

ovariotomy in the third month, not detecting the pregnancy until the ovarian tumor had been removed. The patient recovered well, and was delivered of a fine child at term.

Mr. Wells says, "If inadvertently the uterus be penetrated, if any conclusion can be drawn from the case in which I made this mistake and emptied the uterus, and two other cases in which the same mistake was made by other surgeons, who did not empty the uterus, but closed the puncture in its wall by wire sutures, both patients having died after aborting, while mine recovered, it would appear to be the safer practice to empty the uterus."

Wells relates four cases, in one of which ovariotomy was performed at the fourth month of pregnancy, after rupture of the cyst and peritonitis; in the second, third, and fourth operation was a matter of election to avoid other dangers. The result was successful. All three subjects gave birth to living children at term.

When pregnancy supervenes on ovarian dropsy, there are three, perhaps four, courses out of which to select.

*a.* We may *leave things alone*, simply watching, prepared to act, if urgency from rupture of the cyst, axial twisting, or hemorrhage or excessive pressure arise. In a considerable proportion of cases pregnancy goes on to term, and the labor is completed happily. Is it wise then to stand by and trust to the chance of this issue? If we determine to anticipate danger, we may

*b. Tap the cyst.* This will, of course, at once lessen the inconvenience of pressure, and the danger of bursting.

*c.* Or we *act upon the uterus*. We may lessen the distension and risk of rupture by drawing off the liquor amnii; that is, by inducing labor, postponing the question of dealing with the tumor, until the case is reduced to its simplest expression, by eliminating the pregnancy. I have discussed this question in my work on *Obstetric Operations*, and have there given the reasons which appear to me to weigh in favor of this course.

*d.* The opposite view, that of *acting on the ovarian tumor by tapping or extirpation*, is well argued by Mr. Goddard (*Obstr. Trans.*, 1871). No doubt in certain cases, either proceeding may be preferable to the other. But, as a general rule, I believe experience will show that it is better to act first upon the pregnant uterus.

Mr. Wells refers to five patients whom he has tapped during pregnancy, one of them three times, one twice, and three once. In all these women great relief was afforded by the tapping, no ill effect of any kind was observed to follow it, and in all the children were born alive, after labors of moderate duration.

There is a peculiar state of nervous and vascular tension produced by pregnancy which should be taken into account. Pregnancy induces great irritability of the nervous centres, spinal and cerebral. This irritability accounts for the greater risk of abortion, of vomiting, if interference be resorted to. It also is a source of danger if accident or complication arise, as rupture of the cyst, or inflammation. And as this complication may be more serious than the operation, the operation may become justifiable as the lesser danger.

Believing, as I do, that a woman in whom pregnancy is complicated with an ovarian cyst, is in a position of imminent peril; that her life is threatened at any moment by some catastrophe which may strike so suddenly and so violently as to leave no time for action, my opinion is decidedly in favor of eliminating the pregnancy. I have acted on this principle on several occasions with a successful result, not counterbalanced by a single unsuccessful one.

If the cyst actually burst, or give rise to hemorrhage or peritonitis, there should be no hesitation in attempting removal of the tumor, which is the cause of immediate danger.

*Ovariotomy by the Vagina.*—In suitable cases where the tumor is small, and presumably free from adhesions, Thomas recommends removal through the roof of the vagina. The occasional extrusion of tumors by bursting through this route under the straining of labor lends support to his expedient. Thomas proposes to open Douglas's pouch by the vagina, to puncture the cyst, then to draw it out, to tie the pedicle and cut off the tumor, returning the stump into the abdomen. Some dermoid cysts might admit of removal in this way; but the frequent complication with adhesions would prove a formidable obstacle.

*Normal Ovariotomy.*—The subject of ovariotomy cannot well be dismissed without reference to the operation of removing the healthy working ovaries, proposed by Dr. R. Battey, of Georgia, U. S. A. The question, of course, does not apply here. This form of "spaying" will be referred to more particularly when discussing the treatment of fibroid tumors of the uterus.

## CHAPTER XVII.

SPECIAL PATHOLOGY OF THE UTERUS; DEVELOPMENTAL FAULTS; UNILATERAL DEVELOPMENT; UTERUS BICORNIS; UTERUS BIPARTITUS, BILOCULARIS; HYPERTROPHY; ATROPHY.

BEFORE entering upon uterine pathology proper, it will be useful to take a rapid review of the congenital or developmental abnormalities of the uterus. This review is necessary, because these abnormal conditions are often attended by disorder of function, and give rise to symptoms, the interpretation of which would be extremely puzzling, if not sometimes impossible, unless this association were present to the mind. Some of these conditions have been referred to in the history of Retained Menstruation, and of Ectopic Gestation. The following summary is chiefly drawn from Rokitansky and Kussmaul, and from study of specimens in the London museums. The principal varieties of atresia, congenital and ac-



quired, have been considered in Chapter VII. on "Occult Menstruation;" and in Chapter XIII. on "Ectopic Gestation," that curious form of uterus resulting from arrested development of one horn, has been sufficiently illustrated.

Complete absence of the uterus is extremely rare. When there is apparent absence of the uterus proper, there will be found in one or both sides, behind the bladder, in the peritoneal fold destined to receive the internal genital organs, one or two small flattened roundish bodies, solid, made out of uterine substance, and with a cavity lined with mucous membrane. These are rudimentary uterine horns, to which the Fallopian tubes have a distinct relation, although sometimes these are absent, and sometimes form a blind worm-like tube closed at the juncture with rudimentary uterus, or opening into it.

This uterine development in the form of two oval hollow rudiments, from which a Fallopian tube runs outwards to its ovary, is Mayer's *uterus bipartitus*. Inwards, and between the same peritoneal folds, these uterine rudiments are united by a closed cord of uterine substance. At the seat of the uterus is found a mass of connective tissue which, mingled sparingly with the just mentioned cord of uterine fibres, assumes the outline of a uterine body, and is inserted below into the roof of the vagina. In this roof a stellate scar is sometimes seen.

When one of these rudimentary uteri has developed into a uterine body, then there appears the *one-horned uterus*, *uterus unicornis*. When both are developed, then we have the *two-horned uterus*, *uterus duplex*.

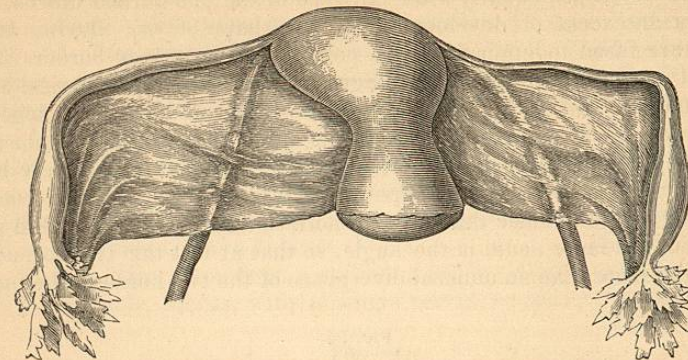
The *one-horned uterus* always appears as one-half of a uterus, that is, as the unpaired half of a two-horned uterus, and is either a right or a left uterus. There is a cylindrical or spindle-shaped prominence on the corresponding side of the uterine body, from the upper end of which runs the tube. Compared with the normal uterus, the one-horned is smaller; the vaginal portion especially is smaller; in the cervix the *plicæ palmatæ* are nearer to the convex border of the uterus; the broad ligament on the side of the missing uterine half is larger, often of extraordinary size.

The uterine rudiment of the other side presents all the above conditions: it is a solid or a hollow little body; it sometimes lies at a considerable distance from the one-horned uterus in a wide-spreading peritoneal fold; and sometimes it is altogether wanting. The corresponding ovary and tube follow the same rule. The junction between the rudimental and the one-horned uterus presents the greatest diversities. At times there is none. At times there runs from the rudiment a round or flat-round cord, composed of uterine parenchyma in an oblique direction towards the one-horned uterus, and inserts itself into, or above the internal orifice, sometimes higher, sometimes lower. This cord is solid, or contains a canal which connects the cavity of the one-horned uterus with that of the rudimental uterus, and makes this last susceptible of impregnation. But we have seen, especially from Professor Turner's researches, that impregnation possibly takes place even where the structure uniting the rudimentary horn with the developed horn is solid.

Here it may be useful to place the following figure taken from Tiedemann (Fig. 92). It is described as a "uterus strongly developed to the

right, the neighborhood of the isthmus atrophied." It is probably an instance of imperfect development of the left horn of the uterus. In such

FIG. 92.

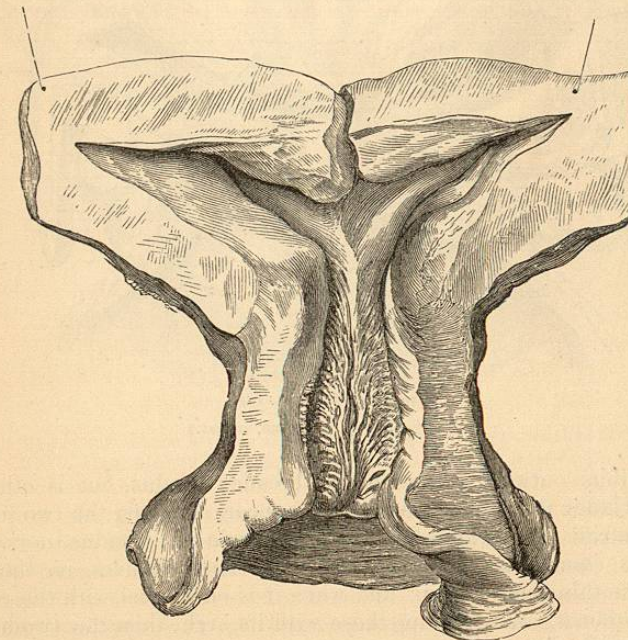


Uterus strongly Developed to Right. Probably Imperfect Development of Left Side.

(From Tiedemann.)

cases it is probable that the general development of the uterus is also defective. I introduce it because I believe it represents a formation which

FIG. 93.



Double or Bicornuate Uterus, with a Single Cervix and Os Uteri (R. B.).

(From Nature, from a specimen in Guy's Museum, 2261<sup>72</sup>.)

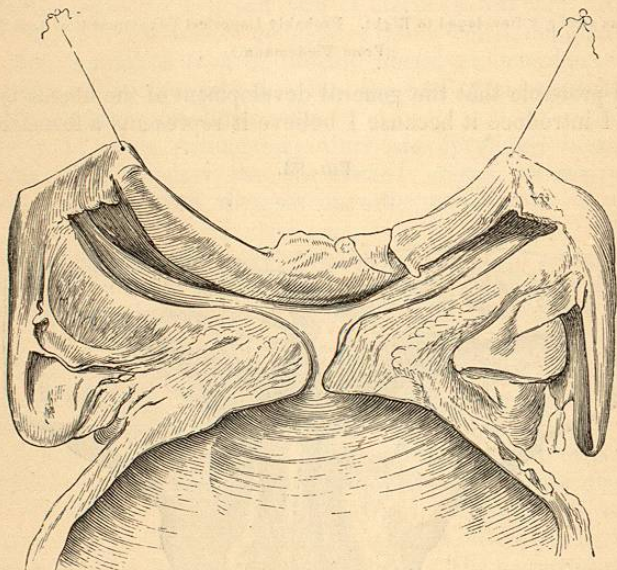
is not very infrequent. I have many times met with cases in which the uterus resembled this one in size and position, there being a small os



uteri scarcely projecting into the vagina. They have been brought under observation on account of dysmenorrhœa, amenorrhœa, or sterility.

When, as already said, the two rudiments constituting the uterus bipartitus are developed equally after the type of the one-horned uterus, there appears an excess of development in the shape of *two uterine halves*, which are fused together from one point of their convex borders in the form of a uterus bicornis. The degree of two-hornedness varies, and is determined by the spot from which the two uterine halves run together. The lower this is, the more obtuse is the angle of union, and so much the greater is the divergence of the two halves. It falls very rarely below the *orificium internum*, and here the two horns run into one common cervix in such a manner that they lie horizontally. The higher the place of union, the more acute is the angle, so that at last the two-hornedness is nothing more than an unusual divergence of the two horns of the uterus,

Fig. 94.



Bicornuate Uterus (R. B.).  
(Royal College of Surgeons, ad nat.)

which exhibits outwardly a somewhat broader fundus, but is otherwise normal. Under these conditions there appears between the two uterine-halves a uterine mass which has the significance of a fundus uteri. The higher this connecting bond between the uterine-halves is, the more prominent is this significance; and when it is on a level with the ends of the uterine horns, and overtops these with its arch, then the two-hornedness has vanished.

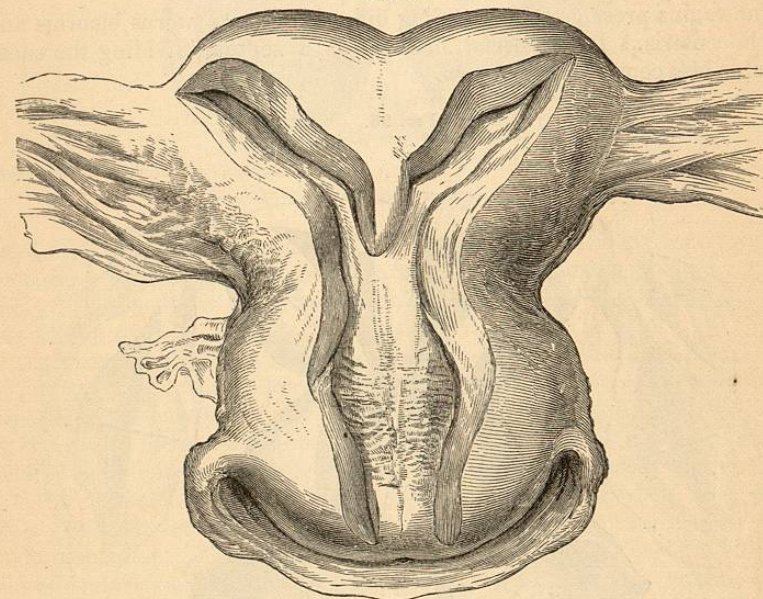
This is illustrated in Fig. 95, taken from a girl who died of phthisis at the age of seventeen. She was well developed. The Graafian vesicles were numerous and large. The vagina was well-formed. The horns

open into a common uterine cavity. The walls are unusually thick; the fundus, although depressed in the centre, indicating the original two-hornedness, is straighter than in Fig. 94.

The bicornuate uterus is illustrated in a remarkable specimen in the Royal College of Surgeons, taken from a mulatto (*Physiological Series*, 2828). In this specimen the body of the uterus is drawn out into two long horns so that the line representing the fundus between the two horns is a long concave arch. More commonly the two horns continue parted for an indeterminate space by a septum descending from the fundus to a variable length. It may reach as low as the *os uteri internum*, or even the *os externum*. If the septum is incomplete, it ends below in a sharp edge, but it commonly stretches lower down, along the posterior wall, in the form of a ridge, like a raphe.

In Fig. 95, also taken from a specimen in Guy's Museum, No. 2261<sup>80</sup>, is seen a double uterus, with a single cervix, so that only one *os uteri*

Fig. 95.



Bicornuate Uterus, the Septum dividing the Uterine Cavity into two, descends as far as the Isthmus.  
(R. B.). (From Nature, from a specimen in Guy's Museum.)

opens into the single vagina. Such a case must be recognized in the living, by feeling the indented fundus, as well as by the sound, which might perchance enter the two cavities one after the other.

In other cases the division extends along the cervical portion, so that two *ora uteri* open into one common vagina. Such a case may be very puzzling in labor, as I once experienced. I was called in consultation to a case of puerperal convulsions, in order to deliver the woman. The surgeon in attendance, using his right hand, always touched the child's head presenting at the *os uteri*. I, as is my custom, examining with the



left hand, could only feel the head through a thick solid wall of flesh. It was not until I followed exactly the clue indicated by my friend that I touched the head, and could apply instruments. There was a double uterus. My finger had first entered the empty side.

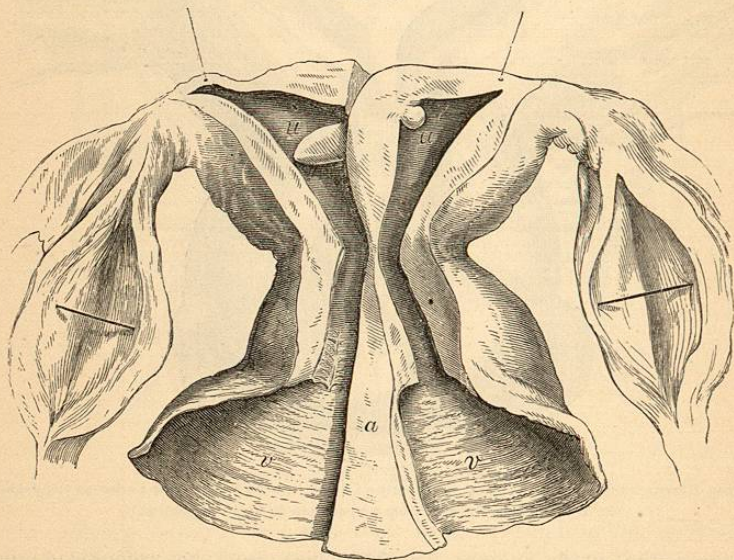
In Cruveilhier's magnificent work is a beautiful drawing of a double uterus, taken from a woman who died of puerperal fever. The uterus which contained the foetus presents much the same appearance as is usual after delivery, in the single uterus. The other uterus is enlarged in sympathy with its impregnated fellow, but is considerably smaller.

In a few very important cases there is atresia of one half of the uterus bicornis.

To the two-hornedness, with formation of a septum, belongs the *uterus bilocularis*, which consists in the septum-formation in a uterus, normal as regards the degree of divergence of its horns. The septum in the uterus bilocularis presents all the variations seen in the uterus unicornis. Its presence is often signified by a greater breadth of the uterine body, and sometimes by a shallow furrow along its posterior wall.

The vagina presents corresponding diversities in the uterus bicornis and the bilocularis. It is normal, or there is a septum, dividing the canal more or less completely into two.

FIG. 96.



Double Uterus and Vagina (R. B.). (From Nature, from a specimen in Guy's Museum.)

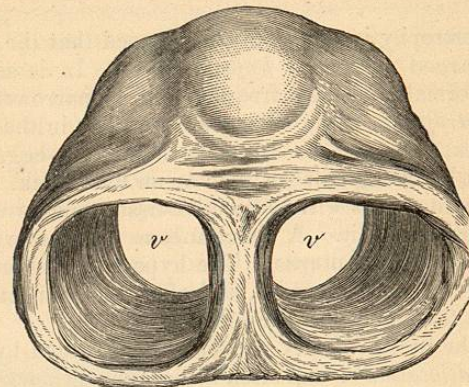
*u, u.* The right and left uterine cavities, communicating by separate cervical canal and os into *v, v*, right and left vaginae.

*a.* The septum of dense fibrous tissue, which runs along the median line.

The septum may extend all along the uterus and vagina. The pathological relations of this form of uterus have been referred to in the Section on "Occult Menstruation." The condition is not, I believe, very uncommon. Most museums can show a specimen; and every now and

then a living specimen comes under notice, either accidentally or on account of some difficulty in the functions of menstruation or labor. But these difficulties are by no means necessary. Things may go on very well, one vagina and one uterus acting. The Figs. 96, 97, are taken from a preparation (2261<sup>85</sup>) in Guy's Museum. There is one equally typical in St. Thomas's. The Guy's specimen was taken from a woman

FIG. 97.

Transverse Section of the Vaginae of the same Specimen as the preceding Figure showing, *v, v*, the Separate Vaginal Canals (R. B.). (Nat. size.)

aged fifty, who died of influenza; she had been married twenty years, remaining sterile. The tubes and ovaries were matted together by adhesions. The body of the uterus seen externally was single, only a slight depression marking the internal division.

As regards menstruation, conception, and labor, the described forms of uterus behave as follows: The constituent rudiments of the uterus bipartitus are capable of conception; an accumulation of menstrual blood in the cavity of such a rudiment with dilatation of it may happen. Where such a rudiment is connected with a one-horned uterus by a perforated bond of union, it is capable of conception, and so even when it is solid. The gestation terminates, as in tubal gestation, by rupture, within three or four months. The uterus unicornis and the uterus bicornis, as well as the bilocularis, are capable of conception. In the two last, repeated gestations occur interchangeably, sometimes in one, sometimes in the other uterine half. When conception takes place in one half, a decidua is formed in the other half, and grows during the early part of the pregnancy equally with the pregnant half. Moreover, twin-pregnancy may occur, not only in one uterine half, but pregnancy has been observed in the two halves simultaneously. In this case one foetus is usually arrested in development.

In these uterine forms the ruptures, abortions, tedious labors observed are accounted for by the smaller mass of the uterus, and by the diminution of the uterine fundus.

When there is atresia of one-half of the uterus bicornis, retention of menstruation, with its perilous consequences, will occur. Rokitansky



relates a case where the fluid retained in the closed half caused perforation of the septum, and discharge into the half which communicated with the vagina.

*Abnormal size of the uterus* may originate in foetal life or may arise later, from premature sexual maturity. It consists in *hypertrophy* and *dilatation*.

Hypertrophy affects the whole uterus or only a part of it. As partial hypertrophy, that of the vaginal-portion is especially deserving of attention.

General hypertrophy is commonly so formed that the uterine cavity is uniformly enlarged (*eccentric hypertrophy*). In lesser degrees the cavity is often normal, and less frequently it is narrowed (*simple and concentric hypertrophy*). The enlargement attains in the first form considerable degrees, becoming as large as a goose's egg, or a fist, and larger; its walls becoming half an inch or an inch thick. The most important enlargement occurs with connective-tissue tumors which prolapse into the cavity or grow in it. A simultaneous elongation occurs in hypertrophy of the prolapsed uterus. The hypertrophied uterine mass is often like that of the normal uterus, and often the connective tissue in it is increased, and thus its consistency is greater.

Dilatation of the uterine cavity is commonly attended by thickening of its walls (*active dilatation*); and often with thinning (*passive dilatation*). It is generally produced by accumulations within, the result of stenosis or atresia at a lower point. In Guy's Museum (2261<sup>72</sup>) is a specimen showing dilatation of the body of the uterus with thinning of its walls. A quantity of albuminous matter had collected within it, and the os internum was closed.

*Abnormal smallness of the uterus* may be the consequence of defective development. The uterus is small from retaining its infantile form, or its growth was arrested. In the latter case it is small throughout, thin-walled, its mucus membrane is thin, its *plicæ palmatæ* very slightly raised. Commonly the other organs, the whole body, are retarded in development, and especially the heart is small.

*Atrophy*.—The smallness may be due to *atrophy*. This may affect the whole uterus, or simply the cervix, or the vaginal-portion.

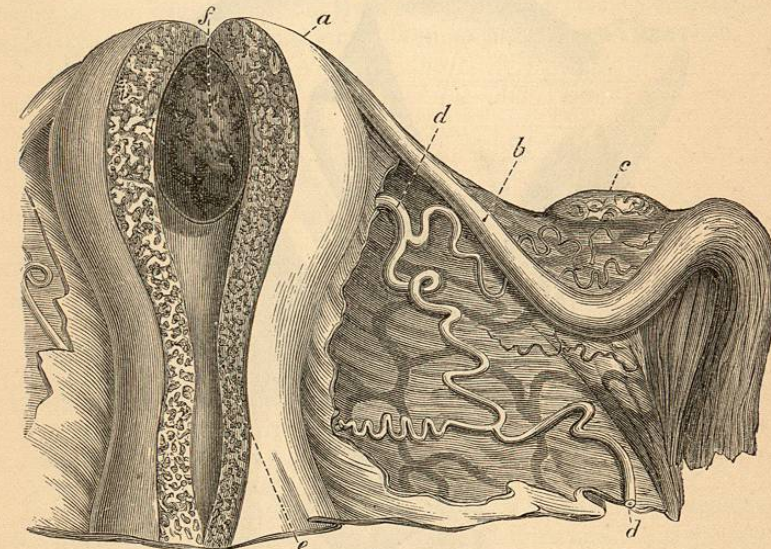
Atrophy of the whole uterus follows chiefly upon chronic catarrh in advancing age; often prematurely upon cessation of menstruation; and sometimes even in younger persons, in consequence of the rapid succession of labors. Mostly, the uterine cavity is narrowed (*concentric atrophy*), and here and there, in the cavity, or at the orifices, there are adhesions of mucous membrane. Often, the uterine cavity is enlarged by the accumulation of secretions. When these adhesions exist (*eccentric atrophy*) the uterine substance is dense, tenacious; or especially in advanced age, softened, pale, penetrated by rigid, widened, calcified arteries, a condition which disposes to bleedings. (See Fig. 98.) Fibrous tumors also lead to atrophy of the uterus.

Atrophy of the cervix is commonly caused by the dragging which it undergoes from the rising of uterine and ovarian tumors into the abdomen. It is drawn out lengthwise, made thinner; the duplicature of the vagina which surrounds the vaginal-portion is unfolded, and the vaginal

roof is transformed into a cone. Then closures of the cervical canal ensue, and even at times a gradual separation of connection.

Atrophy of the vaginal-portion occurs sometimes after repeated labor. Mr. Walter Whitehead relates<sup>1</sup> a remarkable case, in which it seems probable that the uterus and ovaries completely disappeared after labor. A woman, aged thirty-nine, first menstruated at eleven, married at twenty-five, had four children within three years and a half, the first two being born prematurely. Severe flooding took place after the last labor. She had a long convalescence, but there was no history of acute disease. During eleven years menstruation never returned, nor was there the slightest leucorrhœa; she had become quite indifferent to sexual intercourse. For four months previous to birth of last child she had passed large quantities of blood *per anum*. She was a tall, pale, thin woman, with markedly flabby cheeks, and a commencing arcus senilis; the mammae shrunken and flat, with apparent atrophy of gland-structure. No cervix or uterus could be detected; but a small triangular opening was felt and seen in the position of the os. A No. 12 elastic catheter passed, without any pressure, eight inches through the opening. Every mode

FIG. 98.



Atrophy of the Uterus and Ovaries from Ossification of the Arteries.

*a, a*, Uterus laid open; *b*, Tube; *c*, ovary; *d, d, d*, the principal arteries, and several of their smaller branches completely ossified and nearly impervious; the substance of the uterus *e*, containing a multitude of small arteries in the same state; a tumor *f*, composed of dilated veins and cellulo-fibrous tissue, occupying the fundus of the uterus. (After Carswell.)

of examination failed to detect a uterus. The sound passed through the opening could be felt under the abdominal wall, two inches above the umbilicus. It might be conjectured that the sound went through the fundus of the uterus; but repeated examinations, varied in manner, by

<sup>1</sup> Brit. Med. Journal, Oct. 1872.



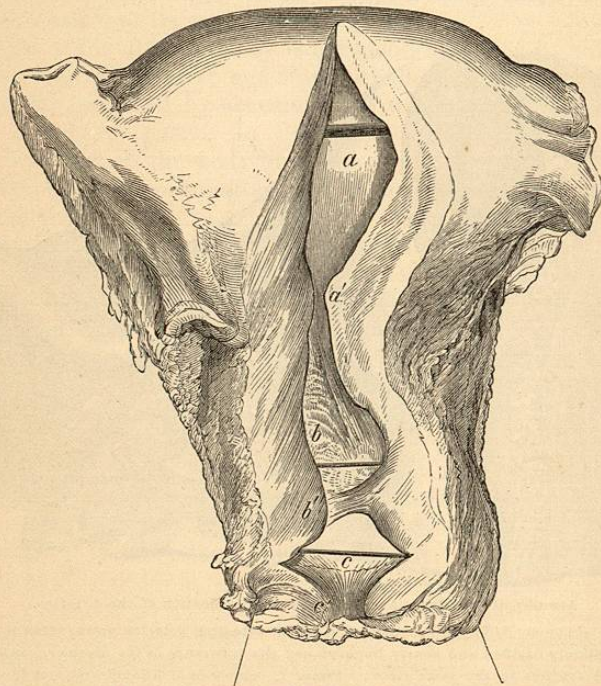
Dr. Thorburn, Dr. Lloyd Roberts, and Mr. Windsor corroborated the conclusion drawn by Mr. Whitehead.

The preceding drawing (Fig. 98) taken from Carswell's *Morbid Anatomy* represents a form of atrophy of the uterus connected with calcification of the ovario-uterine arteries.

*Obliteration of the uterine cavity* is sometimes the result of concentric atrophy; it often results from adhesions following accumulations of mucus, mucous polypi, or connective-tissue tumors.

*Obliteration of the cervix uteri and of the orifices* is commonly caused by closure from pullulating ovula Nabothi. More often the os internum is closed by flexions. Occasionally it is the result of longitudinal dragging of the cervix. The os internum may be closed by cicatrices from lacerations and bruising, from ulcerative loss of substance, from amputation of the vaginal-portion, from the action of cauteries. In aged women, it not unfrequently closes by a process of concentric atrophy, the margin of the ring of the os uteri getting glued up by dense epithelial scales resembling a membrane.

FIG. 99.



Stenosis; Atresia; Dilatation of Uterus (R. B.). London Hospital, Ea. 56, from nat. size ("Dr. Barnes").

Fig. 99, from a specimen in the London Hospital, put up by me, represents closure at three different points of the uterine canal.

This uterus came from a woman aged forty-three, married, barren. It is divided imperfectly into three cavities. The upper two, *a*, *b*, are

hour-glass shaped; the lowest, *c*, about three-quarters of an inch long, is separated from the middle one by a nearly complete fold of mucous membrane. In the middle cavity, the uterus is deeply furrowed, and studded with large gaping follicles. The atresia was no doubt due to endometritis with follicular inflammation.

*Abnormities of Shape of the Uterus.*—As a congenital anomaly, there occurs the congenital obliquity in connection with the uterus bipartitus, unicornis, bicornis, and bilocularis. The most marked form of this is seen when one horn with its tube stands higher than the other, and the vaginal-portion is correspondingly oblique. This uterus lies obliquely in the pelvis, inclining to one or other side of the vaginal roof. (See Fig. 92 from Tiedemann.) The broad ligament of this side is narrower, and the ovary lies nearer to the uterus. Sometimes this uterus is bent in an angular form on that side which is highest. Often the higher side is more dense and bigger.

There are asymmetrical forms of the uterus caused by excessive development of one half of the body of the uterus. When there is bending on this side, the retort form is produced.

Among acquired malformations, there is obliquity from one-sided dragging of a fibrous tumor, or an ovarian tumor, from dragging in hypertrophy of the vaginal-portion, from scars, from various accumulations in its cavity, and from inflammatory adhesions in one broad ligament.

## CHAPTER XVIII.

### GENERAL OBSERVATIONS ON UTERINE PATHOLOGY; EFFECTS OF LABOR AND LACTATION; INVOLUTION IN DEFECT AND EXCESS.

IN studying the pathology of the uterus, it is especially necessary to keep in constant view the peculiarities of structure and the physiology of the organ. No organ in the body undergoes such remarkable physiological changes. At each menstrual period there is increased vascularity, increased volume, increased muscular energy, the development of new tissue, followed by a retrograde process of involution, which effects the return to the ordinary state. At every pregnancy the changes wrought are more wonderful still. Under its physiological influences, the uterus is thus continually subject to alternate hypertrophy and atrophy, or more strictly speaking, involution. The mucous membrane is endowed with extraordinary regenerative power. And these active reproductive and solvent forces inherent in the uterus are constantly ready to be called