis of extra-uterine pregnancy.

Retroflexion of the gravid uterus.—The elastic tumour formed by the body of the uterus might be mistaken for an ovarian cyst; more usually the resemblance is to an extra-uterine fœtation, and to distinguish between these conditions may be difficult, unless the patient is under the influence of an anæsthetic; there will then be usually no difficulty in pushing up the body of the retroflexed uterus and satisfying ourselves that it is the body of the uterus. Besides the history of the two conditions is different.

Diagnosis in Advanced Cases when there is an Obvious Enlargement of the Abdomen.

The conditions from which a large ovarian tumour has to be distinguished are:—

1. *Pregnancy.*
2. *Phantom tumours.*
3. *Distended bladder.*
4. *Ascites.*
5. *Fibroids.*
6. *Hæmatocele.*
7. *Encysted serous perimetritis and purulent perimetritis.*
8. *Hydronephrosis and pyonephrosis.*
9. *Hydatids.*
10. *Advanced extra-uterine pregnancy.*

The first seven conditions are of more common occurrence; the last three are comparatively rare.

It will be well to mention shortly the physical signs that would usually be present in the case of a large multilocular ovarian tumour (the commonest variety) about the size of the uterus at full term.

Inspection.—We notice that the abdomen is distended, the umbilicus not depressed—either level with the skin, or actually pouched out (if there is much co-existing ascites); on asking the patient to breath slowly and deeply, if the abdomen is exposed to a good light we can often see the upper border of the tumour descending on inspiration, and ascending during expiration. We may notice that the enlargement of the abdomen is not symmetrical. Irregular projections due to the presence of secondary cysts may be distinctly visible at parts of the tumour, if the abdominal wall is thin.

Large subcutaneous veins will be visible at various parts of the abdominal wall, and skin-cracks similar to those met with in advanced pregnancy will usually be present.

The following measurements should be taken. 1. Maximum girth of the abdomen. 2. From the xiphisternal articulation to the umbilicus. 3. From the umbilicus to the upper border of the pubes. 4. From the umbilicus to each anterior superior iliac spine.

The greatest circumference of the abdomen in ovarian tumours is usually below the umbilicus, two or three inches below it for example. In ascites, the greatest circumference is at the umbilicus. Again we measure the distance from the xiphisternal articulation to the umbilicus, and also that from the umbilicus to the pubes. Normally the umbilicus is an inch or so nearer to the top of the pubes than to the xiphisternal articulation; in cases of ovarian tumour this relation is altered, so that these measurements are equal, or the lower measurement may

even be greater than the upper, the relation of the measurements thus being inverted. Further, in ovarian tumours the umbilicus is not usually equidistant from each anterior superior iliac spine, as it is normally, or in cases of ascites.

Palpation.—We recognise the presence of a tumour, and are able to define its limits above and laterally, more or less completely—below, we cannot separate it from the pelvis. The surface of the tumour is often felt to be irregular, owing to the projection of secondary cysts. Fluctuation can be obtained over the area occupied by the tumour, or at parts of it. We may be able to feel the movements of the tumour during respiration, if the whole abdomen is not too tense.

Percussion.—The area of dulness occupies the middle region of the abdomen shading off at the flanks, and at the epigastrium, into resonance. The whole of the hypogastric region is dull. The dulness described is that of any large centrally-situated tumour—an ovarian tumour, the pregnant uterus, a distended bladder, or a large fibroid tumour of the uterus. If we define the exact line at which dulness begins from above downwards during quiet respiration, and then ask the patient to take a deep breath and hold it, the displacement downwards of the tumour on inspiration causes the line at which dulness commences to be displaced downwards, so that percussing in the same place we get a resonant note in place of the dull note obtained before.

Auscultation.—Nothing but gurgling sounds (produced in the intestines) can be heard as a rule at any part of the tumour; sometimes a crackling sound can be heard, which may indicate a localised peritonitis at the spot, but does not necessarily do so.

On local examination.—There may be some blueish discolouration of the vaginal mucous membrane, but not approaching in degree that met with in advanced pregnancy. The vaginal portion of the cervix is not softened, and is not of a blue colour. It is commonly quite as easy to reach it as usual, sometimes even more easy to reach it, owing to the uterus being pushed downwards. Exceptionally, owing to adhesions between the tumour and the uterus, the latter is so drawn up that it may be impossible to reach the os uteri with the finger at all.

It is not uncommon for the uterus to be a little to the right or left of the middle line.

Often nothing of the tumour can be felt on vaginal examination, sometimes lumps of perhaps the size of a walnut can be felt behind the uterus in Douglas's pouch; supposing the rectum to have been emptied, these are, in all probability, secondary projections from the surface of the tumour, occupying Douglas's pouch, and they may not improbably be found adherent there at the subsequent operation.

The sound passes the normal distance (2½ to 3 inches); if much more, it is usually in cases where the cervix does not project into the vagina the whole uterus being displaced upwards, and to some degree elongated by stretching.

Differential Diagnosis.

Pregnancy.—What has been said on this subject at page 156, on the differential diagnosis of fibroids applies equally here, and the reader is referred to it, to avoid repetition. In addition, we may say that in

advanced pregnancy—(as we are now considering only the case of large abdominal tumours) it is easy to recognise the parts of the fœtus, the head particularly; and if the child is alive, we shall be sure, on repeated examination at all events, to hear the fœtal heart-sounds, and most probably feel the movements of the fœtus. Further, we can on palpating in a leisurely manner over the whole of the tumour recognise that it alternately hardens and softens.

Pregnancy has not very uncommonly been mistaken for ovarian tumour; almost always such mistakes might be avoided if only *all* the methods of physical examination at our disposal were employed as a matter of routine in every case where an abdominal enlargement is present.

There are two cases of real difficulty in connection with the diagnosis of pregnancy, and these are not common. They are:—

1. Pregnancy with Hydramnios.
2. Pregnancy complicated with an ovarian tumour.

1. *Pregnancy with Hydramnios.*—The fact of pregnancy will be ascertained by the history of amenorrhœa, and other symptoms of pregnancy; and, as regards physical signs, by the condition of the breasts, and the softening of the cervix.

The alternate hardening and softening that occurs in the walls of the pregnant uterus will be recognised as affecting the whole surface of the tumour—Galabin says he has known cases of pregnancy with hydramnios tapped on the supposition that they were cases of ovarian tumour.

2. *Pregnancy complicated with an ovarian tumour.*—In early pregnancy there is a danger of the ovarian tumour alone being recognised. We must rely for diagnosis

partly on the history, and, if the ovarian tumour is not very large, it may be possible to carry out the bimanual examination, and recognise the enlargement of the body of the uterus. The condition of the cervix should also be noticed. In advanced cases there will be the usual symptoms and physical signs of pregnancy to guide us, and we may recognise that alternate hardening and softening only occurs in part of the swelling—that of course corresponding to the uterus.

Phantom tumours.—By this expression we mean enlargement of the abdomen due (1) to the presence of flatus, or (2) to a large quantity of fat in the abdominal wall, or (3) to contraction of the muscles, so as to produce prominence of the abdomen. All these conditions are often present together. The history is not of much value as the patient often is firmly persuaded she is pregnant, or that she has a tumour. Often by getting her to keep her mouth open, and breath slowly and deeply, while we palpate the abdomen, we can sink the hands deeper and deeper at each expiration till we come down on the vertebræ.

Bimanually we can make out that there is no tumour between the fingers, and that the uterus is not enlarged. Phantom tumours and pregnancy are I think the conditions which most often lead to mistakes, such mistakes might always be avoided by careful examination.

In cases where there is any uncertainty, the administration of an anæsthetic will always enable us to come to a definite conclusion.

Distended bladder.—In all cases of abdominal tumour a catheter should be passed, when if it be the distended bladder, it will of course disappear as soon as all the urine has been drawn off.

Ascites.—The circumference of the abdomen is

usually greatest at the level of the umbilicus in ascites. The umbilicus is equidistant from each anterior superior iliac spine, and maintains its normal position as regards the pubes and xiphisternal articulation being about an inch nearer the former than the latter; no tumour with a definite outline can be either seen or felt. The flanks are somewhat bulged out, and the front of the abdomen somewhat flattened as the patient lies on her back. The front of the abdomen in ordinary cases is resonant, while the flanks are dull. If there is a short mesentery, the intestines may not be able to float upwards, and the front of the abdomen may then be dull. This may also happen if the intestines are adherent, or the distention extreme. If the patient is turned on one side the uppermost flank, previously dull, becomes resonant. If the fluid is enclosed by adhesions, diagnosis will be very difficult.

Fibroids.—The diagnosis between fibroid tumours and ovarian tumours has been fully considered at page 160, to which the reader is referred.

Hæmatocele.—I have seen several cases where pelvic hæmatocele has been mistaken for a solid ovarian tumour. The history of sudden onset of the symptoms, characteristic of hæmatocele, will usually prevent mistake. Then, again, the tumour in hæmatocele is firmly fixed, whereas the solid ovarian tumour, unless it is malignant, is more likely to be movable; even when malignant, it may be movable at an early stage. Malignant ovarian tumours are usually attended by severe pelvic pain, with rapid loss of flesh, and ascites is not long in making its appearance. Whereas in hæmatocele, when the acutest stage is over, and the patient at rest in bed, pain is not usually severe; further, wasting and ascites do not occur.

When doubt arises, careful enquiry should be made

for a history of extra-uterine fœtation, (see p. 296), as many cases of hæmatocele are produced by rupture of a tubal gestation-sac.

Encysted serous or purulent perimetritis.—The history will help us to distinguish these conditions from ovarian tumours; the illness will date from some of the well known causes of pelvic inflammation, *e.g.*, labour or abortion; there will be the history of pelvic pain, perhaps rigors and vomiting, there will be some fever present at the time the case comes under observation. As regards physical signs the tumour formed in either of the cases under consideration rarely has the defined outline usual in cases of ovarian tumour, and it is usually much more fixed than ordinary cases of ovarian tumour. Again, on vaginal examination there will be usually clear evidence of inflammatory exudation in the pelvis round the uterus, and this organ will be more or less fixed. In cases of ovarian tumour on the contrary nothing abnormal can be felt round the uterus, and though its mobility may be restricted by the pressure of the tumour above it, the uterus is usually not anything like fixed. Occasionally, if we consider the case only on its physical signs, a centrally situated encysted collection of pus, due to perimetritis, may simulate an ovarian tumour; but the history and the presence of well-marked fever will help us to avoid error.

Hydronephrosis and pyonephrosis.—There will be a history of a tumour growing from above downwards; there will usually be disturbances pointing to kidney mischief, frequency of micturition, blood, pus, or albumen in the urine; and, unless the tumour is large, we may expect to be able to separate it from the pelvis, *i.e.*, on palpation get the hand under it.

We shall usually be able to trace the colon resonance across the tumour. On the other hand, an ovarian tumour is first noticed below, and has extended upwards, the intestines are behind it; while of course the urine is, so far as the ovarian tumour is concerned, normal; and menstruation is, as a rule, disturbed.

Hydatids.—Only rarely occur in the pelvis, usually there will be a history of the swelling having spread from above down. When they do occur in the pelvis, they are almost certain to be mistaken for some more common pelvic tumour, such as a small ovarian cyst. Tapping, which would probably enable us to make the diagnosis, is undesirable for other reasons.

Advanced extra-uterine pregnancy.—Here there will be the history, differing in all probability from that of ordinary pregnancy; the exact symptoms vary a good deal in different cases, but periods of amenorrhœa, broken by irregular hæmorrhages, pain in the lower part of the abdomen, perhaps expulsion of a decidua, are symptoms to be expected at some time. As regards physical signs, in advanced cases the parts of the fœtus can be felt with unusual distinctness through the abdominal wall; and if the fœtus is alive we shall hear the fœtal heart. In actual practice early cases of extra-uterine pregnancy are most likely either to be overlooked, or mistaken for pelvic cellulitis, or peritonitis; while advanced cases have to be diagnosed from ordinary pregnancy. The only ovarian tumour at all resembling advanced extra-uterine pregnancy is a large dermoid cyst with bony projections and masses at various parts of it producing some resemblance to the projections of fœtal limbs, or the fœtal skull. With care it will usually be easy to make out that the resemblance is only superficial, that

the projections met with in the dermoid cyst do not correspond either in number or position with those caused by the presence of a fœtus.

Enlargement of the spleen.—The edge of the spleen looking to the right and upwards and having a notch in it, and the history of the tumour having grown from above down will usually serve to distinguish this from an ovarian tumour.

The tumour is found to have a sharp edge with a notch in it, this edge looking partly upwards owing to some rotation having occurred as the spleen enlarged. The history will be of a tumour beginning above and spreading downwards. In most cases diagnosis is easy. Sometimes the error is in taking an ovarian tumour for a splenic tumour. I remember a case of this, where, at a special Hospital, the tumour had been thought to be an enlarged spleen. At the London Hospital the tumour was thought to be ovarian, and at the operation was found to be so.

Treatment.—At the present time it is generally recognised that an ovarian tumour should be removed as soon as a diagnosis has been made. The natural history of these tumours is known; the large majority will run on to a fatal termination in three years, and they are liable to many accidents, which may place the patient in immediate peril at any moment. Tapping is undesirable (apart from the risk of setting up inflammation in the tumour, which, if nothing worse happens, will probably render its subsequent removal much more difficult by causing the tumour to become more adherent to surrounding parts), because if the tumour be tapped, and happen to contain papillary growths, some of the cells are very likely to become detached from these, and escaping into the general peritoneal cavity, set up similar

growths there. No one should, under ordinary conditions, perform ovariotomy unless circumstances render it probable that they will have the opportunity of performing the operation a large number of times.

Ovariotomy.

Preliminary considerations.— *The room for the operation.*—As regards the room, it is to be remembered that there will be two persons constantly in it, subsequent to the operation—the patient and the nurse, and that, according to the rules of hygiene, each of them requires at least 3000 cubic feet of air per hour. The air can only be changed three or four times an hour without draughts. There should be therefore 2000 cubic feet of space at least in the room, this will suffice if the ventilation is good. A room, fourteen feet by twelve feet, and twelve feet high, contains roughly the cubic space mentioned. There should be a fireplace in the room, and a very efficient system of ventilation is by means of a large Tobin's tube. A good light is of course indispensable.

If the size of the room will allow of it, the bed and the operation table should both be in the room at the time of the operation; if the room is too small to allow of this conveniently, the bed may be brought in afterwards, the patient well covered with blankets, in the meantime remaining on the operation table. This is the system followed at the London Hospital in the room which the writer has for ovariotomy—the room being a small one.

Assistants.—Two are needed, one to give the anæsthetic, and one to stand opposite the operator, and assist

him with the operation. It is important that the anæsthetist should have had experience in abdominal cases, for if vomiting, or coughing, occur during the operation, the risk of the intestines coming out (and therefore of course the total risk of the operation) is considerably increased. Only one nurse is absolutely necessary; where two can be had as easily as one, it is better to have two. The nurse also should have had previous experience in abdominal cases.

Preparation of the patient.—She should be confined to bed for a few days previous to the operation, and care should be taken that the bowels are acting regularly.

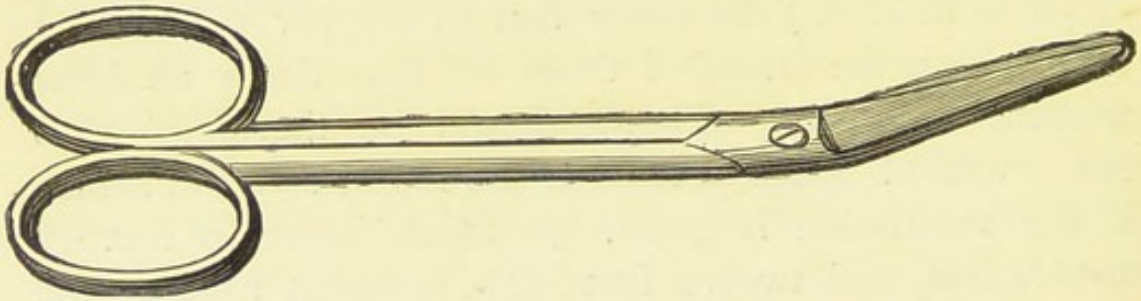

FIG. 103.—BLUNT-POINTED SCISSORS BENT ON THE FLAT.

Two nights before the operation a purgative is given, such as that recommended on p. 99.

Ten grains of the pil. col. e. hyoscyami, will do as well. On the morning of the operation a copious enema of soap and water should be given.

The patient should have long warm stockings, flannel drawers, and a flannel vest with long sleeves, also a flannel jacket to wear over her nightdress, the object of this being to avoid any unnecessary chilling during the operation. The night before the operation the patient should have a hot bath, and wash thoroughly with carbolic soap, particularly the surface of the abdomen. If the operation is fixed for ten o'clock in the

morning, the patient should have a cup of strong beef-tea at six.

It used to be thought that ovariotomy should not be performed during a menstrual period; this is now known to make little, if any, matter. In two of my cases the patient was menstruating at the time of the operation, both patients made good recoveries. In the first of these, I was not told till afterwards that menstruation had begun; in the second case it appeared probable that mental emotion had something to do with the occurrence of the flow; the patient had previously had

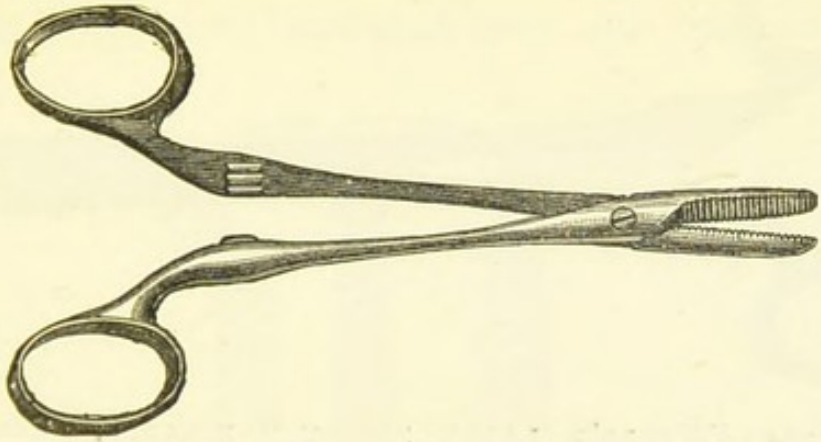

FIG. 104.—WELL'S SMALL PRESSURE FORCEPS.

the operation postponed on account of menstruation, then she took scarlet fever, and was away some ten weeks at the Fever hospital. During that time she "saw nothing;" two days before the operation the menstrual flow began.

Time of the operation.—This is not a matter of perhaps very much importance, but I think the morning, say ten a.m., has many advantages, particularly in general hospitals, where the sister and nurses have many other things to think of besides preparing for the ovariotomy. Everyone is fresher in the morning in every sense,

Monday morning obviously has advantages over other mornings in this respect, everyone is less likely to have been seeing other cases, or doing any work likely to make their presence at an ovariotomy undesirable.

The sponges.—Twelve sponges are sufficient, three should be small, and there should be one large flat sponge, the remaining eight are of the ordinary size.

Some prefer twenty sponges. The greater the total number used, however, the more the chance of the nurse making some mistake in counting them. The nurse

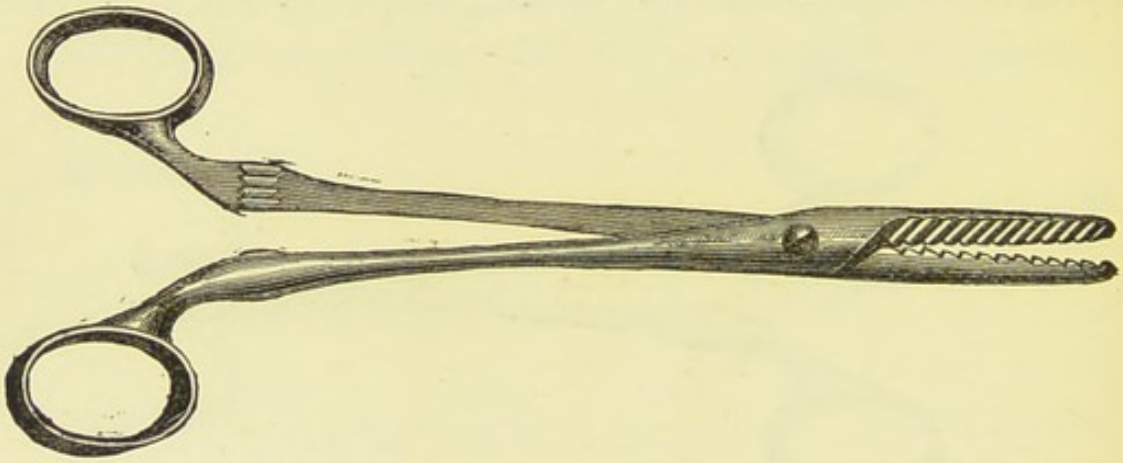

FIG. 105.—WELLS'S LARGE PRESSURE FORCEPS. Sometimes it is an advantage to have forceps of the same size and strength made with the terminals seen in the next figure.

must be specially informed of the importance of being absolutely certain as to the number of the sponges she has. *On no pretence whatever* should any other sponge be brought into the operation room, nor should any sponge be torn in two, nor thrown away during the operation. No matter how good the nurse, I prefer to count the sponges before the operation myself, and have them counted over before me previous to closing the wound. The nurse should not allow any spectator to touch the sponges; it is better for the nurse to hand the sponges direct to the operator's assistant, and not to

place several sponges wrung out in any vessel ready for use, as they become cold; besides some well-meaning spectator may be tempted to hand a sponge when he sees several ready for use in a basin.

Should the operation be done with full Listerian precautions?—Without attempting to enter at all fully into this question, it may be said that although, under special circumstances, as good results seem to be obtained equally without, as with the Listerian system, yet in general, it appears surely better to give the patient the benefit of the doubt, *i.e.*, to perform the operation with full Listerian precautions, including the carbolic spray. The desirability of doing so is certainly increased when the operation is to

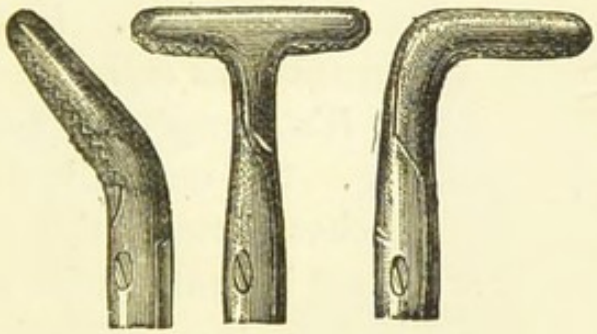

FIG. 106.

be done in a general hospital. With the Listerian system as good results can be obtained in a general hospital as elsewhere.

List of instruments, etc., needed for ovariotomy.—In an operation like ovariotomy, for which so many things are required, the only way to avoid omissions is to have a list of everything needed, and prepare for the operation in accordance with the list.

The ultimate responsibility for everything being right rests with the operator; but as, from the very circumstances of the case, many matters of the greatest im-

portance, both before and during the operation, have to be attended to by others, it may well be said that a successful ovariotomy is a triumph of *organisation* quite as much as of *operation*.

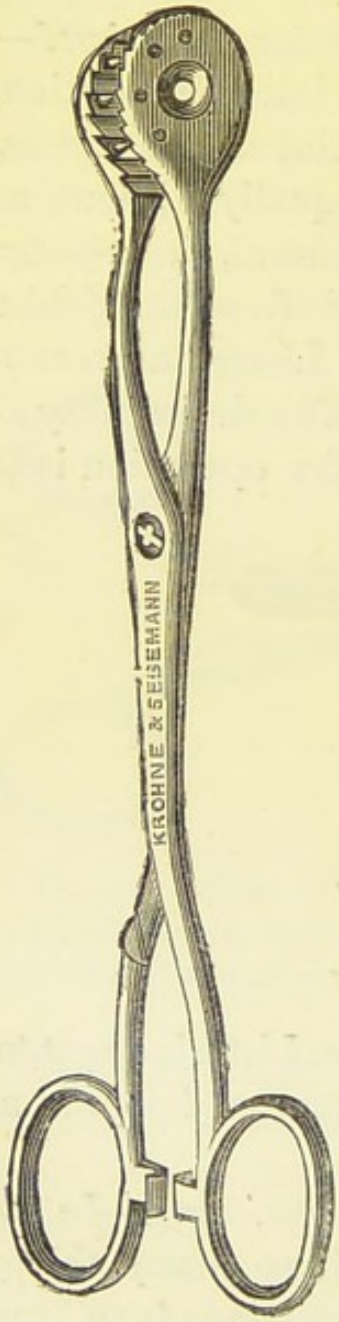

FIG. 107.
NELATON'S CYST FORCEPS.

Chloroform or ether.

Spray (unless large enough to last two hours, there should be two sprays).

Porcelain trays (4). They should be sufficiently deep to allow the instruments to lie well covered with carbolic lotion without being too full.

Sponges (12). (See paragraph on sponges *supra*).

Waterproof sheet with oval opening. On one side for about two inches round the opening the sheet is coated with plaster. Just before the operation the side spread with plaster is held to the fire, and then made to adhere to the surface of the abdomen. The object of having this sheet is merely to keep the patient dry, fluid from the cyst, etc., that would otherwise wet her clothes, running off on the waterproof to the floor.

Scalpel. This should not be too small.

Probe-pointed bistoury (which some operators use for enlarging the incision upwards; scissors do equally well for the purpose, should this be required).

Scissors (blunt-pointed), 1 straight pair, 1 pair bent on the flat.

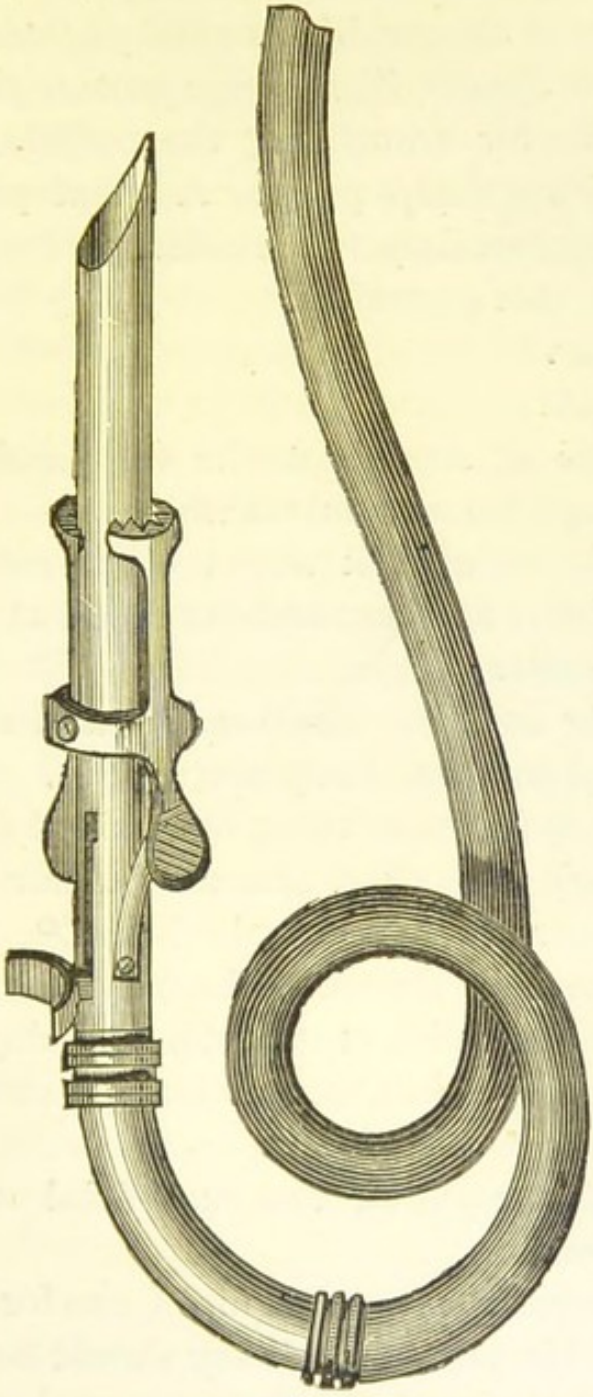

FIG. 108.—SPENCER WELLS'S TROCAR.

A pair of large blunt hooks, the hook forming a segment of a circle the size of a penny.

Dissecting forceps.

A pair of longer forceps with teeth. Useful for pinching up the layers of the abdominal wall to be divided after the skin and fat have been cut through.

Twelve pairs of Spencer Wells's small pressure forceps.

Two pairs of Spencer Wells's large pressure forceps.

Pedicle needle for transfixing the pedicle. Some use this made with a sharp point. A blunt point answers very well, and certainly seems safer.

Cyst forceps (not essential).

Wells's trocar.

Volsella (2).

Twelve pairs of straight needles for passing the deep sutures through the abdominal wall.

Twelve pieces of silk about eighteen inches long (Spencer Wells) are cut, and threaded at each end on one of the needles.

Needle-holder and three small curved needles for passing the superficial sutures, if any are needed.

Carbolised silk (Chinese twist, or braided silk, the latter is very strong), two sizes, one thicker for the pedicle, and one thinner for the abdominal wall.*

I always have all the silk to be used boiled in a solution of carbolic acid (1 to 40), the day before the operation, and then left in a solution of similar strength till required.

Fine carbolised catgut for the superficial sutures in the abdominal wall.

Two mackintosh aprons are required, one for the operator, the other for his assistant. They should be long enough to reach from the neck to the feet, and must be thoroughly washed after each operation.

* If Chinese twist is used, No. 2 is the size for the abdominal sutures, No. 5 for the pedicle. If braided silk is used, No. 4 is the size for the abdominal sutures, and No. 12 for the pedicle.

A laryngoscopic mirror and lamp should be at hand for throwing light into the pelvis if necessary. Trouvé's electric lamp (worn on the operator's forehead when in use) is better, if it can be obtained.

Two ordinary mackintoshes.

Lister's dressings.

A flannel binder to fasten over the dressings. It is well to have lint sewn at the part where the binder comes in contact with the patient's back.

Strips of flannel bandage to pass round each thigh, and pin to the lower edge of the abdominal binder, so as to keep it in place. These strips should be changed after the operation by the nurse, as they become dirty.

Calico bandages for fastening the patient's hands to the operating table. A few turns should also be passed over the patient's knees and round beneath the table to prevent her legs being moved.

Three basins, two for the nurse to use in washing the sponges, and one placed conveniently for the operator that he may rinse his hands from time to time during the operation.

At the London Hospital I have a large tin vessel holding two or three gallons of 1 to 40 carbolic acid solution, heated by a large spirit lamp underneath to ensure a plentiful supply of hot water throughout the operation, without the nurse having to obtain it from outside.

A catheter.

An injection bottle in case it is requisite to give brandy per rectum.

Razor and carbolic oil for shaving the pubes.

Hypodermic syringe for giving morphia, if necessary, after the operation.

Certain other instruments must be at hand in reserve.

1. *In case drainage may be necessary :—*

Keith's glass drainage tubes (different sizes).

India-rubber sheeting for the same.

2. *In case it may be necessary to fix the pedicle in the lower angle of the wound :—*

The clamp, with wires and pincers for adjusting the wire.

Transfixion pins with caps.

Solid perchloride of iron for applying to the stump.

The Operation.

Before the patient is brought into the room all the instruments are covered with a towel.

The nurse should see that the patient passes her water immediately before she is brought in.

No spectators should be allowed in till the patient is under the influence of the anæsthetic.

As the patient lies on the table her clothes are drawn up round the waist, so as to be out of the way, the legs are then tightly wrapped in a blanket, arranged so that it can be tucked in below the feet.

As soon as the patient is unconscious, the pubic hair is shaved off, so far as it seems likely to be in the way. The hands are tied back by a bandage passed beneath the table; and similarly the knees are kept flat by a few turns of bandage. An ordinary mackintosh is now placed over the blanket covering the lower extremities.

The operator and his assistant take off their coats, and turn up their shirt sleeves well above the elbow; it is convenient to fasten the rolled-up vest to the shirt on the shoulder with a safety pin. They now wash their hands and arms thoroughly, paying special attention to

the nails, and after washing, soak the hands and arms for a minute or so in iodine water (3 ii., or 3 iii., Tr. Iodi to O j. water). The mackintosh with the oval opening, which has been in the meantime held to the fire by the nurse to melt the plaster, is then carefully adapted to the surface of the abdomen, so that the aperture is symmetrically situated with regard to the middle line from the umbilicus to the pubes. The lower end of the opening in the mackintosh should be two inches above the pubes.

The operator now sponges the skin with 1 in 40 carbolic acid, and also the mackintosh for a few inches round in each direction. He then hands the basin of 1 in 40 carbolic to his assistant, who dips his hands, the basin being returned beside the operator.

The incision.—The spray is now turned on, the operator takes a scalpel, and makes the incision.

This should be in the middle line, and should begin about $3\frac{1}{2}$ inches above the lower end of the opening in the mackintosh, extending down to that point, *i.e.*, to within two inches of the symphysis pubis. As soon as the skin and fat are divided, the assistant should press a sponge firmly into the wound for a few seconds, the operator then fixes Wells's pressure forceps on any bleeding points. Unless the recti have been separated, the sheath of one or other rectus must be opened, as there is no linea alba below the umbilicus (Treves). The operator pinches up the white aponeurosis in view with toothed forceps, and makes an opening in it with the knife held flat. The aponeurosis is then divided to the full extent of the wound by means of scissors bent on the flat. The recti are not to be cut, the operator must look for the interval between them, and divide the tendinous structures found there by pinching these up,

and cutting towards himself, with the knife held flat, till the yellow subperitoneal fat comes into view. Spencer Wells's forceps are then put on any points that may be bleeding, and the wound sponged clean. The subperitoneal fat and peritoneum are then pinched up and divided, with the knife held flat as before. As soon as the opening made in the peritoneum is large enough to admit the finger, the forefinger of the left hand is introduced, and the peritoneum, opened to the extent of the wound by means of scissors bent on the flat, passed along the finger.

The surface of the cyst, which usually has a greyish-blue colour, is now seen. If the cyst is small, so that it can be removed without puncturing it, either through the existing wound, or by only enlarging this a little, it is better to remove it entire, as it is impossible to be sure beforehand that the contents may not be fœtid pus. As a rule, however, the next step of the operation is puncturing the cyst.

The assistant steadies the cyst by placing his hands one on each side of the abdomen. The operator then takes the trocar and plunges it into the cyst, using no more force than is necessary. As soon as the trocar is in the cyst cavity, the canula must be projected beyond the trocar. As a rule the claws on Wells's trocar do not afford a very satisfactory hold, so that it is better to seize the cyst-wall near the point of puncture with a volsella. Great care should be taken to avoid allowing any of the contents of the cyst to escape into the peritoneal cavity. If the tumour is composed chiefly of a single cyst, it will soon have collapsed sufficiently to allow of its being drawn out of the wound; if on the contrary the tumour is made up of several large cysts, besides the one punctured, it will not come out. It will

then be necessary either to bring these in turn, so long as the tumour cannot be drawn out, up to the wound, and puncture them; or the puncture first made may be enlarged, so that the operator can pass his hand and arm into the interior of the cyst, and break up the secondary cysts.

If the operator's hands are fouled with the contents of the cyst, he must wash them thoroughly before again using them within the cavity of the peritoneum. As the tumour is gradually drawn out of the wound, its surface is carefully watched with a view to the recognition of adhesions.

Adhesions to the omentum are the least serious. If the omentum is very extensively adherent, it must be tied *in sections* with carbolised silk. If too large a piece of it is trusted to one ligature, there is great danger of secondary hæmorrhage.

Adhesions to the intestine are much more serious. An attempt must be made to separate the cyst from the intestine by pressing with a sponge. If this does not succeed, the cyst wall must be divided, and a thin lamella of it left adherent to the intestine. Adhesions deep down in the pelvis also require very careful management.

According to their length and firmness, it will either be right to tie them with carbolised silk, or to split the cyst wall and leave a thin portion of it attached.

Ligature of the pedicle.—The assistant holds up the tumour so that the pedicle is well in view. The operator then transfixes it with the blunt pedicle needle (Fig. 107) threaded with the silk previously selected for the purpose. The loop of the ligature is seized on the far side of the pedicle, and held while the pedicle needle is withdrawn. The loop is now drawn through till it is

large enough to allow of its being carried over the whole cyst towards the operator, he then places one of the free ends above the loop, and holding the pedicle with his left forefinger and thumb, draws the two free ends of the ligature taut, so as to constrict the pedicle. They are then tied as tightly as is possible without breaking the ligature. In making the first tie, the one end should be hitched twice over the other.

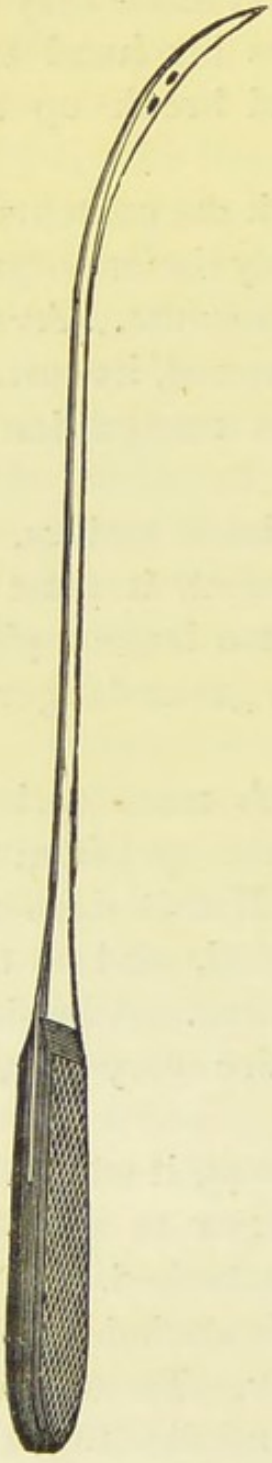

FIG. 109.

BLUNT-POINTED PEDICLE NEEDLE for transfixing the pedicle.

This mode of managing the ligature—drawing back the loop over the tumour—passing one of the free ends above the loop, drawing the ends tight, and tying, is the one introduced by Mr. Lawson Tait, and he has named the knot "the Staffordshire knot" (Fig. 110).

When the knots are being drawn tight, the assistant must lower the tumour so that the pedicle may not be on the stretch.

Another simple way of ligaturing the pedicle is to transfix as before, leaving a loop on the far side, then to carry one of the free ends round the pedicle, pass it through the loop, draw the two free ends tight round the other side of the pedicle. and tie them together.

It is important while tying the ligature, although aiming at tying it tight, to stop well short of using the degree of force that will break it; apart from the waste of time in applying another, such an accident may lead to a tearing of the pedicle, and this may be very troublesome. In one of my cases the ligature broke, I immediately turned to get another, and proceeded to transfix and tie what appeared to be the same pedicle as before; after the ligature was applied there was an area outside it, from which pretty free bleeding occurred, and as there had been no adhesions in the case, I was at first puzzled to account for it. It was really the outer part of the original pedicle which had been torn, or as it were, had the peritoneum "scalped" off it by

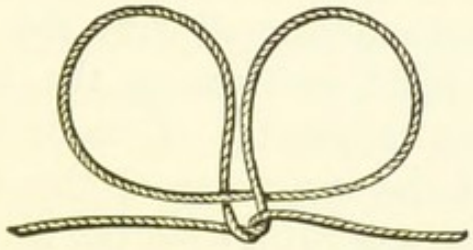

FIG. 110.—The Staffordshire knot.

the first ligature. As soon as I made out what had happened, I transfixed the broad ligament, and tied the bleeding surface with the Staffordshire knot. The patient made a good recovery.

Some recommend tying a preliminary ligature round the outer part of the pedicle before applying the main ligature. It certainly appears to be an additional safeguard against secondary hæmorrhage; but it cannot be considered as absolutely necessary.

The tumour is now cut away about half an inch from the ligature. The cut surface of the pedicle is held in view for a few seconds to be sure there is no bleeding;

if there is none, the ends of the ligature are cut short, and the pedicle dropped back into the pelvis.

A sponge fixed in a pair of Wells's large pressure forceps is now guided down along the fingers of the left hand into Douglas's pouch. If there is no bleeding it is best to get on with the introduction of the sutures into the abdominal wall. A large flat sponge is passed into the wound, so as to keep back the intestines, and soak up the small amount of blood escaping as the sutures are being passed. A large blunt hook is now introduced into the upper and lower angle of the wound; these hooks are held by the assistant; they facilitate the even introduction of the sutures, and the neat apposition of the edges of the wound. No needle-holder is necessary, the operator begins at the lower end of the wound, pinches up the abdominal wall with the forefinger and thumb of the left hand, and passes the needle from the peritoneum, about a quarter of an inch from the cut edge, through all the structures of the abdominal wall except the muscle, and brings out the needle on the skin about a quarter of an inch from the cut edge. The needle already threaded on the other end of the suture is then passed similarly through the abdominal wall on the other side. When as many sutures have been passed as seem necessary, the free ends on each side are gathered together, and fixed with a pair of Wells's forceps; the loops of the sutures lying across the wound are then pulled long enough to allow of their being caught and held out of the way by the blunt hooks in the upper and lower angles of the wound. The flat sponge is then removed. If much blood or fluid from the cyst have escaped into the peritoneum it is best to wash out the peritoneal cavity by pouring in carbolic lotion (1 in 40) heated to blood heat. This may be done

conveniently by having a basin with the carbolic lotion, and dropping in from it as much as may seem desirable with a large sponge. The edges of the wound are held together, and the abdomen is kneaded, so that the fluid may wash the peritoneum thoroughly. The time occupied in the process, and the quantity of fluid to be introduced, will depend entirely on the degree to which the peritoneum has been fouled; for example, if fœtid pus from a suppurating cyst has got into the peritoneum the washing must be done very thoroughly indeed. The carbolic water is then sponged out; just at the last, the patient's shoulders being raised off the table to allow all the fluid to flow into the pelvis; the last sponge should come up clean.

The operator should not forget to look at the other ovary; if it should be in a state of cystic degeneration, it also must be removed.

The sponges and forceps must now be carefully counted before closing the wound; it is best that the counting be done under the operator's eye, so that he may feel personally certain that the numbers are correct.

The abdominal sutures are then tied, beginning below, the edges of the skin being carefully adjusted, and the sutures not tied too tight. If necessary, superficial sutures of fine carbolised catgut are inserted with a small curved needle held in a needle-holder. The waterproof sheet is now removed, the surface of the abdomen cleaned and the wound dressed. One pad of wet carbolic gauze is laid over the wound followed by several layers of dry gauze, and then a considerable quantity of loose gauze in strips. The outside dressing is then put on, and the flannel binder pinned tightly over all. The patient is then put back to bed. There should be a hot bottle for her feet ready in the bed.

Special difficulties during the operation.—There may at the outset be some difficulty in ascertaining when the peritoneum has been reached; this is likely to occur when there are dense adhesions between the anterior surface of the tumour and the parietal peritoneum. Under such circumstances it is best to enlarge the the wound in an upward direction, so as to endeavour to strike the peritoneal cavity above the adherent part of the tumour.

The tumour may be found to have no pedicle, having grown between the layers of the broad ligament beneath the pelvic peritoneum. Sometimes after tapping it becomes possible to get a sort of broad pedicle, and tie it in the usual way; this happened to me in one case where the tumour had grown outwards between the layers of the left broad ligament to the wall of the pelvis. There were no adhesions; but before tapping, the tumour was perfectly immovable. The patient made a good recovery.

Enucleation.—When no pedicle can be established even after tapping, the opening made by the trocar must be enlarged somewhat, and the cyst shelled out of its capsule. Large vessels must be seized with Wells's forceps and tied. Care must be taken not to lacerate the capsule during this proceeding.

As regards the capsule left after enucleation of the cyst it may happen:—

1. That it can be drawn up, its attachment transfixed, and tied like an ordinary pedicle, and the rest of the capsule removed; or

2. If this cannot be done, the capsule must be drawn up and stitched to the lower part of the abdominal wound; any superabundant portion beyond the stitches being cut off. If the capsule has not been torn in

shelling out the cyst, the cavity of the capsule will then be completely shut off from the general peritoneal cavity. A glass drainage tube is inserted into the cavity of the capsule. The peritoneal cavity is treated in the ordinary way, as already described.

On opening the abdomen the tumour may prove to be malignant, and so densely adherent in every direction that removal of it would be impossible. In such a case the wound must be closed. Apart from malignancy an ordinary ovarian tumour may be so universally adherent that complete removal is impossible. In such a case the opening made by the trocar in the cyst is enlarged, the hand introduced into the cyst cavity, and as much as possible of the solid material in the cyst, if

FIG. 111.—KEITH'S GLASS DRAINAGE TUBE.

any, removed; the edges of the cyst are then stitched to the abdominal wall, so as to shut off the cyst-cavity from the general peritoneal cavity, and a glass drainage tube inserted.

Drainage.—In the account given of an ordinary complete ovariotomy, drainage is not mentioned because in the large majority of cases it is not required. It is a very difficult matter in certain cases to decide whether to insert a drainage tube in the lower angle of the wound, or not. Most cases certainly do not require it. Moreover, it adds to the difficulty of the after-treatment, and unless very skillfully managed is an additional source of danger in itself. The more manipulation that has been

necessary within the peritoneal cavity the more likely is it that a drainage tube ought to be inserted. When therefore the operation has been very long and difficult, when a very large number of adhesions have had to be dealt with, and particularly, when the separation of adhesions has left a large oozing surface, a glass drainage tube (Fig. 111), should be inserted in the lower angle of the wound, it should be passed well down into Douglas's pouch. The exposed end of the tube has a projecting collar; this is passed through a small hole in the centre of a piece of india-rubber sheeting, about a foot square. The hole is so small that the end of the tube can only be passed through when the india-rubber is on the stretch. It thus grasps the tube firmly; a sponge is placed over the end of the tube, and the india-rubber wrapped round the sponge so as to exclude the air. One suture is left untied near the tube, so as to bring the edges of the wound together when the time comes for dispensing with the tube. The upper part of the wound is dressed in the usual way. The sponge has to be changed and wrung out of carbolic lotion (1 in 40) every twelve hours. An india-rubber tube attached to a syringe is then passed into the drainage tube, and as much fluid sucked out as possible before replacing the sponge. When the colour of the discharge is no longer red, and the quantity of it very little, the tube may be taken out.

After-treatment.—The patient has nothing given her by the mouth for the first thirty-six hours except pieces of ice to suck, or a teaspoonful of iced soda water. But it is as well to begin giving nourishment per rectum from the beginning. Griffin's meat suppositories are useful alternated with enemata of beef-tea; thus if a suppository is given at twelve o'clock, a nutrient

enema may be given at three o'clock, another suppository at six o'clock, and so on. The nutrient enema should not be more than three ounces in quantity, it may consist of two ounces of peptonised beef-tea and one ounce of brandy. A tube should be passed a little way into the rectum to allow flatus to escape before giving the enema. Hypodermic injections of morphia are given if the patient is in much pain; they are not always necessary. After the first thirty-six hours, if there is no sickness, she may begin to take nourishment by the mouth, commencing with a teaspoonful of iced milk every half hour.

The stitches are taken out on the eighth day, the wound being well sponged with 1 in 40 carbolic lotion before doing so. A pad of salicylic wool is laid on, and fixed by broad bands of strapping to support the cicatrix. From neglecting to do this the wound burst open in one of my cases. The patient was the subject of chronic bronchitis. The edges of the wound were drawn together with strapping, and the patient did well. The bursting open of the wound was not attended by any special symptoms, although a coil of intestine could be seen at the bottom of the wound. This immunity was, I think, due to the fact that the general cavity of the peritoneum was shut off by adhesions, and also to the fact that the case was being treated on rigidly antiseptic principles.

Towards the end of the week the bowels should be opened by an enema.

When the case is going to do badly after the operation, unfavourable symptoms usually set in about the third day.

Rise of temperature, rapidity of the pulse, vomiting, hiccough, and abdominal distention may occur.

The more of these symptoms that are present together, the worse the prognosis.

Another early symptom, if the case is going to do badly, is a change in the appearance of the patient's face; it acquires a pinched look.

A high temperature must be treated by applying ice, or ice-cold water, to the head. The former by means of an ice-bag, the latter by means of Thornton's ice-cap. An ice-bag does very well. Brandy must be given according to the state of the pulse.

If all the unfavourable symptoms mentioned are present, very little can be done for the patient, and she is almost certain to die before the eighth day.

Mr. Lawson Tait, writes as follows*:—"Concerning fatal cases I am altogether of Dr. Keith's opinion, that the very first search to be made for an explanation should be in the details of the operation."

When the patient is convalescent an abdominal belt should be ordered for her before she gets out of bed. She should wear it for a year after the operation. Another point of importance is to warn her to be exceedingly careful to rest, and to avoid any exposure, at the menstrual periods for some time to come. Neglect of this precaution may lead to very alarming symptoms, high temperature and rapid pulse particularly, which, however, usually pass off in a few days.

Mortality of ovariotomy.—Although long runs of cases are recorded from time to time without any fatality, yet it may be taken that if the rule of operating on every case of ovarian tumour as it comes is followed without any rejection of cases, there will be from 7 to 10 deaths in a series of one hundred consecutive cases, even in the best hands.

* *Diseases of the Ovaries*, 4th edit.

Ovaritis.

Etiology.—The conditions usually given as causing ovaritis are:—

Labour and abortion.
Gonorrhœa.
Suppression of menstruation by cold.
Operations on the uterus.
Recent marriage.
Certain fevers.
Alcoholism (Matthews Duncan).

On looking through this list it will be seen that most of these causes are causes of pelvic inflammation (pelvic peritonitis and cellulitis).

It is difficult to imagine what may be called an isolated ovaritis, *i.e.*, an inflammation of the ovary without any implication of the structures in the immediate neighbourhood. Probably in most cases ovaritis is secondary to pelvic peritonitis or cellulitis. *In the case of ovaritis secondary to pelvic peritonitis*, the inflammation has spread along the Fallopian tube to the peritoneum, producing pelvic peritonitis, which involves the peritoneal aspect of the ovary producing adhesions between it and surrounding parts, *e.g.*, the Fallopian tube; this is *peri-ovaritis*. Just as in pelvic peritonitis the tissue immediately under the peritoneum must participate to some extent in the inflammation, so in peri-ovaritis no doubt the superficial layers of the parenchyma are at the same time to some extent involved. *In the case of ovaritis, secondary to pelvic cellulitis (interstitial ovaritis)* the inflammation has spread along the connective tissue in the fold of the broad ligament forming the meso-

varium to the parenchyma of the ovary. Under pelvic cellulitis I have referred to a specimen, I had the opportunity of examining, where the inflammation in the broad ligament was in the stage of phlegmon, while that in the adjoining ovary had gone on to abscess. A follicular form of ovaritis is described where the contents of the Graafian follicles become turbid, or purulent, the parenchyma of the ovary being more or less involved at the same time. It is sufficient, however, to speak of *peri-ovaritis* and *interstitial ovaritis*.

Ovaritis may be acute or chronic. In the acute form there is more or less enlargement of the ovary; in the chronic form the organ may be enlarged, but it may be smaller than normal, the change being of a cirrhotic nature with destruction of follicles.

Symptoms and Signs.—*In acute cases* these are the same as for the pelvic peritonitis, or cellulitis, to which the ovaritis is in the large majority of cases, if not in all, secondary.

In chronic cases the patient complains of pain at the affected side; dysmenorrhœa, pain on coitus, sometimes pain on micturition, or defæcation. There is sometimes menorrhagia; whether this is present or not, depends on whether there is coexisting endometritis of the body of the uterus or not (Matthews Duncan).

As regards the physical signs, the uterus is probably less movable than normal, owing to the persistent adhesions, and there is a swelling about the size of a walnut in the situation of the ovary. This swelling often being more or less fixed.

Such swellings when they come to be examined, after removal by operation, or post-mortem, are often found to consist of the Fallopian tube (more or less dilated, its fimbriated extremity not to be recognised,

the tube ending on the surface of the ovary), matted to the ovary by adhesions, and there are also adhesions between the swelling, formed by the tube and ovary, and adjacent parts. Such a condition is not uncommonly bilateral. I have known cases where swellings, believed to be enlarged ovaries, as the result of physical examination, were found to be chiefly due to dilatation of the Fallopian Tubes at a subsequent operation.

Treatment.—The treatment of acute ovaritis is that of acute pelvic inflammation, and the treatment of chronic ovaritis is very similar to that for chronic pelvic inflammation, *e.g.*, blistering, or painting the area to which pain is referred, with iodine; hot vaginal douches; the use of a glycerine plug every night; and regulating the bowels. If there is menorrhagia, ergot, or bromide of potassium in scruple doses, may be tried. Though many cases improve under such treatment, the improvement is usually only of a temporary character. In such cases the question of removal of the ovaries and tubes will have to be considered. The patient must thoroughly understand what it is proposed to do—the risks of the operation itself, and the possibility that she may not be cured by it; the sterility necessarily produced (though many such cases are *per se* sterile, owing to occlusion of the tubes). The operation is a more difficult one than ovariotomy, owing to the dense adhesions often met with, and should only be undertaken by a specialist skilled in abdominal surgery.

Displacements of the Ovary.

It must be remembered that the position of the ovary is constantly varying, according to the position of the uterus; this follows from the intimate connection of the two organs. So that there is no one position entitled to be considered *the* normal position of the ovary; in reality there are several normal positions for it.

Hernia. Prolapse.

Hernia.—The ovary may be found in a hernial sac, usually that of an inguinal hernia. Cases of this kind are usually congenital. The treatment consists of protecting the organ from pressure by a suitable shield; if this cannot be done, and the suffering is considerable, it may be removed by operation.

Prolapse.—The common form of this is where the ovary descends into Douglas's pouch. It does this in marked retroversion or retroflexion of the uterus. In such cases both ovaries can usually be felt in the posterior fornix, one on each side of the swelling produced by the uterus. Again, in cases of procidentia uteri, when the whole uterus lies outside the vulva, the ovaries can often be felt at the side of the uterus.

The ovary may, however, come to lie in Douglas's pouch if its attachment to the broad ligament becomes stretched without any displacement of the uterus. Such stretching is likely to occur when the ovary enlarges from any cause, and remains freely movable.

Symptoms.—Pain on coitus is present, and perhaps also pain on defæcation, or there may be more or less constant pain aggravated on such occasions. Menstruation may be irregular; this will depend rather on other changes, *e.g.*, commencing cystic degeneration, or inflammation affecting the ovary, than on its mere prolapse.

Diagnosis.—The swelling, suppose it to be the size of a walnut, is felt in the posterior fornix; it may be movable or fixed, according to the presence or absence of adhesions. It must be distinguished from the body of the retroflexed uterus; this is easily done either by the bimanual examination feeling the body of the uterus in front, or by passing the sound, also the sickening pain caused by pressure on the ovary serves to identify it.

Treatment.—If the prolapsed ovary is movable it may be pushed up, and an effort made to keep it up by inserting an elastic ring pessary of suitable size, or a Hodge's pessary, preferably one with its upper end made to contain glycerine, so as to produce a sort of soft cushion. If palliative measures fail, we may remove the ovary by operation, if the patient is anxious for this to be done, after being made to understand the nature of the proposed operation.

Malformations.—It is sufficient to mention that the ovaries may in rare cases be congenitally absent. Sometimes one ovary and the other uterine appendages of the same side are wanting, the corresponding kidney may also be absent; a more frequent anomaly is that the ovaries are present, but are imperfectly developed and remain so throughout life.

Parovarian cysts.—Figure 112 shows diagrammatically the relations of the parovarium and neighbouring

structures in the broad ligament. A parovarian cyst is formed by distention of one of the tubules of the parovarium. Sometimes parovarian cysts contain papillary growths.

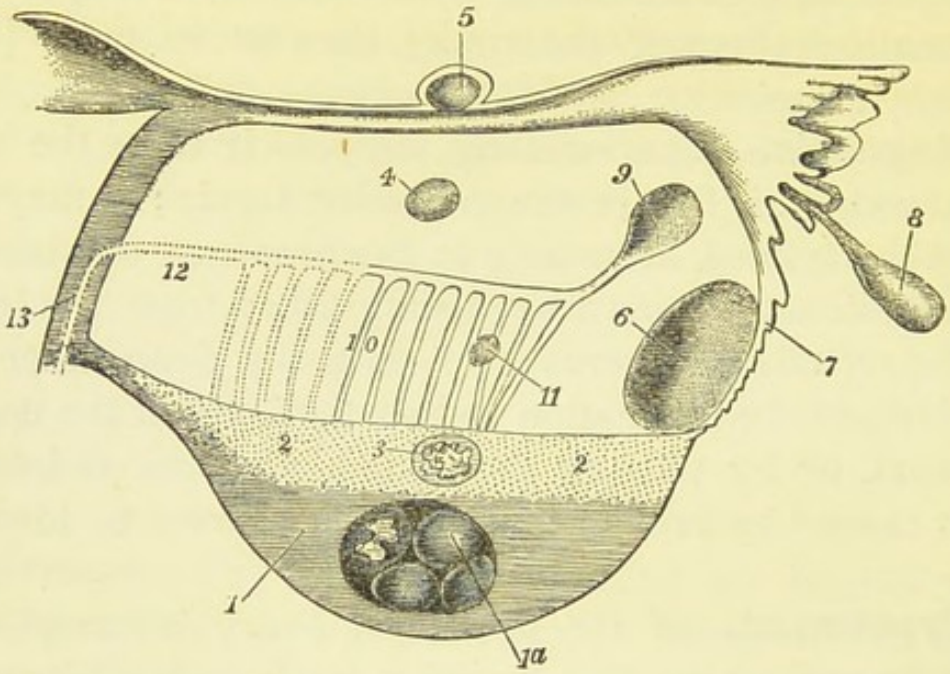

FIG. 112.—Diagram of the structures in and adjacent to the broad ligament (Doran).

1. Framework of the parenchyma of the ovary, seat of 1*a*, simple or glandular multilocular cyst; 2. Tissue of hilum, with 3, papillomatous cyst; 4. Broad ligament cyst, independent of parovarium and Fallopian tube; 5. A similar cyst in broad ligament above the tube, but not connected with it; 6. A similar cyst developed close to 7, ovarian fimbria of tube; 8. The hydatid of Morgagni; 9. Cyst developed from horizontal tube of parovarium; cysts 4, 5, 6, 8, and 9, are always lined internally with a simple layer of endothelium; 10. The parovarium, the dotted lines represent the inner portion, always more or less obsolete in the adult; 11. A small cyst developed from a vertical tube; cysts that have this origin, or that spring from the obsolete portion, have a lining of cubical or ciliated epithelium, and tend to develop papillomatous growths, as do cysts in 2, tissue of the hilum; 12. The duct of Gartner, often persistent in the adult as a fibrous cord; 13. Track of that duct in the uterine wall; unobliterated portions are, according to Coblenz, the origin of papillomatous cysts in the uterus.

The fluid in a parovarian cyst is thin, of low specific gravity, it contains a little salt, and a trace of albumen.

As these cysts sometimes contain papillomatous growths, they should not be tapped for fear of infecting the peritoneum. They should be removed in the same way as an ovarian tumour.

CHAPTER XVII.

Flexions and Versions.

The normal position of the uterus.—The accompanying diagram (Fig. 113) shows what may be taken as the normal position of the uterus when the bladder is empty. The position is one of slight anteflexion.

It must not be forgotten, however, that although it is customary to speak of that position of the uterus as more particularly *the* normal position, there are in reality several normal positions—several other positions which the uterus may occupy that are to be regarded as physiological, not pathological.

For example, as the bladder fills, the uterus is pushed backwards as a whole, rotating round an imaginary transverse axis—in technical language it becomes retroverted. In Fig. 114 B. C. D. indicate the positions successively occupied by the uterus as the bladder becomes more and more distended. When the bladder is emptied the uterus returns to its original position of slight anteflexion, A.

Flexion of the uterus.—By a flexion of the uterus we mean that the long axis of the body of the uterus makes an angle, more or less obtuse according to the degree of flexion, with the long axis of the cervix. The angle is usually situated at the internal os.

In Fig. 113 the long axis of the body of the uterus meets the long axis of the cervix at about an angle of 120°.

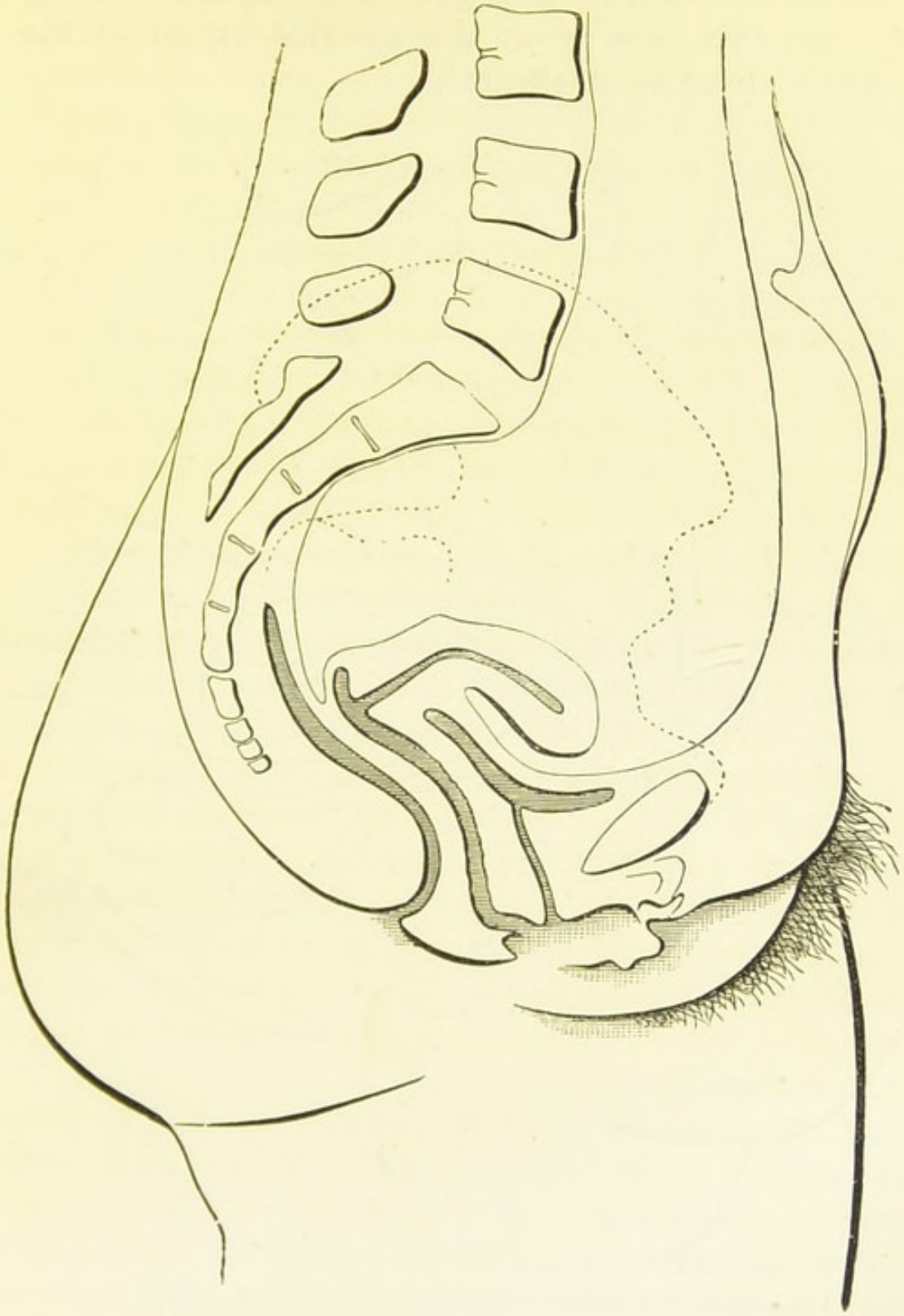

FIG. 113.—Showing the normal shape and position of the virgin uterus when the bladder is empty (Schultze).

Anteflexion.—When the angle formed by the meeting of these two axes is on the anterior aspect of the uterus we have an anteflexion.

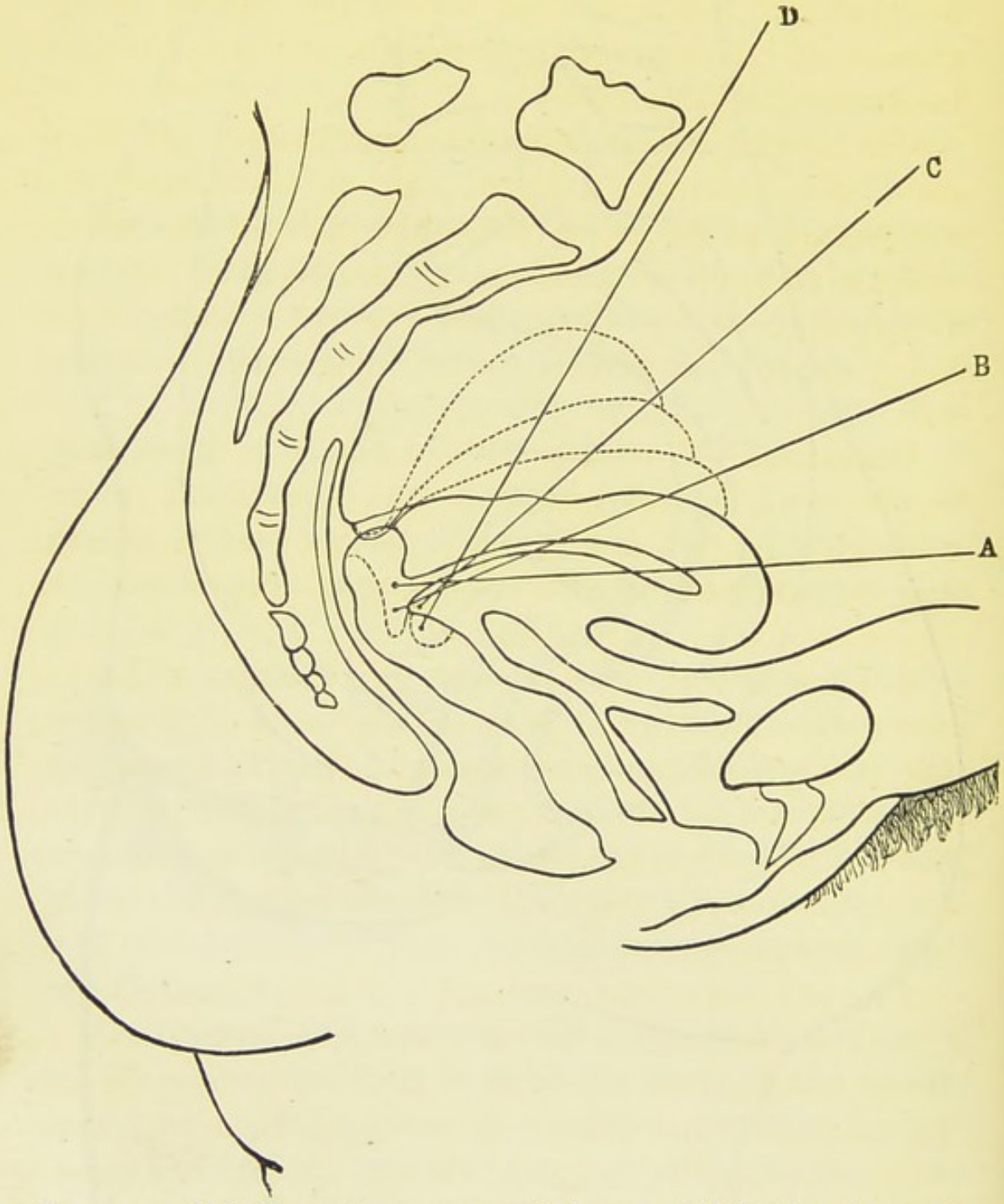

FIG. 114.—B C D, positions successively occupied by the uterus as the bladder fills (Van de Warker).

Retroflexion.—When the angle is on the posterior aspect of the uterus we have a retroflexion.

Version of the uterus.—When the whole uterus is rotated round an imaginary transverse axis, without the position of the cervix and body relative to one another being altered, we have what is called a version of the uterus. If the rotation is forwards, *an anteversion;* if backwards, *a retroversion.*

Version and flexion may be combined in the same case. For instance, a uterus may be anteflexed and retroverted at the same time—the axis of the cervix making an angle with the axis of the body on the anterior aspect of the uterus, and then the whole organ being rotated backwards on an imaginary transverse axis.

Diagnosis.—Normally the external os is found looking downwards and backwards, and on bimanual examination, *if the bladder is empty*, the body of the uterus can be grasped between the internal finger and the fingers of the external hand.

In other words, on bimanual examination when the uterus is in the normal position the body of it can be felt through the anterior fornix. That is to say the uterus is anteverted or anteflexed. Conversely, if the body of the uterus cannot be felt through the anterior fornix bimanually, the position of the uterus is not one of anteversion.

Two precautions are necessary to avoid error:—

1. The external hand must make pressure well above the situation where the body of the uterus may be expected to be if the position of the uterus be one of anteversion or anteflexion. The fingers of this hand must not, for example, press downwards close behind the pubes, or they may very probably be altogether in front of the body of the uterus, and meet the internal finger without the body of the uterus being grasped, even

though it be anteverted or anteflexed. This mistake is a common one. Another somewhat similar mistake is omitting to make the pressure with the external fingers in the middle line, in this case also the external and internal fingers may be made to meet without grasping the body of the uterus, although it really lies in front.

2. The internal finger should make its pressure upwards *immediately* in front of the vaginal portion of the cervix, not some distance in front, or it will easily meet the external fingers without the body of the uterus being grasped.

It is well for the beginner to satisfy himself in an undoubted case of anteversion or anteflexion how all these mistakes can be made. They are certainly all commonly made by students beginning the study of the subject. The diagnosis may be confirmed by passing the sound, and finding that it enters with its concavity forwards. When the body of the uterus lies to the front it is usually quite unnecessary to pass the sound for this purpose—the information obtained by the bimanual examination in practised hands is quite conclusive.

If an examination is made with the precautions mentioned, and the body of the uterus cannot be felt through the anterior fornix, but the internal and external fingers meet with only the abdominal wall, the vaginal wall, and the walls of the bladder between them, the body of the uterus does not lie to the front. It must, therefore, be either retroverted (Fig. 118), anteflexed and retroverted (Fig. 117), or retroflexed and retroverted (Figs. 119 and 120).

Retroversion.—When this exists alone (Fig. 118) the physical signs are as follows:—The os uteri looks upwards and forwards; we can feel the body of the uterus

through the posterior fornix, and if the abdominal walls are very lax we may be able to grasp the body of the

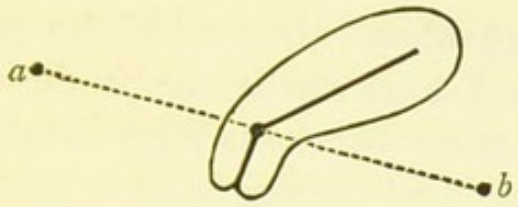

FIG. 115.—Slight anteflexion—the normal position. *a*. Posterior aspect; *b*. Anterior aspect.

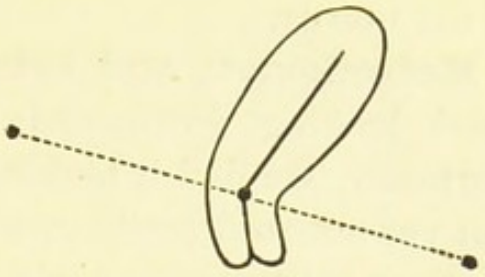

FIG. 116. — Anteflexion with slight retroversion.

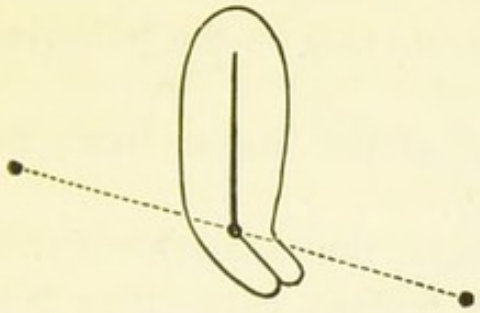

FIG. 117. — Anteflexion with considerable retroversion.

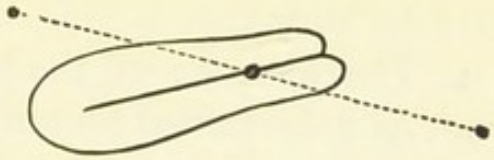

FIG. 118.—Retroversion without any retroflexion.

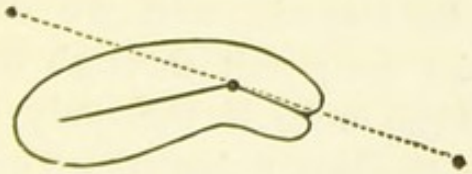

FIG. 119. — Retroversion and slight retroflexion.

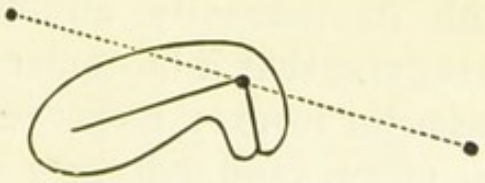

FIG. 120.—Slight retroversion and marked retroflexion.

Retroversion may occur :—

Alone (Fig. 118), or,

Associated with anteflexion (Figs. 116 and 117), or,

Associated with retroflexion (Figs. 119 and 120).

Retroflexion always has some retroversion combined with it (Figs. 119 and 120).

uterus bimanually even in this position. If there is no co-existing retroflexion, we find no angle at the point where the axis of the cervix meets the axis of the body of the uterus.

Retroflexion and retroversion.—Instead of the os uteri looking downwards and backwards, as it does normally, we find it looking more forwards than usual, but yet not so directly upwards and forwards as it does in pure retroversion; we feel the body of the uterus through the posterior fornix, and we notice that there is an angle produced where the axis of the cervix meets that of the body (Figs. 119 and 120).

To make sure that a lump felt through the posterior fornix is the body of the uterus, we rely on the following considerations:—

1. The absence of the body of the uterus from the front as ascertained bimanually.

2. On the lump felt through the posterior fornix moving with the cervix, and feeling continuous with it.

3. On information obtained by passing the sound. If the lump is the body of the uterus, the sound passes with its concavity directed backwards, and we can recognise that it has entered the lump felt through the posterior fornix; moreover, if the lump is the body of the uterus (and there are no adhesions fixing it) we can replace the uterus with the sound (as shown in the accompanying figure) into a position of anteversion, or anteflexion. After this has been done it will be found that the lump previously felt through the posterior fornix has disappeared, and that on bimanual examination the body of the uterus can be grasped through the anterior fornix.

Attention to these points is needed to make certain

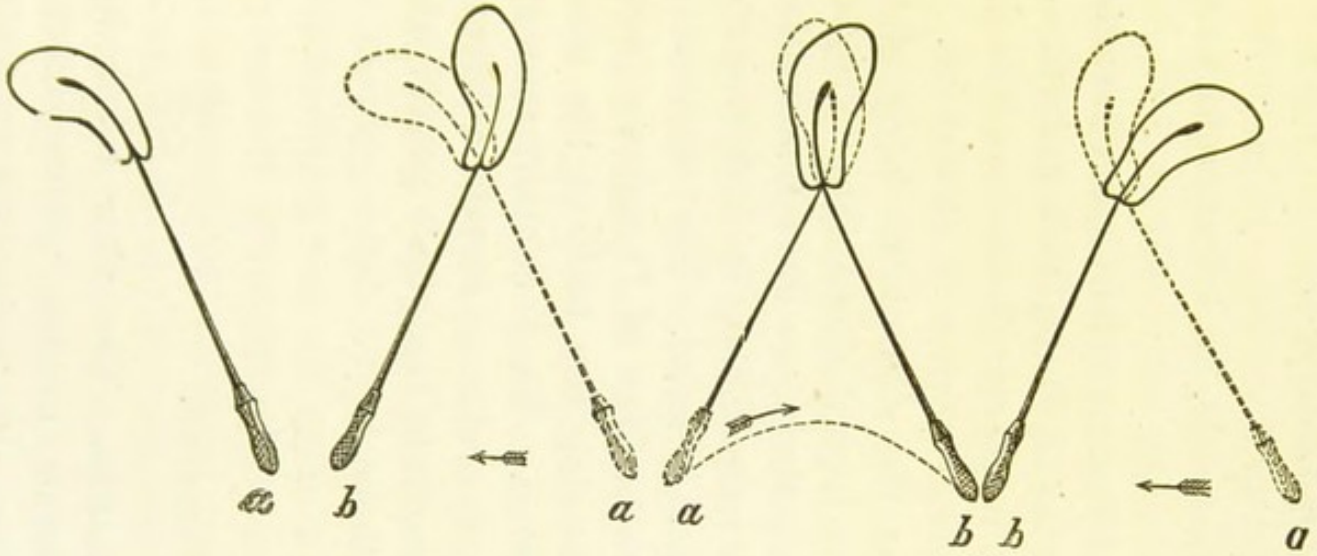

FIG. 121.—Replacement of the retroverted or retroflexed uterus by the sound (Thorburn).

The first figure on the reader's left shows the sound passed into a retroflexed uterus.

The second figure from the left shows the first step of replacement, the handle of the sound carried back towards the perineum without reversing the curve, (from *a* in the second figure to *b*) thus raising the uterus.

The third figure shows the "tour de maitre" (see p. 29) the handle of the sound being carried through a wide semi-circle from *a* to *b*, so as to bring the concavity of the sound forwards.

The replacement is completed by carrying the handle of the sound once more back towards the perineum as in the end figure on the right.

that a lump felt through the posterior fornix is the body of the uterus, and not for instance:—

A fibroid tumour growing from the posterior wall of the uterus, or

An enlarged and prolapsed ovary, or

A dilated Fallopian tube, or

A swelling due to hæmatocele, or inflammatory exudation.

Retroversion or retroflexion with incarceration of the body of the uterus in Douglas's pouch.—In many cases of retroversion and retroflexion we find that the uterus is as movable as it normally should be. If, however, it happens that the size of the body of the uterus is such that when forced down into Douglas's pouch the uterus fits tightly there, we have the condition known as *retroversion, or retroflexion, with incarceration.* The uterus in such cases is fixed. The utero-sacral ligaments, which form the edges of Douglas's pouch, play an active part in retaining the body of the uterus in its incarcerated position. They contain muscular fibres, and can therefore exercise a certain amount of grip on the uterus, keeping it in Douglas's pouch, when it has once been pushed there.

Etiology.

Forward displacements.—The view taken here that forward displacements of the uterus (anteversion and anteflexion) have in themselves no pathological significance, renders it unnecessary to dwell at length on their etiology. It has already been said that the normal position of the uterus in the virgin, when the bladder is empty, is one of anteversion together with

anteflexion, so that the axis of the body of the uterus forms an angle with the axis of the cervix on the anterior aspect of the uterus, the angle being an obtuse angle, and its value about 120°. Sometimes the angle is a much smaller one, and it may even be an acute angle.

An exaggerated anteflexion of this kind is met with:—

1. *In cases where the uterus is ill-developed.* Here we shall be able to make out that the uterus as a whole is small, *e.g.*, only 1½ inches long altogether.

2. *In cases where there has been pelvic peritonitis* and the excessive anteflexion has been produced by the dragging of adhesions. Here there will be probably a history of the inflammatory attack to guide us, and some evidence of it on physical examination, for instance, diminished mobility of the uterus.

3. *In cases where there has been cellulitis in the utero-sacral ligaments.* As the inflammatory exudation contracts, it pulls on the uterus at the junction of the cervix and the body, the force acting in a backward direction; it is obvious how this will tend to produce an exaggerated degree of anteflexion. The mobility of the uterus will probably here also be diminished.

In the first group of cases it is not the anteflexion but the want of development, that is of chief importance; and in the second and third groups, it is not the anteflexion, but the pelvic inflammation, that is the pathological factor to be reckoned with.

Backward displacements.—It has been already said that retroversion to a moderate degree is physiological, inasmuch as it occurs every time the bladder fills. We may speak of this as "physiological retroversion." Retroflexion is occasionally congenital, but more rarely so than excessive anteflexion.

Retroversion in excess of the physiological retroversion just spoken of, and retroflexion, are usually acquired.

They generally imply, at least when present to any marked degree, a certain amount of descent of the uterus also; their mode of causation is therefore in many cases identical with that of uterine prolapse (*see* Chapter VIII.). Retroversion and retroflexion may also be caused by the dragging of adhesions, the result of pelvic peritonitis; in such cases the mobility of the uterus will be diminished or lost, and it will be impossible without using an undue amount of force to replace the uterus into a position of anteversion or anteflexion with the sound.

Significance of Versions.—*Anteversion* in itself has no pathological significance; if the mobility of the uterus is diminished, there has probably been pelvic inflammation which is to be considered the important feature in the case.

Retroversion in excess of physiological retroversion, as we have seen, usually indicates some descent of the uterus, which under ordinary circumstances becomes retroverted as it prolapses. If the mobility of the uterus is lost, or diminished, and the uterus cannot be replaced with the sound, we are justified in considering that there has been pelvic peritonitis, and that the altered position of the uterus has probably been caused by it; however this may be, it is the pelvic peritonitis and not the retroversion that is the important feature of such a case.

So long as the uterus is freely movable, and not enlarged to any extent, retroversion of the non-pregnant uterus usually leads to no symptoms; there are some cases, however, where disorders of micturition (frequent

desire to pass water, or incontinence of urine) are met with associated with retroverted uterus; in cases of this kind the uterus is as a rule not quite of the normal size, but somewhat enlarged. In such cases it is desirable at all events to try the effect of replacing the uterus, and to insert a ring pessary to keep it from becoming again retroverted.

When the retroverted uterus is incarcerated in Douglas's pouch some of the following symptoms are usually present:—

Bearing down pain in the lower part of the abdomen, and back.

Dysmenorrhœa.

Menorrhagia.

Trouble connected with micturition, or defæcation.

Here it is the *incarceration* of the uterus, not the mere retroversion, that is important.

Whether marked symptoms exist, or not, will depend on the tightness with which the uterus is gripped in Douglas's pouch.

Significance of Flexions.—Flexions have been considered to have a pathological significance chiefly for two reasons:—

1. Because it has been thought that at the angle of flexion there was an obstruction to the circulation, so that the body and fundus of the uterus became congested—flexion of the uterus was thought to cause congestion of the body and fundus.

2. It was supposed that the canal of the uterus was narrowed at the angle of flexion, usually at the internal os uteri, so that an obstruction was produced at that point—flexion was thought to cause obstruction of the uterine channel.

I. The first proposition—*that flexion causes uterine con-*

gestion—must be regarded as disproved chiefly for the following reasons.*

1. Owing to the arrangement of the vessels supplying the uterus it is impossible that flexion can interfere in any way with the return of the blood from the body and

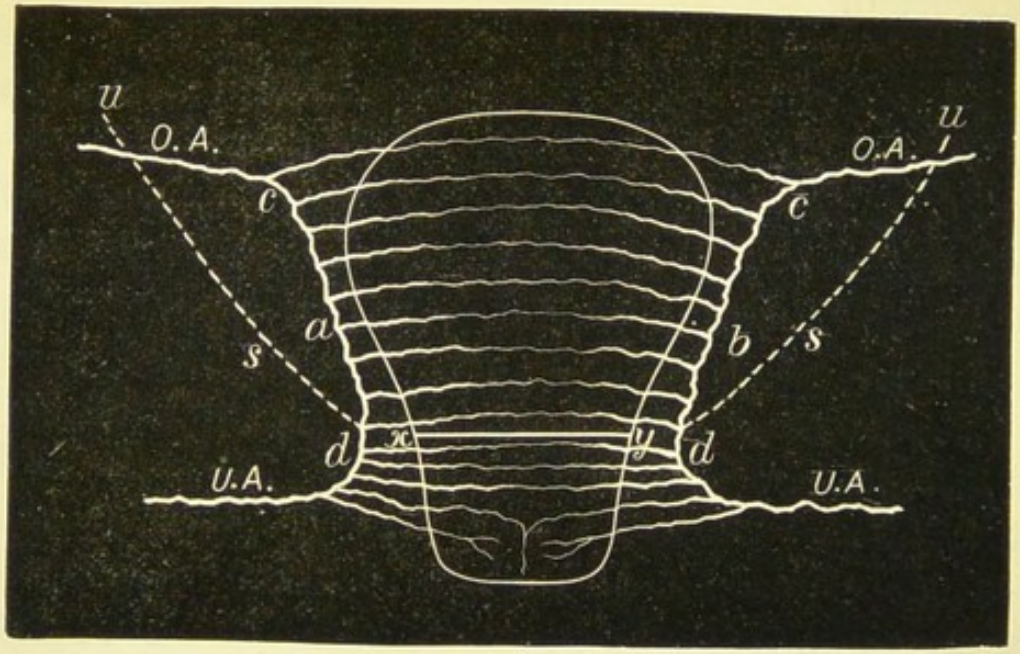

FIG. 122.—Diagram to shew the position of the blood-vessels supplying the uterus (after Hyrtl).

O. A. Ovarian artery; *U. A.* Uterine artery; *cd.* Lateral arterial channel on each side; *ab.* one of the transverse branches given off from this lateral channel; *xy.* Indicates roughly the position of the internal os, *us*, *us.* Show position of pressure on each broad ligament when the uterus is incarcerated in Douglas's pouch.

fundus of the uterus along the broad ligaments. This will be clear from the accompanying diagram.

The ovarian artery reaches the uterus near the fundus on each side; as it nears the uterus it divides into two

* The account in the text is based on a paper by Dr. John Williams "On the Circulation in the Uterus," in vol. xxvii. of the *Transactions of the Obstetrical Society of London.*

branches, one of which descends to join the uterine artery.

Thus there is, as it were, a lateral arterial channel *cd*, *cd*, on each side, from which branches are given off that have a general transverse direction over the uterus with a slight inclination upwards.

These transverse branches join corresponding branches from the opposite side. From these transverse branches secondary smaller branches are given off towards the

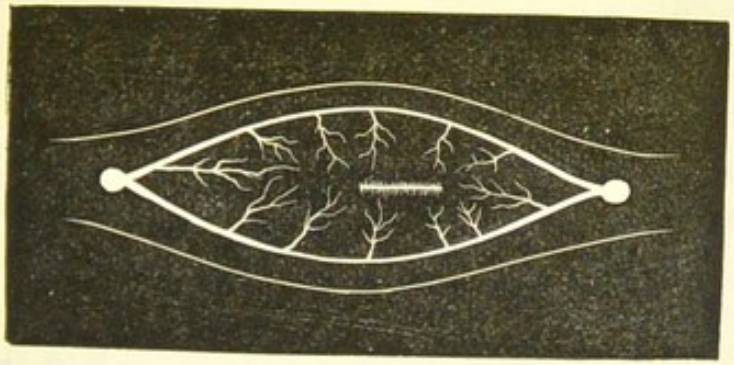

FIG. 123.—Transverse section of uterus, showing the arrangement of uterine arteries, the arterial circles formed by their primary branches, and the branches of the latter supplying the mucous membrane (John Williams).

The large white dot at each side of the figure corresponds to a transverse section of the lateral arterial channel *cd* in the preceding figure.

mucous surface of the uterus in a direction perpendicular to the plane of the paper. The veins have a similar arrangement. It will thus be seen that *each transverse section of the uterus has its own vascular supply*, and that a constriction in the situation of *x y*, about the level of the internal os, the usual situation of flexion, cannot effect the circulation in the uterus above or below.

When the uterus is incarcerated in Douglas's pouch,

congestion of the body and fundus does occur, but here the obstruction is to the return of the blood along *the broad ligament on each side.* The edges of the pouch pressing on the broad ligaments in the situation, *us, us,* on each side. It is not the retroflexion causing obstruction at the angle of flexion, but the pressure of the edges of Douglas's pouch on the broad ligament that causes obstruction.

2. If flexion caused congestion we should expect to have excessive menstruation in cases of flexion. Now cases are constantly met with in practice where there is marked flexion, retro- or anteflexion, and yet there is no menorrhagia.

3. Though we speak of the angle of flexion, it is rather because the term is a convenient one than that there is any actual angle; what is usually spoken of as "an angle" is really rather a simple curve; owing to the thickness of the walls of the uterus, when the body is bent on the cervix, the intervening part of the uterus forms a curve, not an angle.

4. In the paper already referred to it was shewn that when the fundus of the uterus was stitched to the cervix it could be equally well injected artificially, as when nothing of the sort had been done.

II. *As to the relation of flexion to obstruction of the uterine canal:—*

1. What has been said as to the angle of flexion being rather a curve than an angle applies here also. The direction of the canal is altered by the flexion, but that is all. Dr. Matthews Duncan speaking of a specimen of an acutely flexed uterus remarks, that the flow of the menses out of it would not be "nearly so much obstructed as the passage of the water along a bend of the river Thames."

Obstruction produced by flexion has been considered of importance:—

1. As a cause of dysmenorrhœa.
2. As a cause of sterility.

1. *The supposed obstruction as a cause of dysmenorrhœa.*—The explanation of the pain on this hypothesis is that it is caused by obstruction; excessive contractions of the uterus are set up to drive the menstrual fluid past the obstruction.

It has been shown above from the examination of specimens, that in flexed uteri the direction of the channel is altered, but that the channel itself is not appreciably obstructed. Clinical evidence shows also that flexion is about equally common in patients with dysmenorrhœa, and in cases without dysmenorrhœa. Vedeler's statistics, quoted by Hart and Barbour, show that—

Well-marked anteflexion existed in 37·3 per cent. of patients complaining of dysmenorrhœa, and in 33·3 per cent. of patients who did not complain of dysmenorrhœa.

Further, in the worst cases of dysmenorrhœa the sound can be passed quite easily, showing the absence of any obstruction.

2. *As a cause of sterility.*—Just as there is practically no obstruction to the exit of menstrual fluid at the angle of flexion, so there is none to the entrance of spermatozoa. Dilatation of the cervix only increases the probability of conception to a very slight degree.

Treatment of versions and flexions.—Anteversion and anteflexion require no treatment. Any symptoms present must be referred to some associated morbid condition, *e.g.*, pelvic inflammation, recent or old, and not to the anteversion, or anteflexion. When there is

retroversion or retroflexion, with incarceration of the uterus in Douglas's pouch, the condition is to be looked upon as a pathological one, and remedied. The bladder should be emptied, and the uterus replaced with the sound; a suitable pessary, either an elastic ring, or a Hodge's pessary, should then be inserted to prevent the displacement recurring. So long as the uterus is freely movable, any existing flexion should be regarded as having in itself no pathological importance.

Marked retroflexion, without incarceration of the uterus in Douglas's pouch, is usually to be taken as an indication that the uterus is lower than normal—that it is somewhat prolapsed. In such cases the treatment is that suitable for a case of slight prolapse; it is well to replace the uterus, so that the body of it lies to the front, before inserting a pessary. We shall then be able to know whether the pessary is efficient or not by subsequent examination. If it is efficient, the uterus will be to the front; if it is not efficient the displacement will have recurred.

It is well to understand clearly that no vaginal pessary, whether it be a ring pessary, or a Hodge's pessary, or any other, can straighten or keep straight a flexed uterus. The only pessary that can do this (were it of any importance to do it) is an intra-uterine stem pessary, *i.e.*, a pessary that has a straight rigid rod occupying the canal of the cervix and body of the uterus.

If a patient, complaining of pelvic pain, says that it is distinctly relieved by lying down, it is often worth trying if a pessary that tends to keep the uterus at a higher level will relieve her. For this purpose the ordinary ring pessary is the best.

In such cases the relief obtained is due to removal of

passive congestion by raising the uterus as a whole, and by lessening the tension on the various uterine supports.

Some general remarks on vaginal pessaries.—For all ordinary cases where the use of a vaginal pessary is indicated, either the ring pessary made of watch spring covered with india-rubber, or Hodge's pessary will be found to meet every requirement.

Several sizes of each should be at hand; Hodge's pessary is made of many different materials, a good form is that made of copper wire covered with india-rubber.

The action of the watch-spring pessary, and the mode of inserting it have been mentioned on p. 119.

Position of Hodge's pessary.—Hodge's pessary should lie with the narrow end upwards in the posterior fornix, and the concavity of the upper curve directed forwards. The pessary should not be pressing firmly against any bony part, but should simply be grasped by the vaginal walls.

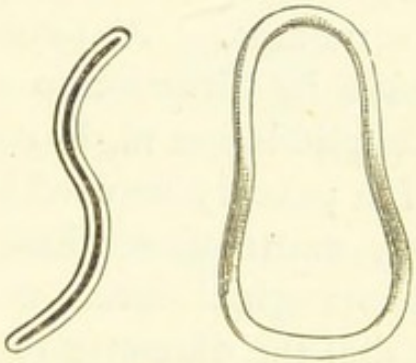

FIG. 124.—HODGE'S PESSARY. Side view and front view.

Action of Hodge's pessary.—The upper limb of Hodge's pessary pulls the vaginal wall at its insertion posteriorly into the cervix, in a backward direction, and so tends to throw the weight, the body of the uterus, forwards, the fulcrum lying somewhere between these two parts.

To insert a Hodge's pessary.—One finger of the left hand retracts the perineum slightly, the pessary held in the right hand is passed through the orifice of the vulva,

narrow end first; the bar closing the upper end of the pessary parallel to the cleft between the labia. When the pessary is in the vagina, it is turned round through a quarter of a circle, so that the upper bar lies transversely in the vagina. The upper end has a tendency to find its way into the anterior fornix, and care must, therefore, be taken to hook it with the fore-finger behind the cervix into the posterior fornix.

Whenever a pessary has been inserted the patient should be told that she is wearing an instrument, and shown one of the kind she is wearing, and she should be warned that it should not on any account be left unchanged for a longer period than *three* months at a time. In general, it is best to see her again in the course of a few days to know if the pessary is comfortable; if then all is right, she need not be seen again for *three* months. A patient wearing a pessary should always be directed to use a vaginal douche of some antiseptic lotion night and morning.

If a pessary be used that fits too tightly, it will very likely cause ulcerations, and in neglected cases even vesico-vaginal fistula may be produced. It is well to see that the diameter of the pessary at every part of it is a relatively broad one, so as to distribute the pressure over a broad surface rather than over a narrow one.

In fact the nearer any part of a pessary approaches in character to anything like an "edge," the greater the probability of it causing ulceration.

Inversion of the uterus.—This is a very rare displacement. It may be either *acute*, or *chronic*. The acute variety almost always occurs as a complication of the third stage of labour; exceptionally it may be produced by the dragging of a submucous fibroid tumour, or fibroid polypus attached to the fundus of

the uterus, or by traction on such a polypus while it is being removed.

The chronic form is a sequel of the acute, when the patient has survived the immediate consequences of the accident.

Pathology.—Relaxation of the fundus and neighbouring part of the uterus is a necessary condition for the production of inversion. Given this relaxation, then either pressure from above, or traction on the fundus from below, may cause inversion. Instances of traction from below are (*a*) pulling on the cord in cases of adherent placenta (*b*) dragging of a fibroid polypus adherent to the fundus, or its neighbourhood. An example of pressure from above, causing inversion, is where sudden pressure is made on the uterus with the hand in the third stage of labour, the uterus at the moment happening to be relaxed. Hence the importance of the practical rule in regard to expression of the placenta, viz., only to make efforts to express it when the uterus is felt to be hard, *i.e.*, contracted.

Degrees of inversion.—It is usual to divide cases of inversion into groups :—

1. Where an inversion exists, but the inverted fundus has not passed the os uteri.

2. Where the inverted fundus has passed through the os, and

3. Where the whole uterus is turned inside out, cervix as well as body.

Symptoms.—In the acute variety there is severe shock, and there may be hæmorrhage. In the chronic form symptoms may in rare cases be absent;* usually, however, there is more or less bearing down, and the patient loses an excessive amount of blood (menorrhagia

* As in a case (quoted by Dr. West) observed by Madame Boivin.

and metrorrhagia). When she is not losing blood, there is a yellow discharge, owing to inflammation of the exposed mucous membrane of the uterus.

Physical signs and diagnosis.—These have been considered under the diagnosis of fibroid polypi (p. 166).

Treatment.—The treatment of acute cases occurring during labour belongs to Midwifery. In chronic cases we may try to effect replacement, either with the hand alone, or by pressure exerted by some instrument guided by the hand, or we may try the effect of constant elastic pressure on the inverted uterus.

It seems preferable to try the last-mentioned method first. An instrument, on the principle of, and somewhat

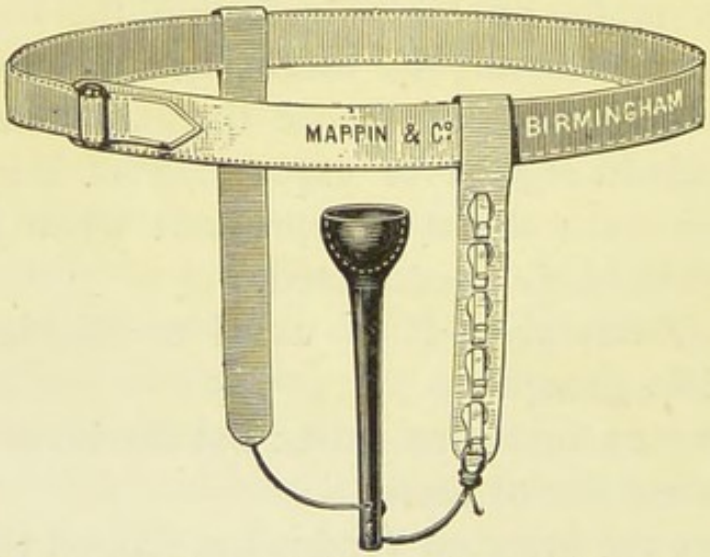

FIG. 125.—Instrument for replacing an inverted uterus by constant elastic pressure.

resembling, a cup and stem pessary, is used. The cup is made of vulcanite, and is adapted to the inverted fundus. Any desired degree of upward pressure is then obtained by tightening up the elastic bands that pass to the waist belt. This method may be used for two or three weeks, the patient remaining in bed, and the instrument frequently examined to see it is in

proper position; pain is relieved by hypodermic injections of morphia.

Should this treatment fail, we may try manipulation under chloroform, and we may either use the hand alone or use White's repositor, guided by the hand. If the hand alone is used, we should try to replace first the part last inverted. Dr. West refers to a case of thirteen

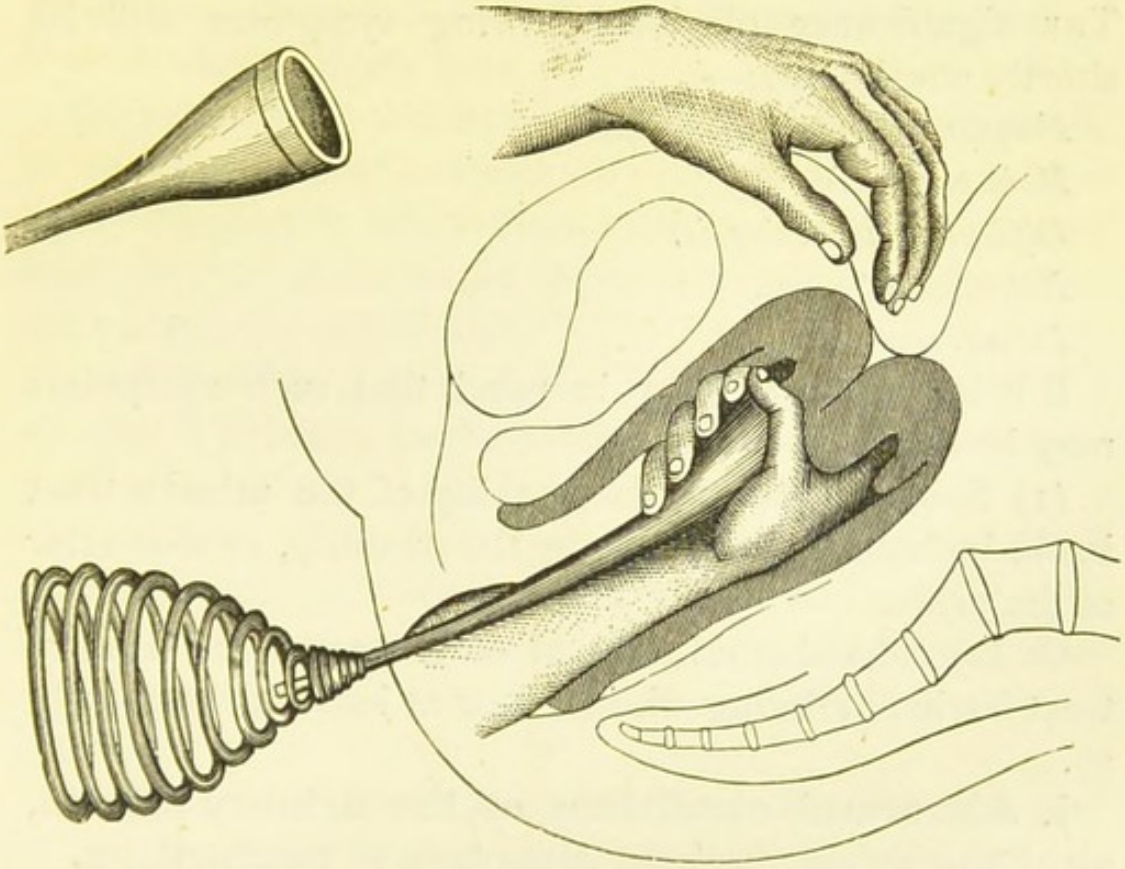

FIG. 126.—White's repositor with spiral spring to place against the operator's chest (Thomas).

years' standing, where Noeggerath succeeded in replacing the uterus by manipulation with the hand alone.

In very rare cases, where all means at our disposal for replacing the uterus have failed, and where the patient is becoming exhausted by the constant loss of blood, it is justifiable to remove the uterus by operation.

CHAPTER XVIII.

Disorders of Micturition.

The significance of the following symptoms will be shortly considered:—

Frequent desire to pass water.
Pain on passing it.
Difficulty in passing it.
Retention of urine.
Incontinence of urine.

It is important to bear in mind that such symptoms may be due either to:—

(1) Some disease or abnormality of the urinary tract itself, including alterations in the quantity, or character of the urine.

Or (2) morbid conditions of other parts—the urinary tract itself not being diseased, or at least not primarily so.

I. Abnormal conditions of the urinary organs, or of the urine, causing disorders of micturition.

a. Diseases of the urethra.

Urethritis, Vascular caruncle } Common.
Malignant disease, Stricture } Rare.

Frequent desire to pass water, and pain on passing it, are the chief symptoms; occasionally there may be retention, which is partly voluntary in some cases from fear of the pain accompanying micturition.

b. Diseases of the bladder.

Cystitis and its various causes, gonorrhœa, foreign bodies in the bladder (hair-pins, etc.) vesical calculi.

Malignant disease.—Primary (rare) secondary to malignant disease of uterus (common).

Frequent desire to pass water, and pain in passing it are the prominent symptoms.

Vesico-vaginal or vesico-uterine fistula.—The characteristic symptom here is, of course, incontinence of urine.

c. Alterations in the urine.

Quantity.—If an excessive quantity of urine is secreted, as in diabetes, and some cases of hysteria, the bladder being frequently filled there will be frequent calls to empty it. In these cases there is frequent micturition, but not painful micturition.

Quality.—When the urine contains "gravel," the bladder is irritated mechanically; in such cases micturition is painful as well as frequent.

d. Diseases of the pelvis of the kidney, or of the kidney itself.—Scrofulous disease of the kidney and pelvis of the kidney are perhaps the conditions most likely for a time to be overlooked, and the case regarded as one of cystitis.

Two cases in illustration of this are added at the end of the chapter. Malignant disease of the kidney also requires mention under this heading.

II. **Abnormal conditions outside the urinary tract causing disorders of micturition.**

a. Pelvic inflammation including pelvic peritonitis, pelvic cellulitis, and ovaritis.

These may lead to pain on passing water, and frequent desire to pass it.

b. Pressure.—When the uterus is not enlarged, neither its anteflexion nor retroflexion disturb the function of

micturition; when the uterus is enlarged, however, the case is different.

If the enlarged uterus occupy a position of anteversion or anteflexion we may have frequent desire to pass water, and sometimes involuntary passage of a small quantity of urine. Cases of this kind are met with during pregnancy, and also where the uterus is enlarged owing to the presence of fibroid tumours.

If the enlarged uterus occupy a position of retroversion or retroflexion, we may have disturbances of micturition, viz., frequent micturition, incontinence of urine, or retention.

The best example of micturition being interfered with by an enlarged retroverted uterus is retention of urine in cases of retroverted gravid uterus.

When there is retroversion or retroflexion of the gravid uterus, the uterus may rise out of the pelvis at the proper time (the beginning of the fourth month) and so the malposition be spontaneously rectified; sometimes however, it does not do so, and retention of urine occurs.

This is due partly to the urethra being dragged upwards by the cervix, which is displaced high up behind the pubes, and partly to direct pressure on the urethra. Often there is some dribbling over of urine from the distended bladder, which may mislead the patient into thinking she is passing her water properly. In cases of this kind the degree of distention reached may be very great. For example, in one of my cases, the bladder contained 104 ounces of urine.

Ovarian tumours very rarely cause retention of urine, but they do occasionally. I have met with one instance of this (see p. 292).

Fibroid tumours of the uterus, on the other hand, often

cause retention, and when this has been relieved, it does not necessarily recur.

Malignant tumours originating in the pelvis may cause frequent and painful micturition.

Tumours in the vagina, whether originating there or elsewhere, may also interfere with micturition.

c. Hysteria may cause retention of urine, or lead to frequent micturition owing to an unusually large quantity of urine being secreted; sometimes, however, in such cases absolutely less urine than normal is secreted.

d. Labour.—Difficulty in passing water, or complete inability to pass it, may occur after labour, due to the bruising or laceration of the parts in the neighbourhood of the urethra.

e. Procidentia.—Difficulty in passing water is not unfrequently present; often the patient has found that by pressing the parts up she can pass water more easily.

Diagnosis.—The chief point to be considered at first is whether the symptoms are due to morbid conditions of the urinary tract, or of the urine; or to morbid conditions elsewhere. Whether in fact the cause is in Group I. or Group II.

Some of the causes in Group I., such as vascular caruncle, stricture of the urethra, and urethritis are diagnosed by inspection.

Careful examination of the urine is of great importance, and it should be drawn off with a catheter for the purpose, to avoid contamination with vaginal discharges.

Bleeding caused by passing the catheter probably means malignant disease of the bladder, fragments of the growth in such cases may come away in the eye of the catheter; the diagnosis would be completed by dilating the urethra with Hegar's dilators and passing the

finger into the bladder. It is easy also to dilate the urethra with the fingers, first passing the little finger.

The sound* should be passed into the bladder, and search made for foreign bodies or calculi. The distance the sound can be passed into the bladder measured from the external orifice of the urethra should be noted; in health it passes $4\frac{1}{2}$ inches. This measurement is diminished in various diseases, particularly acute and sub-acute cystitis.

Tenderness on passing the sound also indicates disease of the bladder.

On vaginal examination, if we find there is special tenderness when pressure is made on the anterior vaginal wall, this may indicate cystitis.

When the urine contains pus, and is *acid*, the cause may be acute or sub-acute cystitis, or pyelitis. In chronic cystitis the urine is alkaline.

When for various reasons we suspect that the pus comes, in part at least, from the urinary tract above the bladder, it becomes a matter of importance to determine if possible whether the pus comes from one side or both sides, the possibility of relief by nephrectomy being kept in mind. To decide this point catheterisation of the ureters has been proposed and carried out by various observers; the practical difficulties of this proceeding are, however, so great that it is unlikely to come into general use. On this point Skene says:† "Catheterisation of the ureters has been performed by Simon and Winckel, but as it is difficult, not without danger, and of little practical value, I shall not dwell upon it here." Again, Erichsen says:‡ "Catheterisa-

* The ordinary uterine sound answers the purpose very well.

† *Diseases of the Bladder and Urethra in Women*, p. 136.

‡ *Science and Art of Surgery*, vol. ii., p. 927 (8th edition).

tion of the ureter, even in the female, cannot be carried out with sufficient certainty to be of any use." The method to which I desire to call attention is, on the other hand, easy of execution, and in the case in which it was tried gave a perfectly satisfactory result. It is as follows:—The urethra is dilated; then one piece of a Bryant's rectal speculum is passed along the urethra into the bladder, and so placed that, seen from the front, it occupies one lateral half of the urethra and bladder beyond. When in this position the speculum divides the bladder into two compartments; for example, supposing the speculum occupies the right lateral half

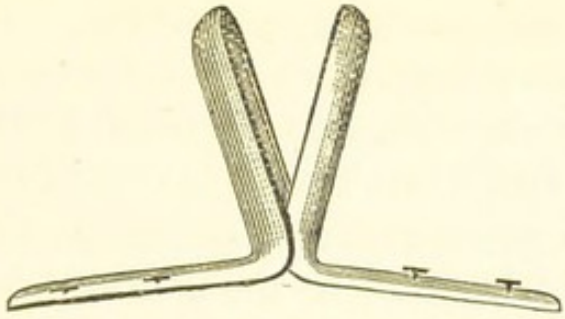

FIG. 127.—BRYANT'S RECTAL SPECULUM.

of the urethra and the bladder, then the orifice of the left ureter is in view. The surface is gently mopped with cotton-wool, and then the character of the urine escaping from the ureter is observed. As it collects in the hollow of the speculum, some of it may be taken up with a syringe, and tested in the usual way. Having finished the examination of the left ureter, the speculum is now quickly turned round so as to lie in the left lateral half of the urethra, thus bringing the orifice of the right ureter into view. When this was done in the case about to be narrated, a little fountain of clear urine about a quarter of an inch high escaped from the right ureter, the exit of the urine from it having evidently

been prevented by pressure of the speculum while the left ureter was being observed. Here also, if the obvious characters of the urine do not at once settle the point at issue, some may be collected and tested. The electric light is necessary for illumination, unless direct sunlight be available. In the following case observations made in the manner described showed that suppuration was taking place on one side only, as pus was seen steadily oozing from the left ureter, and clear urine came from the right. Guided by the oozing of the pus from one particular point, a hollow probe was passed two inches along the left ureter, but I was not able to pass the probe along the right ureter. The evidence already obtained would not, however, have been rendered any more conclusive by catheterisation of the ureters. I think, then, that in women when the urine contains pus, and when, owing to other considerations—for instance, wasting, fever, failure to improve under local treatment, such as washing out the bladder with antiseptic lotions—we have reason to believe that the presence of pus is not to be accounted for by cystitis alone, the method above described should be employed with a view to give the patient the benefit of surgical treatment if the affection prove to be unilateral. The following is an abstract of the case referred to.

A. G., aged 18, shop assistant, was admitted to the London Hospital on May 15th, 1886, complaining of inability to hold her urine. She first began to experience micturition trouble in November, 1885. She noticed then that she had to void urine more frequently than she had to do before, and had to get up at night to pass it. In January, 1886, she began to have some pain during micturition, which became more and more frequent, and at last the bladder was so irritable, that for some time before she came to the hospital she had been quite unable to hold her urine. She had never passed blood with her urine. On one occasion, in April, 1886, the

patient had a pain across the small of the back and in the stomach. The pain was severe and shooting; it came on suddenly and went away suddenly; it did not cause nausea or vomiting, nor did it pass down towards the legs.

On admission, the patient was anæmic, but fairly well nourished, the temperature normal. There was no tenderness in the abdomen, nor anything abnormal to be felt there. Vulva and skin adjacent to it red, and sore-looking. Hymen perfect, but lax. On vaginal examination, pressure on the anterior vaginal wall caused pain, much more than the same pressure on the posterior vaginal wall. The uterus and its appendages were normal. The sound passed into the bladder a distance of three inches or rather less, the measurement being taken from the external orifice of the urethra. The passage of the sound caused pain. About a drachm of urine was obtained by passing a catheter; reaction amphoteric,* it contained pus in abundance, and some shreds or flakes; no casts; only pus-cells and bladder epithelium were seen under the microscope. The other organs were healthy.

The case was thought to be one of cystitis only for some time, and the bladder was washed out daily with liquor carbonis detergens (one drachm to a pint) and afterwards with boracic acid lotion, without, however, any improvement taking place.—May 31st: The temperature had hitherto been normal; but from this date onwards, the the patient suffered from attacks of high fever running an irregular course; the temperature on several occasions being as high as 104°. —July 8th: Examined under ether to-day. No tumour to be felt in the region of either kidney.—August 21st: The patient has lost 13 lb. in weight since June 14th.—31st: There have been general pains during the attacks of fever, but no pain specially referred to the region of the kidneys. For the last three weeks increased resistance has been felt in the region of the left kidney; palpation causing some pain, and exciting the abdominal muscles to contract. When the patient lay on her face, dulness over the left kidney in the back was found to reach two fingers' breadths lower than over the right kidney Under ether a lump was easily felt in the situation of the left kidney. The observations on the character of the urine flowing from the right and left ureters respectively were then made, as described above in this chapter. My colleague, Mr. Treves, saw the case with me, and it was agreed that it was probably one of

* *i.e.*, Turns red litmus blue, and blue litmus red.

scrofulous degeneration of the left kidney, and that the right kidney was healthy, as evidenced by the urine flowing from its ureter. Although the patient's condition was most unfavourable, yet, as the rapid loss of weight and other grave symptoms made it certain that the case must end fatally in a short time if left alone, we felt it right to suggest operative interference to the patient and her friends, at the same time putting the risk fairly before them. Consent having been readily given, Mr. Treves accordingly operated. The patient did very well after the operation, and the temperature was persistently lower than it had been previously, though still febrile. The urine contained (three weeks after the operation) a small quantity of pus, due no doubt to the cystitis which still remained. The amount of pus in the urine was trifling, however, when compared to the large quantity passed before removal of the kidney.

Whatever the ultimate result may be in this particular case, there is no doubt that a diagnosis sufficiently probable to justify an exploratory operation could have been made by the method described months earlier when no tumour was to be felt in the abdomen, and before the patient's strength had been so much reduced as to render her a very unfavourable subject for operative interference at all.

Note on the operation by Mr. Treves.—"The kidney was approached by the ordinary lumbar incision It was embedded in an extensive mass of tough adhesions. It was subsequently found that this perinephritic inflammation was the main constituent of the 'renal' tumour, since the gland itself was but little enlarged. The adhesions were broken down with difficulty. It was found impossible to separate the kidney from the capsule, or from the supra-renal body. The latter structure, with the entire kidney, was therefore removed. A surgical pedicle could not be established. The ureter, distended with caseous and purulent matter, gave way; the renal vessels were clamped, and subsequently ligatured. The kidney was entirely occupied by a series of tubercular abscesses. The wound was stuffed with sponge covered with iodoform, and the cavity left to granulate up."

January, 1888: The patient now looks fat and well. The wound completely healed some time ago. She still cannot hold her water properly, but she has recently acquired the power of holding it for a short time, which is a great improvement. It is as certain as anything can be that she must have died long ago had the operation not been performed.

The existence of a vesico-vaginal, or vesico-uterine fistula, and its position, can be demonstrated by pouring milk into the bladder while we are looking into the vagina with a Sims's speculum.

Coming now to Group II., we need only say that pelvic peritonitis and cellulitis, enlargements of the uterus, ovarian and other tumours will necessarily be discovered by a careful physical examination; and as regards hysteria, we shall be guided to a diagnosis by an absence of local physical signs, combined with the general appearance and bearing of the patient.

Treatment.—The treatment suitable in each case will depend on the cause; for example, vascular caruncle must be burnt off; vesico-vaginal fistula operated on with a view to closing the fistula; ovarian tumours removed; foreign bodies, or calculi in the bladder, extracted; a scrofulous kidney, if the disease is proved to be unilateral, may be extirpated. In cases of cystitis for which no cause can be discovered, rest in bed, with frequent hot hip baths, is useful. In such cases the bladder should be washed out two or three times a day with water containing ʒ ij of liq. carbonis detergens to the pint.* The best way of doing this is to use a catheter made of india-rubber with a glass funnel fitted on the other end of the catheter. The bladder is first emptied with another catheter; then the india-rubber catheter is passed, and the solution to be used poured into the glass funnel. The quantity that can be introduced depends on the irritability of the bladder, perhaps only two or three drachms, or less, may be tolerated.

Large quantities of demulcent drinks, such as barley water, are useful; where pain on passing water is a marked symptom, and is due to disease of the bladder,

* 1-4000 corrosive sublimate lotion also answers very well, used once a day.

or urethra, tincture of hyoscyamus, decoction of pareira, bicarbonate of potash, spiritus ætheris nitrosi and camphor water, separately or in various combinations, may be prescribed.

For *nocturnal incontinence* in young girls we attend carefully to the state of the bowels; if the girl suffers from worms, suitable treatment is adopted; we advise the mother not to let her drink any fluids for two hours before she goes to bed; and she should be wakened to pass water when the mother is going to bed. Sometimes a blister applied above the pubes is efficacious; sometimes benefit is derived from small doses of tincture of belladonna. Of course we are now speaking of cases where the urine is healthy, and there seems no reason for suspecting organic disease.

The following case is an example of the latent character of scrofulous disease of the kidney. It was not suspected during life.

M. K., age 30, was admitted to the London Hospital complaining of pain on micturition, and of having to pass her water frequently for the previous six weeks. The urine passed during this time had been milky. She has had to get up at night to pass her water.

Has been troubled with cough and shortness of breath five months.

Had one child born dead, she thinks it was at full term.

On admission the urine was found to contain a small quantity of pus, and was acid.

The case was thought to be one of subacute cystitis, and treated accordingly.

She died suddenly of syncope, apparently due to fright, while an operation was being performed in the ward.

On post-mortem examination there was found advanced scrofulous degeneration of the left kidney. The right kidney contained two small abscesses, but was for the most part healthy.

She had a typical kyphotic pelvis, the measurements of which are appended.

Conjugate of the brim, 5¼ inches.

Transverse, 5¼ inches.

Conjugate at the outlet with the coccyx pushed back, $3\frac{1}{4}$ inches.
Between ischial tuberosities, 3 inches.
Between ischial spines, $3\frac{5}{16}$ inches.
Diagonal conjugate (*i.e.*, from the sacral promontory to the lower border of the symphysis pubis) 6 inches.

The following case is an example of malignant disease affecting a movable kidney. The prominent symptoms were occasional hæmaturia; sometimes pain on micturition, apparently only when clots had to be passed; wasting, and the presence of a tumour in the abdomen.

M. B., age 62, married at the age of 27, a widow since she was 40, has had six children. She was admitted to the London Hospital under my care on 29th of December, 1887, complaining of a tumour in her right side, and of having passed blood with her water.

History of the illness.—Nine or ten months ago she passed "blood instead of water." The next morning after getting up she was attacked with severe pain in the right iliac region and in the stomach. She passed a motion, but this did not relieve the pain. A doctor who was called in, declared the lump in her side to be a fæcal accumulation, and ordered her some aperient medicine, which gave her some relief.

Two or three months afterwards she again passed a large quantity of dark-coloured blood together with a few clots. The passing of it was accompanied by a good deal of pain. Since then she has been losing flesh, and feeling weak.

She first felt pain on passing her water seven months ago, and has suffered from it occasionally since, especially six weeks ago, when it was of a severe cutting character. Until a month ago she had to get up at night to pass water, but lately she has not had to pass her water with undue frequency.

December 29th.—In the right lumbar region there is felt a hard mass moving on respiration, and easily separable from the liver. It is very freely movable on manipulation. The mass feels solid, and like a movable kidney, only it is larger than a healthy kidney, and in places the surface of the tumour is somewhat nodular.

It is not tender.

When the finger is laid lightly on the abdomen over the tumour, there is resonance, but less than in the corresponding iliac region.

When the finger is pressed down on the surface of the tumour, the note obtained on percussion is dull.

Bladder.—The sound passed 4½ inches into the bladder, measured from the external orifice of the urethra. No pain caused by passing it.

Urine.—Alkaline, sp. gr. 1008, smoky in colour, contained albumen, and on standing a deposit formed, which was found to contain blood corpuscles and pus corpuscles.

On another occasion the urine was acid, and on standing gave a deposit in which blood corpuscles were seen, though the guaiacum test gave a negative result. I thought the case was one of malignant disease affecting a movable kidney, and transferred the case to the surgical side for operation.

The tumour was removed on January 20th, 1888, and found to be what had been expected.

On cutting the kidney open there was seen a partially decolorised clot forming a cast of the pelvis of the kidney. The malignant growth was in the form of white circumscribed nodules, the projection of which caused the unevenness of the surface referred to above.

The patient unfortunately died of peritonitis a few days later.

CHAPTER XIX.

MALFORMATIONS—STERILITY.

Malformations.—These will be merely mentioned as they are all rare, and most of them very rare.

1. **Of the vulva.**—All malformations of the vulva are instances of arrested development. The following five figures from Schroeder illustrate stages in the development of the vulva, terminating in the normal condition of parts (Fig. 132); any one of the conditions represented in the first four figures may persist, and constitute a malformation.

In figure 128 we have the allantois, the rectum and

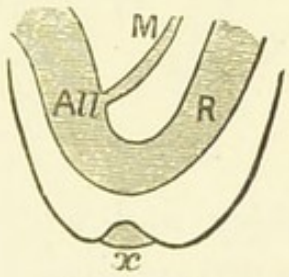

FIG. 128.

Müller's ducts communicating, but shut off from the exterior.

This condition, absence of the vulva, is found in some monstrous fœtuses.

In figure 129 a depression of the skin has established a

FIG. 129.

communication with the exterior, but the rectum, bladder, and vagina both open into a single passage, or cloaca.

In figure 130 the tissues between the rectum and blad-

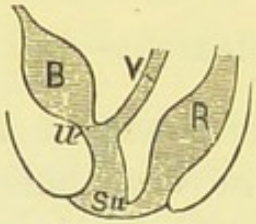

FIG. 130.

der are seen to be descending, so as to divide the common opening into an anterior part—the uro-genital sinus, and a posterior part—the anus.

In figure 131 the perineum has now been completely

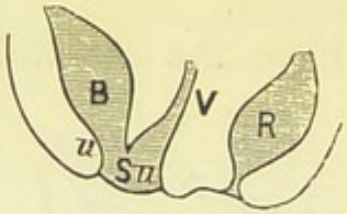

FIG. 131.

formed, but the bladder and vagina still open into a common opening, the uro-genital sinus.

In figure 132 the uro-genital sinus is divided by descent

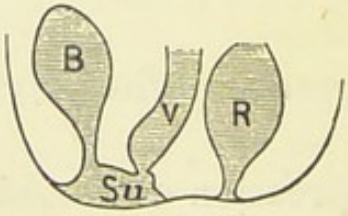

FIG. 132.

of the tissues between the bladder and vagina into an upper part, the urethra, and a lower part, which forms the vestibule, thus completing the normal arrangement of the parts.

2. **Of the uterus.**—It is easy to understand the various malformations that occur, if it be borne in mind that the Fallopian tubes, the uterus, and vagina are

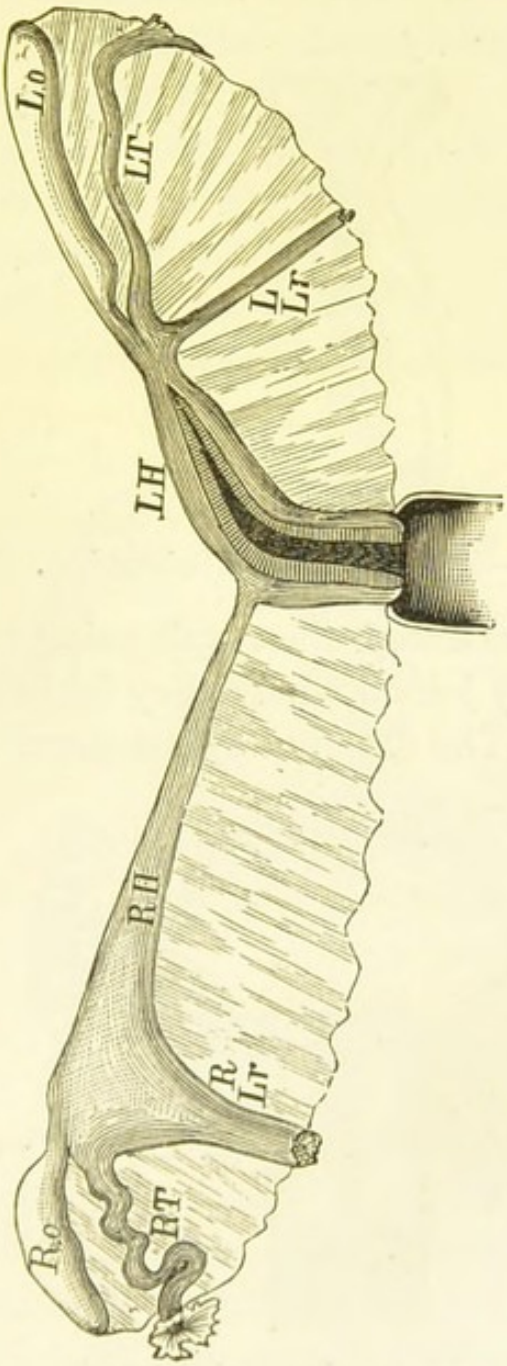

FIG. 133.—Uterus unicornis (Schroeder).

LH., *Lo.*, *LT.*, *LLr.*, uterine horn, ovary, tube, and round ligament of the left side *RH.*, *Ro.*, *RT.*, *RLr.*, those of the right side.

developed from two tubes—Müller's ducts; these remain separate above, forming the Fallopian tubes, but below they coalesce, the septum between them being absorbed, to form the uterus and vagina.

The following malformations are described:—

1. *Uterus unicornis.*—Here one of Müller's ducts has not developed (Fig. 133).

2. *Uterus duplex.*—Both Müller's ducts have developed,

FIG. 134.—Infantile uterus (Schroeder).

but they have not coalesced, the result being two almost distinct uteri, merely joined where they lie in contact.

3. *Uterus septus.*—The external appearance is that of

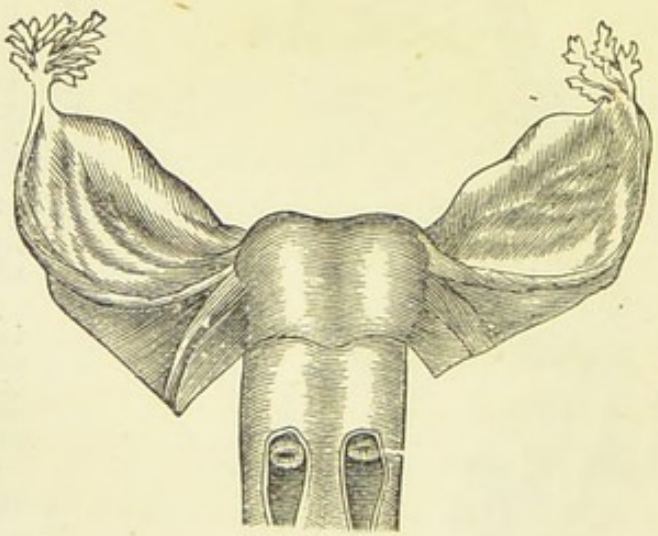

FIG. 135.—Uterus duplex (Thomas).

a normal uterus, but on section the uterine cavity is seen more or less distinctly sub-divided into two. The vagina may be single or double (Fig. 137).

4. *Uterus bicornis.*—The external appearance here is not that of a normal uterus, as there is sulcus at the fundus, dividing it into two horns.

The cavity may be completely divided into two by a septum, or incompletely, there being two cavities above, and a single cervix.

In rare cases the uterus may be rudimentary or absent; in such cases the ovaries are usually absent, but they may be present.

Infantile uterus.—Here the uterus in the adult retains its infantile characters; that is to say the cervix

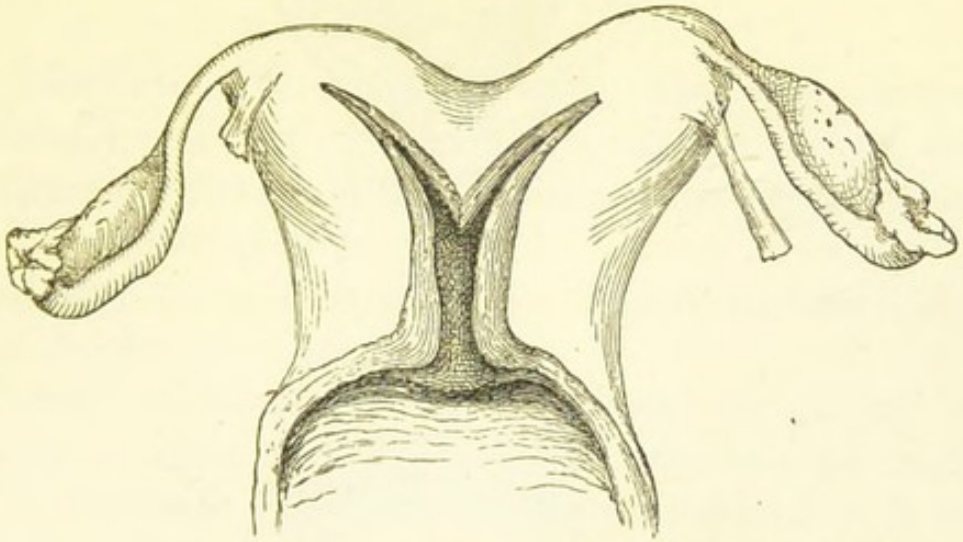

FIG. 136.—Uterus bicornis (Schroeder).

is relatively well developed as compared with the body, which forms only a quarter or thereabouts of the whole length of the uterus. The whole uterus is small, one and a half to two inches long. In such cases the vagina and ovaries are also usually incompletely developed.

Congenital atrophy of the uterus.—Here the relative proportions of the body and cervix are normal, but the whole uterus is small. Usually there is a very marked anteflexion of the uterus, and the vaginal por-

tion of the cervix points forwards. In such cases if menstruation occurs at all, it is irregular and painful, and the function is late in beginning. The menopause occurs early.

Malformations of the vagina.

The vagina may be absent.—The uterus and its appendages may in such cases be either rudimentary or well developed; in the latter case the non-development of

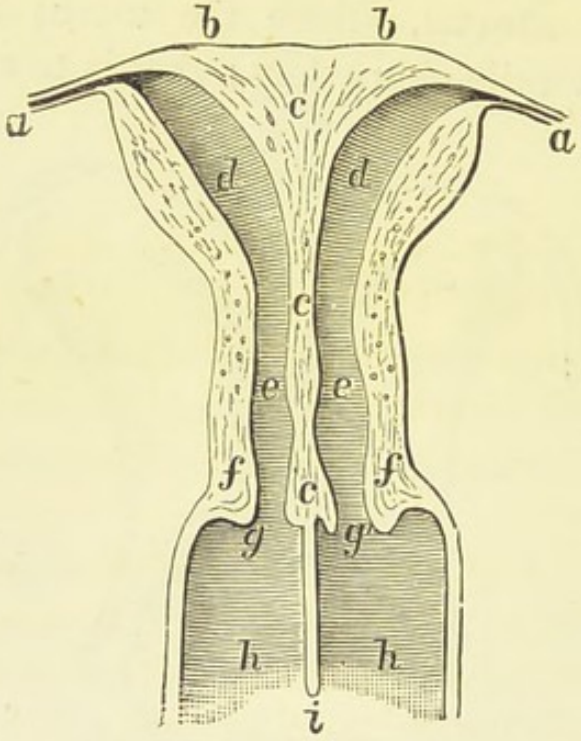

FIG. 137.—Uterus septus (Schroeder after Kussmaul).

the vagina causes retention of menses (Hæmatokolpos, Hæmatometra).

The vagina way be double.—There is a septum dividing the vagina wholly or partially into two separate parts. When there is a double vagina, and also a double uterus, on one side there may be occlusion of the lower part of the vagina, the other opening as usual; on the occluded side there will be retention of menses. This is called "unilateral hæmatokolpos."

Atresia or occlusion of the genital canal.—This may be congenital or acquired.

In congenital cases it may be due to either imperforate hymen, occlusion of the vagina, or less commonly occlusion at some part of the cervix.

Acquired occlusion is due to inflammation, followed by adhesion of the inflamed surfaces. Injuries to the vagina and cervix during labour, and sloughing of the vaginal walls after acute specific fevers, account for most of these cases.

STERILITY.

Dr. Matthews Duncan has shown that there is no reason for regarding a woman as probably sterile till three complete years of married life have passed without the occurrence of pregnancy.

Etiology.—The local causes to which sterility may be ascribed are:—

1. *Pelvic peritonitis which has obliterated the openings of the Fallopian tubes.* When this has occurred on both sides, so that both Fallopian tubes are occluded, it is of course impossible for an ovum to reach the uterus, and the sterility is absolute. This is by far the commonest local cause of sterility.

2. *Morbid conditions of the endometrium.*

Corporeal endometritis.

Fibroid and other polypi.

3. *Imperfect development of the uterus or ovaries.*

As regards the above three sets of causes we can have no doubt of their influence.

4. *All causes of pain on intercourse.*—Particularly if it is severe enough to give rise to vaginismus.

We must not forget that the fault may be with the

husband,* and it is a fact that the same woman may be sterile with one husband and fertile with another.

There is a very strong probability against any narrowing of the cervical canal, short of actual occlusion, being the cause of sterility in any particular case. This is shown by Pallen's statistics, quoted by Galabin, where in 337 cases of sterility, the cervix was incised, only 13 or 14, however, becoming pregnant afterwards, which, as Dr. Galabin says, is not a greater proportion than might be accounted for by coincidence.

Treatment.—If the patient has not been married three years, we need only attend to the general health; till then, there is no reason for her to think she will have no children. If, however, there is pain on coitus, we endeavour to discover the cause, and treat it in a suitable manner. If the pain on coitus lead to secondary vaginismus, we may expect to cure the vaginismus by removing the cause. In primary vaginismus, *i.e.*, where we can discover no local cause, the prospect is unsatisfactory, though we may try the treatment recommended on page 111.

In face of the strong probability against narrowness of the cervical canal at any part being the cause of sterility in any given case, it is undesirable to resort to incision of the internal or external os. If the patient suffers from spasmodic dysmenorrhœa (which is common in cases of sterility), and there is nothing abnormal to be made out by physical examination, we may endeavour to cure the dysmenorrhœa by dilating the cervix as recommended when discussing dysmenorrhœa.

* M. Pajot in a recent lecture, basing his observations on notes of 400 cases, concludes that of 100 sterile marriages of from two to fourteen years duration, the husband is at fault in from fifteen to twenty cases. (See *Sterility and Impotence*, Ultzmann, translated by Arthur Cooper).

APPENDIX A.

Note on the Systematic Treatment of Nerve Prostration and Hysteria—The Weir Mitchell Treatment.

This plan of treatment, originally introduced by Dr. Weir Mitchell, of Philadelphia, has been brought into notice in this country by Dr. Playfair.

The cases for which it is suitable are those where careful examination discovers no organic disease of the nervous system, and where some one or more of the symptoms commonly known as hysterical are present. The patient is a "worn and wasted, often bedridden, woman, who has broken down either from some sudden shock, such as grief, or money losses, or excessive mental or bodily strain. At first perhaps there may have been only a debility, constantly, however, on the increase, daily more and more yielded to, until at last all power of effort is lost, fostered too often by injudicious sympathy, and the constant nursing of devoted relatives and friends. Coincident with this is the total loss of appetite, the profound anæmia, and the consequent wasting of the tissues, so characteristic of these cases. On the soil so prepared are often developed the graver protean forms of hysterical disease, such as paresis or paralysis, vomiting, disorder of motion, hystero-epilepsy, etc."*

* *The Systematic Treatment of Nerve Prostration and Hysteria*, by W. S. Playfair, M.D.

The chief points in the treatment are :—

1. Removal of the patient from her surroundings, to lodgings or a hospital for private patients, where she can be isolated, no one being allowed to see her but her doctor and nurse.

Fig. 138.

2. The patient at first is to be kept absolutely at rest in bed.

3. The use of mechanical tonics to produce muscular waste. This is done partly by systematic kneading and

rubbing of the muscles by a trained nurse, and partly by making the muscles contract by applying the faradic current.

In this way the patient's power of assimilating food is greatly increased.

FIG. 139.

4. Systematic over-feeding.

Dr. Playfair considers it essential that the patient should be removed from her surroundings, and holds that any attempt to carry out the treatment at the patient's own home is likely to end in failure.

Another point of importance is the selection of a suitable nurse, she must be capable of exerting a moral control over the patient, and yet on the other hand she must be kind, and able to make herself an agreeable companion. Dr. Playfair often finds it necessary to change the nurse, if in a few days the case is not going on satisfactorily, and in this way success has been the result where failure appeared imminent.

For three or four days the patient is kept on a milk diet alone, then massage is commenced, at first for about twenty minutes, afterwards for 1½ hour night and morning. The faradic current is also used for from ten to twenty minutes, night and morning. By about the tenth day the patient is taking about two quarts of milk and three full meals, in addition, as in the following diet sheet taken from Dr. Playfair's book.

Breakfast consisting of a plate of porridge and cream, fish or bacon, toast and tea, coffee or cocoa.

Lunch at one p.m., of fish, cutlets or joints, and a sweet, such as stewed fruit and cream, or a milk pudding.

Dinner at seven p.m., consisting of soup, fish, joint, and sweets; and in addition a cup of raw meat soup at seven a.m. and eleven p.m.

Dr. Playfair finds professional rubbers unsatisfactory, he prefers to choose a strong intelligent woman who knows nothing of massage, and train her according to the directions given in Dr. Weir Mitchell's book.

The treatment lasts from six to eight weeks.

The photographs which have been kindly placed at my disposal by Dr. Playfair, are from a case of his own treated according to the plan just described. One (it is needless to say which) is a photograph of the patient before the treatment was begun, the other was taken at the end of six weeks.

APPENDIX B.

Notes of seven cases in which the cervix was rapidly dilated by means of Hegar's dilators.

CASE 1.—E. S., aged 39, married 16 years, seven children. Admitted into the London Hospital complaining of losing a large quantity of blood on and off ever since a miscarriage she had five months previously, when about three months pregnant. On admission it was found that some blood was escaping from the external os, and that the uterus was enlarged. The sound passed three inches and a half. Four days later, under ether, the cervix was rapidly dilated; the finger passed into the uterine cavity came on several irregular prominences. These were removed as completely as possible. They looked like pieces of placenta. Pure carbolic acid was applied to the interior of the uterus. The temperature after the dilatation was normal for four days. On the evening of the fifth day there was a rise to 101·4°; the next day the temperature was again normal and continued so. No cause for the rise on that one day was discovered, the patient's general condition being perfectly satisfactory otherwise. Three months later she came to see me. Since leaving the hospital she had menstruated regularly, the periods lasting four days only, and recurring at the proper time.

CASE 2.—I. L., aged 40, married 20 years, six children, the last nine years ago, four miscarriages, the last before the birth of her fifth child. Admitted into the hospital complaining principally that for the previous six months her periods had occurred every fortnight; before that she had been quite regular. No cause for the bleeding was discovered on examination, and accordingly, the cervix was dilated rapidly under ether. Nothing, however, was found in the cavity of the uterus to account for the bleeding, and it seemed probable that the menorrhagia was due to the menopause being about to occur earlier than usual. In this case the temperature after dilatation of the cervix never rose above normal.

CASE 3.—M. W., aged 35, married 16 years, twins a year after

marriage, two miscarriages, the last eleven years and a half ago. Admitted to the hospital on account of menorrhagia of fifteen months' duration. She had been under treatment in the out-patient department, but had obtained no relief. On examination, the uterus was found to be enlarged, and the sound passed four inches. The uterus was freely movable. The vaginal portion of the cervix was healthy. The cervix was rapidly dilated under ether. On passing the finger into the body of the uterus, soft irregular projections, particularly extensive on the right side, were met with. These were thoroughly scraped away with a spoon, and tincture of iodine applied to the interior of the uterus. Portions of the substance removed, on microscopical examination afterwards, showed a glandular structure; sections showed very large irregular cavities lined with columnar epithelium in a single layer. The temperature after dilatation remained normal. I have seen this patient at intervals since; she is now regular, and does not lose too much.

Case 4.—E. B., aged 45, married 23 years ago, three children, the last sixteen years ago, three miscarriages. Admitted chiefly on account of having lost too much at her periods for the last eleven months. During this time the flow once lasted nine weeks and once five weeks, and often a fortnight. On examination there was found an erosion on the anterior lip of the cervix; for a time it was thought doubtful whether it was not commencing malignant disease. Under local treatment, however, the erosion improved rapidly, but the menorrhagia was still as bad as ever; the cervix was therefore rapidly dilated. A little sessile lump, the size of a split pea, was found in the cavity of the uterus near the point of entrance of the right Fallopian tube; it did not admit of removal. The temperature after dilatation remained normal in this case also. This was probably one of the menorrhagic cases commonly met with, apart from local disease, about the time of the menopause.

Case 5.—H. H., age 37, married fifteen years, no children, one miscarriage ten years ago. Admitted complaining of having lost too much at her periods for the last six years, sometimes bleeding for three weeks at a time. The cervix was rapidly dilated till the finger could be passed into the uterine cavity. Nothing abnormal was detected. In this case it is worth noticing that the time occupied in dilating the cervix was only twenty minutes. The patient had had no children, and the external os was small. The temperature on the second day was 100·8° in the evening, but except on that occasion was normal throughout.

CASE 6.—E. M., aged 39, married eight years, had one child when she was fifteen years old, none since. Admitted into the hospital complaining of having had a red vaginal discharge for three months. Three months previously she had one of her ordinary menstrual periods, but instead of this passing off in the usual way, she continued to have a red discharge till she came to the hospital. In the out-patient department, no cause was found for the hæmorrhage, and she was therefore taken in, that further investigations might be made. When the anterior lip of the cervix was seized with a volsella preparatory to dilatation, the lip was necessarily somewhat everted, and it was at once evident that there was malignant disease within the cervical canal that had not extended beyond the external os. The cervix was rapidly dilated, and it was found that there was extensive malignant disease in the cervical canal. The cavity of the body of the uterus was healthy. As here we are only concerned with the case so far as it was affected by dilatation of the cervix, I need only say that on the evening of the day when dilatation was performed the temperature was 100·2°; but after that it remained normal.

In the preceding six cases dilatation of the cervix was performed in the non-pregnant condition, in the following case it was done at the sixth month of pregnancy for the purpose of terminating the pregnancy on account of persistent hæmorrhage that was seriously affecting the patient.

CASE 7.—Mrs. F., aged 37, married thirteen years, had had four children, the last five years ago, no miscarriages. She was brought to me by Dr. Cockell, of Dalston, complaining of attacks of pain from time to time across the lower part of the abdomen and back and of irregular hæmorrhages. Three months before I saw her she had an attack of bleeding lasting five weeks; then she went a month free from bleeding, then it came on again, small clots being passed. The bleeding continued till the time I saw her. The uterus was about the size it reaches at the sixth month of pregnancy. The patient was a good deal pulled down by the bleeding, and it was clearly desirable that the uterus should be emptied as soon as possible. Accordingly, the cervix was dilated with Hegar's dilators. As soon as it was sufficiently open to admit my finger, I felt the placenta attached right over the internal os; in fact, it turned out to be a case of placenta prævia. I separated the placenta all round as far as I could reach, and then ruptured the membranes, brought down a leg, and

so delivered. The whole period occupied from the time she began to take the anæsthetic till the uterus was emptied, was one hour and twenty minutes. Strict antiseptic precautions were used, the vagina being washed out with iodine water before beginning, and the uterus washed out afterwards with the same antiseptic. Two or three injections of ergotin were given hypodermically during the operation. Dr. Cockell wrote to me some time after to say that the case had done extremely well, and that the temperature had never risen above normal. I certainly think that if this case—one of placenta prævia—had been treated by tents instead of the rapid method of dilatation the record would have been a very different one.

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