

increased if the tumor be solid; and generally the lower edge of the liver can be made out well-defined, the fingers even able to penetrate beneath it. The hydatid of the liver is the condition most likely to deceive. Here we may have fluctuation and dulness over an area sometimes very similar to that occupied by an ovarian tumor. The history and the peculiar features of the disease will supply diagnostic indications. We shall generally have a resonant space below the tumor. The hydatid tremor or thrill may be felt. Fluid drawn by aspirator-needle would show hooklets of echinococci, and its specific gravity would be below 1010.

I have known a considerable area of resonance between the pelvis and a tumor seated under the liver, which proved to be ovarian. This had been carried up and rolled over on its axis, the pedicle stretching and twisting under the pressure of a growing gravid uterus.

Spiegelberg relates¹ a case of echinococcus of the right kidney, mistaken for ovarian tumor, and operated upon with a fatal issue. The tumor extended from the ribs to the pelvis, and was felt by vagina. In reading this case it appears to me—so easy is it to criticize after the event—that the tumor was more strictly confined to one side than is usual in ovarian tumor. It extended all along the right side from ribs to pelvis, but did not much overlap the median line.

Cystic disease of the kidney has given rise to mistakes. So long as the tumor formed by this disease is comparatively small, danger of mistaking it for an ovarian tumor is not great. The dulness and fluctuation are more limited to one lumbar and hypochondriac region; and an area of resonance will be made out between the tumor and the pelvis. But when the cystic enlargement is very great, extending across the abdomen and below to the pelvis, the diagnosis is not easy. Renal tumors growing from behind press the intestines forward, so there is resonance in front. Babington and Bright pointed out that in renal disease we may expect changes in the urine, especially an abundance of phosphates and lithates. A very small ovarian tumor, with a long pedicle, might be mistaken for a floating kidney.

In 1877 I saw a case with Mr. Christopher Heath, which he operated on under our joint diagnosis that it was ovarian. It proved to be a renal cyst caused by impaction of a calculus in the ureter. This calculus had been felt through the abdominal wall. The patient survived the operation ten days.

g. Is there pelvic cellulitis or peritonitis or hæmatocele? Here a history of sudden or rapid development under symptoms of local and general distress will, when given, generally be sufficient. But often cases come before us with no history, or only a misleading one. In these it requires great care to distinguish a consolidated mass of omentum or intestines found near the pelvis from an ovarian tumor. This condition has frequently deceived, even to the extent of inducing the surgeon to open the abdomen. The distinction will rest mainly upon the more solid character of the inflammatory consolidation, the absence of fluctuation, and perhaps the presence of deadened resonance from intestine entangled

¹ Archiv für Gynäkologie, 1870.

in the mass. Here again the aphorism which warns to be suspicious of a solid tumor finds useful application.

It is also necessary to remember that peritonitis or hæmatocele may supervene upon ovarian cystic disease. In the first case, that of peritonitis, it is singular to observe how an area previously yielding distinct fluctuation, becomes hard, almost solid, from the effusion of plastic matter on the surface of the tumor. Where there has been no opportunity of examining before the inflammation set in, it is not easy to avoid the error of concluding that there is a solid tumor under the hand. In the absence of antecedent knowledge of the real nature of the tumor it is only by waiting until the inflammatory complication has to a great extent disappeared, that we can be sure of our diagnosis.

In the second case, that of hæmatocele, the sudden access of grave symptoms at once arrests attention. Where there is an ovarian tumor the source of the effused blood is likely to be the tumor itself. Its walls, or large vessels on its surface, may have burst. Abdominal shock is the first result. If the patient survive this, peritonitis, diffuse or limited to the pelvic region, follows. This will give rise to a firm tumor felt projecting into the rectum and vagina, probably rising out of the true pelvis in one or both iliac fossæ, and pushing the uterus forward against the symphysis pubis.

For the distinctive characters of retro-uterine hæmatocele and other retro-uterine tumors I must refer to the chapter on this subject.

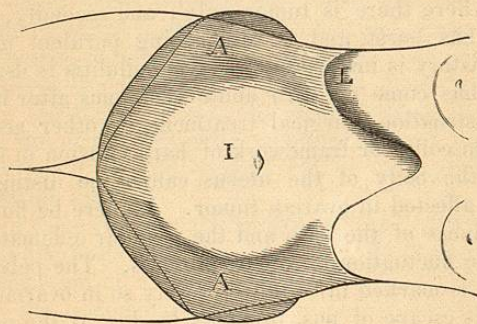
Pelvic cellulitis may be confounded with ovarian tumor under two conditions: first, where there is tumor only; and secondly, where there is a tumor which has burst, and is discharging purulent matter. In the first case, the history is important. Pelvic cellulitis is usually of recent formation. It has come on with acute symptoms after labor, abortion, suppressed menstruation, surgical treatment, or other accident; it sets the uterus fast in collar or framework of hard effusion in the brim of the pelvis, so that the body of the uterus cannot be distinguished. The uterus is not so affected in ovarian tumor. If there be fluctuation, there is commonly redness of the skin and the peculiar œdematous feel of the tissues where the fluctuation is due to abscess. The pelvic distress, including dysuria, is marked in cellulitis, rarely so in ovarian dropsy.

Where there is escape of pus, this may be due to the perforation of a suppurating ovarian cyst. But this is a rare event; whilst it is a frequent issue of pelvic cellulitis. And it usually occurs within a few weeks of the commencement of pelvic cellulitis; whereas it is extremely rare for an ovarian tumor to suppurate and discharge until it has attained a large size, that is, until it is of considerable duration. But these features, clear enough when the whole course of the disease has passed under our observation, are not so clear if we are called to a case of long standing. For example, although pelvic cellulitis usually runs a tolerably definite course within a short time, cases occur where abscesses burst after some months, or at least in which suppuration goes on, and matter is discharged for months together by the vagina or rectum. It is not always easy, under such circumstances, to decide that the source of the pus is not an ovarian cyst; especially as a cyst, during the process of suppuration and perforation of the vagina, is likely to have set up pelvic peritonitis. This

complication may be very puzzling; and we shall often be driven to the history for data upon which to found a presumption one way or the other. The necessity, however, of forming a precise diagnosis in such case is of minor urgency, since even if we attained to the certainty of its being ovarian, the high probability of extensive pelvic adhesions would forbid the attempt at extirpation.

h. Is there ascites, or peritoneal encysted dropsy, or abscess? The distinction between pure ascites and pure ovarian dropsy is rarely so difficult as to induce error. But the two conditions are so frequently associated that the subject demands discussion. The grand characteristics of ascites are: that if the patient be on her back, the intestines floating anchored to the mesentery, there will be clear resonance in front, where in ovarian dropsy, pregnancy, and fibroid of the uterus there is dulness; that the dulness will be in the lumbar regions between the false ribs and the crests of the ilia, where the fluid gravitates, and where there is resonance in ovarian dropsy and pregnancy; that the areas of resonance and dulness will shift on changing the position of the patient, because the hollow intestines float to the surface, whereas in cystic dropsy and pregnancy these areas do not shift. If percussion be performed, the patient lying on her back, the fluid in ascites gravitating to the flanks, and the intestines floating up to the front, the areas of resonance and dulness will be as in Fig. 88. In ovarian dropsy, the areas of resonance and dulness

FIG. 88.



Dorsal Decubitus.
A. Ascitic dulness. I. Intestinal resonance. L. Liver. (R. B.)

will be exactly the reverse, as in Fig. 89, and will not vary under change of posture.

A striking contrast between ascites and ovarian tumor may also be demonstrated by percussing in the erect posture. In ascites the line of demarcation between dulness and resonance is concave, whilst in ovarian tumor it is convex. This contrast is seen in diagram, Fig. 90.

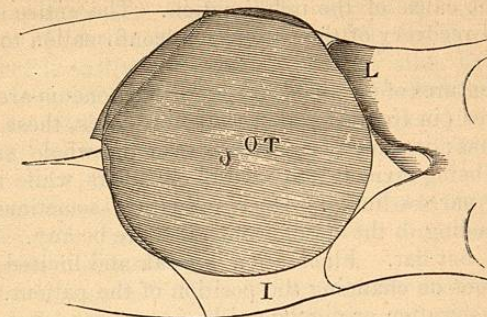
In ascites, when lying on the back, the flanks widen, bag out, whilst the belly becomes flatter. In ovarian dropsy the prominence is preserved. In ascites again the abdominal walls are more even in outline, softer, and more yielding.

Again, ascites is the consequence and therefore a symptom of disease

of the heart, liver, or kidneys. The history and other symptoms of these diseases will guide to a right appreciation of the dropsy.

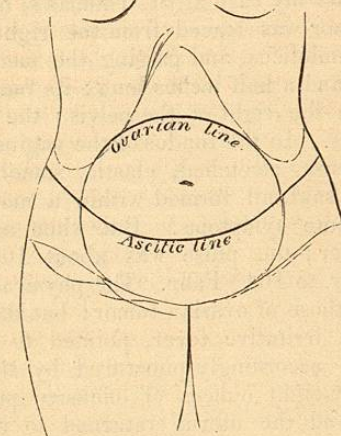
There is a form of *encysted dropsy*, the result of peritonitis, in which the peritoneum of the pelvic organs may or may not be involved. Peritonitis may be greatly limited to a portion of the omentum, and of the

FIG. 89.



Dorsal Decubitus.
O.T. Dull area of ovarian tumor. I. Intestinal resonance. L. Liver. (R. B.)

FIG. 90.



Differential Characters of Ovarian and Ascitic Dropsies in Upright Posture (R. B.).

small intestines covered by it. Plastic matter may be so thrown out as to form a cavity or cyst between these parts in which serum is imprisoned. I saw a case which I concluded to be of this kind some years ago in consultation with Dr. Clapton and Mr. Litchfield of Twickenham. There was a large tumor in the right flank, passing across the median line, and giving fluctuation, which could be traced downwards to the iliac fossa. It had been looked upon as certainly ovarian. The circumstances that made me doubt were the rapidity with which the tumor had formed; the severe attendant pain and history of fever; a certain singular thickness

and doughiness of part of the walls; and the more marked lateral site of the tumor than is usually found in ovarian cysts. I punctured the cyst; and in doing so it required some confidence in one's diagnosis, for the trocar had to be made to penetrate considerably deeper than is usually necessary in the case of ovarian cysts which lie close behind the abdominal wall. A quart or more of horribly stinking putrid serum escaped, so that we suspected there had been a perforation of the intestine into the peritoneum as the cause of the inflammation. The entire disappearance of the tumor and recovery of the patient lent confirmation to the diagnosis arrived at.

The general features of encysted dropsy of peritoneum are thus summed up: The fluid lies (in front of) above the intestines, these being bound down by adhesions; it sometimes extends over the whole anterior aspect of the abdomen, being divided into several chambers, while in other cases it is bounded by narrow limits. Depressions are sometimes felt on the surface corresponding to the dissepiments, if there be any. The abdomen is not prominent, but flat. Fluctuation is weak and limited, and does not change its relations on changing the position of the patient. It does not interfere with respiration or digestion like an ovarian cyst, and is never attended by œdema of the legs or enlargement of the abdominal veins. The fluid drawn by aspirator will contain flakes of fibrin and will coagulate by heat.

Encysted peritoneal abscess may simulate ovarian dropsy. Thus a case was admitted under my care at St. Thomas's, in which a tense, obscurely-fluctuating tumor was traced from the right side of the pelvis, rising as high as the umbilicus, and passing the median line to the left. The uterus was three and a half inches long; its fundus deflected to the left by the swelling in the right of the pelvis; the cervix was pushed forward near the pubes. In the fundus of the vagina, on the right of the cervix uteri, was a tense, stretched, elastic, smooth depression. The tumor had, the patient said, all formed within a month. Its onset was not marked by any acute symptoms. But when admitted there were signs of irritative fever; the pulse was about 100, the temperature ranged from 100° Fahr. to 104° Fahr. The physical signs could hardly be distinguished from those of ovarian tumor; but the rapidity of formation, and the signs of irritative fever, pointed to the diagnosis of a perimetric abscess. I accordingly punctured by the vagina with the aspirator-trocar. Fifty-eight ounces of offensive pus were drawn off; the tumor subsided, and the uterus returned to its normal position. More pus formed, which was again drawn off. The woman died of peritonitis and septicæmia. The diagnosis was verified, in so far that an encysted abscess was found. But a small ovarian cyst, which appeared to have ruptured, was imbedded in the abscess.

In connection with ovarian cysts it is desirable to refer to certain *cysts occasionally found on the external surface of the uterus*, and described by Huguier. Two cases he described were the result of metro-peritonitis. I have seen several similar examples, mostly in connection with malignant disease, and where obvious indications of recent or old peritonitis existed. I have, however, seen other examples of cysts containing serum seated on the peritoneal surface of the uterus, on the broad liga-

ments and ovaries in which association with inflammation or cancer could not be proved. Dr. McClintock also has referred to cysts attached behind the uterus.

Another form of *ascites* is that *which attends upon malignant disease* inducing peritonitis. Here the evidence of malignant disease will commonly be marked; and we shall miss the characteristic signs of encysted dropsy.

It is the *complication of ascites with ovarian cystic disease* which is often puzzling. If the ovarian tumor be small, and the ascitic collection large, the tumor is easily overlooked. On the other hand, if the tumor be large and the ascitic collection small, the tumor alone may attract attention. In the latter case the practical consequences of mistake may not be serious, because the ovarian tumor is the disease that rules the choice of treatment, the ascites being secondary. In the first case, if there be urgent distress from accumulation of fluid, tapping by the aspirator-trocar would be indicated; and then, the fluid removed, the tumor would come under manipulation.

i. Are there adhesions? This is often an exceedingly difficult point to determine. I have seen extensive adhesions where it was confidently foretold that there were none. Accurate diagnosis is not so important as it was at one time thought to be. Abundant experience has now proved that moderate adhesions offer no serious difficulty in carrying out extirpation, and do not jeopardize the recovery. Extensive and intimate adhesions, especially to the lower surface of the liver, to the intestines, and to the pelvic cavity, will sometimes altogether frustrate the operation, or the injury inflicted in overcoming them may be so great as to prove fatal. But adhesions at these points cannot be diagnosed, so that in practice we are often compelled to disregard the possibility of their presence.

The tumor may be presumed to be free from adhesions if—

1. There be no history of antecedent severe pain pointing to attacks of peritonitis. But this cannot be trusted. After recent adhesions a fremitus may be felt under the hand, a friction-movement, as the tumor rises and falls under respiration.
2. If we pinch up folds of the abdominal wall, or make the abdominal wall slide over the tumor.
3. By inspection in the semi-prone position, watching the effect of respiration: if, on inspiration, the tumor is seen to glide downwards beneath the abdominal wall, and to glide up again on expiration.
4. If on moving the patient, first to one side then to the other, the tumor be seen or felt to fall to the dependent side.
5. If the uterus be small and move freely under examination by finger and sound, the presumption is against pelvic adhesions.
6. If we can make out a thin layer of ascitic fluid, giving a wave superficial to the tumor, we have, perhaps, the best evidence of absence of adhesions.
7. Adhesions are less likely to be present if the tumor is benign; more likely if the tumor is malignant.

Owing to the free peristaltic and other movements of the small intestines, adhesion of them to the ovary is comparatively rare.

All the signs of free movement of the tumor may be found, and yet

there may exist extensive adhesions. These may have become gradually drawn out by the advancing growth of the tumor, have become elongated, partly atrophied, so as to admit of free movement, but yet to give some trouble to separate when an attempt at extirpation is made.

j. Is the tumor benign or malignant? In seeking to determine this question, we shall derive assistance from the history, aspect, and constitutional condition. If the aspect be clear, and the general health not impaired beyond what can be attributed to the mere bulk and pressure of the tumor; if there be free fluctuation; if the uterus be capable of being isolated from the tumor; if we find the tumor free from adhesions, it may be presumed that the tumor is benign.

k. Two other conditions, which may possibly give rise to error, are distension of the bladder with urine, and fecal accumulation. For the distinctive features of these conditions consult Chapter III. and Fig. 38. If the rule to pass the catheter before exploring further be observed, this error will be avoided.

It is not easy, however free and universal the fluctuation may be, to predicate that *the tumor is monocystic*. Indeed, monocystic tumors are so rare that it is scarcely worth while to contemplate the probability of any given tumor being of this kind. It is almost always a safe prophecy to say that it is polycystic. A single cyst will, *ex necessitate rei*, be perfectly uniform on its surface, and of spherical or ellipsoid form. Deviations from these characters, or variations in degree of fluctuation, or in the rate of growth in different parts, are conclusive against a single cyst.

The tumor is probably malignant, if it have grown rapidly; if the aspect be earthy, sallow, and of characteristic malignant cachexia; if emaciation be very great; if very irregular, knobby in form; if the uterus be found fixed to it; if irregular protrusions be found behind the uterus; if on rectal examination—which should never be omitted where malignancy is suspected—these projections into the rectum be more plainly felt; if the vaginal or other glands within observation be enlarged and hardened; if there be any considerable amount of ascitic fluid, and especially if there be œdema of the legs, with or without phlegmasia dolens.

The *recognition of ovarian tumor in the earliest stage* is especially difficult. Very little distress may attend the early growth. Practically, it rarely happens that the case comes before us until a tumor of considerable size has formed. The first inconvenience that attracts attention is the increased size of the abdomen; and this is often more annoying for moral than for physical reasons. An unmarried woman is visibly increasing in size, and censorious people whisper away her character; and if dependent upon her own exertions, she is unable to find employment. But sooner or later physical distress from pressure is pretty sure to follow.

When a small cyst containing fluid has formed, we may feel a smooth, rounded, tense body stretching the roof of the vagina on one side of the cervix, or a little behind. Small cysts get into Douglas's pouch, causing some amount of prolapse of the vagina. By bi-manual palpation we may possibly define the tumor, and even make out fluctuation. In this stage, a cystic ovary may be mistaken for a Fallopian gestation, or a dropsy of

the tube. In either event the uterus may be so pushed forwards by the tumor as to obstruct the bladder and cause retention of urine, as in the following case:—A young woman applied as an out-patient, complaining of retention of urine. In accordance with our practice in such cases, she was at once sent to bed. I found the os uteri pressed close behind the symphysis pubis; after drawing off the urine I passed the sound into the uterus; it went in the normal direction forwards, and the fundus was felt just above the symphysis. This made it clear that the uterus of normal size was pushed bodily forwards by something behind it. Exploring with the finger to the sides of, and behind, the uterus, the vaginal roof was felt stretched out, and a tense, elastic, defined swelling with fluctuation was made out by vagino-abdominal touch. The swelling did not rise above the pelvic brim, and except by the two-handed mode of examination it could hardly have been distinguished. I concluded that it was an incipient ovarian cystic tumor; and since it was causing serious, even dangerous, pressure upon the bladder, I punctured it through the roof of the vagina by the aspirator-trocar, and drew off about six ounces of limpid lemon-colored serum. The uterus then retreated to near the centre of the pelvis, leaving the bladder. No bad symptom followed; but after some days there was again retention; the uterus was again pushed forwards against the pubes. I repeated the operation, this time drawing off about two ounces of fluid, and injected an ounce of tincture of iodine, hoping that a cyst so small might contract and be cured. For a time the patient seemed to be doing well; but irritative fever set in, and ended fatally. Unfortunately a post-mortem examination could not be made. We have since had another case in the hospital of retention of urine caused by a small ovarian tumor.

Difficulty of diagnosis between early cystic tumor of an ovary, tubal gestation and dropsy of the Fallopian tube, is the less to be regretted, because puncture by the aspirator-trocar is probably the best treatment in all these cases. It should be performed in all cases where the prevailing character of the tumor is solidity, and where the fluctuation is obscure and limited.

The fluid drawn off should be carefully examined. It sometimes gives diagnostic evidence. Spencer Wells says, in the case of uterine tumor, it is not the viscid mucoid fluid of multilocular ovarian disease, but a thin serum containing 5, 10, or 15 per cent. of blood intimately mixed with it. If we get fluid of this character or none, the idea of laparotomy should be abandoned, unless, indeed, we are prepared to undertake the extirpation of the uterus.

A rare instance of difficult diagnosis arose in a case related by Disse (*Monatsschrift für Geburtskunde*, 1857), in which an ovarian cyst formed part of a femoral hernia.

Assuming the tumor to be ovarian, *which side did it start from?* Whilst the tumor is of moderate size this can sometimes be told by the canting of the uterus. The ovary rising out of the pelvis drags up the uterus, so as to throw the fundus over to the opposite side. This canting is determined by finger and sound. Sometimes this canting can be increased and made sensible to the finger placed on the cervix, by lifting up the tumor by pressure from below it through the abdominal walls.

Especially whilst the tumor is of moderate size, measurements taken from the umbilicus to either superior iliac process will probably differ by the tumor side being the longest.

Tapping and Exploratory Incisions.—After exhausting all ordinary diagnostic methods, the indication to relieve from distressing symptoms and danger to life may still be so urgent that we are justified in resorting to certain operations in order to attain the precise knowledge necessary to direct ulterior proceedings. These operations are tapping and exploratory incisions.

Tapping, indeed, is an operation of old standing. For a long time it was the only proceeding employed to relieve the distension and other urgent symptoms. The operation was looked upon simply as a palliative, and occasionally it turned out to be curative. Now there is added a diagnostic value. When a tumor, apparently monocystic, is emptied of the greater proportion of its fluid, the cyst which contained this fluid collapses, and the operator can press his hand down upon the base of the tumor and feel what remains. Sometimes, but rarely, we may feel nothing; the tumor has to all evidence gone. In these cases the doubt is reasonable that the cyst was not ovarian, but a simple cyst of the broad ligament. In such a case the tapping may prove curative as well as diagnostic. The cyst-walls may shrivel up, cease to secrete, and finally become atrophied. It is in such cases that the injection of iodine is likely to be followed by cure; and it must often remain doubtful whether the iodic injection was not superfluous. Or we come to the conclusion that there is no cyst at all; that the case is one of ascites. The peritoneum emptied, we can now examine the state of the liver and other abdominal viscera more easily; we may find tubercular or other disease of the lumbar and pelvic glands.

It is not always easy to determine that there is no cyst. Its walls may be so thin, and so adherent to the abdominal wall, that incision may go through the cyst-wall without this being identified.

In other cases, and these by far the most numerous, when fluid ceases to run by the canula, we come down to a residual tumor more or less solid, more or less bulky. If there remain a considerable mass bulging up behind the abdominal wall on one side, or near the pelvis, and presenting fluctuation, we may diagnose another cyst, and the trocar may be used to puncture this, and even another in succession, or we may explore through the canula by a sound to ascertain the condition of the tumor. Here the polycystic character is beyond doubt. And the therapeutic conclusion may confidently be drawn that neither by iodine injection nor by any means, short of extirpation, will a cure be obtained. In these cases the fluid is often gummy or colloid, sometimes puriform. Once opened, these tumors are liable to run a rapid downward course. Suppuration in the cysts is very likely to occur.

In another class of cases, also numerous, when the fluid ceases to run, the great bulk of the swelling has disappeared. But by deep pressure through the now flaccid abdomen, we come upon a solid residuum in the pelvis, which may sometimes be grasped in the hand, and which may always be defined between the hand outside and a finger in the vagina. In these cases also it is of no use to inject iodine. The solid residuum

almost certainly contains smaller cysts, whose development, repressed by the preponderant activity of the one which has been emptied, will quickly take its place, if indeed the first cyst do not fill again. When the tumor has thus grown again, it is generally advisable not to repeat the tapping, but to proceed to extirpation, which holds out the only trustworthy hope.

Exploratory Incision.—Before proceeding to this measure, the call for relief should be so serious as to justify extirpation, should this ultimatum be found practicable. Exploratory incisions are not, it is true, so dangerous as the complete operation; but a fatal issue has with considerable frequency occurred. It properly claims consideration when other means of diagnosis, including puncture or tapping, yield no results, or are contraindicated. It is advisable on beginning the operation to have all things prepared for proceeding to extirpation. The patient should be in anaesthesia. A small incision, an inch or two long, is made with a bistoury, midway between the umbilicus and pubes. This is very cautiously made so as to avoid all risk of incising the tumor, which may *not* be ovarian. The incision should be just large enough to admit the finger to feel the tumor, and to sweep round in a short radius, so as to ascertain if there are adhesions. This will generally be large enough also to enable one to inspect the surface of the tumor. The uterus, or uterine fibroid, presents a dark-reddish fleshy appearance, which, if not absolutely differential from the usual pearly-blue aspect of an ovarian cyst, should serve as a warning not to proceed to ulterior measures without further investigation. Or again we come upon irregular nodular masses not freely movable upon each other, or *en bloc*, and especially if fixed by broad attachments at the base, there is *prima facie* evidence of malignancy.

For clinical purposes we divide tumors of the ovary into two classes namely, *tumors which contain cavities*, and *those which form solid and compact masses*. To the first belong the simple or multiple cysts, the cysto-sarcoma, the colloid tumor, and the cysto-carcinoma; whilst the second comprises the fibroid bodies, the enchondromata, and the cancerous tumors without cavities. This division is certainly useful. But there is another division, which, not displacing this one, I think is even more useful in practice. Ovarian tumors may be divided into *benign* and *malignant*. It is not indeed easy in all cases to tell, in the living subject, to which class a particular tumor belongs. But in many cases we can form a reasonably good opinion. For example, we may often negative malignancy. When we can do this the course of treatment to adopt is more easily decided, and the prognosis is more hopeful. On the other hand, we can often affirm malignancy; and in this case we know the treatment must be more circumspect, and the prognosis be more grave.

The evidence deducible from the examination of the fluids drawn by tapping.—Great hopes have been based upon this line of evidence. Chemical and microscopical analysis might be expected to reveal the source whence these fluids come. And undoubtedly the chemical and microscopical features of fluids from ascitic collections, ovarian cysts, cysto-fibromas, renal and hepatic cysts offer characteristic differences. Sometimes, perhaps most frequently, trustworthy evidence may be thus obtained. But in others, and these may be the most critical, where ordinary methods give only doubtful evidence, and where, consequently, we should most