sensation of a funnel-shaped *cul-de-sac*, in the centre of which the small dimple-like os uteri is felt. The mucous membrane is often pale; the glands have in great part disappeared or undergone degeneration. The tissues have lost elasticity.

The uterine mucous membrane is now liable to what may be called senile catarrh. There is a chronic secretion of mucus, which, when moderate in quantity, and not impeded in excretion, may entail little distress. But it not infrequently happens that through the atrophic atresia of the os externum, the mucus sereted in the uterine cavity is retained. In this case, colic and other consequences similar to those which characterize retention of menstrual secretion, arise. The remedy is similar. It consists in dilating the closed os by incision or by tents. Then, astringents can be applied to the uterine cavity.

This chronic senile catarrh is very often a continuation of catarrh which began at an earlier period. The discharge is sometimes mucopurulent. In this case there is often some persistent hypertrophy of the vaginal-portion. The margin of the os uteri commonly shows a ring of intense red color. This, says Whitehead, is a sure sign of endometritis.

We have already, when studying the climacteric condition, referred to the "senile hemorrhages." There are various troublesome affections of the skin which appear at, and after the climacteric period. Alibert observed many skin-eruptions only twice during life, that is, before the appearance of menstruation, and after its cessation. The predisposing cause appears to reside in the unhealthy state of the blood and nervous system, which underlies so many of the climacteric troubles. Amongst other evidences of this we see a greater disposition to gout, rheumatism, and neuralgia. A transient form of erysipelas is not uncommon. These will be discussed under "Diseases of the Vagina and Vulva."

CHAPTER X.

THE RELATIONS OF MENSTRUATION TO VARIOUS DISEASES—THE INFLUENCES OF OVULATION AND MENSTRUATION IN EVOKING MORBID INFLUENCES.

In discussing this subject it would be convenient to consider, first, the influence of disease in other organs or in the system generally, upon the function of menstruation; and secondly, the influence of ovulation and menstruation in producing diseased action in other organs, or in the system at large. In a considerable number of cases this could be done. But there are other cases in which the action and reaction are so close,

that it is scarcely possible to get at the first factor. So we are compelled by clinical necessity to study some cases from both sides, that is, to observe the reciprocal influences of ovulation, and menstruation, and diseased actions.

In some diseases, menstruation is diminished or altogether arrested. This is especially the case in chronic wasting diseases which induce degradation of the blood. Phthisis is a marked example of this kind. Ovulation, indeed, is not arrested, but the ordinary menstrual discharge gradually diminishes, and generally ceases altogether. This is partly due to the waste of red-corpuscles; partly to the diminished force of the circulation; partly to the morbid process causing derivation of blood away from the uterus; and partly from impaired nutrition of the ovaries. Louis observed that cessation of the menses was seldom delayed beyond the onset of the tubercular hectic. Acute lung-inflammations do not entail much interference, menstruation usually appearing notwithstanding. In the great majority of affections of the spinal cord, menstruation is not suspended.

When menstruation makes its appearance in the course of a disease, especially in fevers, it has been looked upon as critical, and as exercising a favorable influence. There is little evidence of the truth of this theory. Perhaps the case is, that when the disease is going on favorably, there is more probability of menstruation being restored. At the same time a useful indication may sometimes be drawn from the manifest relief which follows the appearance of the menstrual flow in many morbid conditions, to solicit or promote the flow or to establish an equivalent for it, by a topical or general bleeding.

In exanthematous fevers, as smallpox, scarlatina, measles, or typhoid, sanguineous discharge occasionally takes place from the vagina. Sometimes this is undoubtedly menstrual. But in most instances it is to be regarded in the same light as the other hemorrhages which occur under similar circumstances. These fevers, especially smallpox and typhoid, induce a state of blood favorable to extravasation from mucous membranes and skin. The utero-vaginal tract is of course likely to be the seat of this effusion; and if menstruation be impending, the flow will probably be profuse. Under these circumstances, blood may flow back from the Fallopian tubes, and escape into the peritoneum, constituting retro-uterine hæmatocele.

We have another example of hemorrhage from the genital tract in "malignant jaundice," or "acute yellow atrophy of the liver." Here, also, there is no special tendency to metrorrhagia. The genital hemorrhage is simply the result of a general alteration of the blood which disposes it to exude from all the mucous membranes.

As this subject has not attracted the attention it deserves, I am happy to have the opportunity of embodying the results of extensive observation and inquiry, kindly made, at my request, by Dr. Clapton. *Phthisis*, he says, in nearly every case stops menstruation; in the majority, abruptly, but sometimes after gradual diminution. Not uncommonly phthisis appears to be developed in consequence of emansio mensium, but in almost all these instances there is evidence of scrofulous diathesis. In *Scrofula*, there is great irregularity as to time, quantity, and character.

As a rule there is delay, deficiency, or suppression. In *Bronchocele* menstruation is generally scanty and pale. In *Neuralgia* it, as a rule, diminishes. Neuralgia is often associated, either as cause or effect, with dysmenorrhœa. *Malarious affections* diminish the secretion; the color is pale. *Chorea* is not common after puberty, except in pregnant young women; but when it does occur it is generally associated with either dysmenorrhœa or emansio mensium. The influence of *Epilepsy* is uncertain; menstruation is generally regular, but if not, there is a tendency to excessive or too frequent flow. *Hysteria* is sometimes cause, sometimes effect of amenorrhœa; it is usually associated with dysmenorrhœa; more rarely with menorrhagia. Inflammatory and congestive *diseases of the brain* and spinal cord tend to increase the menstrual flow, the *degenerative* tend to diminish it; *paraplegia*, if from hyperæmia, increases, if from anæmia decreases the flow. *Mania* generally increases the discharge; *melancholy* diminishes it; *dementia* usually occurs after cessation of catamenia; in *idiocy*, in the majority of cases, menstruation is regularly performed, in others there is emansio mensium. Surgical injuries, attended by *shock or concussion*, generally check menstruation if occurring during the flow, but tend to induce it if occurring during the intervals. *Pyæmia* at once suppresses the discharge. In *secondary syphilitic affections* there is no alteration. (This I would qualify by observing that where the uterine mucous membrane is affected as it often is, there is a tendency to menorrhagia.) *Purpura* disposes to uterine hemorrhage. *Typhus and enteric fevers and exanthemata* retard, and sometimes suppress for a long time after the attack. In some of the worst cases there is uterine hemorrhage at the time. *Rheumatism and gout* have little apparent effect, except that in rheumatic fever menstruation is generally delayed. After one attack of acute rheumatism, menstruation is usually suppressed for a month or two. *Congestive liver diseases* often for a time increase, whilst the atrophic diseases diminish or suppress it. Chronic *diarrhœa or dysentery* tend to diminish or suppress. Of *kidney diseases*, the inflammatory or congestive generally increase menstruation, whilst the fatty and amyloid diminish or stop it. *Diabetes* diminishes, and after a time stops the secretion, but in some cases there is no change. *Heart diseases:* distension of the right cavities, and affections of the mitral valves tend to increase, whilst aortic diseases generally diminish or stop menstrual flow. In *emphysema and asthma*, as a rule, there is no change; if any, there is dysmenorrhœa. In *chronic bronchitis* and *pneumonia* there is no change.

My observations generally agree with Dr. Clapton's. But I have seen striking instances of *asthma* coming on at every menstrual epoch.

The modifications induced in the course of inflammations, acute or subacute, by menstruation, deserve careful attention. In several cases observed at St. George's Hospital by Dr. Lacy when my assistant, and myself, it was found that the temperature rose 1°, 2°, or 3° F. at every menstrual epoch. Hence we draw indication to moderate nervous and vascular tension at the menstrual epoch.

Acne is one of the forms of skin affection induced or influenced by disorder of menstruation. At least an eruption of this form has been noticed at every month when menstruation has been suppressed, and has

ceased when the function was restored. The internal administration of arsenic is often useful in these cases. The acne pustules may be touched with butter of antimony, taking care to neutralize the caustic immediately with a little solution of bicarbonate of soda.

The *influence of ordinary menstruation upon the breasts* has been already alluded to. Of the influence of obstructed menstruation upon morbid conditions of the breasts I have seen several remarkable illustrations. Some years ago a single lady came to me from the country, suffering so much from dysmenorrhœa that her health was breaking down. She had, besides, a suspicious hard tumor in the left breast, for which she consulted the late Mr. C. H. Moore. The dysmenorrhœa I concluded was due to extreme narrowing of the os uteri. I dilated this by incision, and almost complete relief from dysmenorrhœa ensued; and whereas the tumor in the breast had previously been progressing unfavorably under monthly exacerbations of pain and swelling, it now became quiescent, and scarcely gave any distress. Several years have now elapsed, and the tumor is still dormant. Mr. Moore was himself so struck with the beneficial effect attending the relief of the utero-ovarian distress, that he read a paper on the case before a meeting of the British Medical Association. It is one amongst many proofs constantly observed in practice, of the wisdom, when cases of complicated diseases come before us, of eliminating any one of the complications that may be within our power, in the assurance that, generally, the remaining diseases will be mitigated, and the load borne by the patient be by so much lightened.

Menstruation induces a state of hyperæsthesia or nervous erethism, under which, evils that in the intervals lie dormant or quiescent are brought into prominence. It is quite a familiar experience to observe intense facial *neuralgia* recurring at every menstrual epoch. A lady came under my care for endometritis following abortions induced by a syphilitic diathesis, and who had also a stiff knee with chronic synovitis, for which I referred her to Mr. Curling. At every period pain came on in the knee, and her lameness was worse; and at the same time an old syphilitic eruption on the chest would reappear. As the syphilitic condition mended the knee got better. She returned to Canada much improved. I saw her in 1876, that is, more than two years afterwards, when I found that her leg was still better.

The influence of chronic nervous disorder upon ovulation and menstruation is not often very clearly marked. But sudden strong emotions, acting as it were by shock, often exercise an unmistakable influence. In some cases, profuse flooding is produced; in others the secretion is checked, and even protracted amenorrhœa is induced.

Négrier says, "Softening of the brain does not always suspend menstruation." The ovaries receive their innervation from the ganglionic system. For the like reason chronic affections of the brain do not usually interrupt ovarian functions. On the other hand, ovarian function exerts great influence upon diseases of the brain, especially when the ovaries are unusually developed. Thus, ovulation sensibly aggravates intellectual disorders, and frequently stamps them with an hysterical character.

As *epilepsy* sometimes attends the menopause, so it sometimes attends onset of menstrual life. A young lady came several times under my

observation at the age of sixteen and afterwards. She never had fits in infancy or childhood. At fourteen menstruation began; it soon became arrested or irregular, and epileptic fits appeared. The epochs were indicated by pelvic uneasiness, the fits generally occurred a week after the menstrual effort. Her aspect was heavy, but she was not wanting in intelligence. There was a scrofulous diathesis. By the application of leeches to the inside of the thighs at the epochs, and the use of bromide of potassium, she greatly improved, and when menstruation was properly restored, she had no more fits.

In my Lumleian Lectures I have given many illustrations of the relations of menstruation and pregnancy to convulsive diseases. It is clearly shown that the exaggerated nervous and vascular tension attending these analogous conditions, inducing probably altered nutrition, may not only determine convulsive disorders, but may evoke a dormant proclivity to them. Thus menstruation or pregnancy may bring back chorea, epilepsy, or ague, which had been believed to be cured.

This is further justified by the proposition I have on many occasions stated and illustrated, namely, that menstruation and pregnancy are the grand tests of the soundness of the constitution.

Marotte[1] adduces interesting illustrations of the relations of epilepsy with menstruation. Leuret relates a case of mania recurring at every period, and subsiding with the appearance of menstruation. Négrier relates an interesting case of epilepsy occurring under ovarian irritation and flow to the head. She had only a rudimentary uterus, whence it may be inferred that the fits were in some measure due to the want of the regulating influence of menstruation.

The relations of the sexual functions to the various kinds of insanity, form a subject of the highest clinical interest. The occasional outbreak of insanity after childbirth unequivocally demonstrates the influence of childbirth upon the nervous system. Phenomena scarcely less striking are not seldom seen in connection with disorders in the menstrual function. There is evidence to show that disease of the ovaries is occasionally the exciting cause of mental disease.

Dr. R. A. Davis says: "In all the cases, whether puerperal mania, ordinary mania, or melancholia, during menstruation, the symptoms are mostly aggravated. In the cases of melancholia and of those having a suicidal disposition, extra watching is required lest they should commit suicide during the menstrual periods. I find in nearly all cases on first admission, that the menstruation is either very irregular, or suppressed for some time beforehand."

Négrier relates the following amongst other interesting cases: X ——, aged seventeen, menstruated at fourteen, was seized with hysteriform symptoms coinciding with menstrual derangement. After several closely succeeding convulsive attacks, this girl, well brought up, and very intelligent, became insane, exhibiting erotic delirum, obscene talk and acts. Secluded in an asylum, under most cruel treatment, she recovered after a year, married at nineteen, and has six children, all of which she suckled. She gave no further sign of mental disorder.

[1] Rapports de l'Épilepsie avec la Menstruation. (*Revue Méd. Chir.*, 1851.)

"Pregnancy exerts a happy and powerful derivation in insanity, especially if this state of the encephalon has for cause a nervous disorder of hysterical form." The condition being that the ovaries are kept in abeyance during the temporary rule of the uterus. This is strikingly shown in the following case of Négrier: X —— was hysterical from nubility, was seized with insanity almost immediately after marriage; always recovered her intellect during her numerous gestations, and during the first months of suckling. She relapsed into her mental alienation as soon as the ovarian function manifested itself.

Dr. Crichton Browne, medical director of the West Riding Asylum, bears decided testimony to the inter-reaction of the ovario-uterine and nervous system: "A condition of mental agitation may, he says, derange the menstrual discharge, and ideas may modify the nutrition of the sexual apparatus." It is, Dr. Browne observes, in the close and subtle relation between the brain and the pelvic viscera that the source of hysterical mania must be sought. The one constant element in all cases of this disorder, is a disturbance of the balance of action and reaction which subsists between the nervous centres and the reproductive organs. In every instance of it, the brain and the uterus have their functions constantly deranged; for whatever may be true of simple hysteria as encountered in general practice, it would not hold good of hysterical mania as seen in asylums, that it may accomplish its whole course without the involvement of the generative system. The morbid process may originate in the brain or in the uterus; but in either case it spreads from the one to the other, and upsets that harmony and proportion of function in which health consists. "As the result," Dr. Browne further says, "of large experience of hysterical mania, I am satisfied that it is, without exception, preceded or accompanied by some derangement of the reproductive system, the existence of which is most frequently indicated by alteration or obstruction of the monthly discharge. Even where, however, neither amenorrhœa, leucorrhœa, nor menorrhagia can be discovered, other signs of disorder in the functions of the reproductive organs can be found, if carefully looked for."

The rapid, almost sudden bursting into womanhood, attests the influence of the complete evolution of the sexual organs. The nervous system especially is profoundly affected; sentiments, disposition, pursuits are changed. Menstruation, a function compounded of increased nervous and vascular tension, of ovulation, an effort at reproduction, and of a periodical discharge of blood, exercises a twofold influence upon the general system. The relations of the discharge have chiefly attracted attention, whilst those of the higher antecedent functions have been comparatively overlooked. Although the menstrual discharge may, by its variations in character, frequently give note of what is passing in the ovaries, we must be careful not to conclude that this is always so. We cannot depend upon the menstrual discharge as a constant index of the state of the ovary.

Whenever an organ is the seat of a secretion, it is endowed with a particular mode of vitality in relation with the function it has to fulfil. When this secretion is periodical, there are alternations of action and of repose, which preserve the equilibrium of action of the different organs.

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