When the activity is spent upon one point, there is derivation at the expense of other parts; and every exaggeration of this activity is a disturbance of the general equilibrium; in the same way as the sudden cessation of the function recalls the activity to another organ, which becomes the seat of a movement of fluxion appropriate to its structure. It is thus a dynamic metastasis rather than a transmigration of fluids. This is so true that, when it does not appear in its ordinary, that is critical form, it is upon the nervous system alone that this deviation of activity is concentrated, and some disorder of nervous function is manifested.

So long as the function of menstruation is accomplished normally in all its conditions, there is nothing, *quoàd* this function, to disturb the harmonious balance of the nervous system. But let the function be attended with pain, shock to the nervous centres is inevitable; and it is henceforth only a question of time, how long the brain and spinal cord will withstand the irritation of continuous or intermittent painful impressions, before the healthy equilibrium is overturned, and before morbid deviations of nervous energy become manifested. The time of resistance will vary with the absolute and relative force of the two factors at work. If we look upon the nervous centres as the resisting or conservative power, and the aberration of the menstrual function as the assailing power, it is obvious that, where the nervous system is robust, pain will make less severe impressions and slower inroads; and that, on the other hand, where the nervous centres are very susceptible, pain is felt more acutely, and will sooner break down the conservative resistance. In practice we may see frequent illustrations of this proposition. Dysmenorrhœa, at first, leaves but an evanescent depression; after a time, the prostration and nervous irritability are continuous, only remittent in degree; later still, attacks of hysteria, neuralgia, and other nervous disorders are developed, and the general health breaks down under the continual wear and tear, and perverted distribution of the nervous power.

CHAPTER XI.

OVARY: ABSENCE OF; ABNORMAL CONDITIONS OF; DISPLACEMENT: PROLAPSUS; HERNIA; HYPERÆMIA; HEMORRHAGE; ANOMALIES OF CORPUS LUTEUM; INFLAMMATION (OOPHORITIS); TUBERCLE; CANCER; SOLID TUMORS; FIBROMA.

BOTH ovaries are hardly ever absent, unless when there is defect of the whole sexual apparatus. They commonly exist well developed when the uterus is absent. Deficiency of one ovary is rarely observed when the rest of the sexual organs are well developed. When an ovary is

wanting, the Fallopian tube of the same side is also wanting, or is only represented by a solid cord running from the uterus. Occasionally, says Rokitansky, an ovary may be missing, from having been twisted off by a process of atrophy, through dragging upon its attachments, and then, sometimes, a bit of the tube has gone with it. This may take place in the fœtal state, and the ovary may quite disappear. Sappey relates that in a woman who had had several children he found both ovaries adherent to the left iliac region, and completely detached from the uterus.

Atrophy of the ovaries, independently of the normal involution at the climacteric, is not seldom observed within the period of child-bearing as the result of exhausting diseases. The existing follicles shrink away, new ones are not formed, and the stroma retracts; on the surface, all trace of recent scar is wanting.

DISPLACEMENTS OF THE OVARY.

The ovary is subject to various displacements. These arise:—

1. From changes in its own condition, as of bulk, the result of inflammation or other disease.
2. From pressure of other organs or structures upon it, as tumors.
3. From dragging of the uterus.
4. From inflammatory adhesions binding it down in unnatural positions.
5. From relaxation of the vagina and other structures, which support the uterus and ovaries *in sitû*.

1. *Displacements of the Ovary from its Altered Bulk.*—The most frequent, or at least the most familiarly known, are the displacements which ensue upon enlargement of the ovary from cystic disease. I must refer to the chapter on Ovarian Dropsy for further description of the displacements from this cause.

Slightly increased bulk and weight, acting concurrently with the relaxation induced by morbid action, may cause the ovary to drop; and if it drop, it must fall into the recto-uterine pouch, tending to get behind the uterus. This movement from the lateral position towards the median line is the necessary result of attachments. The ovary is suspended at the side of the uterus on a plane posterior to this organ by a chord represented by the Fallopian tubes and ovarian ligament. As the ovary descends it describes an arc, of which this chord is the radius; and thus, unless the uterus descends *pari passu*, the ovary must come behind it.

This has been called *prolapsus of the ovary* by Rigby and others. It gets between the rectum and the uterus. It is, says Rigby, of great practical importance, producing intense suffering. There is a peculiar sickening pain about the sacral region extending to one or other groin, and coming on in paroxysms of agonizing severity. Sometimes there are intermissions; at others only remissions. The source of the pain is connected with the rectum, the passage of feces being difficult and painful. The patient describes it as a sense of obstruction up the rectum. Rigby likens it to orchitis. There is throbbing, sense of bursting, aggravated by menstruation and coagula; the stomach is irritable, vomiting being frequent. Great pain is felt on touching the os uteri, but this is

owing to pressing the cervix back upon the ovary. If the finger is pressed behind the os, by vagina or especially by rectum, it touches the painful spot directly; the oval movable ovary is then felt. It is almost necessarily enlarged by the strangulation caused by the displacement. The ovary may be fixed in this abnormal position by adhesions. Until the ovary attains the size of a Tangerine orange or more, it is almost always felt on one side of the uterine neck; as it enlarges it tends to get more in the median position, filling the recto-uterine pouch. But even then it generally throws the body of the uterus somewhat over to the opposite side. It is an observation made in connection with my investigations into the characters of Douglas's pouch, that the left ovary is more frequently prolapsed than the right. But I have frequently known the retroflected uterus to be mistaken for a prolapsed ovary. The diagnosis is made with certainty by passing the sound into the uterus. This done, if the mass is lifted up away from the finger, and the fundus uteri be felt supported on the sound by the hand above the symphysis, we know the case is retroflexion. If, on the other hand, the sound goes the normal direction, and the mass, tender to touch and movable, is still felt behind the cervix, the conclusion that it is a prolapsed ovary may be justified.

The symptoms above described are mostly due to congestion or inflammation, which may be either primary or secondary upon the displacement. It constitutes ovarian dysmenorrhœa. Whether there be inflammation or not, dyspareunia is an almost constant consequence.

Simple prolapsus occurs in women of lax fibre, prone to constipation, to passive menorrhagia and leucorrhœa.

An essential point in the *treatment* is to rouse the liver, to clear the intestinal canal by salines, and enemata or alteratives. When the pain is great on touch, opiate suppositories or sedative pessaries should first be tried, unless we are satisfied there is inflammation. In this event leeches to the posterior fundus of the vagina will probably be useful. Hot water injections by rectum or vagina are also useful.

2. *Displacements from Pressure of other Structures.*—Enlargement of the uterus from a tumor in its walls may displace the ovary in various ways. The ovaries naturally follow the uterus in many of the displacements of this organ, as when a retro-uterine hæmatocele pushes it forwards against the symphysis pubis. But as their relative position to the uterus may be preserved, this change of position does not of itself involve any particular symptoms, although the displacing cause may exert such pressure upon the ovaries as to cause pain in them.

3. *Displacements of the Ovary from Dragging of the Uterus.*—If the uterus descend, the ovaries must follow, unless we imagine the Fallopian tubes and ovarian ligaments to stretch. In prolapsus of the uterus the ovaries will be drawn down, preserving their relative position behind the uterus. They are thus brought more within reach of the finger examining by the rectum.

The uterus may be carried up into the abdomen, as in pregnancy. The ovaries then follow, dropping, however, a little to the sides of the uterus. The uterus may also rise out of the pelvis, owing to enlargement from tumors in its cavity or walls.

Retroversion and retroflexion of the uterus, by dragging on the Fallopian tubes and broad ligaments, must pull somewhat upon the ovaries, and in some cases the displacement thus effected is considerable.

The effect of displacement of the fundus uteri is well seen in cases of inversion. The descending fundus drags upon the tubes, tends to draw them into its inverted cavity, and the ovaries seek the same centre, seldom, however, getting quite inside. The ovary rises into the abdomen when it is too large to be contained in the pelvis.

Hernia of the Ovary.—When the ovary enters into the contents of a hernial sac it may be the result of a congenital vice. The most common form is the inguinal, but the ovary has been found in crural, abdominal, vaginal, subpubic, and even ischiatic herniæ. Observed cases permit the following conclusions to be drawn: The pain which attends these herniæ extends from the seat of the strangulation to the uterus, and thus, if by the finger in the vagina we move the uterus, this movement is transmitted to the contents of the hernia. In one-sided ovario-inguinal hernia, the fundus of the uterus is slightly inclined to the side of the hernia, and Seller has drawn attention to the fact that the pains in the hernial sac increase, and are attended by a feeling of dragging, when the patient lies down on the opposite side. The ovaries swell and become more tender at the menstrual epochs, as was observed by Scanzoni, in the remarkable case already referred to under "menstruation" (see page 186). This periodical swelling was clearly observed and measured in my case at St. George's Hospital. Boivin and Dugès feared that ovarian hernia would either induce sterility or lead to extra-uterine gestation. Since Mr. Curling has shown that hernia of the testicles induces sterility in the male, the first conjecture seems strengthened. But Scanzoni's patient became pregnant. Disse relates a case in which a diseased cystic ovary was the subject of hernia (*Monatssch. f. Geburtsk.* 1857).

Diagnosis is not always easy. An ovoid tumor of firm consistence, painful to touch, especially at the menstrual epochs, may prove to be an enlarged gland or a fibroid tumor. Examination of the tumor after removal may be necessary to its identification.

Treatment.—When the hernia is reducible, the taxis and a suitable bandage should be applied. But if the ovary be fixed by adhesions it will be wise to follow the example of Pott and Deneux,[1] and to remove it. The operation is simple. In my case the distress from the swelling of the ovary was so great that walking was impeded, and the wearing a truss, which was indicated by the attending descent of intestine, was impossible. It was therefore removed, and the relief was complete.

4. *Anomalies of relation* are frequently seen in the form of *pseudo-membranous adhesions* of the ovaries. The most common is the adhesion with the tube; next in frequency is the adhesion of the ovary, either with or without its tube, to the hinder wall of the uterus, and the neighboring parts of the ligamentum latum down to the bottom of the recto-vaginal pouch. These adhesions frequently result from puerperal peritonitis at a time when the uterus is above the usual size, filling the pelvic cavity, and when its appendages are thrown back to its posterior surface. Adhesions of the ovaries also take place to the sides of the

[1] Recherches sur les Hernies de l'Ovaire. Paris, 1813.

pelvis, to the rectum, to the sigmoid flexure, in consequence of pelvic peritonitis to which analogous maturation and morbid processes in the ovaries, or tubal catarrh has given rise.

Peritonitis determining adhesions of this kind may also be caused by retro-uterine hæmatocele. When the blood-tumor disappears, the relation of the ovaries and uterus may thus remain altered for a time.

When the ovary has contracted adhesions it is subject to dragging from the rising gravid uterus, or from the uterus growing together with the developing pelvis, also from the development of the bladder, sigmoid flexure, or rectum. This dragging commonly causes atrophy of the ovary.

Hyperæmia of the ovary attends the normal as well as the abnormal ripening and extrusion of ova and the results, and especially affects the stroma surrounding the peripheral follicles and their fibrous cavities. The involution of the follicle following on the completion of the menstrual antecedents is also often marked by a considerable vascularity of the surrounding tissues.

Congestion may excite in the peripheral, as well as in the deep-lying follicles, an excessive growth and cystic degeneration. Very often it leads to hemorrhage, principally in the large peripheral follicles; then there are found one or more projecting sacs filled with lightly coagulated blood, and varying in size from a bean to a nut, or even to a fist. They shrink after the manner of corpora lutea, and sometimes after the resorption of the extravasated blood they remain as cysts and continue to grow. Hemorrhagic effusions in the ovary are not uncommon. I have seen them, small, in women dying during pregnancy. If they burst the capsule, then there is pelvic hæmatocele in the broad ligament or in the peritoneal sac.

The anomalies observed in the corpus luteum are, according to Rokitansky—1. *Dendritic protrusion of the corpus luteum* outwards through the rent of the follicle. This appears as a villous, soft, reddish-yellow outgrowth continuous with the mass of the yellow body, or as a leaf-like excrescence connected by a branched stalk, on which are small linseed-formed white fibrous bodies.

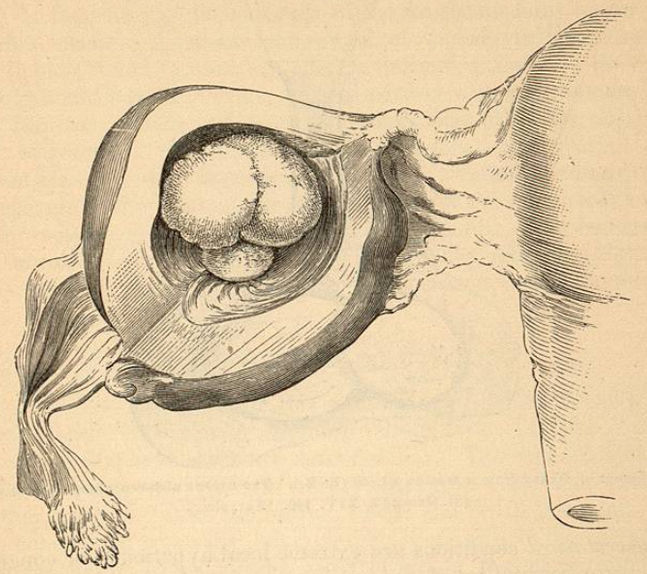
2. *Duplication of the corpus luteum*, which Rokitansky explains thus: A fresh hemorrhage takes place prematurely from the wall of a follicle after the formation of one corpus luteum, which detaches the yellow body, pushing it inward, and hereupon a second corpus luteum is formed in the wall of the follicle.

3. Rokitansky describes the following *degenerations of the corpus luteum*. *Cystic degeneration*. The cyst in the periphery of the ovary is found retaining traces of the structure of the corpus luteum, including the scar of the rent, although it may be as large as a walnut. With these cysts there is occasionally seen the remarkable appearance of a primitive communication of the cyst with the fimbriated extremity of the Fallopian tube, resulting from the process of extrusion of the ovum from the follicle and its reception into the tube. These are the so-called *tubo-ovarian cysts* which have been described by Richard.

4. *The degeneration to a fibrous tumor*, which consists in the excessive growth of the yellow body and its persistence in the form of a more or

less plainly visible sheath inclosing round fibrous knots the size of a walnut, and a cavity filled with serum. The specimen figured (Fig. 73) seems to be an example of this fibrous degeneration of a Graafian follicle.

FIG. 72.



Showing a Blood Coagulum in a Cyst or Ovary (R. B.)—(Guy's 2228[80].)

"The ovary forms a cyst with thick walls, and contains what appears to be a coagulum of blood as large as a chestnut."—(Catalogue.)

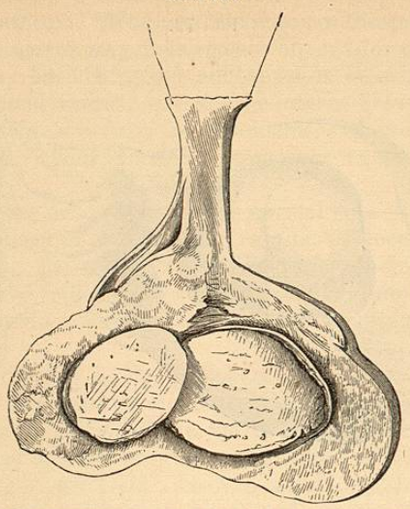
5. The degeneration to *Carcinoma* may ensue upon the preceding fibrous degeneration, or occur independently.

"*Congestion of the ovary*" and "*oophoralgia*," "*neuralgia of the ovary*," "*ovarian irritation*," have been discussed in the preceding chapter.

That cases marked by excessive pain are especially apt to pass into inflammation is highly probable. There is congestion of the ovaries, tubes, and uterus beyond the physiological measures, so that escape of blood into the peritoneum is not unlikely to occur. But intensity of pain is not evidence of inflammation. I have known an ovarian cyst to burst, discharge its contents into the peritoneal cavity, and death ensue under the most excruciating agony; yet examination has not shown a trace of inflammation. Again, in these cases we find the uterus remaining movable, with entire absence of any thickening or perimetric swellings, even after years of suffering. It may be true that the ovary proper may be inflamed alone, it is hardly conceivable that repeated attacks of oophoritis should fail to involve the peritoneal investment. It is, moreover, scarcely in accordance with the history of inflammation to return in an organ every month, to run its course in a few days, and to leave the organ essentially sound, that is, in a condition ultimately to perform its functions. Yet I

have seen cases where this oophoralgia lasted for years, was cured, and healthy menstruation ultimately established.

Fig. 73.



Fibrous Tumor of Ovary from a woman æt. 50 (R. B.). The uterus also contained a fibrous tumor. (St. George's, XIV. 140. Nat. size.)

The *ascertained* conditions are extreme local hyperæmia or congestion, and exquisite sensibility of the ovaries, combined with great irritability of the nervous centres.

These conditions furnish the indications in *treatment*. It is very important to eliminate the idea of inflammation where the thing does not exist, because antiphlogistic treatment will in the long run aggravate the disease, and reduce the general powers. Thus I have several times seen great prostration, increase of local hyperæsthesia and of general local irritability produced by the repeated application of leeches to the groins or to the os uteri. It is true that in some of these cases the patients expressed relief at the time; but the relief could hardly be said to be real; it was not attended by cure, and seemed to me to do more harm than good. Counter-irritation in the form of blisters or chloroform-embrocations to the iliac regions has appeared to be beneficial.

Another proceeding very apt to be carried to mischievous excess is lying down. Nutrition must suffer, and as a consequence the nervous centres become more irritable.

The true course to adopt is to follow the three indications given by—1. The general depression of the system; 2. The exaggerated irritability of the nervous centres; 3. The congestion and hyperæsthesia of the ovaries and surrounding parts.

It is superfluous to enumerate the medicinal, dietetic, and hygienic remedies which help to fulfil the first indication. The task of allaying the extreme irritability of the nervous centres will be made easier in proportion as the general tone is improved. The nervous centres will also

recover power as the third indication, that of tranquillizing the ovaries, one source of irritation, is effected.

Rest in the physiological sense, that is, abstinence from "married life," is imperative. To subdue the hyperæsthesia, the wearing for a few hours every day one of the forms of "vaginal-rest" will be found of great service. If there is any displacement of the womb this must be corrected by suitable means. Abrasion, congestion of the cervix uteri, must be cured. I have found it useful to effect a derivative action in the cervix, by making a small eschar on the vaginal-portion with potassa cum calce. This is far less painful and more efficacious than blistering the groins. Bromide of potassium acts in some degree as a sedative of ovarian excitement; but it is not to be depended upon alone. Sedative pessaries containing opium or belladonna applied to the fundus of the vagina a day or two before the advent of the menstrual epoch are useful. The bowels must be well regulated to prevent accumulation in the rectum. Salt-water or Vichy baths, tepid or cold, according to the season, are often eminently useful.

INFLAMMATION OF THE OVARY.

It is not within the scope of this work to describe the diseases of the puerperal state. I pass over therefore those forms of oophoritis with which pathological anatomists are most familiar. The oophoritis of childbed is seldom met with, perhaps never, apart from complication with inflammation, extending from the uterus, tubes, and broad ligaments. The ovary is not affected primarily, but is caught secondarily in the spread of an active inflammation which invades most or all of the pelvic structures. It is difficult so to isolate the oophoritis in these cases as to extract any trustworthy facts to illustrate the history of pure oophoritis. Nor do we derive a much larger amount of precise information, *ad hôc*, from the examination of subjects who have had oophoritis apart from childbed. Here, too, the oophoritis is not often simple, but a part of an inflammatory process involving other structures.

Simple oophoritis is rarely fatal; so that the opportunities of seeing the condition of the ovary under the influence of acute or recent inflammation are necessarily rare. Rokitansky declares that apart from childbed oophoritis is very rare. But this statement must be taken as expressing the experience of the dead-house. I believe that simple, or conjoined with metritis, it is not uncommon. But as the cases recover more or less perfectly, distinct evidence of the inflammatory action to which the ovaries have been subject is rarely seen. All such evidence had disappeared during life, or had become confounded with the results of complicating diseases.

One of the most frequent conditions found is fibrinous adhesions of various age uniting the ovaries to the sides and posterior surface of the uterus, to the broad ligament, or other neighboring structures. These are often found in women who have never borne children. We are thus driven to the conclusion that women are liable to frequent pelvic inflammations apart from pregnancy. These adhesions of course are the residua of peritoneal inflammation, and commonly extend beyond the ovaries to other parts of the pelvic peritoneum.

Assuming that the ovarian implication is often secondary, it cannot be doubted that there are cases of primary oophoritis proper. All active function involves determination of blood to the organ performing it; but there is hardly any organ whose functional activity attracts blood in such profusion as the ovary. It goes beyond simple transient hyperæmia; the rush and work are so violent that actual extravasation of blood and laceration of structure take place. It cannot then be surprising that under certain conditions interfering with the normal accomplishment of this function, activity so great should pass the narrow physiological boundary, and terminate in inflammation.

Scanzoni describes the post-mortem appearances in what seems to have been a typical case of acute oophoritis. The subject died of pneumonia, the result of cold, and with symptoms of peritonitis in the right ovarian region. In this situation was found a mass of coagulated fibrin, the size of a fist. On removing this the right ovary was seen two inches long, nearly as much across, and one and a half inches thick. It was ovoid, considerably enlarged, as the measurements show; its surface was violet-blue, covered with numerous dilated veins, and near the inner angle of the posterior surface was a black spot, the seat of recent rupture of a vesicle. The organ was pasty, almost fluctuating in parts. On incision there escaped a considerable quantity of blood, and the section showed the same violet color, and some veins strongly congested. The ruptured vesicle still held some liquid black blood. Towards the other extremity of the ovary, where the congestion was less intense, there was an abscess in the parenchyma; and at the side were other smaller abscesses, all deep in the parenchyma. This case shows a combination of all the forms of oophoritis.

Causes.—Oophoritis may be said to be almost strictly limited to the reproductive period of life. It is accordingly found to arise under conditions which offer obstruction to the ordinary course of the ovarian function. Impressions, physical or emotional, occurring during menstruation may goad the physiological congestion into inflammation. It has followed operations on the os uteri, and intra-uterine injections, and the spread of blennorrhagic inflammation along the Fallopian tubes. Ricord described this last form as analogous to the orchitis arising from blennorrhagia in the male. Its origin in obstructed menstruation will account for the fact of oophoritis being more frequent in virgins than inflammation of the uterus, which as yet has only entered upon the subsidiary function of menstruation.

It is often secondary upon disease of the uterus, tubes, and broad ligaments. The intimate vascular communications between these organs offer a ready channel of extension for inflammation from the uterus.

The dysmenorrhœa resulting from a contracted or nearly impervious os uteri is very likely to induce chronic inflammation of the ovary.

Retroversion is a frequent cause of swelling and great tenderness of the ovary, not unfrequently amounting to oophoritis, from the fundus of the uterus pulling the ovary backwards, and thus by the tension of the broad ligaments producing obstruction to its returning circulation.

Sexual intercourse for the first time, or in excess, particularly if during the menstrual nisus, especially if there have been previously an irritable state of the ovary, with dysmenorrhœa, is not unfrequently followed by oophoritis.

Early abortions also may lead to the same condition.

Oophoritis, arising otherwise than in childbed, is often single. But the ovaries appear to be subject, like the eyes and other double organs, to consensual suffering. Thus, inflammation of one ovary is likely to be followed by inflammation of the other. In some cases it is easy to observe that common predisposing and exciting causes act upon both ovaries alike, although one may be affected earlier and more severely than the other.

Inflammation of the Follicles of the Ovary.—Apart from the ordinary peritoneal inflammatory action proceeding from the ripened and burst follices, one or more ripe follicles may be seen with injected walls, red, softened, easily torn, with turbid, flocculent, puriform contents, and the surrounding parenchyma infiltrated. This leads to atrophy of the follicle, or causes its degeneration to a cyst.

Négrier describes "*Vésiculite*" simple. In most cases the trouble remains local. A point of the ovary becomes tumefied and torn, an inflammatory areola has surrounded the little wound, sometimes has invaded the peritoneal investment, and even the pelvic peritoneum. "Vésiculite" is "simple" when easily stopped, and ending in resolution. "Vésiculite" is "grave," when ending in suppuration, or when the inflammation has spread widely to the pelvic peritoneum.

Kiwisch says the inflammation of the follicles is commonly confined to one Graafian vesicle. An indication of the inflammatory process is seen in the menstrual metamorphosis of the follicles. The products of this inflammatory condition are more or less plastic, and in general much infiltrated with blood; the follicle is distended to the size of a pea or a cherry. When several follicles are implicated, the surrounding stroma participates in the inflammatory condition, and is found in a state of hyperæmia, serous infiltration, or inflammatory softening.

Parenchymatous Oophoritis.—This very rarely runs to suppuration. It often, however, leads in young persons to peritoneal false membranes and adhesions, to increase of bulk and thickening (sclerosis) of the stroma, thickening of the tunica albuginea, with atrophy of the follicles, especially of the peripheral ones, and enlargement of the ovary, with tuberose surface.

Inflammation of the stroma is rare in the non-puerperal state. Kiwisch relates two cases in which the entire organs were affected, both ending fatally in a short time; in the one by acute abscess, in the other by a sanious disintegration. In both consecutive peritonitis was the cause of death.

Simple peritoneal oophoritis can hardly be said to exist. It is peritonitis, not oophoritis; and the inflammation will rarely be limited to the surface of the ovary. Ovarian peritonitis is commonly a part of the wide-spread pelvic peritonitis of childbed, or other forms of general pelvic peritonitis. Primary ovarian peritonitis is more frequently limited to one side, and is the result of, or attended by traumatic or other lesion proceeding from the bursting or disease of a Graafian follicle. But even