child which has been the subject of a severe forceps extraction, one will find that the narrow rim of metal about the fenestrum has shown a tendency to actually cut into the tissues of the scalp. Not only the outer, convex, marginal edges make their mark, but also, in lesser degree, the inner, concave edges which bound the fenestrum. Looking at such a specimen one would incline to the opinion that the fenestrum is an evil.

But waiving the question as to whether the fenestrum has any reason to exist, I think that my mishap in the case cited gives us reason to cease operating above the brim with forceps having wide fenestra.

EXTRA-UTERINE PREGNANCY.

Read in the Section of Obstetrics and Diseases of Women, at the Forty-second Annual Meeting of the American Medical Association, Washington, D. C., May 5, 1891.

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In discussing the subject of extra-uterine pregnancy, it is advisable to begin by directing our attention to the locations at which fecundation takes place. There are three sites at which it is supposed to occur, viz.: the Fallopian tubes, the ovaries, and in the peritoneal cavity.

There are several varieties of the three species just alluded to. The tubo-ovarian is that variety in which the germ is arrested in the pavilion (the tube adhering to the ovary).

The tubo-abdominal, in which the germ is arrested in the same place as the tubo-ovarian, but instead of the tube being adherent to the ovary, it is adherent to any of the neighboring viscera.

The tubal-proper is that form in which the germ is arrested in any part of the oviduct between the pavilion and that portion of the Fallopian tube that is surrounded by the uterine walls.

The tubo-uterine, or interstitial variety, is that form of gestation in which the ovum is arrested in the part of the tube that is surrounded by the uterine walls.

Abdominal pregnancy is usually divided into primary and secondary varieties. In primary abdominal pregnancy the germ is arrested in the peritoneal cavity. In secondary abdominal pregnancy the germ is arrested in the Fallopian tube or ovary, and the cyst ruptures and allows the ovum to escape into the abdominal cavity, where it continues to live and develop.

Ovarian pregnancy is that form of gestation in which the ovum is developed in the ovary.

By far the most frequent variety is tubal pregnancy, and the most common causes of this variety are supposed to be inflammation of the mucous membrane that lines the Fallopian tubes and destroys its ciliated epithelium, thereby leaving a denuded surface for the fecundated egg to adhere

to; flexion of the tubes, which prevents the ovum from entering the uterus; hernial pouches produced by dilatation of the oviduct. When the impregnated ovum is arrested and remains for any length of time in the tube, the mucous membrane becomes hypertrophied, surrounds the egg, forms a decidua, and a placenta is developed, very similar to that which is found in normal pregnancy. When the product of conception is situated in the free part of the tube, rupture almost invariably takes place before the thirteenth week, and sometimes as early as the fourth or fifth week; when it does occur, it is either into the peritoneal cavity or between the folds of the broad ligament. When rupture takes place into the peritoneal cavity, death is almost certain within a few hours, unless the abdomen is promptly opened, the bleeding vessels secured, and all foreign substances removed. When rupture takes place into the cavity of the broad ligament, the prognosis is not so grave, as the product of conception may be disposed of in several ways, viz.: it may remain between the folds of the ligament, go to full term, and be removed when viable as a living child, or it may die and be absorbed, or it may die and suppurate, and be discharged through the vagina, the rectum, bladder or abdominal walls, or it may lie quiescent as a lithopædian, or it may become intra-peritoneal through secondary rupture.

Tubo-uterine, or interstitial pregnancy, is of rare occurrence. Rupture usually takes place before the fifth month, and when it does occur it is into the peritoneal cavity.

Ovarian pregnancy undoubtedly has existed, but is extremely rare. A few cases have been recorded. The earliest of which I can find any record is that of M. de St. Meurice in the year 1682. Marinus has reported three specimens, which are in the pathological museum of Wurzburg, which he has examined, and believed them to be impregnated ovaries. J. G. Porter reported a case of ovarian gestation in the year 1853. The autopsy showed the left ovary enlarged and containing a gravid sac, the Fallopian tube on the same side being free from adhesions. Kammerer exhibited a specimen of ovarian pregnancy to the Pathological Society of New York in the year 1865. Spiegelberg also records a case of pregnancy in the right ovary.

After carefully reviewing the literature of the subject of abdominal pregnancy, I have arrived at the conclusion that primary abdominal pregnancy has not been proved by any well authenticated cases to have existed; nor does it seem possible for a fecundated ovum to remain for a long enough time in any one position to contract an adhesion that is sufficiently firm for its development; and furthermore, if it did so, its absorption or digestion would be very likely.

I believe that most, if not all, abdominal pregnancies are secondary, fecundation usually occur-

ring in the oviduct, escaping from thence through a rupture into the abdominal cavity, and there becoming adherent to any surface with which it comes in contact.

The uterus in extra-uterine pregnancy is subject to a variety of changes, similar in many respects to those that occur when the product of conception is contained within its cavity. It always undergoes certain changes which prepare it for the reception of the ovum. Its cavity is often lined with decidua, or I might say, *always*, because in many cases it is thrown off in small shreds and is passed without being observed; in other cases it is expelled *en masse*, often leading one to suppose that an abortion is in progress; the cervix frequently contains a plug of thick mucus similar to that found in normal pregnancy. The whole organ becomes more vascular, enlarged and softened—or, in other words, prepares itself for parturition.

The impregnated germ, from the beginning to the end of its growth, is not abnormal in any way, except in its location. A portion of the fœtus may be in the uterus while the remainder is in the abdominal cavity, as in a case reported by M. Mondat,¹ in which the head of the child was in the uterus, while the trunk occupied the Fallopian tube.

Bel narrates a case² that was verified by a post-mortem, in which the fœtus was in the uterus and a portion of the placenta was within the Fallopian tube. On the other hand, the placenta may occupy the normal position and the fœtus may be contained within the tube or abdomen, as was shown by Hey,³ Putna⁴ and Hofmeister⁵ in separate autopsies where the child was found free in the abdomen, the cord extending through the tube to the interior of the uterus, where the placenta was attached.

A number of cases have been recorded in which fœtuses have been found in hernial sacs. Gouley, Geuth, Muller and others have reported such cases, the greater number of which were found in inguinal hernias.

Twin conception is another variety of extra-uterine pregnancy. It is a very uncommon coincidence to find both children in the same locality; one is generally uterine, while the other is extra-uterine. Normal pregnancy may take place while extra-uterine pregnancy already exists, and gestation advance to full term and labor take place without any unusual occurrence, provided that the pelvic outlet is not obstructed by the extra-uterine fœtus. Gordon reported a case in which a woman gave birth to five living children while carrying one that had become encysted.

The positive diagnosis of ectopic gestation in

the early stages is almost impossible in every case. There are no regular symptoms that occur during the first few weeks that are not frequently found in normal gestation. If from any cause one is led to believe, or even to suspect, that anything is unusual, a physical examination should be made. The size of the womb should be compared with the size it should be, at the supposed period of pregnancy. A careful search should be made in the neighborhood of the Fallopian tubes, fundus of the womb and ovaries. If an enlargement is discovered, so much is gained. The question then arises, to what is that tumor due? Is it a pyosalpinx, a hæmatosalpinx, a hydrosalpinx, a subperitoneal fibroma, a cystic ovary or an extra-uterine pregnancy? These questions will have to be decided by an inquiry into the previous history of the case, and by carefully comparing the symptoms of the disease which it might resemble with the symptoms of pregnancy. The size of the tumor should be compared with the size that the fœtal sac should be at the supposed time of gestation. If the following symptoms are present, I think that one is justified in treating the case as extra-uterine pregnancy:

1. A previous history of sterility, or if a long period has elapsed since the birth of the last child.
2. Amenorrhœa followed in six or seven weeks by irregular hæmorrhages.
3. A tumor in either Fallopian tube.
4. Slight enlargement of the uterus, with softening of the cervix.
5. The presence of decidua. The latter symptom is of great importance. A small portion of the decidua, if present, can often be obtained by passing a pair of dressing forceps into the womb, pressing them against its lining, then closing and withdrawing them. Great care and gentleness must be exercised in their introduction, and if the slightest obstruction should be encountered they must immediately be withdrawn.

If, in addition to the foregoing symptoms, there is a plug of thick mucus in the os uteri, morning sickness, enlargement of the breasts with alteration of the areola, one is justified in passing a sound cautiously into the womb for the purpose of ascertaining the presence or absence of a fœtus.

The diagnosis cannot be made with certainty until after the fourth month, when the outlines of the child can be distinguished and the movements felt. Generally, the first time we are called upon to see the case, we find the patient complaining of an agonizing pain in the lower part of the abdomen, with symptoms of shock and internal hæmorrhage, which very clearly tells us that rupture has taken place. If death does not follow, peritonitis, either localized or general, is sure to develop. If the woman survives the attack, it is very likely to be repeated within a short time. When rupture takes place within the folds of the broad ligament, the symptoms are not so severe

¹ Archives Générales de Méd., Tome 11, 2d Series, p. 67.

² London and Edinburgh Med. Jour., November, 1845, p. 817.

³ Med. and Obst. Jour., Vol. viii, London, 1796, p. 341.

⁴ Cayaux, loc. citat., p. 590.

⁵ Rusto Magazine, 1823, Vol. xv, p. 126.

or alarming; in fact, the pain in some instances has been so slight as not to have been observed by the patient herself. This form of rupture is very rarely, if ever, followed by peritonitis. If the foetal sac ruptures, the foetus dies; if it does not rupture, gestation continues until full term, unless it is interrupted by secondary rupture into the peritoneal cavity. If this accident should happen, the symptoms are the same as those that occur in primary rupture into the peritoneal cavity, except that they are much more severe, and death is certain to follow unless operated on immediately. If the foetus is carried to full term, a spurious labor will set in, and if the woman is not delivered, the child will die.

If our knowledge of the differential diagnosis of the various forms of ectopic gestation was more exact, the treatment would be comparatively simple. If we could distinguish tubal from abdominal pregnancy in the early stages, the former could be relieved and the latter allowed to progress until viable.

Many forms of treatment have been devised and practiced at different times. Among these may be mentioned hypodermic injections of various narcotics and poisons into the foetal sac, and even into the foetus itself; syphilization of the mother with the hope of destroying the child; puncturing the sac through the vaginal or abdominal walls and drawing off the liquor amnii; the passage of an electric current through the foetus with the hope of killing it. It is needless to say that these and many other devices, too numerous to mention, are hazardous to the mother, and in many instances ineffectual in the destruction of the child.

In my opinion, the only sensible and rational treatment in extra-uterine pregnancy is laparotomy. The proper plan of treatment to be pursued in all cases of extra-uterine pregnancy, except those in which the foetus is contained within the folds of the broad ligament, no matter at what period of gestation, is to open the abdomen and remove the tube that contains the foetal sac. I will go still further, and say that in a case in which a tumor has been discovered in the tube, and we are led to suspect the existence of extra-uterine pregnancy, an exploratory laparotomy should be performed, and if it is then found that the tube does not contain a foetus, the tumor, whatever it may be, can be removed. Too much emphasis cannot be laid upon the propriety of early operation, for we all know that the tube is sure to rupture, sooner or later, and, in most cases, cause the death of the woman, if an immediate operation is not performed.

When the foetus is contained within the broad ligament, it should be allowed to remain there until it becomes viable, unless secondary rupture occurs, or it should die in the meanwhile. When rupture has taken place, the abdomen should be

immediately opened, all foreign substances removed, and the bleeding vessels ligated. The peritoneal cavity should be thoroughly irrigated with warm water that has been boiled, and a glass drainage tube placed in the lower angle of the wound. When pregnancy is far advanced, and the child is either viable or dead, its removal becomes necessary. This is best accomplished by abdominal section. The incision should be made directly over the foetal sac, if possible, as by so doing the foetus, in many instances, can be removed without opening the peritoneal cavity. The child should be removed from the sac, and the cord cut as close as possible to the placenta. If the placenta be not firmly adherent, it should be removed. If the hæmorrhage from the surface of the sac which contained the placenta cannot be controlled with warm water, a sponge wet with Monsell's solution should be applied to the bleeding surface. This failing, the sac should be packed with a strip of iodoform gauze, the end of which should be brought out at the lower angle of the wound, by the side of a glass drainage tube. In from twenty-four to thirty-six hours the gauze should be removed, and the drainage tube allowed to remain until all discharges have ceased. If the placenta is firmly adherent, it should not be removed.

After thoroughly cleansing the interior of the sac and removing all loose membranes, the stitches should be so arranged that when they are tightly drawn the sac will be air-tight. If at any future time the placenta should show evidences of suppuration, the wound must be reopened, the placenta removed, and the interior of the sac thoroughly irrigated and drained.

It is needless to say that in all these operations the strictest antiseptic precautions should be observed in their minutest details.

ELECTRICITY AS A THERAPEUTICAL AGENT IN THE TREATMENT OF DYSMENORRHOEA AND PELVIC INFLAMMATIONS.

Read at the Annual Meeting of the Illinois State Medical Society, at Springfield, Ill., May 20, 1891.

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As a therapeutical agent, electricity has a wider range of usefulness than any other one agent known to the medical profession to-day. A great deal of good can be done with it when properly and carefully used. The ancients had a limited knowledge of its power to cure disease. Their batteries were furnished them in the form of an electrical fish, the *raja torpedo*, found in the Mediterranean Sea. Shocks from these torpedoes were often used in the treatment of dis-