abdominal wall by displacing the intestines, and this is most easily accomplished in the epigastrium. In the converse condition, when a clear note is produced by pressure in ascites, the abdominal wall is brought into contact with floating intestine, the mesentery of which is so short, and the quantity of fluid so great, as to keep the structures apart in the absence of the pressure. We have, further, a difference between the clear percussion notes of ascites and ovarian dropsy, in that the former readily alters its position, always appearing at the part of the tumor highest in relation to the patient's position. Thus, in a doubtful case, if there be a corona of clearness above the supposed tumor, extending from the hepatic to the splenic regions, and any alteration of position, such as lowering the shoulders and raising the pelvis, should alter the position of the area of clearness to the region of the umbilicus, then the case is almost certainly one of peritoneal dropsy.

More than once I have met with a case where even this sign failed me, and where I have opened the abdomen to remove an ovarian tumor and found only masses of peritoneal cancer. The reason of such a mistake was, that the intestines were all matted together by growths in the great omentum, and were drawn up into an arch under the diaphragm. The exploratory incision, however, did no harm, the patients recovering from it and dying some time after from the extension of the disease. Additional difficulty was created in one such case by the fact that the patient had been twice tapped before the operation, and no doubt was entertained that a cyst had been emptied, and that the masses felt were smaller cysts. I have also operated on a case in which no intestinal note could be obtained anywhere. The patient had suffered from recurrent peritonitis, and it was evident that the intestines were all behind the tumor. At the operation this was found to be the case, and the adhesions were of the most formidable character. Yet the patient recovered without a bad symptom.

The rapidity with which the waves travel is governed by three conditions chiefly. First, the thickness of the abdominal walls, and this will also influence the sharpness with which the wave is felt. The tension of the cyst will also materially affect the wave transit, for in the tightly filled cyst the wave rushes along with great rapidity, while in the flaccid cyst it is transmitted much more slowly and is so much less easily perceived that the unpractised observer may altogether miss it. If the contents of the cyst are thick and gluey it may be altogether impossible to obtain anything like a distinct wave of fluctuation, and there are many cases of really solid tumors, more particularly the œdematous variety of uterine myoma, which are sufficiently soft to give a wave of fluctuation which makes it impossible to discriminate them from ovarian cystomata with gluey contents. In fact I do not know anything more difficult to teach than the many facts about this sign of fluctuation. I do not know anything requiring longer practice and greater variety of experience for being perfectly learned; but I also know nothing giving greater diagnostic power when the fingers have been sufficiently trained to perceive its differences. Thus, given a case of ovarian tumor in a young woman and another case of advanced pregnancy, the practised fingers alone, without any question being asked, without a vaginal examination being even proposed, and without the use of the stethoscope, will in the majority of cases at once be able to make an exact diagnosis; while in the case of a large uterine myoma, the mere sense of resistance upon the first impact of the hand is often enough to determine the nature of the case. This "sense of resistance" is a thing quite impossible to teach. I saw it first practised by Dr. Warburton Begbie, and have seen him diagnose accurately and by it alone between an effusion of fluid in the pleura and consolidation of the lung. Similarly in the abdomen this sign is nearly always enough to enable me to discriminate between pregnancy, an ovarian tumor and a solid mass, though of course I should never dream of trusting to it alone.

Of a similar character is the sign to which French writers have given the term *ballottement*. This is not confined in its usefulness by any means to the determination of pregnancy. In a case where there is an abdominal tumor surrounded by ascitic fluid, the latter may be easily recognized by the sign of fluctuation, but the tumor may escape observation if an effort be not made to discover its *ballottement*. It is my uniform practice, therefore, in examining an abdomen in which I am satisfied of the presence of ascitic fluid, to place the fingers of one hand upon the skin very lightly, and then with a steady and somewhat rapid movement downward the ascitic fluid is made to move away, and if there be a tumor the fingers come promptly in contact with it and convey a sensation which cannot be mistaken. In cases of doubtful pregnancy this sign is well enough known, and there, of course, it is the liquor amnii which is displaced by the sudden movement of the fœtus which is felt. This ballottement may be determined through the abdominal walls with quite as good effect as through the vaginal cul-de-sac. If the fluid outside the cyst be small in quantity, its diagnosis is of no great consequence; but if large, its non-recognition may lead to serious mistakes. For instance, in one of my cases I satisfied myself

that there was an ovarian tumor from the signs given by percussion, and that there was evidently some ascites from the double wave of fluctuation. The patient was of an enormous size, and the growth had not existed for more than six months. It was a grave question whether I had to deal with a multilocular tumor having one or two very large cysts and a small quantity of ascitic fluid, or with a small tumor and a large quantity of ascitic fluid. The only method of deciding the question would have been to tap the abdomen above the tumor by my blunt trocar, and to have evacuated the ascitic fluid only; but to this the patient would not accede, and I had to begin the operation in serious doubt. The result showed that the plan referred to would have been a wise one, for it proved to be a comparatively small tumor with an enormous ascitic collection, all the intestines having been pushed above the tumor. There are some minor signs which often serve to indicate the presence of ascites to any marked extent, such as the protrusion of fluid through the omphalic ring, carrying in front of it a layer of peritoneum like the finger of a glove. The uniformity of the enlargement by ascitic fluid is greater than that produced by ovarian dropsy, though in the case just referred to this indication failed me; for it was the want of symmetry in the measurement which suggested that the chief cause of the enlargement was cystic. The readiness of alteration of the form usual to an abdomen distended by peritoneal dropsy was also absent; for, in whatever position the patient lay, the same outlines were preserved; and the greatest proportional increment of measurement had occurred between the umbilicus and the pubes. This peculiarity is usually an indication of ovarian cysts or of uterine tumors.

I have already uttered a warning, which I think it necessary to repeat, concerning the use of the sound; and here I may introduce the account of a very singular experience in which the use of the sound, instead of being an assistance, might have led me into a very serious mistake, had I not been familiar with the fact that every now and then a case occurs in which the fundus uteri is perforated by the sound while it is being used in an ordinary way by one quite accustomed to its use and without any undue force. Such perforations never do any harm, and I used to see them often when I used the sound a good deal, but now that I use it hardly at all I have not seen one for a very long time.

Some years ago I drew attention to cases of persistent metro-peritoneal fistula in which the condition has been one of interest only on account of its curiosity, but in the following case it presented features of great importance in the diagnosis of an

ovarian tumor. S. W——, aged forty-nine, and unmarried, was sent to me from a distance in September, 1874, on account of an abdominal enlargement which had been in progress for three months, and had reached a considerable size. The parietes were extremely thin, and the wave of fluctuation was everywhere extremely vivid. Behind the uterus was a round nodular mass, freely movable, and the sound readily entered the uterus for three inches. I diagnosed ovarian dropsy, and admitted her into the hospital for the purpose of removing the tumor.

At a consultation, held on October 8th, some doubt was entertained by some of my colleagues that it might be a case of peritoneal dropsy, and to assist the diagnosis the sound was introduced by Mr. Ross Jordan. It readily passed in seven inches toward the left side, though there was absolutely no force used in its introduction, the instrument seeming to slip in most easily. I at once expressed my opinion that the uterus had been perforated, and with the consent of my colleagues I proceeded with the operation. The tumor was removed without difficulty, and the nodular mass behind the uterus was found to be a small fibroid growth in the fundus. It was the right ovary which was removed, the left being quite healthy; and as the pedicle was very short, and the uterus somewhat dragged upon, I did not think myself justified in endeavoring to gratify my curiosity by looking for the point of perforation. From the position of the fibroid, however, I am certain that the aperture must have been situated in the anterior wall, for the fundus was completely retroflexed, both Fallopian tubes being carried with it. It is probable that the anterior wall had become very attenuated, or even completely perforated, from being stretched over the fibroid by the retroflection, this latter being evidently due mainly to the pressure of the tumor from above.

Whether Mr. Jordan made the perforation or not, it made no difference to the progress of the case, for she got well without a bad symptom, and went home on the twentieth day. She called on me eight weeks after the operation with the wound almost healed. I passed the sound very cautiously into the uterus, and found that it readily entered three inches, and then met with the usual obstruction. I happened, however, to move its point about a little, and found that toward the left side of the cavity it slipped through a hole, and made itself immediately perceptible under the integuments to the left of the cicatrix. The right cornu of the uterus was tilted upward toward the wound, on account of the adhesion of the pedicle, and I know that the sound could not have passed through the Fallopian tube on that side, for it had been embraced by the clamp; while the thinness of

the abdominal walls and the fixidity of the uterus enabled me to determine that the sound had clearly passed through the anterior wall somewhere to the left of the middle line of the organ.

In addition, therefore, to the interesting fact which my former cases clearly established, that we may have permanent communications formed between the peritoneal cavity and the cavity of the uterus other than those of the oviducts, and without any deleterious results, we have in this case the further fact of great clinical importance, that these abnormal apertures may be the cause of confusion in diagnosis. If I had not been firmly convinced, from the physical signs, that my patient really suffered from an ovarian tumor, the passage of the sound inward for seven inches, in the hands of one so careful and so skilled as Mr. Jordan, would have so staggered me that I should have fallen into error.

Familiarity with the somewhat common occurrence of such apertures, however, enabled me to have the courage of my opinions.

In my earlier practice I placed considerable reliance upon tapping as a means of diagnosis in abdominal tumors, but further experience has led me to distrust it. Some of my reasons for distrusting tapping will be given at greater length in another chapter and others I have already discussed.

In cases where there is ascitic fluid its removal may indeed help us to map out the position and size of a tumor with greater accuracy, or the removal of the fluid from a cyst may help us to determine that it is parovarian, or that it is ovarian, from the fact that other cysts or solid matter were left behind; but beyond this tapping helps us but little. It serves in no way to clear up the nature of a doubtful tumor, nor does it reveal what the intimate relations of that tumor may be. The operation has its own special risks, and our more recent experience shows that these risks are greater than, or at least as great as, those of a simple exploratory incision. I therefore prefer the latter in all cases, for if we can do no more than relieve the patient of a quantity of ascitic fluid, or of the contents of one or more major cysts, we can do this far more effectually by a small exploratory incision than by the wound of a trocar, and with quite as little risk.

Of the occasional misfortunes which follow tapping, I had a very notable instance in the case of a patient sent to me some years ago by Dr. Laidler, of Stockton-on-Tees. She was of enormous size, so that it was advisable to tap her before removing the tumor. Unfortunately, the cyst-walls were permeated by large venous sinuses, and one of these was injured by the trocar,

so that several pounds of blood poured into the cavity of the emptied cyst, and the result was unfavorable to the success of the subsequent ovariotomy. Besides such an exceptional risk as this, there is the possibility of suppuration of the cyst after tapping, and the infection of the peritoneum by its septic contents.

Finally, by means of an exploratory incision, which need not as a rule be more than an inch and a half or two inches long, we can ascertain absolutely the nature of the tumor and very many of its relations, and we may generally obtain information concerning it altogether beyond the reach of a tapping. This latter operation, therefore, I have almost entirely excluded from my practice for any purpose of diagnosis, and it is now only used for relief in those cases where removal of the tumor is impossible. When it is absolutely necessary to tap, the operation is best performed by a trocar which I have devised, having a steel point with a chisel edge, which is almost blunt. The patient having been placed in a convenient position, a puncture is made by an

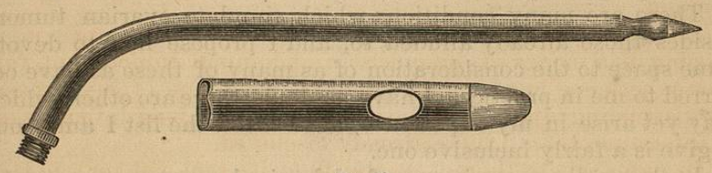

FIG. 29.

ordinary lancet into the cyst, and the trocar is made to follow the track of the lancet. The trocar is so simple that it never can be out of order; it forms a solid rod, which is extremely useful as a probe, and its point is sharp enough to penetrate an inner cyst, and yet so blunt as to be incapable of mischief save in the hands of the clumsy or the careless. Great care should always be taken to empty completely the cyst which is tapped, and to prevent the admission of air, and for this latter point the perfect solidity of my trocar is the most absolute guarantee.

Tapping by the vagina was an operation a good deal in vogue about eight or ten years ago, and I have had two cases in which cysts of some kind were permanently cured by this means; but as it is by no means always attended with good results, I have almost discontinued it. I have known death occur three times after it, and I may state as my general conclusion that I have a growing distrust of tapping of any kind, either by the aspirator or the trocar, and in all cases where treatment is or may be an object, as well as diagnosis, I infinitely prefer an abdominal section.

The diagnosis of the variety of tumor in each case is of im-

portance in guiding us to its treatment; therefore it is not for the mere exercise of ingenuity that I recommend every practitioner dealing with a case of ovarian tumor to exhaust every point on which I have dwelt, together with many others to which I have not alluded, but which the individual peculiarities of each case and his own personal shrewdness may suggest. Above all, let me again urge the necessity of reasoning by exclusion, and of making repeated examinations at intervals before any certainty of diagnosis is felt. Three times it has occurred to me to remove ovarian tumors which had hastily been set down at an early period of their history as floating kidneys, that diagnosis having been made in all three cases because the wish was father to the thought, and because the practitioners who made it had not learned the value of patience. It is this want of patience that is to blame for those melancholy instances of blunders, altogether unpardonable, where the abdomen has been opened in cases of normal pregnancy mistaken for ovarian tumors.

There are many conditions which simulate ovarian tumors besides those already alluded to, and I propose now to devote some space to the consideration of as many of these as have occurred to me in practice. I have no doubt there are others which may yet arise in my experience, but I think the list I am about to give is a fairly inclusive one.

In the earlier experiences of abdominal surgery many cases occurred in which an operation was performed for the removal of an ovarian tumor and no tumor found; that is to say, where there was no condition whatever to justify the mistake. During the last twenty or twenty-five years, however, I have not heard of any instances of this kind, indeed the introduction of anæsthetics has rendered such a misfortune all but impossible. We can easily understand how such mistakes as those so candidly narrated by Mr. Lizars could occur. We can only admire the frankness with which he published them, and acknowledge the great service the publication rendered to his successors. It is a trite saying, but one worthy of frequent repetition, that we learn a great deal more from our blunders than we do from our successes.

Before the introduction of anæsthetics the most likely condition to give rise to such a mistake was that singular disease known as phantom tumor or phantom pregnancy, to which the name of pseudocyesis has been given by Goode. This singular disease is certainly an affection of the nervous system, and lies in that border-land which exists between hysteria and insanity, and where everything in the way of explanation consists merely of guesswork. There can be no doubt that whatever may be the

mechanism of this disease, its immediate exciting cause is intimately associated with the ovaries, as indeed is the whole group of hysterical diseases. We know, however, that these affections are by no means unknown in the male sex, and I have seen a marked case of phantom tumor in a male, and singularly enough a medical man was the victim of the fancy. Mr. Spencer Wells (*British Medical Journal*, June, 1878) says he saw a phantom tumor in a soldier who came down from the Crimea to Smyrna with an abdominal enlargement which entirely disappeared when the man was narcotized with chloroform. Perhaps this was a case of malingering.

Simpson, quoting Harvey and giving also his own experience, tells us that symptoms such as we find in these cases are to be observed in cows and bitches; and doubtless, if accurate observations were to be made on these animals so affected, some kind of explanation would be arrived at. That the symptoms are due to a perverted intelligence, or a mere desire to defraud, is not an explanation which would apply to many cases which have come under my own observation, and it could scarcely be urged in the case of animals. I have failed, however, to find that in cows or bitches any of the imitative symptoms have often been observed; that is to say, such symptoms as distention of the abdomen seldom occur. The signs of the spurious pregnancy in them consist in the reflex phenomena which accompany true pregnancy, and this points conclusively to some false start given to the reflex mechanism which connects the ovaries and uterus with their subsidiary organs and the system generally.

Dr. S. Haughton, F.R.S., made a communication to the Dublin Obstetrical Society on February 7, 1880, on a case of phantom tumor in an ass. Having purchased a fine specimen of a rare variety of zebra, he was anxious to provide a suitable partner for him; he therefore obtained a healthy three-year-old virgin ass. It was necessary to have a virgin, as it was known that the first intercourse gave a stamp to the subsequent progeny. Frequent and apparently satisfactory intercourse took place between the two. The ass came into season at intervals of five weeks, and remained so from ten to fourteen days, and its period of utero-gestation was eleven months. It was therefore easy to discern when the animal was in foal. After six weeks, the ass began to enlarge visibly, and a man much accustomed to the breeding of horses declared that he could "feel the foal inside her." The eleven months expired, and the ass came into season again without having given birth to a foal. After a lapse of four months she was again given the zebra, and again she swelled, continued so for eleven months, and again gave birth to noth-

ing. In this case he considered that the mental element might be disregarded, for the ass could have no object in deceiving, and her illusion of being in foal influenced her physiological condition, for her mammary glands were enlarged, and when the supposed pregnancy was over they subsided with the abdominal enlargement.

The great majority of cases of phantom tumor are really instances of spurious pregnancy incompletely developed; indeed, I am not quite sure but that every case really is so; those about which I have doubt being of a class which are certainly hysterical, which have no other sign than abdominal distention, and which seem to me perfectly analogous to crib-biting among horses. I have seen a sufficient number of these to be able generally to distinguish them as they enter the consulting-room, by the one sign which can always be heard, loud intestinal gurglings. These gurglings are due to the swallowing of air which the patient indulges in for a few minutes before she visits the surgeon, and she generally begins the consultation by attracting attention to them and to her large size. The increase in size is partly due to the spurious flatulence and partly to the peculiar muscular rigidities which these patients indulge in. If the patient is kept engaged in conversation for fifteen or twenty minutes, without an opportunity of renewing her air supply, the gurglings will entirely cease and she will markedly diminish in size. Physical examination, especially under an anæsthetic, at once confirms the spurious nature of the abdominal distention. In these cases there is usually no attempt on the part of the patient to induce the surgeon to believe that she is pregnant, or even that she has a tumor, and the belief that a deliberate and voluntary fraud is intended is, I think, to be justified only in exceptional cases. The object seems really to be that of gratifying that insatiable love of attracting attention so deeply rooted in the female mind, a weakness which is at the bottom of ninety-nine cases of hysteria out of every hundred; and it must be borne in mind that this desire is characteristic of many forms of insanity in men as well as in women. The majority of cases of eccentric hysteria occur in women to whom nature has denied the external attractions of beauty, or in whom there is not the compensation of a refined and cultured intellect. It is therefore in neglected and ill-educated women that these objectionable forms of hysteria are chiefly to be met with. I have seen the kind I am now speaking of imitated by crib-biting mares and geldings very closely, the best instance having occurred in a mare. She was generally required to go out at a particular time of day, and as that hour approached, if she could succeed in getting a hold of any fixed object with her teeth she would secure a quiet day in the stable by rendering herself quite unfit for work for many hours. She would swallow large gulps of air, so that the distension looked, to those unaccustomed to it, almost like the last stage of a peritoneal dropsy, and the intestinal gurglings could be heard at many yards distant. In a few hours she would be well again and ready for work; but nothing could prevent her succeeding in her trick unless care was taken to have nothing about upon which she could fix her teeth.

Women who indulge in this objectionable habit are nearly always sterile, though I can call to mind two cases in mothers of large families. It is by no means confined to any period of life, as I have seen it in very young and in very old women.

Between this group and those in which there is always present a distinct conviction that they have a tumor, there is no defined line, but they are generally women of the same type. They do not usually, however, have the gurglings, the distension being produced entirely by some peculiar muscular fixation, in which probably the diaphragm is the chief factor. In order to distend the walls of the abdomen, the first step is to fix the diaphragm at as low a level as possible; and after this is done, breathing can be carried on by the ribs alone. The time through which this kind of respiration can be employed is very brief in men, but is practically unlimited in women, owing to the peculiar superior costal method of breathing which exists in them. After fixing her muscles in this way, a woman has only to throw her shoulders back and her pelvis forward, and if her clothes are loose she at once presents the appearance of pregnancy; and in these cases, if the confidence of the patient be sufficiently reached, it will always be found that there is either a hidden desire or a concealed dread of pregnancy. Generally, there is some little sign, or a group of symptoms, which gives coloring to the suspicion; such as morning sickness, pain in the breasts, flow of milk, or arrest of the menses; but in those cases where there is no expressed belief in the existence of pregnancy, the history of the symptoms given seldom leads up to that supposition, and the patients are generally very reticent in giving their own impression. Between this second group of cases and the third, in which I class those in which the belief in pregnancy is expressed, and both its symptoms and signs given with more or less completeness and without hesitation, there is no well-defined distinction; for cases present themselves in which the condition is not sufficiently complete to place them under the heading of spurious pregnancy, and yet where there is evidently a belief on the part of the patient that there is something more than a swelling.

A well-marked case of spurious pregnancy, with its train of imaginary symptoms well described, and its reflex phenomena well developed, is one of the most singular experiences any one can have, and is most bewildering to those unaccustomed to physical examination of the pelvis. It is by no means confined to women at the climacteric, as many authors seem to have taken for granted without having properly analyzed the facts; and it is not even confined to married women, or such as have engaged in sexual functions without being married; for I have seen a very well-marked case in a young woman, twenty-two years of age, who presented all the usual and most trustworthy features of virginity.

There is some peculiar nervous machinery put in action the moment a fertilized ovum becomes attached to the uterine or tubal mucous surface, and that machinery sometimes gets a false start. How this occurs, we do not know, but the result is the appearance of all the symptoms without the reality of pregnancy.

One of the most perfect cases of phantom pregnancy or pseudocyesis which I have ever met with, was one I saw in consultation with Dr. Charles Warden and Mr. Machin, of Erdington. The patient was thirty-two years of age, had been married eleven years, and had menstruated with perfect regularity until June, 1872. Menstruation was then suddenly and entirely arrested, she slowly increased in size, and had morning sickness and many other symptoms of pregnancy. The breasts enlarged, she described the sensations of quickening, and she engaged Mr. Machin to attend her in the confinement she expected in March. Nothing, however, came of it. When I saw her in the following May she presented all the appearances of being pregnant at the full time, the breasts containing quite an abundant supply of milk, and the question to be considered was, had she an extra-uterine pregnancy? As the uterus was perfectly normal, having no tumor of any kind in association with it, this suspicion was at once dispelled; and on placing her completely under the influence of ether it became at once apparent that the pregnancy was a phantom, which ultimate test for pseudocyesis is one of the many triumphs of gynæcology due to the genius of Simpson. This patient was in the same condition in 1879.

Another condition which frequently gives rise to the suspicion that the patient is suffering from a tumor, and therefore, of course, most probably an ovarian tumor, is the curiously rapid growth of omental fat which many women put on at the climacteric period. Only a few days ago a remarkable instance of this occurred in my experience, the description of which will serve for all I have to say upon this subject.

A lady was brought to me from a distance by her medical attendant, who was a gentleman of exceptional experience and ability, but, of course, like other men engaged in general practice in the country, he had but very occasional opportunities for obtaining experience in the diagnosis of abdominal tumors; and, as he frankly told me, he knew very little about them. He brought his patient to me because he was in doubt, and there was no discredit due to him by reason of his difficulty. The patient was forty-seven years of age, and for about a year her menstruation had become irregular, her abdomen had increased very much in size, and she had lost flesh in the face and limbs. Her arms bore distinct evidence of this, for the subcutaneous fat had disappeared from them and the skin was wrinkled and flabby. Her abdomen was large, and, as she said, dresses she could wear only a few months before, she was now wholly unable to put on. As she lay on the couch the appearance was certainly that of an abdominal tumor, but the moment I touched the abdomen and felt the tight condition of the skin, I suspected what I had to deal with. The layer of subcutaneous fat there was extremely thick, for on taking up a handful of the skin it was found to include considerably more than two inches of fat. All over the abdomen a clear resonant note could be determined, no traces of fluctuation could be detected, the cavity of the pelvis was perfectly normal, her functions were healthy, and nothing distressed her but the size of her abdomen. But for my previous experience in such cases I might have hesitated to give the opinion I did, that the case was nothing but a climacteric accumulation of fat in the abdomen. I comforted both the patient and her doctor with the assurance that after the climacteric period was over a redistribution of fat would probably occur, that it would become more equalized over the body and less pronounced in the abdomen, and this I have seen occur so many times that I have little doubt that in the case I am describing I shall find in about two years that my prognosis will be verified.

This of course was a somewhat extreme case, because it is much more usual to find a general increase in the adipose tissue of the body than that it should be deposited in the abdomen at the expense of the other regions. I can, however, recall to mind a sufficient number of mistakes which I have made in such cases as this to be able to give a warning to others to be cautious in expressing an opinion concerning the existence of a tumor merely from an increase in the size of the abdomen of a woman at the climacteric period.

Another of the conditions which simulate ovarian tumors, and one about which we must be more cautious than any other,