

finger in the rectum, showing that Douglas's sac is not filled by intestine. In the dead subject frozen, the uterus with its broad ligaments and ovaries is mostly found lying as close to the posterior wall of the pelvis as the lungs are to the ribs. The rectum passes close by the left border of the body of the uterus. Having examined sections of many frozen subjects, he concludes that there is always anteversion, anteflexion, or ante-fraction of the uterus when intestinal loops are present in Douglas's sac. My own observations confirm those of Claudius. The anterior and posterior walls of Douglas's sac are always in close apposition in the normal condition. It is a potential sac.

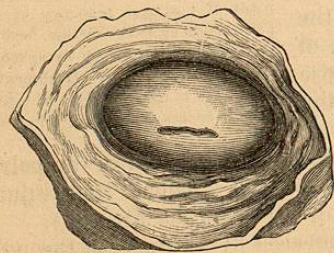
The posterior surface is more convex than the anterior, and can be explored by the finger introduced into the rectum.

The lateral margins of the uterus are slightly concave, thick, and situated between the two laminae of the broad ligaments. They are in relation with the trunks of the uterine arteries, the venous plexuses, the nerves, and the cellular tissue confined within the thickness of the broad ligaments. This cellular tissue is the frequent seat of inflammation and abscess after labor.

The upper border or *fundus* is convex, thick, rounded, and forms the base of the flattened cone which the uterus represents. Clothed with peritoneum, and covered with the coils of the small intestine, the fundus of the empty uterus never rises to the level of the brim of the pelvis; it is therefore only in the diseased state or during pregnancy that it is possible to feel it by the fingers applied to the hypogastrium. In the impa- rous woman the upper border is nearly straight, and on a level with the Fallopian tubes; after one or more pregnancies, it always remains convex, being more raised in the middle than near the origin of the tubes.

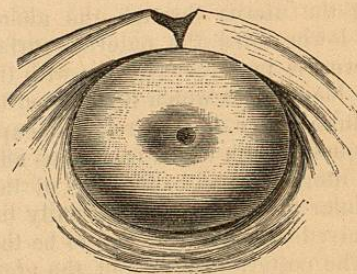
The *inferior extremity* of the uterus is the apex of the uterine cone. The *os tincae*, or vaginal portion, has the form of a rounded cone. It usually projects 0.25 in. to 0.5 in., but in certain pathological states it may be lengthened so as to reach the vulva or even to protrude externally. Caseaux says the length of the vaginal portion diminishes in

FIG. 13.



Virgin Os Uteri and Vaginal Portion of the Cervix  
—(after A. Farre).

FIG. 14.

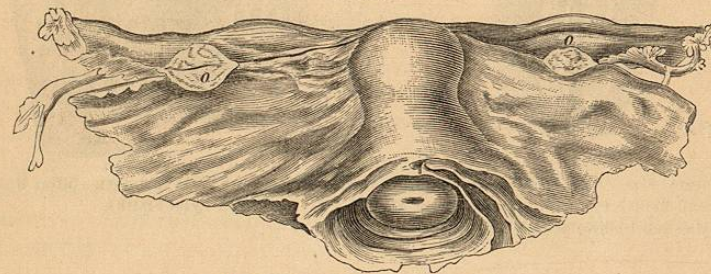


The Os Uteri in Old Age.

proportion to the number of pregnancies, and may even disappear altogether in women who have had many children. But this disappearance is commonly due to senile atrophy. The apex is pierced by an opening which leads to the cavity of the uterus. This opening, the *os externum*

*uteri*, or *os tincae*, looks a little backwards. In the virgin it is a small transverse fissure, sometimes round, bordered by two lips, one anterior, the other posterior, both smooth, the anterior being thicker and more prominent than the posterior (see Fig. 13). To the touch, says Cruveilhier, the *os tincae* gives the same sensation as the lobule of the nose. At the menstrual epoch the neck is a little gaping. In women who have had children the *os externum uteri* represents a larger fissure, often large enough to admit easily the end of the index finger; the lips are thicker, uneven, and often present notches, the remains of the rents they have undergone during labor. Of these notches one is almost always seen towards the left commissure, which is explained by the frequency of the left occipito-anterior position of the child's head in labor.

FIG. 15.



The Uterus in Old Age—(after A. Farre).

Showing a return to the infantine proportions between the body and cervix; half natural size; o, o, the shrivelled ovaries.

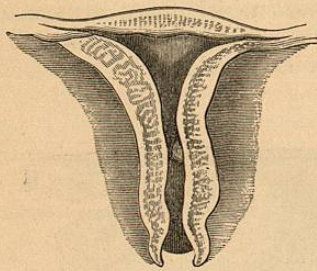
Sometimes the portion of the uterus which projects into the vagina quite disappears. The vagina then terminates in a cul-de-sac, at the bottom of which is felt only a contraction separating the cavity of the vagina from that of the uterus. This condition is most frequent in old age.

*The Cavity of the Uterus.*—The uterus is hollowed by a cavity very small in proportion to the volume of the organ. Excepting during pregnancy, and certain morbid states, the walls of this cavity are always in contact. It represents an irregular canal, divided by a sort of hour-glass constriction in the middle into two parts: the one upper, flattened out transversely, is *the cavity of the body of the uterus*; the other, inferior, fusiform, is *the cavity of the neck of the uterus*. The constricted part which separates the two cavities is the *os uteri internum*, or isthmus of the uterus (see Fig. 1).

The cavity of the body is triangular, and has an orifice at each angle: one inferior, which communicates with the cavity of the cervix, and one at each upper angle, which lead to the Fallopian tubes. The uterine orifices of the tubes are situated at the bottom of the funnel-shaped cavities, which are vestiges of the primitive division of the body of the uterus into two halves or horns. This bifidity, normal in the lower animals, is sometimes observed in the human species. The three borders of the uterine cavity are convex inwards. In the multiparous uterus the cavity of the body is more developed, its borders are less convex, or nearly straight, the upper angles are enlarged, and the cavity of the neck

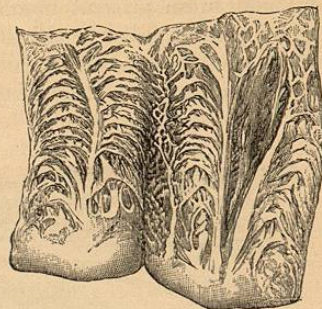
has lost in length. The cavity of the neck of the uterus is cylindroid; flattened from before backwards, slightly enlarged at the middle, it presents on either wall rugæ, or elevations, forming a tolerably regular series, known as the *lyra*, or *arbor vitæ* (see Fig. 17). On each of these walls is distinguished a vertical column running along the entire length of the neck, swelling out above and continuous with the median column

FIG. 16.



Half Natural Size. Shrinkage of the Walls in Old Age, and Return to the Triangular Form of the Infantile and Undeveloped Uterus—(after A. Farre).

FIG. 17.



Natural Size of Cervix laid open—(after Hassall and Tyler Smith).

of the body of the uterus. The two columns of the neck do not descend quite so low as the os externum, but stop a little above the circle of the orifice, which is always smooth (see Fig. 17). M. Guyon has observed that these columns are never situated exactly on the median line; the anterior one is a little on the right, the posterior one a little on the left; so there results a kind of dovetailing of the walls of the neck; especially marked at the upper part of the cavity. From the two borders of each column a certain number of smaller folds proceed, at more or less acute angles, and are directed upwards and outwards, resembling a fern leaf. These oblique folds have their free border directed downwards, and inclose furrows or pits, in which are seen the gaping orifices of the uterine glandules. Sometimes they bifurcate. The *arbor vitæ* is commonly much smoothed down after the first labor. But this is not constant, since the *arbor vitæ* is sometimes found intact after several labors.

The *isthmus* is generally 0.20 in. to 0.25 in. long: 0.16 in. across, and 0.12 in. from before backwards in imparous women. In multiparæ the length of the *isthmus*, which is always included in the measurement of the body, is reduced to 0.16 in. and even less. The uterine sound is commonly arrested by the constriction of the *isthmus*, and only penetrates it under a certain pressure. After the cessation of menstruation the *isthmus* contracts considerably, and often is completely obliterated. The orifice of the os externum also I have frequently found obliterated in old women. M. Guyon says this obliteration always coincides with the obliteration of the *isthmus*. This, however, I have found to be far from constant.

The inner surface of the body of the uterus is much more vascular than that of the neck. This difference is especially marked in women who have died during menstruation. The *walls of the uterine cavity*, apart from pregnancy, are 0.40 in. to 0.60 in. thick. The thickness is greater in women who have had children than in the virgin. The thinnest part corresponds with the insertion of the tubes. The walls of the neck are thinner than those of the body.

The *dimensions* of the uterus have been determined by M. Richet in the following manner: The uterus remaining intact he first measured the cavity by the sound, then having removed the uterus from the pelvis, he split it from before backwards along the median line, and measured it again from the neck to the fundus of the uterine cavity first, and then from the neck of the upper border of the organ. He obtained the following dimensions:—

	In the virgin.	In women.	In mothers.
The vertical diameter of the uterus . . . . .	2.20 in.	2.52 in.	2.72 in.
Vertical diameter of the cavity . . . . .	1.80 in.	2.20 in.	2.44 in.
Transverse diameter of the uterus . . . . .	1.24 in.	1.80 in.	1.90 in.
Transverse diameter of the cavity . . . . .	0.60 in.	1.08 in.	1.24 in.

Good standards are so important that the following tables are added. The subjoined measurements are given by Sappey:—

	Virgin.	Nulliparæ.	Multiparæ.
Length of uterus . . . . .	2.35 in.	2.50 in.	2.70 in.
Width . . . . .	1.50 in.	1.55 in.	1.70 in.
Thickness . . . . .	0.85 in.	0.90 in.	1.00 in.

To these it is useful to add the measurements of other observers:—

	Huschke.	P. Dubois.	Richet.	Aran.	
Length	Nulliparæ . . . . .	2.70 in.	2.70 in.	2.50 in.	2.80 in.
	Multiparæ . . . . .	3.60 in.	2.90 in.	2.70 in.	2.75 in.
Width	Nulliparæ . . . . .	1.55 in.	1.75 in.	1.70 in.	1.65 in.
	Multiparæ . . . . .	2.35 in.	1.90 in.	1.85 in.	1.25 in.

Huschke's long diameter is manifestly erroneous; it must have been taken from a specimen in which the involution-process after pregnancy had not been completed. Dubois's is also somewhat exaggerated. Sappey confirms Richet, whose observations included forty women from eighteen to fifty years old.

Comparing the three diameters in virgins, nulliparæ, and multiparæ, it is seen that they increase but little in passing from the first column to the second, and that they lengthen sensibly in passing from the second to the third. The influence, therefore, of pregnancy is manifest; that of coitus is much less pronounced. Rouget showed that when the whole vascular system of the organ is injected, its dimensions are often more than doubled. The turgescence attending ovulation is not so great; but

it is greater than is commonly thought. Under the influence of this congestion its two faces become more convex, its border is thicker, the whole organ becomes rounded, so that its increase bears more upon the transverse and antero-posterior diameters than upon the vertical.

In estimating the above measurements borrowed from Sappey and others, it must be borne in mind that they were made on organs removed from the body, and consequently wanting the turgor of vascular activity. The extent of the shrinking thus endured is difficult to determine; but it is certainly considerable. During life the sound commonly gives  $2\frac{1}{2}$  in. as the length from the lower border of the os externum to the internal aspect of the summit of the body of the uterus. To this we may generally add  $\frac{1}{2}$  in. at least as the thickness of this part, making quite 3 in. as the life size of the organ, to compare with barely  $2\frac{1}{4}$  in. as the size after death, represented in Figs. 12-18.

There are two purposes for which it is desirable to settle the standard normal uterus in the several states of virginity, nulliparity and uniparity, or multiparity. The one is for clinical use, the other for forensic application. For the first purpose the data quoted are sufficiently precise.

M. Guyon,<sup>1</sup> as well as Richet, has examined the uterus at the different physiological epochs, and both find that the uterus attains its maximum during the menstrual periods, and its minimum in the intervals. It is important in practice to bear in mind that during the five or six days which precede and follow the catamenia, the uterine diameters will generally exceed the means, whilst during the intermediate period they will fall a little below.

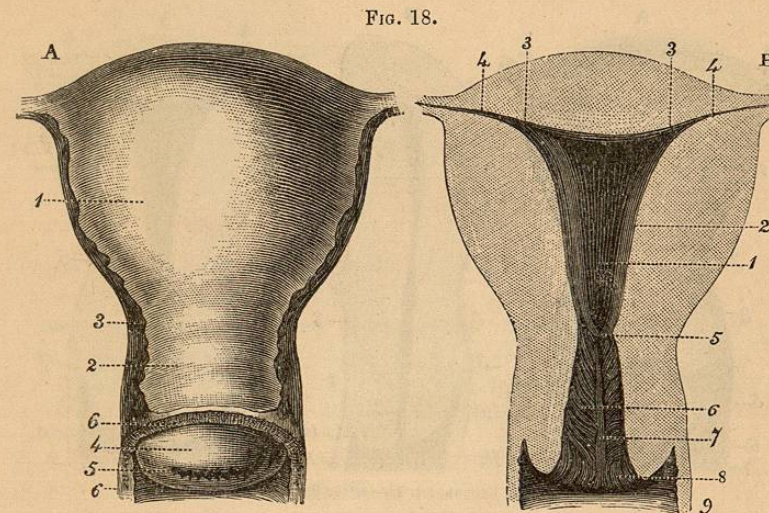
The vertical diameter of the uterus is divided unequally between the body and the neck. In the virgin the longest portion belongs to the neck. In multiparous women, the two diameters are nearly equal, the difference, if any, inclining in favor of the body. In multiparæ the body continues to grow, whilst the neck has undergone an absolute or comparative shortening, which reduces its vertical diameter in some cases below that of the body (see Fig. 19).

The shape of the cavities of the body of the uterus and of its cervix, and the relations of their walls, are best demonstrated by longitudinal sections, and by transverse sections made at different points.

If we first make a vertical section in the antero-posterior direction, as in Figs. 12 and 19 B, we see that the walls of the body of the uterus lie in contact. The cavity is represented by a line running from the fundus to the cervix. This cavity is, under ordinary circumstances, potential rather than actual. But when fluids are retained, or a solid body is introduced into or grows in the space between the two walls, the cavity is capable of enlarging to an almost indefinite extent. This enlargement of the cavity is always, at least when considerable, effected chiefly by gradual growth of the uterine walls. When the uterus is emptied this growth ceases, a process of absorption and involution takes place; and generally the triangular form of the cavity is resumed, the anterior wall being again flattened upon the posterior. Where any distinct hollow remains, it may be assumed that there is more or less habitual retention of

<sup>1</sup> "Études sur les cavités de l'utérus," thèses inaug. 1858.

fluids, and that there is some pathological condition of the mucous membrane or wall of the uterus, or obstruction at a lower point of the canal. This contact of the wall of the body of the uterus, together with the mucous plug usually filling the cervix, and the closing of the vagina by approximation of its walls, prevent the intrusion of air into the cavity, and thus obviate the foulness that would otherwise result from decomposition of the secretions.



Multiparous Uterus, æt. 26—(after Sappey).

A. Anterior aspect.

B. Uterine cavity.

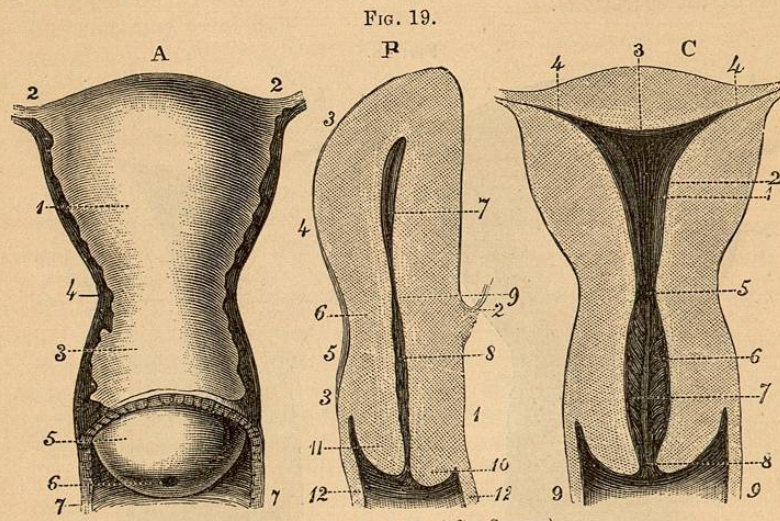
A. 1, body of uterus, much larger than that of the neck; 2, the neck; 3, isthmus; 4, os tinæ; 5, os externum, a transverse fissure, its margin notched; 6, 6, vagina.

B. 1, cavity of body; 2, left lateral border; 3, 3, upper border; 4, 4, its upper or lateral infundibuliform angles continuous with the Fallopian tubes; 5, its lower angle forming the os internum; 6, cavity of the neck; 7, arbor vitæ; 8, posterior lip of os externum; 9, vagina.

The cervical cavity is fusiform in some cases, conical in others, according to the extent of the opening of the os externum. Although the columns of the arbor vitæ are so adapted as to dovetail with each other, there is usually a distinct cervical cavity, the walls not being commonly in close apposition.

If we next make a longitudinal section transversely, so as to separate along the entire length the anterior half of the uterus from the posterior, we see the triangular shape of the cavity of the body of the uterus, with its two superior angles drawn out funnel-wise, to be continuous with the Fallopian tubes, and its inferior angle contracting to be continuous at the isthmus with the canal of the cervix (see Figs. 18, 19). Below the isthmus is the cervical cavity, fusiform or conical. In multiparæ, in whom the os externum is a wide fissure, the conical form is more manifest in this section than in the antero-posterior section, from its giving the whole width of the tinæ; but even in these the base of the cone at the os tinæ is commonly more contracted than the middle part of the canal.

In nulliparæ the os externum is still more contracted, so that the canal approaches the fusiform character. In many cases of sterility, the os externum is a mere round hole no bigger than the os internum, and the central part of the canal is then generally more dilated than usual, so that it is completely fusiform. (See figures of sections under "Dysmenorrhœa.")



Virgin Uterus, æt. 22—(after Sappey).

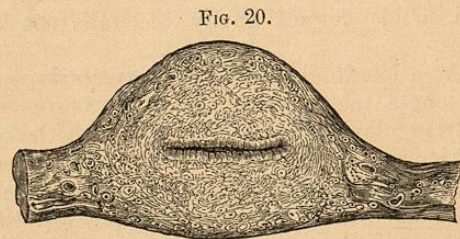
A. Anterior aspect.

B. Median section.

C. Transverse section.

- A. 1, body of uterus; 2, 2, its superior angles; 3, neck; 4, isthmus; 5, vaginal portion of neck; 6, os externum, small and circular; 7, vagina.  
 B. 1, 1, profile of anterior surface of uterus; 2, vesico-uterine cul-de-sac of peritoneum; 3, 3, profile of posterior surface; 4, body of uterus; 5, neck; 6, isthmus; 7, cavity of body; 8, cavity of neck; 9, its upper extremity; 10, anterior lip of os tincæ; 11, its posterior lip; 12, vagina.  
 C. 1, cavity of body; 2, its left border; 3, upper border; 4, 4, its lateral infundibuliform angles; 5, its inferior angle; 6, cavity of neck; 7, arbor vitæ of posterior wall; 8, lower end; 9, vagina.

A series of horizontal sections, made through the walls of the body, will exhibit a narrow line marking the contact of the anterior wall flattened



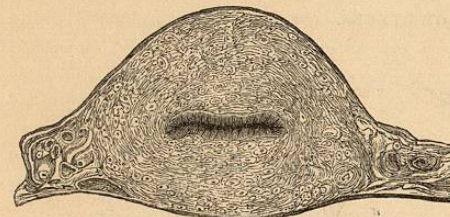
Ad Nat.—(after Farre).

Section made through cavity of the body of the uterus above the entrance of the Fallopian tubes.

upon the posterior; made through the isthmus or os uteri internum, a round hole of about the calibre of a No. 8 or 9 catheter, the fibres of the wall disposed in a circular or sphincteric manner around it; and at the mar-

gins, right and left, the gaping orifices of the vessels which enter the uterus in greatest size and number at this level; made lower down across the cervical canal, the cavity of this canal is seen somewhat flattened antero-posteriorly (see Figs. 20, 21, 22).

FIG. 21.



(After A. Farre.)

Section through centre of cavity.

FIG. 22.



(After A. Farre.)

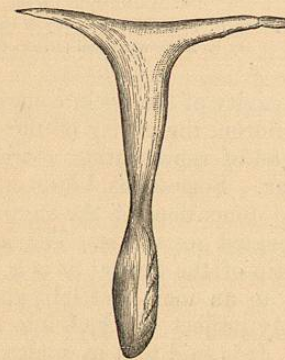
Through centre of cervical canal.

There is another way of representing the shape and size of the uterine cavities, namely, by taking casts or moulds with wax or plaster of Paris. The information thus acquired has a certain value, but is apt to mislead. Liquid poured into the uterus distends the cavity, and when it has set we get a mould of a cavity such as does not normally exist. But in the case of morbidly dilated cavities, these casts give more accurate representations.

*Interior Conformation of the Uterus.*—The cavities of the uterus vary in dimension and shape in the virgin and multiparous uterus. In the

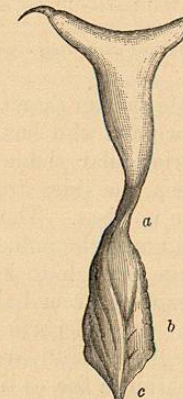
CASTS OF CAVITIES OF UTERUS. (AFTER GUYON.)

FIG. 23.



1. Uterus of Virgin, æt. 17.

FIG. 24.



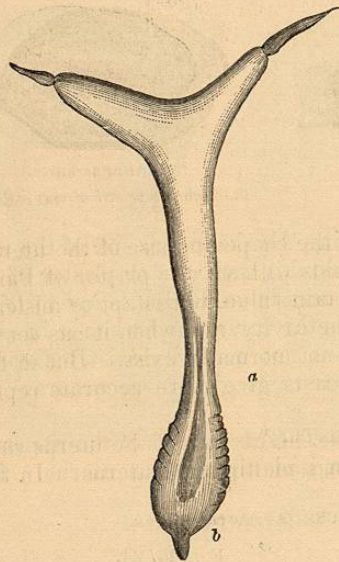
2. Multiparous Uterus, æt. 25-30.  
 a. Narrowing and lengthening of isthmus.  
 b. Dilatation of cavity of neck.  
 c. Narrowing of os externum.

virgin and nulliparous uterus the entire length of the cavity is on an average 2.10 inches, divided in the following manner: Cavity of the body, 0.9 inch; cavity of the neck, 1 inch; the intermediate cavity of

the canal of the isthmus, 0.20 inch. In the multiparous uterus the total length rises to 2.30 inches, of which the cavity of the body takes 1.10 inch; the cervix, 0.90 inch; the isthmus, 0.20 inch. The length of the cavity, therefore, increases under the influence of pregnancy, and in proportion that it lengthens the vertical diameter of the cavity of the body,

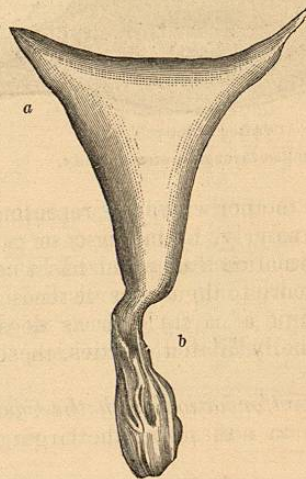
CASTS OF CAVITIES OF UTERUS. (AFTER GUYON.)

FIG. 25.



3. Multiparous Uterus, æt. 42.  
a. Dilated isthmus.  
b. Marked narrowing of os externum.

FIG. 26.



4. Multiparous Uterus, æt. 35.  
a. Dilatation of cavity of body.  
b. Narrowing and torsion of isthmus.

at first a little shorter than that of the cavity of the neck, comes to exceed it. In the woman who has borne children, the cavity of the body preserves its triangular shape, but instead of representing a triangle with incurved sides, the sides are rectilinear. Sometimes, however, a degree of curvature persists. The shape and dimensions of the vaginal portion are modified under the influence of repeated gestations. The orifice often becomes large enough to admit the tip of the finger; it is a transverse fissure, measuring from half an inch to an inch, and split at each end. Nor does the vaginal portion commonly project so much into the vagina as in the virgin or multiparous case. It is said that in women who have had many children the os tinæ may disappear completely, so that in its place one finds at the fundus of the vagina nothing but a hemispherical depression, pierced in the centre by a small round hole. In two women who had had, the one seventeen, the other nineteen children, Caseaux found no projection whatever into the fundus of the vagina. My own observations do not bear out this proposition in its absolute sense. In women who have borne as many children as those cited by Caseaux, I have found a fairly prominent vaginal portion if they were examined

before the age of fifty. After this age, some women who have had only a few children may, under an exaggerated senile atrophy, exhibit the conditions described by Caseaux.

The capacity of the uterine cavity has been examined by Sappey in the following manner: He closed the os externum, then tied one of the Fallopian tubes, and injected the cavity by means of a lymphatic-injection tube, fitted to the other Fallopian tube. When equilibrium was established between the resistance of the walls and the mercurial pressure, he tied this other tube at its junction with the uterus. Then incising the body, he collected the mercury, and estimated its volume by pouring it into the hollow of a wax mould of one cubic centimetre capacity. The capacity in nulliparæ ranged from two to three centimetres, and in multiparæ from three to five centimetres.

The structure of the uterus must be examined under the opposite conditions of vacuity and of fulness.

A serous investment pertaining to the peritoneum, a proper tissue of muscular nature, an internal or mucous membrane, vessels and nerves, are the constituent parts of the uterus.

A. The external or peritoneal membrane.—The peritoneum, which has invested the posterior face of the bladder, is reflected over the anterior surface of the uterus, covering, however, the upper three-fourths only, the lower fourth being in immediate relation with the bladder. Thus is formed the utero-vesical, or anterior pouch of the peritoneum.

The peritoneum passes over the fundus of the uterus, clothes the posterior surface throughout, and is prolonged for a short distance down the vagina, below the utero-sacral ligaments, and then is reflected upwards over the rectum. It is the transverse extension of the peritoneum which constitutes the broad ligament. In the space which separates the bladder from the uterus, this membrane forms two very small falciform folds, which bear the name of vesico-uterine ligaments. Two other folds, much larger, stretching from the posterior aspect of the neck of the uterus to the sides of the sacrum, constitute the utero-rectal, or utero-sacral ligaments. For a description of the retro-uterine, or Douglas's pouch, see ante, p. 37.

The adhesion of the peritoneum to the uterus, on a level with the neck and towards the borders, is very loose, but becomes closer the more we approach the median line. It is also more intimate on the posterior than on the anterior aspect. The looseness of the connection of the peritoneum at the level of the neck and borders of the uterus, explains the reason why the peritoneum so rarely shares in even considerable rents of the cervix uteri, and why the effusion of blood in such cases takes place between the tissue of the uterus and the peritoneum.

B. The proper tissue.—In the non-pregnant state, this tissue is grayish, very dense, very resisting, and creaks like fibrous tissue under the scalpel. If the consistency of the body of the uterus seems less than that of the neck, this is solely because the first is the more frequently the seat of sanguineous congestion. The proper tissue which constitutes the principal portion of the uterine wall is composed of fibres, that is, of parts disposed in a linear direction. These fibres belong to the muscular tissue of organic life. The contrary opinion was long held. But com-

parative anatomy, the microscope, examinations during gestation, and physiological observations, have dispelled all doubts upon this point. During pregnancy, and in consequence of the development of tumors, or of an accumulation of liquid in the uterine cavity, the proper tissue assumes all the external characters and properties of muscular tissue, as it is seen in the instruments of organic life.

The *direction* of the muscular fibres of the uterus has been the subject of numerous researches. Malpighi and Monro thought there was nothing regular in the disposition of these fibres; and in the empty state this appears to be the case. They are so interlaced and compressed, that it is in vain we seek to disentangle them. But during gestation, the muscular elements having undergone very considerable development, the mingling of the bundles become easier to follow.

It may be admitted that the muscular wall of the uterus is formed of three layers or planes of bundles—an outer, a middle, and an inner. These three layers are not clearly defined, as is the case in the heart. They send communicating bundles to each other. The arrangement of these muscular bundles is by no means constant, but they nevertheless always approach a determinate type.

1st. The *external* or *superficial layer* comprises a longitudinal bundle, or rather a broad median ribbon, and transverse fibres. The median band, the *looped band* of M. Hélie,<sup>1</sup> arises on the posterior aspect of the uterus, on a level with the union of the body with the neck, by fibres continuous with the transverse fibres. At its origin it is overlaid by a thin stratum of these transverse fibres. Ascending over the posterior surface of the uterus, it is reinforced successively by similar fibres, which are added to its borders, and by new fibres which spring up in the openings of its primitive fibres. It then curves over the fundus uteri, where its fibres, hitherto parallel, proceed diverging, so that three portions may be distinguished—an inner, an external, and a middle. The inner portion often crosses partially with that of the opposite side of the median line; the external portion runs towards the angles of the uterus, and mixes with the transverse fibres. The fibres of the middle portion descend over the anterior aspect, then successively curve outwardly, to be continued with the fibres forming the round ligaments. Sometimes the innermost fibres of this bundle reach the level of the isthmus of the uterus, and in their turn curve outwardly to mingle with the transverse fibres.

The *transverse fibres* form the principal mass of the external layer. On the lower half of the body they are directly transverse; at a higher level they converge towards the angles of the uterus. Towards the median line, the most superficial fibres sometimes turn up so as to become longitudinal, and to be continuous with the looped bundle. The deeper fibres proceed directly from one side of the uterus to the other. Externally the superficial fibres are prolonged into the broad ligaments, over the oviducts, and into the round and ovarian ligaments; the deeper fibres curve round the borders of the uterus, passing from one aspect to the other. In

<sup>1</sup> Recherches sur la disposition des fibres musculaires de l'utérus développé par la grossesse. Paris, 1864.

this course they meet the arteries and veins, which they surround with contractile rings. At the same time the fibres pass from one plane to another, so that those which were at first superficial, become deeper as they get behind.

The *fibres of the neck* are generally transverse, but are a little oblique downwards and inwards, and often crossed on the median line. They send expansions outwardly into the broad ligament, backwards into the utero-sacral ligaments, and sometimes forwards into the utero-vesical ligaments.

2d. The *middle layer* of the muscular fibres of the uterus forms about one-third of the uterine wall. When sections of this wall are made, it is distinguished by the great size of the vessels, principally veins, which traverse it. It is composed of muscular bundles, which cross each other in all directions, and send off frequent branches, which circumscribe more or less completely large holes or canals in which the bloodvessels are contained. This texture is the same throughout the whole body of the uterus, but is especially manifest in the region which corresponds to the insertion of the placenta. There is nothing like it in the neck.

3d. The *internal layer* is principally composed of annular fibres from the isthmus as far as the orifices of the Fallopian tubes.

But these fibres are covered on each of the surfaces of the uterus by a broad and thick band of longitudinal fibres, forming a triangular bundle, whose base is superior, and stretches from one tubal orifice to the other; and whose apex, directed downwards, descends nearly to the os internum uteri. It is formed of transverse fibres, which curve from below upwards, run for a certain distance in the longitudinal direction, and then again become transverse. An annular bundle, very powerful, and always a little prominent, surrounds the os internum uteri, forming a true sphincter, which explains the habitual constriction of this orifice. Muscular rings surround the infundibula of the uterine cavity. On the median line of the anterior wall, and on the median line of the posterior wall, the rings of the right and left sides meet, and even interlace. Their upper halves constitute antero-posterior arcs, which form the roof of the uterine cavity. By their inferior halves they begin the series of the transverse annular fibres.

In the *neck*, on the middle of each wall, a branched muscular bundle gives rise to the projections of the arbor vitæ; it rises from the middle of each wall, and forms arches right and left. Beneath this bundle, but rather deeply, the fibres are transverse or annular, and are confounded with those of the external layer.

C. The *internal* or *mucous membrane*.—Some anatomists, and in particular Morgagni and Chaussier, who observed the inner surface after delivery, have denied the existence of the uterine mucous membrane. But the microscope has set at rest all disputes upon this point. The mucous membrane, however, presents different characters in the cavity of the body and in that of the neck.

The lining membrane of the body of the uterus undergoes a cycle of changes recurring at every menstrual period. It is therefore necessary to trace these changes in the order of succession. Tyler Smith stated clearly, that after the menstrual flow the inner surface of the body