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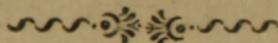
OBSERVATIONS

ON

ABORTION:

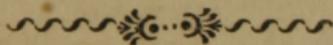
CONTAINING

AN ACCOUNT OF THE MANNER IN
WHICH IT TAKES PLACE, THE
CAUSES WHICH PRODUCE IT,
AND THE METHOD OF PRE-
VENTING OR TREAT-
ING IT.

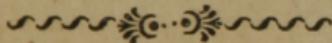


BY JOHN BURNS,

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cians and Surgeons in Glasgow.*



SECOND AMERICAN EDITION.



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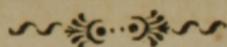
TO THE
GENTLEMEN
WHO
ATTENDED THE AUTHOR'S LECTURES
IN THE SESSION
1802—3,
THIS BOOK IS INSCRIBED,
AS A
GRATEFUL AND AFFECTIONATE REMEMBRANCE
OF THE
VERY FLATTERING COMPLIMENT
WHICH THEY
BESTOWED UPON HIM.

~~416445~~

ADVERTISEMENT.

The Author has carefully Revised the present Edition, and has made such Additions and verbal Alterations as will, he hopes, render his Observations and Practical Directions still more definite and precise.

CONTENTS.

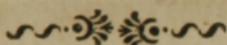


	PAGE.
<i>Of the formation of the Ovum</i>	8
<i>Of the manner in which Abortion takes place</i>	19
<i>Of the causes giving rise to Abor- tion</i>	31
<i>Of the Prognosis</i>	81
<i>Of the prevention and treatment of Abortion</i>	85

OBSERVATIONS

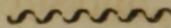
ON

ABORTION.



BY abortion is generally understood the expulsion of the contents of the gravid uterus, at a period of gestation so early as to render it impossible for the fœtus to live. It is an accident or disease which is very frequent in its occurrence, which is always attended with disagreeable circumstances, and which, although it seldom prove immediately fatal, may yet be productive of much mischief at a future time. The consideration, therefore, of the manner in which it takes place, of the causes which give rise to it, and of the most likely means of preventing it, or of obviating those unpleasant symptoms which accompany it, must form a subject of very great importance to the med-

ical student. But before proceeding to consider these points, it will be necessary to understand the structure and formation of the ovum, which I shall therefore, first of all explain.



OF THE FORMATION OF THE OVUM.

THE human uterus in the unimpregnated state, consists of a succulent substance in which we may perceive fibres running in every direction. In the interstices of these we find a serous fluid which can easily be squeezed out. By injecting the vessels finely with size or mercury, we observe them to be numerously intermixed with the fibres, but small in their ramifications, a portion of these vessels follows an irregular course toward the inner surface or cavity of the uterus, and opens there upon the membrane which lines it. At the menstrual period the vessels enlarge or dilate a little,

and their orifices become more distinct over the surface of the cavity, as may be ascertained by inspecting those who have died at that time.—Sometimes a slight temporary serous secretion precedes the flow of the menses, and succeeds it. More frequently the vessels yield a bloody fluid at once which continues to be discharged for a certain number of days.

When impregnation takes place, the vessels enlarge speedily and distinctly. We can observe small trunks forming in the substance of the uterus, the largest of which are to be found at the two sides where the spermatick and hypogastrick branches meet. Both arteries and veins enlarge, but the latter are most conspicuous. Even before the embryo has descended into the uterus, and whilst the viscus itself is not materially enlarged, the venous system has assumed the appearance of sinuses, each principal branch being larger than the barrel of a goose quill. The old fibres are more separated

and new ones are added, especially at the fundus. The quantity of interstitial fluid is increased so that the uterus becomes manifestly softer, and from the enlargement of the veins it soon assumes a doughy feel. The vessels as they enlarge tend to the uterine cavity, but instead of opening there, and yielding a fluid as in menstruation, they either elongate themselves, or which is more probable, form new and very delicate vessels which project from the inner surface of the uterus, giving it an appearance as if covered with down. This takes place first at the orifice of the fallopian tube, and then extends to the fundus, whilst the body remains quite smooth. These vessels project for about a line in length at right angles, from the surface which yields them, and as they consist of arteries and veins, the down or efflorescence which they form, has, after death a striated appearance; the empty arteries being white, the fuller veins red or black. These vessels

constitute the outer layer of the decidua, which may be called decidua striata, although the striae be obliterated as gestation advances ; almost immediately after the formation of these primary vessels, they secrete from their extremities a membrane, or rather an irregular tissue of vessels, which on account of their origin, may be called secondary. These are very different from the primary, for whilst the latter are short, straight, and parallel to each other, the former are more extended, intermix, and ramify together, so as to form a sheet of vascular substance, which assumes a direction at right angles to the striae, so that as they thus cross them, it follows that any body coming down through the fallopian tube into the uterus, must, before it can get fully into its cavity, either rupture this vascular sheet or push it before it. In this last manner it is, that the vesicular ovum enters the cavity of the womb, the vascular web formed by the secondary

vessels, or the inner layer of the decidua, being protruded before it, constituting decidua reflexa or protrusa.

Such is the structure of the decidua externa and interna at three weeks after impregnation, and at this period no fœtus is to be found in the uterus. In one case I detected the vesicular ovum in the tube. It was about half way betwixt the two extremities, was rather smaller than a full grown pea, and contained a little fluid. In another case, I found it still in the ovarium, covered by the fimbriated extremity of the tube. By puncturing the peritoneal coat of the gland, the vesicle escaped. When the fœtus does descend into the uterus, it is contained in a double membrane; the internal one is the amnion, and possesses no distinct vessels; the external one is the chorion, and is from the first vascular, and soon becomes so much so, that its vessels have by some been described as forming a distinct tunick.

From what has been said, it will be evident, that when this vesicle does reach the uterus, it will be received among the primary vessels, which will surround it, whilst the secondary vessels or decidua interna will lie before it, and prevent any direct communication betwixt it and the uterine cavity. But it cannot long remain thus, for in proportion as the vesicular part of the ovum increases, it will push the decidua interna before it, and encroach on the cavity of the uterus. This circumstance, together with the intimate connexion formed betwixt the vessels of the chorion, and those of the decidua, with the consequent production of a placenta, I have elsewhere* fully detailed.

When the ovum descends, and the subsequent changes are beginning to

* Vide anatomy of the gravid uterus with practical inferences relative to pregnancy and labour.

take place, the body of the uterus comes also to form decidua ; for I have already stated that until the foetus comes into the uterus, the fundus alone yields this production.* By the extension of this action and the gradual enlargement of the membranes, the whole body comes to be filled up, and the cervix is sealed as it were with a lymphatick or gelatinous plug. By opening the gravid uterus in the end of the second month, we shall find it quite filled up, the placenta and membranes occupying the fundus, the decidua protrusia covering the membranes, and the lower part of the body filled up with vascular substance, or decidua vera as it has been called, extend-

* It has been the general opinion since the time of Dr. Hunter, that the decidua extended a little way into the tube, and on his authority I stated this to be the case, in an account which I formerly published. By careful examination I am now convinced that this is not the case ; my brother, a most accurate anatomist, in his dissections even thought that the uterine extremity of the tube was less changed in point of vascularity, than any other part of it.

ing all the way down to the gelatinous secretion at the cervix.

If at this time we take the ovum out of the uterus, or, if we cut off the face of the uterus, and remove the decidua from the front of the membranes, we shall see at the upper part of the placenta and membranes, like a thick old fashioned watch, the placenta* resembling the case, and the membranes the glass of the watch; then, at the lower part of the membranes we see the remains or margins of the decidua protrusa, which has been removed to show the chorion, whilst still lower down, we observe the

* The placenta, contrary to some plans, is not in general formed exactly at the fundus uteri, stretching equally down on the two faces of the uterus, with the membranes hanging perpendicularly from it. But it lies chiefly on one face of the uterus, most frequently on the posterioir face, whilst the membranes are turned to the other. The centre of the membranous bag, therefore, at this early period, is not generally directed to the os uteri, but either to the fore or back part of the uterus. In proportion, however, as the bag enlarges it also elongates. Its centre or apex descends, and ultimately corresponds with the long axis of the uterus.

decidua externa occupying the inferiour part of the uterus forming a short stalk to the flattened sphere above. As the layers of decidua, furnished by the opposite sides of the uterus, do not intermix when they meet in its axis, we may trace a small canal or perforation leading up from cervix uteri to the bottom of the decidua protrusa, and corresponding to the long axis of the uterus. In proportion as the membranes elongate and enlarge; the decidua gradually proceeds before them down this canal, until at last it reaches the bottom, or in other words the membranes occupy all the uterine cavity.

Now from this general view of the formation of the ovum, it will appear, that very soon after impregnation the circulation in the uterus is considerably augmented, and a progressively increasing action is established; new fibres are daily formed, and very tender and deli-

cate vessels sprout out from the surface. These are so fine, that they much resemble the down which is formed on putrifying meat. But notwithstanding this, they are not only circulating blood regularly, but are also engaged in a powerful action. Whoever considers these circumstances, will be less astonished that rupture should sometimes take place, than that they should ever remain for a week entire, and will be most forcibly struck with the necessity of preventing the blood from being strongly or rapidly propelled into this tender structure. He will consider the great risk of abortion as at first proceeding almost entirely from causes connected with the circulation of the blood, and will perceive the indispensable necessity of preventing plethora, and moderating the action of the vessels, and the strong probability of inducing abortion, when to these general causes

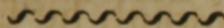
are added any of those which particularly operate on the uterus.

When the foetus has descended, and the fringed vessels of the uterus have come to intermix and communicate with those of the chorion, and especially when about the third month he finds the ovum to be almost a ball, thickly surrounded with innumerable vessels, circulating much blood, and performing strong action, he will without hesitation pronounce that great danger must proceed from a tendency in the vessels to rupture, and that the chief security against this arises from a strict attention to the circulation, and to care which is requisite in order to preserve the integrity of the vessels.

But this is not the only source of danger. The uterus is greatly influenced in its actions by a variety of circumstances.* The health and existence of the foetus

* Some of these are connected with a state opposite to that in which plethora exists and will require a different treatment.

depend much upon the state of the uterus, and the condition of the vascular involucre; it is, moreover, subject to accidents and diseases proceeding from peculiar affections of its own system, and which bring on an early death.



OF THE MANNER IN WHICH ABORTION TAKES PLACE.

THE process of gestation may be stopped, even before the fœtus, or vesicular part of the ovum, has descended into the uterus, and when only the primary vessels are formed. In this case, which occurs within three weeks after impregnation, the symptoms are much the same with those of menorrhagia. There is always a considerable, and often a copious discharge of blood, which coagulates or forms clots. This is accompanied with marks of uterine irritation, such as pain in the back and loins,

frequently spasmodick affections of the bowels, and occasionally a slight febrile state of the system. In plethorick habits, and when abortion proceeds from overaction, or hæmorrhagick action of the uterine vessels, the fever is idiopathick, and precedes the discharge.

In other circumstances it is either absent, or when present, it is symptomatick, and still more inconsiderable, arising merely from pain or irritation. As the primary vessels are very small, and are soon displaced, they cannot be detected in the discharge. Nothing but coagulum can be perceived; and this, as in other cases of uterine hæmorrhage, is often so firm, and the globules and lymph so disposed, as to give it, more especially if it have been retained for some time about the uterus or vagina, a streaked or fibrous appearance, which sometimes gives rise to a supposition, that it is an organized substance. The discharge

does not cease, when the primary vessels are destroyed, but generally continues until the small vesicle passes out of the fallopian tube. Then it stops, and an oozing of serous fluid finishes the process.

The only interruption to the discharge in this case of abortion, proceeds from the formation of clots, which, however, are soon displaced. Women, if plethorick, sometimes suffer considerably from the profusion of the discharge; but, in general they soon recover.

When the secondary vessels are formed, the symptoms are still pretty much the same; but if the vesicle has descended into the uterus, they are somewhat different. We have an attempt in the uterus to contract, which formerly was not necessary; we have pains more or less regular in the back and hypogastrick, region; we have more disturbance of the abdominal viscera, particularly the

stomach. The discharge is copious, and small bits of fibrous substance can often be observed.*

Sometimes, when the vesicle has come into the uterus before abortion takes

* In some instances, the uterus seems to have the power of forming a vascular substance from its inner surface, although impregnation have not taken place; and, in this case, we may have the symptom of early abortion attending its expulsion. But much oftener we find that this appears as a derangement of the menstrual action, the vessels secreting a semi-organized substance, instead of the usual quantity of bloody fluid; hence, as has been observed by that ingenious and excellent practitioner, Dr. Denman, we have sparing and painful menstruation. Sometimes after this substance is formed it is expelled with considerable discharge. A very distinct case of this kind is to be found in the Epistles of Morgagni; a noble matron after bearing several children, and suffering several abortions became subject to a new and very troublesome complaint; for at the menstrual period pains like those of labour came on, and there was expelled a triangular membrane, corresponding to the shape of the uterine cavity. The inner surface of this substance was smooth and moist as if it had contained a fluid; the outer was rough and irregular. The exclusion of this was attended with considerable discharge, and was followed by lochia. This continued to be regularly repeated every month, during the unimpregnated state. "She, therefore," adds he, "determined to lie no longer alone, wherefore, in the month of March, 1724, she became again pregnant."

place, it may be detected in the first discharge of blood, and will be found to be streaked over with pale vessels, giving it an appearance as if it had been slightly macerated. When all the contents are expelled, a bloody discharge continues for a few hours, and is then succeeded by a serous fluid at this time ; and, in later abortion, if the symptoms come on gradually, we may sometimes observe a gelatinous matter to come away before the hæmorrhage appears.

In some instances there is no discharge of blood, but the ovum decays and comes away slowly and piece-meal, in a putrid state ; and the secretion about the vagina has an offensive smell. If the breasts had been tense they become flacid and soft, and sometimes a serous and milky fluid runs out at the nipple for several weeks or even months. The woman feels languid and hot at night, and very frequently hysterical affections supervene. The

uterus continues somewhat enlarged, and its orifice soft until all its contents are discharged ; nor is the health or spirits re-established until that take place.

If the uterus have been filled up, as in the beginning of the third month, the vesicle never escapes first ; but we have for some time a discharge of blood, accompanied or succeeded by uterine pain. Then the inferiour part or short stalk of the ovum is expelled, gorged with blood and afterwards the upper part equally injured. Sometimes the whole comes away at once and entire ; but this is rare. As considerable contraction is now required in the uterus, the pains are pretty severe. The derangement of the stomach is also greater than formerly, giving rise to sickness or faintness, which is a natural contrivance for abating the hæmorrhage.

When the membranes come to occupy more of the uterus, and a still greater difference exists betwixt the placenta and

decidua, we have again a change of the process ; we have more bearing down pain, and greater regularity in its attack ; we have a more rapid discharge, owing to the greater size of the vessels ; but there is not always more blood lost now, than at an earlier period, for coagula form readily from temporary fits of faintness and other causes, and interrupt the flow until new and increased contraction displaces them. Often the membranes give way, and the foetus escapes with the liquor amnii, whilst the rest of the ovum is retained for some hours or even days,* when it is expelled with coagulated blood separating and confounding its different parts or layers. At other times the foetal and maternal portions separate, and the first is expelled before the second, forming a very beautiful preparation. In some

* In all cases the placenta is retained much longer after the expulsion of the child in abortion, than in labour at the full time.

rare instances we find the whole ovum expelled entire, and in high preservation. After the expulsion, the hæmorrhage goes off, and is succeeded by a discharge somewhat resembling the lochia.

In cases of twins, after one child is expelled, either alone or with its secundines, the discharge sometimes stops, and the woman continues pretty well for some hours, or even a day or two, when a repetition of the process takes place, and if she has been using any exertion, there is generally a pretty rapid and profuse discharge. This is one reason, amongst many others, for confining women to bed for several days after abortion.

There is frequently, for a longer or shorter time before the commencement of abortion, a pain and other irregular action in the neighbouring parts, which give warning of its approach before either discharge or contraction take place* un-

* In some cases, shooting pains and tension are felt in the breasts before abortion, and the patient is feverish.

less when it proceeds from violence, in which case the discharge may instantly appear. This is the period at which we can most effectually interfere for the prevention of abortion.

I need not be particular in adding, that we are not to confound these symptoms with the more chronick ailments which accompany pregnancy. Similar disturbances in the action of the neighbouring parts are very commonly found to precede labour at the same time ; and even then, we may, by proper means, postpone or retard expulsion for some hours or days.

A great diversity obtains in different instances with regard to the symptoms and duration of abortion. In some cases the pains are very severe and long continued ; in others, short and trifling.*

* The degree of pain is not always a correct index of the force or degree of contraction.

Sometimes the hæmorrhage is profuse* and alarming; at other times, although circumstances may not be apparently very different, it is moderate or inconsiderable. Often the sympathetick effects on the stomach and bowels are scarcely productive of inconvenience, whilst in a greater number of instances they are very prominent symptoms.

I may only add, that, *cæteris paribus*, we shall find, that the farther the pregnancy is advanced beyond the third month and the nearer it approaches to the end of the sixth, the less chance is there of abortion being accompanied, but the greater of its being succeeded by nervous affection.

As there is a diversity in the symptoms, so is there also in the duration of abortion: for, whilst a few hours in ma-

* Those who are plethorick generally lose most blood unless the contraction have been brisk. In some cases six or seven pounds of blood have been lost in a few hours.

ny, and not above three days in the majority of cases, is sufficient to complete the process, we find other instances in which it is threatened for a long time, and a number of weeks elapse before the expulsion take place.

In some cases the child appears to be dead for a considerable time before the symptoms of which accompany expulsion appear. But in a great majority of cases it is living, when the first signs of abortion are perceived, and in some instances is born alive. The signs by which we judge that the child in utero is dead, are the sudden cessation of the morning sickness, or of any other sympathetick symptom which may have been present. The breasts become flaccid. If milk had been formerly secreted, it sometimes disappears, but in other instances the contrary happens, and no evident secretion takes place until the action of gestation, or at

least the life of the child be lost. In almost every case, however, the breasts will be found to have lost their firmness. If the pregnancy had advanced beyond the period of quickening, the motion of the child will be lost, and a feeling of heaviness will be felt about the pelvis ; when all these signs are observed, and when they are followed by discharge, and especially when this is attended with pain, there can be no doubt that expulsion will take place, and it would be improper to prevent it. We are not, however, to conclude that the child is dead, merely because it does not move, and when abortion is threatened before the term of quickening, this sign does not enter into our consideration.

OF THE CAUSES GIVING RISE TO
ABORTION.

ABORTION may very properly be divided into accidental and habitual. The exciting causes of the first class may, in general, be easily detected; those giving rise to the second are often more obscure; and, without great attention, the woman will go on to miscarry, until either sterility, or some fatal disease, be induced.

In many cases there can be no peculiar pre-disposing cause of abortion; as, for instance, when it is produced by blows, rupture of the membrane, or accidental separation of the decidua; but when it occurs without any very perceptible exciting cause, it is allowable to infer, that some pre-disposing state exists; and this generally consists in an imperfect mode of uterine action, induced by age, former miscarriages, and other causes.

It is well known, that women can only bear children until a certain age ; after which, the uterus is no longer capable of performing the action of gestation, or of performing it properly. Now, it is observable, that this incapability or imperfection takes place sooner in those who are advanced in life, before they marry, than in those who have married and begun to bear children earlier. Thus we find, that a woman who marries at forty, shall be very apt to miscarry ; whereas, had she married at thirty, she might have born children when older than forty ; from which it may be inferred, that the organs of generation lose their power of acting properly sooner, if not employed, than in the connubial state.

The same cause which tends to induce abortion at a certain age in those who have remained until that time single, will also, at a period somewhat later, induce it in those who have been younger mar-

ried: for in them we find, that, after bearing several children, it is not uncommon to conclude with an abortion; or, sometimes after this incomplete action, the uterus, after a considerable time, recruits, as it were, and the woman carries a child to the full time, after which she ceases to conceive.

In the next place, I mention that one abortion paves the way for another, because, setting other circumstances aside, it gives the uterus a tendency to stop its action of gestation at an early period after conception, and therefore it is difficult to make a woman go to the full time, after she has miscarried frequently. This fact has also been explained, upon the principle of repeated abortion weakening the uterus,* and this certainly may

* Per hanc vero consuetudinem nihil aliud intelligo, quam pravam vasorum uteri laxitatem et inde proveniente humorum stagnationem, ex abortiendi labore sæpius repetito inducendam.

have some influence. The renewed operation of those causes which formerly induced abortion, may also account in many cases for its repetition. But I am also inclined to attribute the recurrence, sometimes, to habit alone, by which, I understand, that tendency, which a part has to repeat or continue those modes of acting which it has frequently performed, as we see in many diseases of the stomach and windpipe, spasmodick affections of these and other organs, being apt to return at the same hour, for a long time. With regard to the uterus, one remarkable instance is related by Schubzins, of a woman, who in spite of every remedy, miscarried twenty-three times in the third month. In this and similar cases, slighter causes applied at the period when abortion formerly happened, will be sufficient to induce it, than would be required at another time. The ordinary and unavoidable exertions of

life may be sufficient to excite abortion in this circumstance.

We also find that an excessive or indiscriminate use of venery, either destroys the power of the organs of generation altogether, making the woman barren, or it disposes to abortion, by enfeebling these organs.

Some slight change of structure in part of the uterus, by influencing its actions, may, if it do not prevent conception, interfere with the process of gestation, and produce premature expulsion. If, however, the part affected be very small, and near the os uteri, it is possible for pregnancy to go on to the full time. Indeed, it generally does go on, and the labour, as may be foreseen, will be very tedious; but the operation of cutting the indurated os uteri, which has been proposed, is seldom necessary.

I have known one instance, in which a very considerable part of the uterus, I

may say almost the whole of it, was found, after delivery, to be extremely hard, and nearly ossified : but this state could not have existed before impregnation took place, for I cannot conceive that so great a proportion of the uterus should have been originally diseased, and yet that conception, and its consequent actions, should take place : but there is no difficulty in supposing, that, during the enlarging of the uterus, the vessels deposited osseous or cartilaginous matter, instead of fibres. In this case, it is evident that the delivery must be instrumental, owing to the deficiency of fibres, and recovery can seldom take place. Often we find this morbid action affect the placenta, instead of the uterus ; but this is not dangerous ;* unless to so great a de-

* In some instances, when the ossification is extensive, it may give rise to hæmorrhage during labour, or after delivery. When this state is complicated with strong adhesion to the uterus, it will require attention to prevent bad consequences after the child is expelled ; but by care, danger may in general be prevented, and the placenta be got away entire.

gree as to effect the vitality of the child, in which case, death and premature expulsion must be the consequence.

A general weakness of the system, which must affect the actions of the uterus, in common with those of other organs, is likewise to be considered as giving rise to abortion, though not so frequently as was at one time supposed.

A local weakness of the uterus sometimes exists when the general system is not very feeble, or when the constitution is delicate, the uterus may be weaker in proportion than other organs.

In this case it cannot perform its function with the necessary activity and perfection, but is very apt, after a time to flag. We cannot operate with medicines directly upon the womb, for the purpose of strengthening it, but must act on it by invigorating the general system, and attending to all the other functions. Seabathing is of great service, and after im-

pregnation, every exciting cause of abortion must be guarded against. Women of this description are generally pale, of a weakly, flabby habit, and subject to irregular, often to copious menstruation, or flour albus. When they conceive, the cold-bath, light digestible food, open bowels, and free air should be enjoined; and if any uneasy sensation be felt about the uterus or back, or the pulse throb a little, blood should be slowly taken away, and the woman keep her room for some days. Bleeding prevents the womb from being oppressed, and it is as necessary to attend to this, as it is to prevent the stomach from being loaded in a dyspeptick patient. But, on the other hand, were we to bleed copiously, we might injure the action of the uterus, and destroy the child.

It has been supposed that abortion might rise from a rigidity of the uterus, which prevented its distention. But the

uterus does not distend like a dead part, upon which pressure is applied, but it grows, and therefore I apprehend that an effect is here considered as a primary cause.*

The uterus is not only affected by the general conditions of the system, more especially with regard to sensibility, and the state of the blood vessels; but it likewise sympathizes with the principal organs, and may undergo changes in consequence of alterations in their state.

Thus we often find that loss of tone, or diminished action of the stomach produces amenorrhœa; and it may also on the same principle induce abortion; on the other hand, the action of the uterus may influence that of other viscera, as

* Sometimes a chronick inflammation of the throat is excited by, or connected with a tumour in the side of the neck pressing on the eighth pair of nerves, and producing varying affections of the stomach and breast. These, as well as the size of the tumour, are generally increased by pregnancy, and sometimes abortion seems to proceed from this cause.

we see in pulmonary consumption, which is sometimes suspended in its progress during pregnancy ; or, if there be any disposition in an organ to disease, frequent abortion, partly by sympathy betwixt the uterus and that organ, and partly by the weakness which it induces, and the general injury which it does to the system at large, may excite the irregular or morbid action of the organ so disposed.

As the action of the uterus is increased during pregnancy, it must require more nervous energy ; but the size of the nerves of the uterus is not increased in proportion to the action ; we must therefore depend for the increased supply upon the trunks, or larger portion of nervous substance, from which they arise, for we well know that the quantity of energy expended in an organ, does not depend upon the size of the nerve in its substance, but on the trunk which furnishes

it. Whenever action is increased in an organ, it must either perish, or the larger nerve must send the branches more energy, for the branches themselves cannot form it, their extremities being only intended for expending it ; from which it follows, that in pregnancy there must be more energy sent to the uterus, and less to some other part.

This is the case with all organs whose action is increased, other parts being deprived in proportion as they are supplied, except when irritation raises general action above the natural degree ; the consequence of which is, that the power is not sufficient for the action, which becomes irregular, and the system is exhausted, as we see in febrile conditions.*

* For a fuller explanation and defence of this doctrine, I beg leave to refer the reader to some observations on the animal economy, prefixed to the first volume of my Dissertation on Inflammation.

There being increased action of the uterus in gestation, requiring an increased quantity of energy to support it, we find that the system is put *pro tempore* into an artificial state, and obliged either to form more energy, which cannot be so easily done, or to spend less in some other part. Thus the function of nutrition, or the action by which organick matter is deposited, in room of that which is absorbed, often yields, or is lessened, and the person becomes emaciated, or the stomach has its action diminished, or the bowels producing costiveness and inflation. If no part give way, and no more energy than usual be formed, gestation cannot go on, or goes on imperfectly. Hence some women have abortion induced by being too vigorous; that is to say, all the organs persist in keeping up their action in perfection and complete degree.

A tendency to abortion also results from a contrary cause, from organs yield-

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ing too readily, allowing the uterus to act too easily. In this state it is as liable to go wrong, as the general system is when it is at the highest degree of action, compatible with health, the most trifling cause deranges it. Thus, sometimes, the intestines yield too readily, and become almost torpid, so that a stool can with difficulty be procured. Here costiveness is not a cause of abortion, though it may be blamed. In like manner, the muscular system may yield and become enfeebled ; and in this instance debility is accused as the cause of abortion, although it be, indeed, only an effect of too much energy being destined for the uterus. In this case, the woman is always weaker during menstruation and gestation than at other times.

Now this is not a piece of idle speculation, but is of much practical importance, especially in considering the means of correcting habitual abortion ; and

much attention should be paid to the state of the principal organs in the body ; for, if we confine our attention merely to the uterus, we shall often fail when otherwise we might succeed ; and it will be necessary to remember, that the chain of sympathies in gestation is often extensive and complicated.

The state of the stomach, for example, may give rise to head-ach, tooth-ach, &c. and often it is dangerous suddenly to remove these remote effects. It throws too much energy to the uterus ; its action is too much exerted ; contraction and abortion take place : but in the unimpregnated state, the removal of these effects may, on the contrary, be useful : thus the pulling of a pained tooth sometimes speedily produces the return of the menses in cases of obstruction.

If the neighbouring parts do not accommodate themselves to the changes in the direction of energy, and act in con-

cert with the uterus, their action becomes irregular, and consequently painful. In this case the uterus may have its just degree of power and action; but other parts may not be able to act so well under the change of circumstances. This is chiefly the case in early gestation, for, by time the parts come to act better. It often gives rise to unnecessary alarm, being mistaken for a tendency to abortion; but the symptoms are different. The pain is felt chiefly at night, a time at which weakened parts always suffer most; it returns pretty regularly for several weeks, but the uterus continues to enlarge, the breasts to distend, and all things are as they ought to be, if we except the presence of the pain. This may be alleviated by bleeding, and sometimes by anodynes, but can only be cured by time, and avoiding, by means of rest and care, any additional injury to parts already irregular and ticklish in the performance of their

actions. If this be neglected, they will re-act on the uterus at last, and impede its function. It is therefore highly necessary, especially in those disposed to abortion, to pay attention to pains about the back, loins, or pubes ; and to insist upon rest, upon bowels, and detracting blood, if the state of the vascular system indicate evacuation.

Even although the different organs, both near and remote, may have accommodated themselves to the changes in the uterine action, in the commencement of gestation, the proper balance may yet be lost at a subsequent period ; and this is most apt to take place about the end of the third, or beginning of the fourth month, when the uterus is rising out of the pelvis : and hence a greater number of abortions take place at that time than at any other stage of pregnancy. There is from that time, to the period of quickening, a greater susceptibility in the uterus to have

its action interrupted, than either before or afterwards, which points out the necessity of redoubling our vigilance in watching against the operation of any of the causes giving rise to abortion from the tenth to the sixteenth week.

If the uterus, in its unimpregnated state, become very torpid, as in some cases of amenorrhœa, the abdominal muscles sometimes have their action much increased; and there is absolutely an attempt made to expel it, violent paroxysms of contraction coming on, and repeated daily for a length of time.

These may be lessened by opiates, but can only be cured by exciting the natural action of the uterus. I mention this fact, from its singularity, although it do not immediately refer to abortion.

If the action of gestation go on under restraint, as, for instance, by a change of position in the uterus, or by its prolapsing too low in the vagina, it is very apt

to be accompanied by uneasy feelings, for, whenever any action is constrained, sensation is produced. The woman feels irregular, and pretty sharp pains in the region of the uterus, and from sympathetick irritation both the bladder and rectum may be affected, and occasionally a difficulty is felt in making water, by which a suspicion is raised that retroversion is taking place.

Sometimes the cervical vessels in these circumstances yield a little blood, as if abortion were going to happen ; but by keeping the patient at rest, and attending to the state of the rectum and bladder, no harm is done : and when the uterus rises out of the pelvis, no farther uneasiness is felt. Occasionally a pretty considerable discharge may take place under these circumstances, if the vascular system be full, or the vessels about the cervix, large. But by care, gestation will go on ; for discharge alone does not indicate

that abortion must necessarily happen. It, indeed, often causes abortion, and is almost always an attendant upon it; but we form our judgment not from this symptom alone, but also from the state of the muscular fibres, and the vitality of the child.

Retroversion of the uterus likewise constrains very much its action, and may give rise to abortion, though in a greater number of instances, by care gestation will go on, and the uterus gradually ascend. The bowels are to be kept open, and the urine regularly evacuated. At the same time we endeavour to replace the uterus, and this I believe is to be done by dexterity rather than by great force. I have long been of opinion that much harm has been done in this disease, as well as in hernia, by rude attempts to reduce the parts when tender; and, in the latter disease, I am sure that the accession of gangrene has frequently been hastened

by them. When abortion succeeds retroversion, it sometimes proceeds rather from the morbid state of the bladder, than from the position of the uterus ; and in this case it is a very unfavourable sign.

Sometimes in irritable or hysterical habits, the process of gestation produces a considerable degree of disturbance in the actions of the abdominal viscera, particularly the stomach, exciting frequent and distressing retching or vomiting, which may continue for a week or two, and sometimes is so violent, as to invert the peristaltick motion of the intestines near the stomach, in which case feculent matter, and, in some instances, lumbrici are vomited.

This affection is often accompanied by an unsettled state of mind, which adds greatly to the distress. We sometimes, in these circumstances, have painful attempts made by the muscles to force the uterus downward, and these are occa-

sionally attended by a very slight discharge of blood. We have, however, no regular uterine pain; and if we are careful of our patient, abortion is rarely produced.

The best practice is to take away a little blood at first, to keep the bowels open, to lessen the tendency to vomit, by applying an opium plaster, or a small blister, to the region of the stomach, and to allay pain by doses of hyoscyamus or opium, conjoined with carminatives. When the mind is much affected, or the head painful, it is proper to shave the head, and wash it frequently with cold vinegar, or apply a blister at the same time that we keep the patient very quiet, and have recourse to a soothing management.

In some instances the woman begins very early to have frequent vomiting, not confined to the morning, but occurring at all times of the day, and without any affection of the mind. This is best

treated by taking away a little blood when the vomiting first becomes troublesome ; by keeping the bowels open, and giving a little light food at that time when the stomach is most disposed to receive it.

It is not improper to remark that, at different stages of pregnancy, the stomach may become exceedingly irritable, and even inflamed. This state is indicated by frequent pulse, heat of the skin, tenderness about the stomach, and feeling of heat, sometimes mistaken for heart-burn, oppression, constant vomiting, and frequently black flakes may be observed in the fluid which is ejected, thirst is urgent, and the belly bound. Sometimes the whole tract of the œsophagus is inflamed, and the fauces appear of a deep red colour. If the patient survive, she is in great danger of abortion. The proper treatment consists in early and copious evacuation of blood—

the administration of laxatives—the application of a blister to the stomach—and giving only very small quantities of bland fluid frequently to assuage the intolerable thirst.

The uterus being a large vascular organ, is obedient to the laws of vascular action, whilst the ovum is more influenced by those regulating new formed parts ; with this difference, however, that new formed parts or tumours are united firmly to the part from which they grow by all kinds of vessels, and generally by fibrous or cellular substance, whilst the ovum is united to the uterus only by very tender and fragile arteries and veins. If, therefore, more blood be sent to the maternal part of the ovum, than it can easily receive and circulate, and act under, rupture of the vessels will take place, and an extravasation and consequent separation be produced ; or, even when no rupture is occasioned, the action of the ovum may

be so oppressed and disordered, as to unfit it for continuing the process of gestation. There must, therefore, be a perfect correspondence betwixt the uterus and the ovum, not only in growth and vascularity, but in every other circumstance connected with their functions.

Even when they do correspond, if the uterus be plethorick, the ovum also must be full of blood, and rupture very apt to take place ; and this is a frequent cause of abortion, more especially in those who menstruate copiously. On the other hand, when the uterus is deficient in vascularity, which often happens in those who menstruate sparingly or painfully, the child generally dies before the seventh month, and is expelled. The process is prematurely and imperfectly finished.

The existence of plethora is to be considered as a very frequent cause of abortion, and requires most particular attention. It more especially obtains in the

young and vigorous, or in those who live luxuriously, and sleep in soft warm beds. It renders the uterus too easily supplied with blood : the increase is not made in the regular degree, corresponding to the gradual increase of action, and augmentation of size ; but it is, if I may use the expression, forced on the uterus, which is thus made for a time to act strongly and rapidly. This action is sometimes so great, that the person feels weight in the region of the uterus, and shooting pains about the pelvis ; but in other instances the vessels suddenly give way, without previous warning, and the blood bursts forth at the os uteri. This cause is especially apt to operate in those who are newly married, and who are of a salacious disposition, as the action of the uterus is thus much increased, and the existence of plethora rendered doubly dangerous. In these cases, whenever the menses have become obstructed, all cau-

ses tending to increase the circulation, must be avoided, and often a temporary separation from the husband is indispensable. Often do we find that slight exertion within a fortnight after the menses stop, will produce a speedy and violent eruption of blood, which continues until the vessels are fully unloaded ; and until all that part of the process of forming an ovum, which has been effected, be undone.

Abortion necessarily implies separation of the ovum,* which may be produced mechanically or by spontaneous rupture of the vessels, or by an affection of the muscular fibres. It unavoidably requires, for its accomplishment, contraction of

* In every instance, even when the foetus escapes first, and the membranes and placenta are retained, the ovum must be repositied from the under part of the uterus, and the vessels of communication, torn by abortion, may in one sense be said to have taken place, whenever the child is expelled, but the process cannot properly be said to be over until the secundine have come away.

those fibres which formerly were in a dormant state. A natural and necessary effect of this contraction is to develop the cervix uteri.

This, when gestation goes on regularly, is accomplished gradually and slowly by the extension and formation of fibres. In abortion, no fibres are formed ; but muscular action does all except in those instances where the action of gestation goes on irregularly and too fast ; in which case the cervix distends, sometimes by the third month, by the same process which distends the fundus. But much more frequently the cervix only relaxes during abortion, as the os uteri does in natural labour, and yields to the muscular action of the fundus, or distended part.

The existence and growth of the fœtus depends on the fœtal portion of the ovum. The means of nourishment, and the accommodation of the fœtus in respect of lodgement, depend on the uterus ; and

these circumstances requiring both foetal and maternal action, are intimately connected. The condition of the uterus qualifying it to enlarge, to continue the existence and operation of the maternal portion of the placenta or ovum, and to transmit blood to the ovum, exactly in the degree correspondent to its want, constitutes the action of gestation.

When this condition ceases, then muscular contraction begins, provided the cessation be universal in the uterus. This is necessary, for as the foetal and maternal actions are dependent on each other, the foetus would suffer if it were not expelled. The injury, indeed, will not be immediate ; otherwise, in labour, the child would die before it could be born, because labour implies a cessation of the action of gestation. On the other hand, the loss of action in the foetal part will soon influence the maternal part, and stop its action.

In labour, and at other times, when the action of gestation ceases, the circulation is still kept up in the maternal vessels of the placenta, until either separation and expulsion take place, or the vessels suffer so much as to cease to transmit blood. The cessation of action then does not necessarily immediately affect the fœtus. As long as it, and the fœtal portion of the ovum, connected with it, remain stationary, the same quantity of blood will do. But the uterus cannot now increase its actions along with those of the fœtus, so as gradually to enlarge and send more blood.

This is one cause of disagreement. Another is, that, in consequence of cessation of action in the uterus, the maternal portion of the placenta or ovum ultimately suffers, and flags or decays, whilst the fœtal portion must sympathize with it.

From this it results, first, that even in tedious labour the child does not die : se-

condly, that when the action ceases in the early months of pregnancy, the foetus does not instantly die, nor abortion immediately take place : thirdly, but it invariably happens, that, at whatever period the action ceases, the foetus will, if not expelled within a certain time, perish.

I have elsewhere* endeavoured to prove, that we have a certain quantity of action present in the system at large, and properly distributed amongst the different organs, forming an equilibrium of action ; and that if one organ acts in an over degree, another, which is connected with it, will have its action lessened, and, *vice versa*.

The same holds true with regard to different actions belonging to the same organ : and the fact is of considerable importance, both in explaining and curing diseases. During pregnancy the muscular fibres of the uterus are dormant, pos-

* Vide Dissertations on Inflammation, Vol. I.

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sessing no contractile action ; at least, none qualifying them for contracting, so as to make the uterus smaller.

I doubt much if even the individual fibres possess a power of alternately contracting and relaxing, as in other muscles, in any degree whatever. But, whenever the action of gestation ceases, action is communicated to these fibres ; and whenever this loss on the one part, and gain upon the other, is universally begun in the womb, the transference will be completed, and the ovum can no longer be preserved in the uterus.

The loss of action is generally speedy, when once begun. Perhaps in most instances it takes place instantaneously, and then the fibres begin individually to act ; but they may not, for some hours, contract universally, and all at one and the same time producing pains.*

* In some cases, the fibres about the os uteri or lower part of the cervix, assume the contractile action long before the

But if some other organ shall receive the surplus of action, or the transferred action, then the uterine fibres either will not contract, or will receive an inferiour and insufficient degree of action, and expulsion will not take place until the organ sympathizing shall cease to have the increased action, whether it be the brain, the stomach, or the external muscles of the body. Sometimes also the action seems to be divided betwixt the uterus and other organs, or they alternate in their actions.

This fact is of importance in explaining and correcting many of the irregularities attending labour, which it would be impossible here to specify.

Sometimes the action is chiefly communicated to one part of the uterine fibres,

rest, and produce slight irregular motions, which, if neglected, may excite general contraction. But if the fibres about the body or fundus of the uterus, assume this action, then nothing can prevent expulsion, for the action of gestation is destroyed in every instance before they begin to contract.

whilst the rest are more torpid ; and this part contracts in an undue degree, clasping the child firmly, and retarding labour ;* and, after expulsion, it is apt to return, and retain the placenta, whilst the rest of the uterus becomes torpid, producing flooding.

If, then, the action of gestation cease universally in the uterus, another action, namely, muscular contraction, begins, and then all hope of retaining the ovum any longer is at an end. I know that we

* This contraction is sometimes so firm after the membranes have burst, as to produce the same effect upon the child, as the natural pains would have done had the pelvis been deformed ; that is to say, the presentation becomes unshapely, and the part below the stricture is swelled and livid. This spasm, like that which sometimes retains the placenta, is very difficult to be relaxed, and, in general, requires artificial management. If it come on at the full time, before the membranes break, it may give such a feeling to the lower part of the ovum, as to make it resemble a preternatural presentation, although the head really present. In this case, the band is generally pretty broad, but its contraction is not violent. It has the effect, however, of retarding labour, until we break the membranes, which excites a more general and effective action in the uterine fibres.

have been told of instances where contraction, after beginning, stopped for several weeks.

The os uteri may be prematurely developed; it may be open for some weeks, even without pain; but no man will say that in this case, labour or uterine contraction has begun. We may even have partial muscular action, in a few very rare cases, about the os uteri, which has less to do with the action of gestation than any other part of the uterus; and this action is often attended with considerable pain or uneasiness. Sometimes it is connected with convulsive agitation of several of the external muscles of the body. Even in this case, expulsion does not always immediately take place; for by bleeding, and rest, and opiates, the motion may sometimes be checked; but regular and universal action of the muscular fibres never yet has been stopped. It may, like other muscular actions, be suspended

by anodynes or artificial treatment ; but it never has, and never can be stopped, otherwise than by the expulsion of the ovum, when a new train of actions commence.

Whenever, then, at any period of pregnancy, we have paroxysms of pain in the back,* and region of the uterus, more especially if these be attended with feeling of weight in that region, tenesmus, micturition, descent of the uterus in the pelvis, and opening of the os uteri, we may

* It may not be improper to mention, that in some febrile affections we have pain in the back and loins, occasioning remitting or dysentery altogether for a short space, and then returning. Sometimes along with this we have, owing to the affection of the circulation, and in some instances to the previous exertion, a slight discharge from the vessels about the os uteri. This state is distinguished from uterine contraction, by our finding that the cervix is unaffected, that the pains are increased by motion of pressure, and are more irregular than those attending labours. This state may be prevented from inducing abortion by rest, by keeping the bowels open, by anodynes preceded by venesection, if the pulse indicate it. Frictions, with camphorated spirits of wine or laudanum, give relief. Any exertion, during the remaining period of gestation, will renew the pain in the back.

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be sure that expulsion, though retarded, will soon take place.*

This fact is not always attended to in abortion, for many think that if by anodynes they can abate the pain, they will make the woman go to the full time. This is true, with regard to many painful sensations, which may attend a threatened abortion, or which may be present, although there be no appearance of abortion; but it does not hold with regard to those regular pains proceeding from universal action of the uterine fibres; and we may save both ourselves and our patients some trouble, by keeping this in remembrance.

Seeing, then, that contraction is brought on by stopping the action of gestation, and that when it is brought on it

* We are careful to examine the state of the uterus, ascertaining its universal contraction by finding that the membranes become a little tight during a pain, provided that pregnancy be so far advanced as to allow them to be felt in the early part of the process.

cannot be checked, nor the action of gestation restored, we must next inquire how this action may be stopped. I have already mentioned several circumstances affecting the uterus, and likely to injure its actions ; and these I shall not repeat, but go on to notice some others, which are often more perceptible ; and first I shall mention violence, such as fall, blows, and much fatigue, which may injure the child, and detach part of the ovum.

If part of the ovum be detached, we have not only a discharge of blood, but also the uterus, at that part, suffers in its action, and may influence the whole organ, so as to stop the action universally. But the time required to do this is various, and opportunity is often given to prevent the mischief from spreading, and to stop any farther effusion—perhaps to accomplish a re-union.

Violent exercise, as dancing, for instance, or much walking, or the fatiguing

dissipations of fashionable life, more especially in the earliest months, by affecting the circulation, may vary the distribution of blood in the uterus, so much as to produce rupture of the vessels, or otherwise to destroy the ovum. There is also another way in which fatigue acts, namely, by subducting action and energy from the uterus : for the more energy that is expended on the muscles of the inferiour extremities, the less can be afforded or directed to the uterus ; and hence abortion may be induced at an early stage of gestation.*

Even at a more advanced period, inconvenience will be produced upon the principle formerly mentioned ; for the nerves of the loins conveying less energy in many instances, though not always to the muscles, they are really weaker than

* The same effect is observable in the stomach and other organs. If a delicate person, after a hearty meal, use exercise to the extent of fatigue, he feels that the food is not digested, the stomach having been weakened or injured in its action.

formerly, and are sooner wearied, producing pain, and prolonged feeling of fatigue, for many days, after an exertion which may be considered as moderate.

This feeling must not be confounded with a tendency to abortion, though it may sometimes be combined with it, for generally by rest the sensation goes off. Neither must we suppose that the child is dead, from its being usually quiet during that period, for as soon as the uterus, which has been a little impaired in its action, recovers, it moves as strongly as ever.

In the next place, I mention the death of the child, which may be produced by syphilis, or many diseases perhaps peculiar to itself, or by injury of the functions of the placenta, which may arise from an improper structure of that gland itself, or aneurism, or other diseases of the cord. But in whatever way it is produced, the effect is the same in checking the action

of gestation, unless there be twins, in which case it has been known that the uterus sometimes did not suffer universally, but the action went on, and the one child was born of the full size, the other small and injured.*

The length of time required for producing abortion from this cause is various ; sometimes it is brought on in a few hours : at other times not for a fortnight, or even longer. In these and similar cases, when the muscular action is commencing, the discharge is trifling, like menstruation, until the contraction becomes greater, and more of the ovum be separated. When symptoms of abortion

*It has even been known, that, in consequence of the death of one child, the uterus has suffered partially, and expulsion takes place ; but the other child continuing to live, has preserved the action of gestation in that part of the uterus, which properly speaking, belonged to it, and pregnancy has still gone on. This, however, is an extremely rare occurrence ; for, in almost every instance, the death of one child produces an affection of the action of gestation in the whole uterus, and the consequent expulsion of both children.

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proceed from this cause, it is not possible to prevent its completion; and it would be hurtful even if it were possible. When, therefore, after great fatigue, profuse evacuations in delicate habits, violent colick, or other causes, the motion of the child ceases, the breasts become flaccid, and the signs of gestation disappear. We need not attempt to retard expulsion, but should direct our principal attention to conduct the woman safely through the process.

A third cause is a disproportioned action betwixt the uterus and ovum, the one not increasing in the same ratio with the other, yet both continuing to act. This is productive of frequent discharges of blood, repeated at different, but always at short intervals, for several weeks, until at length the uterus suffers so much, that its action stops, or the fœtus dies.

Another cause is, any strong passion of the mind. The influence of fear, joy,

and other emotions on the muscular system, is well known; and the uterus is not exempted from their power; any sudden shock, even of the body, has much effect on this organ. The pulling of a tooth, for instance, sometimes suddenly produces abortion.

Emmenagogues, or acrid substances, such as savine and other irritating drugs, more especially those which tend to excite a considerable degree of vascular action, may produce abortion.

Such medicines, likewise, as exert a violent action on the stomach or bowels will, upon the principle formerly mentioned, frequently excite abortion; and very often are taken designedly for that purpose in such quantity as to produce fataleffects; and here I must remark, that many people at least pretend to view attempts to excite abortion as different from murder, upon the principle that the embryo is not possessed of life, in the com-

monacceptation of the word. It undoubtedly can neither think nor act ; but, upon the same reasoning, we should conclude it to be innocent to kill the child in the birth.

Whoever prevents life from continuing, until it arrive at perfection, is certainly as culpable as if he had taken it away after that had been accomplished. I do not, however, wish, from this observation, to be understood as in any way disapproving of those necessary attempts which are occasionally made to procure premature labour, or even abortion, when the safety of the mother demands this interference, or when we can thus give the child a chance of living, who otherwise would have none.

If any part with which the uterus sympathizes have its action greatly increased during pregnancy, the uterus may come to suffer, and abortion be produced.— Hence the accession of morbid action or

inflammation in any important organ, or on a large extent of cuticular surface, may bring on miscarriage, which is one cause why small-pox often excites abortion, whilst the same degree of fever, unaccompanied with eruption, would not have had that effect.

Hence also increased secretory action in the vagina, if to a great degree, though it may have even originally been excited in consequence of sympathy with the uterus, may come to incapacitate the uterus for going on with its actions, and therefore it ought to be checked by means of an astringent injection.

In this case the uterus has, without any proof, been supposed to become too much relaxed, whilst in other cases, as for instance when the abdomen was harder than usual, it has with as little foundation been supposed to be preternaturally rigid.*

* Roederer supposes, that periodick abortion proceeds

Mechanical irritations of the os uteri, or attempts to dilate it prematurely, will also be apt to bring on muscular contraction. At the same time, it is worthy of remark, that the effect of these irritations is generally at first confined to the spot on which they act, a partial affection of the fibres in the immediate vicinity of the os uteri being all that is, for some time, produced; and therefore slight uneasiness at the lower part of the belly, with or without a tendency in the os uteri to move or dilate, whether brought on by irritation at the upper part of the vagina or os uteri, or by affection of the neck of the bladder, &c.* may be often

from the uterus being incapable of distending beyond a certain size. Vide *Elementa* cxxii.—Roderick Acastio supposes, that it proceeds “*animia humiditate orificiis matricis.*” Vide *De Morb. Mulier*, p. 462.

* It is an old observation, that these purgatives, which produce much tenesmus, will excite abortion; and this is certainly true, if their operation be carried to a considerable extent, and continue long violent.—Hence dysentery is also

prevented from extending farther, and destroying the action of gestation by rest, anodynes, and having immediate recourse to such means as the nature of irritation may require for its removal.*

The irritation of a prolapsus ani, or of inflamed piles, with or without much

apt to bring on a miscarriage. Those strong purges which are sometimes taken to promote premature expulsion, not only act by exciting tenesmus, but likewise by inflaming the stomach and bowels, and thus affect the uterus in two ways. It cannot be too generally known, that when these medicines do produce abortion, the mother can seldom survive their effects. It is a mistaken notion, that abortion can be most readily excited by drastick purges, frequent and copious bleeding, &c. immediately after the woman discovers herself to be pregnant; on the contrary, the action of the uterus is then more independent of that of other organs, and therefore not so easily injured by changes in their condition. I have already shewn, that abortion more frequently happens when the pregnancy is farther advanced, because then not only the uterus is more easily affected, but the foetus seems to suffer more readily.—It is apt, either from diseases directly affecting itself, or from changes in the uterine action, to die about the middle of the third month, in which case expulsion follows within a fortnight.

* Chronick inflammation of the heart is generally attended with pain at the bottom of the abdomen, which is sometimes mistaken for symptoms of calculus. In one case abortion seemed to proceed from this disease of the heart.

sanguinous discharge, may excite the uterus to contract; and if the bleeding from the anus have been profuse and the woman weakly, it may destroy the child. The piles ought, therefore, never to be neglected. The bowels should be kept open. An anodyne clyster may be given if the pain be great, and a poultice applied, consisting of curd of milk, and a little laudanum, or a linament made up of thick cream, with a little of the extract of lead, or expressed juice of belladonna.

Tapping the ovum, by which the uterus collapses and its fibres receive a stimulus to action, is another cause by which abortion may be produced; and this is sometimes, with great propriety, done at a particular period, in order to avoid a greater evil.

It is now the general opinion, that contraction will unavoidably follow the evacuation of the waters. But we can suppose the action of gestation to be in some

cases so strong as not, at least for a very considerable time, to stop in consequence of this violence, and, if it do not stop, contraction will not take place. I do not, however, mean to say, that all discharges of watery fluid from the uterus, not followed by abortion, are discharges of the liquor amnii, and instances of this failing speedily to produce contraction. On the contrary, I know that most of these dropsical effusions are the consequence of morbid action about the os uteri, the glands yielding a serous, instead of a gelatinous fluid, and this action may continue for many months.

Sometimes the upper range of lacunæ yields water, whilst the under secretes jelly, which confines the water for some hours, until it accumulates, and comes out with a small gush. At other times, in the early period of gestation, it collects in considerable quantity betwixt the lower part of the decidua protrusa, which has

not yet reached the cervix uteri and the gelatinous plug, which becomes a little stronger than usual.

There is thus a species of dropsy produced, and the water is sometimes confined until a little before labour comes on; at other times it is discharged sooner, and an oozing continues for many weeks. In some instances water is collected betwixt the chorion and amnion, or a large hydatid occupies the lower part of the uterus, whilst the ovum lies above it.— But in whatever way we may suppose the water to be collected, there are examples of a very astonishing quantity having been discharged about the middle or end of pregnancy, without exciting the expulsive action of the uterus. In all these cases the woman must be confined to bed and have an anodyne every night at bed-time, for some time, promising venesection if the pulse indicate it, and conjoining gentle laxatives. There

is just so much probability of gestation going on as to encourage us to use endeavours to continue it. In those instances where the discharge is small, and the oozing pretty constant, we conclude that it is yielded chiefly by the glands about the os uteri, and may derive advantage from injecting three or four times a day a strong infusion of galls, or solution of alum. The woman ought to use no exertion, as the membranes are apt to give way.

When the liquor amnii really is evacuated, sometimes a spasmodick contraction of the fibres near the cervix takes place, instead of that regular action which is necessary for expulsion; and if the whole of the liquor have not escaped, the remaining portion will be confined by the tightening of that part of the uterus round the fœtus; and this contraction may endure for a very considera-

ble time. If not interrupted, it may lay the foundation of future diseases in the uterus.



OF THE PROGNOSIS.

THE danger of abortion is to be estimated by considering the previous state of the health, by attending to the violence of the discharge, and the difficulty of checking it; to its duration, and the disposition to expulsion which accompanies it; to the effects which it has produced in weakening the system, and to its combination with hysterical or spasmodick affections. In general, we say that abortion is not dangerous, yet in some cases it does prove fatal very speedily, either from loss of blood, or spasms about the stomach, or convulsions.

It is satisfactory, however, to know that this termination is rare, that these dangerous attendants are seldom present, and that a great hæmorrhage may be sustained, and yet the strength soon recover. But if there be any disposition in a particular organ to disease, abortion may make it active, and thus, at a remote period, carry off the patient. Miscarriages, if frequently repeated, are also very apt to injure the health, and break up the constitution.

When abortion is threatened, the process is very apt to go on to completion; and it is only by interposing, before the expulsive efforts are begun, that we can be successful in preventing it, for whenever the muscular contraction is universally established, marked by regular pains, and attempts to distend the cervix and os uteri, nothing, I believe, can check the process. As this is often the case before we are called, or, as in many in-

stances abortion depends on the action of gestation being stopped by causes whose action could not be ascertained until the effect be produced, we shall frequently fail in preventing expulsion.

This is greatly owing to our not being called until abortion, that is to say, the expulsive process has begun ; whereas, had we been applied to upon the first unusual feeling, it might have been prevented. What I wish then particularly to inculcate is, that no time be lost in giving notice of any ground of alarm, and that the most prompt measures be had recourse to in the very beginning ; for when uterine contraction has commenced then all that we can do is to conduct the patient safely through a confinement, which the power of medicine cannot prevent.

The case of threatened abortion, in which we most frequently succeed, is that arising from slipping of the foot, or

causes exciting a temporary over-action of the vessels, producing a slight separation, because here the hæmorrhage immediately gives alarm, and we are called before the action of gestation be much affected.

Could we impress upon our patients the necessity of equal attention to other preceding symptoms and circumstances, we might succeed in many cases where we fail from a delay, occasioned by their not understanding that an expulsion can only be prevented by interfering before it begins, but that, when sensible signs of contraction appear, the mischief has proceeded too far to be checked. Prompt and decided means used upon the first approach of symptoms indicating a hazardous state of the uterus, or on the earliest appearance of hæmorrhagiæ may, provided the child be still alive, be attended with success.

OF THE PREVENTION AND TREAT-
MENT OF ABORTION.

IN considering the treatment, I shall first of all notice the most likely method of preventing abortion in those who are subject to it; next, the best means of checking it, when it is immediately threatened; and, lastly, the proper method of conducting the woman through it, when it cannot be avoided.

The means to be followed in preventing what may be called habitual miscarriage, must depend on the cause supposed to give rise to it. It will, therefore, be necessary to attend to the history of former abortions; to the usual habitudes and constitution of the woman; and to her condition when she becomes pregnant.

In many instances a plethorick disposition, indicated by a pretty full habit,

and copious menstruation, will be found to give rise to it. In these cases, we shall find it of advantage to restrict the patient almost entirely to a vegetable diet, and at the same time make her use considerable and regular exercise.

The sleep should be abridged in quantity, and taken not on a bed of down, but on a firm mattress, at the same time that we prevent the accumulation of too much heat about the body. The bowels ought to be kept open, or rather loose, which may be effected by drinking Cheltenham water : and this can be artificially prepared, if necessary.

There is, in plethorick habits, a weakness of many, if not all, of the functions ; but this is not to be cured by tonics, but by continued and very gradually increased exercise, with light diet, consisting chiefly of vegetables. This plan, however, must not be carried to an imprudent length, nor established too sudden-

ly ; but regard is to be had to the previous habits. It is a general rule, that exercise should not be carried the length of fatigue, and that it should be taken, if possible, in the country, whilst late hours, and many of the modes of fashionable life, must be departed from. We may also derive some considerable advantage from conjoining with this plan, the shower bath, or sea-bathing, that they ought not to be omitted. There is, I believe, no remedy more powerful in preventing abortion than the cold bath, and the best time for using it is in the morning. By means of this, conjoined with attention to the vascular system, and prudent conduct on the part of the patient, I suppose that nine-tenths of those who are subject to abortion, may go on to the full time. If the shower-bath be employed, we must begin with a small quantity of water ; and, in some instances, may at first add so much warm

water as shall make it just feel cold, but not give too great a shock. After conception, the exercise must be taken with circumspection : but the diet should still be sparing, and the use of the cold bath continued.

If the pulse be at any time full, or inclined to throb, or if the patient be of a vigorous habit, a little blood should be taken away at a very early period. In some cases where the action is great, we must bleed almost immediately after the suppression of the menses. It is not necessary to bleed copiously : it is much better to take away only a few ounces, and repeat the evacuation when required, and we should manage so as to avoid fainting. The cold bath should be conjoined, and we may derive much advantage by using the digitalis,* so as slightly to

* The acetite of lead has been recommended by the ingenious and justly celebrated Dr. Rush of Philadelphia, in doses from one to three grains, given three times a day. Of this practice I cannot speak from my own experience ; but Dr. Rush in-

affect the pulse, keeping it at or below its natural frequency, and diminishing its throbbing. But it is not requisite to be given to the degree employed in some other complaints; and if it be pushed to an imprudent length, the child may suffer. Half a grain may be given, so often as may be found necessary, to bridle the circulation. It may be continued for two days, and then omitted for a day; and in this way it may be continued for a length of time; but it is seldom necessary to give it beyond the beginning of the fourth month, unless a change of circumstances afterwards require it.*

The dose must be occasionally increased, so as to produce the desired effect; and I can vouch for the safety of the plan.

Injecting cold water into the vagina,

forms me, that in his hands it has been attended with great success.

* In those cases where the digitalis produces feebleness it is evidently improper to continue it regularly. Indeed, when this effect takes place, its farther exhibition is unnecessary.

twice or thrice a day, has often a good effect, at the same time that we continue the shower-bath every morning. When there is much aching pain in the back, it is of service to apply cloths to it, dipped in cold water, or gently to dash cold water on it; or employ a partial shower-bath, by means of a small watering can.

In this, and all other cases of habitual abortion, we must advise that impregnation shall not take place until we have corrected the system; and after the woman has conceived, it is requisite that she live *absque marito*, at least until gestation be far advanced. I need scarcely add, that when consulted respecting habitual abortion, the strictest prudence is required on our part, and that the situation of the patient, and many of our advices, should be concealed from the most intimate friends of the patient.

In other cases, we find that the cause of abortion is connected with sparing

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menstruation. This is often the case with women whose appearance indicates good health, and who have a robust look. This is not often to be rectified by medicine, but it may by regimen, &c. Here, as in the former case, we find it useful to make the greatest part of the diet consist of vegetables ; but it is not necessary to restrict the quantity.

When, on the other hand, the patient has a weakly delicate appearance, it will be proper to give a greater proportion of animal food, and two or three glasses of wine, in the afternoon, with some bitter laxative, twice a day, so as to strengthen the stomach, and at the same time keep the bowels open.

We also derive, in both cases, advantage from the daily use of the warm bath, made of a pleasant temperature ; but this is to be omitted after conception : at least, for the first ten or twelve weeks, after which, if there be symptoms of irrita-

tion, or feeling of tension about the belly, or pain about the groins, or pubis, it may be employed, and is both safe and advantageous. But when the patient is of a phlegmatick habit, or subject to profuse flour albus, it is not indicated, and sometimes is pernicious. The internal use of the Bath waters is often of service; or where the circumstances of the patient will not permit this, we may desire her to drink, morning and evening, a pint of tepid water, which may be continued during gestation. Throwing up into the vagina tepid salt water twice or thrice a day, seems also to have a good effect.

I have already mentioned, that abortion is sometimes the consequence of too firm action, the different organs refusing to yield to the uterus, which is thus prevented from enjoying the due quantity of energy and action. These women have none of the diseases of pregnancy, or they have them in a slight degree. They

have good health at all times, but they either miscarry, or have labour in the seventh or eighth month, the child being dead; or, if they go to the full time, I have often observed the child to be sickly, and of a constitution unfitting it for living.

We may sometimes cure this state by giving half a grain of digitalis, and the eighth part of a grain of the tartris antimonii, every night at bed-time, which diminishes the stomachick action. Bleeding is also useful, by making the organs more irritable. Exercise, so as to prove tonic, is hurtful in this species of abortion; instead of wishing to increase the action of any organ, our object is to diminish it, and make the different parts more easily acted on. The warm or tepid bath is, in general, of advantage, and may be employed every second evening for some time.

The accidental accession of an hysterick condition of the system, sometimes spontaneously cures this state : and if the patient have gone to the full time, but bear an unhealthy child from this cause ; if she meet with any accident in her confinement, inducing a nervous condition, she is less apt afterwards to miscarry, or have dead children.

There is another case in which all the functions are healthy and firm, except the circulation, which is accelerated by the uterine irritation. This is more or less the case in every pregnancy, but here it is a prominent symptom. The woman is very restless, and even feverish, and apt to miscarry, especially if she be of a full habit. Immediate relief is given by venesection, and afterwards we may, for sometime, give every night half a grain or a grain of digitalis, with two grains of the extract of hyocyamus.

When, on the contrary, abortion arises, from too easy yielding of some organ, we must keep down uterine action, by avoiding venery, and injecting cold water often into the vagina ; or, pouring cold water every morning from a watering can, upon the loins and ilia. Clysters of cold water are also useful ; but from the unpleasant sensation which they give, they ought not to be frequently employed : at the same time we must attend to the organ sympathizing with the uterus.

Sometimes it is the stomach which is irritable, and the person is often very sick, takes little food, and digests ill. A small blister applied to the pit of the stomach, often relieves this ; a little of the compound tincture of bark, taken three or four times a day, is serviceable ; or a few drops of the tincture of muriated iron in a tumbler glass full of aerated water ; at other times the bowels yield, and

the patient is obstinately costive. This is best cured by manna, with the tartarite of potash. When the muscular system yields, producing a feeling of languour and general weakness, the use of the cold bath, with a grain of opium, at bedtime, will be of most service.

It is evident that it is only by attending minutely to the history of former miscarriages, that we can detect these causes; and we shall generally find, that in each individual case it is the same organ in every pregnancy which has yielded or suffered. Previous to future conception, we may, with propriety, endeavour to render it less easily affected.

General weakness is another condition giving rise to abortion; and upon this I have already made some remarks. I have here only to add, that the use of the cold bath, the exhibition of the Peruvian bark, and wearing flannel next the skin, constitutes the most successful practice.

Syphilis is likewise a cause of abortion. When it occurs in the mother, it often unfits the uterus for going on with its actions. At other times, more especially when the father labours under venereal hectick, or has not been completely cured, the child is evidently affected, and often dies before the process of gestation can be completed.

In these cases a course of mercury alone can effect a cure. But we are not to suppose that every child, born without the cuticle in an early stage of pregnancy, has suffered from this cause ; on the contrary, as the majority of these instances depend on causes already mentioned, and which cannot be cured by mercury, I wish to caution the student against too hastily concluding that one of the parents has been diseased, because the child is born dead or putrid in the seventh month.

It is not always easy to form a correct judgment ; but we may be assisted by

finding that the other causes which I have mentioned are absent ; that we have appearances of ulceration on the child, and that there are some suspicious circumstances in the former history and present health of the parents.

Advancement in life, before marriage, is another cause of frequent abortion, the uterus being then somewhat imperfect in its action. In general we cannot do much in this case, except avoiding carefully the exciting causes of abortion, and by attending minutely to the condition of other organs, during menstruation or pregnancy, we may, from the principles formerly laid down, do some good.

It is satisfactory to know that, although we may fail once or twice, yet by great care the uterus comes at last to act more perfectly, and the woman bears children at the full time.

After these observations, it is only necessary to add, that in every instance of

habitual abortion, whatever the condition may be which gives rise to it, we find that it is essential that the greatest attention be paid to the avoiding of the more evident and immediate exciting causes of miscarriage, such as fatigue, dancing, &c. In some cases, it may even be necessary to confine the patient to her room, until the period at which she usually aborts is past.

When abortion is threatened, we come to consider whether and by what means it can be stopped. I have already stated my opinion, that when the action of gestation ceases, it cannot be renewed, and that general contraction of the uterine fibres is a criterion of this cessation.

Still as some of the means which may be supposed useful in preventing a threatened abortion, are also useful in moderating the symptoms attending its progress we may very properly have recourse to them. Some causes giving

rise to abortion, do not immediately produce it, but give warning of their operation, producing uneasiness in the vicinity of the uterus, before the action of that organ be materially affected.

The detraction of a little blood at this time, if the pulse be in any measure full or frequent ; or, if the patient be not of a habit forbidding evacuations, and the subsequent exhibition of an anodyne clyster, or a full dose of digitalis and opium,* together with a state of absolute rest for some days, will often be sufficient to prevent further mischief, and constitute the most efficacious practice. The patient should be strictly confined to bed, sleeping with few bed-clothes, and without a fire in her apartments. The diet should, in general, be low, consisting of dry toast, biscuit, and

* Opium is of signal benefit in this situation, and should seldom be omitted after venesection.

fruit : and much fluid, especially warm fluid, should be avoided.

This is the time at which we can interfere with the most certain prospect of success ; and the greatest attention should be paid to the state of the rest of the system, removing uneasiness, wherever it is present, and preventing any organ from continuing in a state of undue action. It is difficult to persuade the patient to comply with that strict attention which is necessary at this period ; but being persuaded that if this period be allowed to pass over with neglect, and contraction begins, nothing can afterwards prevent abortion, I wish particularly to impress the mind of the student with a due sense of its importance : and I must add, that as after every appearance of morbid uterine action is over, the slightest cause will renew our alarm, it is necessary that great attention be paid for some time to the patient.

Often, instead of an uneasy feeling about the loins, or lower belly, we have, before the action of gestation stops, a discharge of blood, generally in a moderate, sometimes in a trifling degree. This is more especially the case when abortion is threatened, owing to an external cause, and, if immediately checked, we may prevent contraction from beginning.

Even in those cases where we do not expect to ward off expulsion, it is useful to prevent, as far as we can, the loss of blood; for as I cannot see that the hæmorrhage is necessary for its accomplishment, although it always attend it, I conclude that our attempts to prevent bleeding can never do harm, for if they succeed in checking abortion, we gain our object; if they fail, they do not increase, but diminish the danger.

It should be carefully remembered, that the more we can save blood, the more do we serve our patient. As the

means for checking the discharge will be immediately pointed out, it is unnecessary here to enter into any detail.

Sometimes the vessels about the cervix and os uteri yield, post coitum, a little blood, and this may occur either in those who have the uterus in a high state of activity, or more frequently where it is feeble in its functions. The same discharge may sometimes appear in rather greater quantity after impregnation, passing perhaps for the menses, and making the woman uncertain as to her situation; but it is generally, though not always, irregular in its appearance, and seldom returns above once or twice. In some instances, however, it becomes greater and more frequent in proportion as the vessels increase in size. It is now apt to pass for menorrhagi.

If it be allowed to continue, it tends to injure the action of the uterus, and produces expulsion, which sometimes is

the first thing which shows the woman her situation. This discharge is best managed by rest, and the frequent injection of saturated solution of the sulphat of alumine, or decoction of oak bark.

When a slight discharge takes place, in consequence of a slip of the foot, or some other external cause, we may also derive advantage from the use of the injection, but not so certainly as in the former case; and if the discharge be considerable, the injection will fail. It is better, in this case, to trust to the formation of a coagulum.

When in a plethorick habit abortion is threatened, from a fright, or mental agitation, we have often palpitation, rapidity of the pulse, head-ach, flushed face, and pain about the back or pubis, bleeding relieves immediately the uneasiness in the head, and often the pain in the back; afterwards the patient is to be kept cool and quiet, and an anodyne administered.

In those cases, where regular uterine pain precedes or accompanies the discharge, expulsion cannot be prevented; but when the discharge precedes the pain, it sometimes may; nay, if the child be still alive, it frequently may. Rest is absolutely necessary, if we wish the person to go to the full time: and it is occasionally necessary to confine her to bed for several weeks, at the same time that we put her upon an effective course of digitalis, and give an anodyne at bed-time, taking care also to keep the bowels in a proper state by gentle medicine. Blood ought also, unless the pulse and habit of the patient forbid it, to be detracted.

This is a very critical situation: much depends on the vigour and promptitude of our practice; and much very much, upon the prudence of the patient. It is teasing to find that, sometimes after all our care and exertions, one rash act destroys in a single day the effect of the whole.

When we cannot prevent abortion, the next thing is to conduct the patient safely through the process ; and the first point which naturally claims our attention is the hæmorrhage. Many practitioners, upon a general principle, bleed, in order to check this, and prevent miscarriage, but miscarriage cannot be prevented, if the uterine contraction have commenced ; and the discharge cannot be prudently moderated by venesection, unless there be undue or strong action in the vessels ; or much blood in the system ; and if so, a vein may be opened with advantage.

This is not always the case, and therefore, unless the vessels be at or above the natural force or strength of action, the lancet is not at this stage necessary. The fulness and strength of the pulse are lost much sooner in abortion than can be explained, by the mere loss of blood.

It depends on an affection of the stomach, which has much influence on the

pulse; and the proper time for bleeding is before this has taken place. When abortion has made so much progress before we are called, as to have rendered the pulse small and feeble; or when this is the case from the first, bleeding evidently can do no good.

Instead of this, we may use the *digitalis*, which I have already highly recommended as a preventive; but I do not say that, in ordinary cases, where the contraction is brisk, and the process quick, it is at this stage absolutely necessary; and I shall afterwards mention that, when the stomachick affection is urgent, and the pulse much affected by it, the use of this medicine is improper. When, however, the case is tedious, and the discharge long continued, at the same time that the sickness is not considerable, the *digitalis* will be of essential service.

Nauseating doses of emetick medicines act in the same way with the *digi-*

talis, but are much less effectual, and more disagreeable, as well as uncertain in their operation.

Internal astringents have been proposed, but they have no effect, unless they excite sickness, which is a different operation from that which is expected from them.

The application of cloths dipped in cold water to the back and external parts will have a much better effect than internal astringents, and ought always to be had recourse to. If the digitalis have been exhibited, it assists that medicine in moderating the circulation.

Even when trusted to alone, it lessens the action of the sanguiferous system, particularly of the uterine vessels. The introduction of a small piece of smooth ice into the vagina has been recommended, and has often a very speedy effect in retarding the hæmorrhage, whilst it never, if properly managed, does any harm.

A small snow-ball, wrapped in a bit of linen, will have the same effect ; but neither of these must be continued so long as to produce pain, or much and prolonged shivering. The heat of the surface is also to be moderated, by having few bed clothes, and a free circulation of cool air.

But the most effectual local method of stopping the hæmorrhage, is by plugging the vagina. This is best done by taking a pretty large piece of soft cloth, and dipping it in oil, and then wringing it gently.

It is to be introduced with the finger, portion after portion, until the lower part of the vagina be well filled. The remainder is then to be pressed firmly on the orifice, and held there for some time. This acts by giving the effused blood time to coagulate. It gives no pain ; it produces no irritation, and those who condemn

it, surely must either not have tried it, or have misapplied it.

If we believe that abortion requires for its completion a continued flow of blood, we ought not, in those cases where the process must go on, to have recourse to cold, or other means of restraining hæmorrhage.

If we do not believe this, then surely the most effectual method of moderating it is the best. Plugging can never retard the process, nor prevent the expulsion of the ovum ; for when the uterus contracts, it sends it down into the clotted blood in the upper part of the vagina, and the flooding ceases.

In obstinate cases we may, before introducing the plug, insert a little powdered ice, when it can be procured, tied up in a rag.

Faintness operates in the same way, in many cases, by allowing coagula to form in consequence of the blood flowing

more slowly ; and, when the faintness goes off, the coagula still restrain the hæmorrhage in the same way as when the plug has been used. This naturally points out the advantage of using the plug, together with the digitalis, as we thus produce coagulation at the mouths of the vessels, and also diminish the vascular action. It will likewise show the impropriety of using injections at this time, for, by washing out the coagula, we do more harm than can be compensated by any astringent effect produced on the vessels.

The principal means, then, which we employ for restraining the hæmorrhage, are bleeding, if the pulse be full and sharp ; if not, we trust to the digitalis, stuffing the vagina, the application of cold to the external parts, keeping the heat of the body in general at a low temperature, and enforcing a state of absolute rest, which must be continued during the whole process, however long it

may, in some cases, be. The drink should be cold, and the food, if the patient desires any, light, and taken in small portions.

Opiates have been advised, in order to abate the discharge, and are, by many, used in every case of abortion, and in every stage. But as we cannot finish the process without muscular contraction, and as they tend to suspend that, I do not see that their exhibition can be defended on rational principles.

If given in small quantity, they do no good in the present point of view; if in larger doses, they only postpone the evil, for they cannot check abortion after contraction has begun. Nothing can do this, for it proceeds from the cessation of the action of gestation, which we cannot restore.

But I will not argue against the use of opiates from their abuse. They are very useful in cases of threatened abortion,

more especially in accidental separation of the membranes and consequent discharge. They do not directly preserve the action of gestation, but they prevent the tendency to muscular contraction, and thus do good ; for we find in the animal economy, that when two actions oppose each other, or alternately, preventing a tendency to the one, has an effect in preserving the other. In weakly or emaciated habits, opiates alone if given upon the first appearance of mischief, are often sufficient to prevent abortion ; and, in opposite conditions, when preceded by venesection, they are of great service.

Opiates are likewise useful for allaying those sympathetick pains about the bowels, and many of the nervous affections which precede or accompany abortion. They are also, especially if conjoined with digitalis, of much benefit in cases where we have considerable and protracted discharge, with trifling pains, as the uterus

is not contracting sufficiently to expel the ovum, but merely separate vessels, and excite hæmorrhagiæ.

By suspending, for a time, its action, it returns afterwards with more vigour and perfection, and finishes the process. But when the process is going on regularly, opiates will only tend to interfere with it, and prolong the complaint.

It was, at one time, a very frequent practice to endeavour, with the finger or small forceps, to extract the fœtus and placenta, in order to stop the discharge. Puzos strongly opposed this practice, and it is now very properly given up as a general rule. I do not wish, however, to be understood as altogether forbidding manual assistance; but I am much inclined to consider it as a useful precept, not to be hasty in attempting to extract the ovum. If the discharge be protracted, and the membranes entire, we may, if the situation of the patient require it, sometimes

accelerate expulsion, by evacuating the liquor amnii. But if the pregnancy be not advanced beyond the fourth month, it will be better to trust to smart clysters, and restrain the hæmorrhage by means of the plug. We thus have a greater likelihood of getting all the ovum off at once, and may excite the action by gently dilating the os uteri, and moving the finger round it. If the membranes have given way, and the fœtus be still retained, we may, by insinuating a finger within the uterus cautiously, hook it out; or, in many cases, it will be found partly expelled through the os uteri, and may easily be helped away. But the most tedious and troublesome case generally is that in which the fœtus has been expelled, but the secundines are still retained. Now, we never can consider the patient as secure from hæmorrhage until these be thrown off, and therefore she must be carefully watched, especially when gesta-

tion is considerably advanced. In a great majority of instances, the uterus, within a few hours, contracts and expels them. But in some cases the hæmorrhage does become profuse, and there is little disposition to separate them. By stuffing the vagina, we shall often find that the discharge is safely stopped, and the womb excited to act in a short time. But if we be disappointed, or the symptoms urgent, the finger must be introduced within the uterus,* and the remains of the ovum slowly detached by very gentle motion; and we must be very careful not to endeavour to pull away the secundines until they be fully loosened, for we thus leave part behind, which sometimes gives a great deal of trouble; and farther, if we rashly endeavour to extract, we irritate the uterus, and are apt to ex-

* In some instances, the half of the secundines will be found in the vagina, and the other half still in the uterus. In this case, all that is necessary is gently to bring them out.

cite inflammation or a train of hysterical, and sometimes fatal symptoms. It is these two causes which make me cautious in advising manual assistance; and, fortunately, the proportion of cases requiring it is not great in abortion at an early period.

When part of the ovum is left, or the whole of the secundines are retained, then we have another danger besides hæmorrhage; for, within a few days, putrefaction comes on, and much irritation is given to the system, until the fœtid substance be expelled. Sometimes, if gestation have not been far advanced, or the piece which is left is not very large, it continues to come away in small bits for many months; and during the whole time, the woman is languid, hysterical, and subject to irregularities of the menstrua, very often to obstruction; but more frequently the symptoms are very acute. We have loss of appetite, prostra-

tion of strength, tumid or tender belly, frequent small and sharp pulse, hot and parched state of the skin, of the hands, and feet, nocturnal sweats, and various hysterical symptoms. The discharge from the vagina is abominably fœtid, and hæmorrhage sometimes occurs to a violent degree.*

When this disease proves fatal, there are often, though not always, conjoined symptoms of gangrene, weak fluttering pulse, cold sweats, and hiccup.

The practice ought to be, to endeavour with the finger to loosen the putrid substance, and wash it out with tepid water thrown into the uterus by a syringe with a long pipe. The parts should be kept clean in injecting infusion of

* This is especially apt to take place in those cases where the adhesion of the placenta to the uterus has been unusually firm. When, after being retained for some days, the connection loosens, the detachment is generally attended with hæmorrhage; and, if the separation should be complete, and expulsion take place, we can discover the spot which adhered longest by its difference of colour.

chamomile flowers, with a small quantity of oxygenated muriatic acid. The bowels should be kept open with gentle laxatives and clysters; the strength supported with light nourishment and small portions of wine, or tincture of bark frequently repeated. Plenty of subacid fruit may be allowed, and rest should be obtained, or irritation lessened by opiates. In the outset of the disease, emetics sometimes excite the expulsion of the uterine contents; but when the strength is much impaired, they are of more doubtful service.*

From these observations we may see upon the one hand the impropriety of allowing the secundines to remain too long in the uterus; and, on the other, the danger of making rash or unnecessary attempts to extract, by which we irritate

* The action of the uterus may sometimes be excited, and the placenta or decidua separated and thrown off, by throwing cold water into the uterus by means of a female catheter, fitted to the elastick gum bottle used for injecting hydrocele.

the uterus, and tear the placenta, which is almost always productive of troublesome consequences. I now return to the consideration of the usual progress of abortion.

The stomach very soon suffers, and becomes debilitated, producing a general langour and feebleness, with a disposition to faint, which seems, in abortion, to depend more upon this cause than directly upon loss of blood. Indeed, the hæmorrhage produces both slighter and less premanent effects in abortion than at the full time, although less blood may have been lost in the latter than in the former case, for the vessels are smaller, and the discharge is not so sudden.

There is still another cause for this ; namely, that the action of the uterus is less in the early than in the late months. Now, we know that the effect of hæmorrhage from any organ is, *cæteris paribus*, in proportion to its degree of action.

Hence the discharge is less dangerous than at the full time, and still less in menorrhagia than in abortion.

It is likewise less in cases where hydatids are contained in the uterus, than when a child is present, very astonishing discharges being sometimes sustained in that case with impunity; at the same time it must be observed, that all the discharge in these cases does not consist of pure blood, a great part of it being water proceeding from the bursting of the hydatids.

The effect of abortion on the stomach seems to be in proportion to the period at which that takes place, being greater when it occurs before the fourth month than after it.

The effect, though distressing, and often productive of alarm, is nevertheless beneficial, lessening the action of the vessels in the same way with digitalis, the

use of which is improper when this condition is present.

The strength of the pulse is much abated ; sometimes it becomes slower ; but in general it remains much as formerly in point of frequency ; we are therefore not to be too anxious in removing this condition, which restrains hæmorrhage : yet as it may go beyond due bounds, and produce dangerous syncope, we must check it in time.

We must likewise be very attentive to the state of the discharge when this affection is considerable, for if, notwithstanding this, the hæmorrhage should continue, it will produce greater and more immediately hurtful effects than if this were absent.

The best method of abating this sinking and feebleness, is to keep the body perfectly at rest, and the head low. If necessary, we give small quantities of stomachick cordials, such as a little tinc-

ture of cinnamon, or a few drops of ether in a glass of aerated water; or we may give a little peppermint water, with fifteen drops of tincture of opium. In urgent cases, Madeira or undiluted brandy may be given; but these are not to be frequently repeated, and are very rarely necessary.

Sometimes, instead of a feeling of sinking and faintness, the fibres of the stomach are thrown into a spasmodick contraction, producing sudden and violent pain. This is a most alarming symptom, and may kill the patient very unexpectedly. It is to be instantly attacked by a mixture of sulphurick ether and tincture of opium, in a full dose, whilst a senapism is applied to the epigastrick region; but, if when this pain occurs, there be symptoms of approaching convulsions, then bleeding should precede the anodyne, and no ether should be given.

Spasms about the intestines are more frequent and much less dangerous. They are very readily relieved by thirty drops of tincture of opium, in a desert spoonful of aromattick tincture, or forty drops of the tincture of hyocyamus in two tea-spoonfuls of the compound tincture of lavender.

The brain may also be affected, producing epilepsy, which is a very dangerous symptom. This is sometimes preceded by head-ach, flushing of the face, and feeling of fulness about the head and neck ; but at other times it attacks without any precursory symptom, and sometimes seems to arise directly from copious hæmorrhage.

Nothing can be done to the uterus in the way of manual assistance, or extracting the ovum, in the first three months of gestation, (unless the os uteri be fully open, in which case the fœtus may easily be slipped out with the finger ;) but our

chief attention should be directed to the brain. It will, indeed, be proper to attend to the state of the pains and discharge. If the latter be profuse, we must take measures to check it; if the former be absent or seem to alternate with the convulsions, we may derive advantage from the use of a saline clyster, which will excite the contraction of the uterus, and confine the action more to itself; or enable us soon, and without any irritation, to extract the foetus, which ought in general to be done whenever the period of gestation, or the state of the uterus will permit it.

The same effect may sometimes be obtained by injecting cold water into the os uteri. Whilst we thus endeavour to excite the regular action of the uterus, we must likewise act directly on the brain, by shaving the head, and applying a senapism to the scalp. We also detract blood, if the pulse indicate an evacuation;

which will always be the case unless the flooding have been copious ; and, when we do bleed, we should bleed freely. If, on the other hand, the disease seem to have arisen from the profusion of the discharge, it will be proper to give volatiles or a full dose of laudanum, in a little warm brandy.

In those cases where convulsions accompany abortion after the fourth month, it will be proper after the contraction of the uterus is fully established,* to endeavour to co-operate.

* Convulsions sometimes take place in the pregnant state, without any tendency to abortion ; or, at least, without symptoms of contraction. Sometimes a slight discharge succeeds or accompanies the convulsions : but if the patient be bled, and kept quiet, she goes on to the full time, but is in danger of being seized with convulsions in the course of labour, with the expulsive efforts of the womb, by very cautious manual assistance ; and these endeavours, if the convulsions have not arisen from loss of blood, ought to be preceded by liberal evacuations. It is proper to distinguish carefully betwixt these two states ; for, in the one case, the disease is entirely connected with the state of the uterus ; in the other, it is chiefly dependent on loss of blood ; and, in some, a comparatively small discharge is sufficient to produce it.

.....
 Epilepsy is to be distinguished from a combination of hysteria and syncope, which occasionally occurs during labour, whether natural or premature, and which is by no means equally dangerous.

This is known by the smallness of the pulse, the paleness of the face, the slightness of the convulsions, the absence of foam at the mouth, and an appearance of struggling about the throat. It attacks suddenly, generally on getting into an erect posture.

It is at first little different from syncope, and during the whole time the muscles of the face are not much affected, the countenance having rather a deadly aspect. This is removed by an horizontal posture, sprinkling the face smartly with cold water, and the use of volatiles. The patient, in this case, as in epilepsy, is often unconscious of having been ill.

Regular hysterick paroxysms also sometimes accompany abortion, and are

more dangerous than at other times, more especially if they seem to have been excited by the profusion of the discharge. If they last long, they either end in mortal syncope, or in stupor. If they have been brought on by some agitation of mind, they are less to be feared, though not even then void of danger.

Besides attending to the state of the discharge, the best practice is to keep the person very cool, and exhibit thirty or forty drops of tincture of opium, and two drams of tinctura valerianæ ammoniata in a little peppermint water. A clyster, composed of a pound of cold water and two drams of tincture of assafœtida, is also sometimes of service.

Those disagreeable symptoms which I have described, fortunately do not often attend abortion ; but the process goes on safely, and without disturbance. In this case after it is over, we only find it necessary to confine the person to bed for a

few days, as getting up too soon is apt to produce debilitating discharge.

We must also, by proper treatment, remove any morbid symptoms which may be present, but which depending on the peculiarities of individuals, or their previous state of health, cannot here be specified. When the patient continues weakly, the use of the cold bath, and sometimes of the bark, will be of much service in restoring the strength; and, in future pregnancies, great care must be taken that abortion may not happen again at the same period.

Unfortunately we meet with some cases where the recovery does not take place with that promptitude and regularity which could be wished. This sometimes depends upon a continuance of the hæmorrhage after the ovum is expelled, by which the patient is greatly weakened, and even her life put into danger.

The hæmorrhage may either continue from the time of expulsion, or it may come on a week, or even longer, after it. It seems to proceed from the uterus not going on in the process of restoration to the unimpregnated state, but remaining too long enlarged, the consequence of which is, that very soon the vessels pour out blood, and fill the cavity, forming a coagulum, which presently is expelled with a considerable flow of fluid blood; and this process may be very frequently repeated.

This, which is often connected with an hysterical condition, is more especially apt to occur in those who are subject to flooding after the expulsion of the child, as this marks a natural feebleness in the womb, and a disposition to flag in its actions after delivery.

This disease may take place at any period of gestation; it may follow abortion in the second month, or expulsion at the full time; it is most frequent, however,

in the early months, but most dangerous in the latter ; it may attack only once or twice, or it may be often renewed for many weeks, and it is wonderful how the system can be supported under these repeated discharges, but we find that an incredible quantity of blood may be lost if it be taken away at intervals.

Each paroxysm is accompanied by slight pain in the back and belly, with considerable langour and depression of spirit. The discharge continues until the clot escapes out of the uterus, and for some time after that, until a new coagulum forms in the cavity of the uterus which has not fully contracted ; and during this last process we have a considerable oozing of serum.

This disease is not easily distinguished from the repeated hæmorrhage which sometimes attends the retention of part of the secundines ; but we may be assisted by observing that the clot which is

discharged is generally firm, and possesses exactly the shape of the uterine cavity, showing that no substance is adhering to its surface. No portions of organized or fibrous substance are discharged, and the putrid smell attending the disease proceeds evidently from the clot, which is sometimes retained for five or six days in the womb. This complaint either terminates fatally by a convulsion, or by syncope, or the uterus contracts more briskly, and speedily regains the proper size for the unimpregnated state. If any small coagulum shall form after the brisk contraction which rouses the uterus to its healthy action, it gradually breaks down, and is expelled with the cleansings.

In abortion, during the early stages of gestation, we cannot take any other precaution to prevent this than keeping the patient for some time very quiet, as motion, or even any agitation of mind, might interfere with the process of recovery.

In more advanced gestation, as, for instance, in the seventh month, and afterwards, if we should be obliged, on account of flooding, after the birth of the child, to introduce the hand, and extract the placenta, we must be careful not to withdraw it, until we find the uterus contracting round it, which will be a mean, though not an infallible one, of making it go regularly on in the process of restoration to the unimpregnated state.

The best method of treating this complaint is on the very first appearance of hæmorrhage, to introduce a firm plug into the vagina, which will prevent it from going to an excessive degree. Afterwards we must take measures to prevent a return.

This is best done by keeping the circulation slow, by means of the digitalis, and putting the patient on a mild vegetable diet. We cannot assist the process of restoration otherwise than by endeavouring

to excite the contraction of the uterus. This may be done by injecting an astringent fluid two or three times a day, and by ordering saline clysters, which have also the effect of keeping the bowels open, an object of very great importance. We may also find it useful to excite gentle vomiting by small doses of ipecacuanha.

This has an excellent effect in making the uterus contract, and often is the method which nature takes to bring about recovery.

This complaint is different from the menorrhagia lochialis, or copious discharge of blood brought on by exertion after abortion or delivery, at the full time * In this case we have no large clot discharged, but just the usual appearances

* In some cases, however, exertion speedily after abortion or child-birth does interfere with the action of the uterus, and prevent it from going on in the process of diminution with regularity. In these instances, clots are discharged with hæmorrhagiæ, and these often pass for moles or false conceptions, or portions of the secundines.

of menorrhagia. This sometimes seems to become associated with other morbid conditions of the system : and in those cases is more or less obstinate as they are intractible. It is generally cured by rest, the application of cold, and the use of the digitalis, if the pulse be frequent. The consequent weakness is removed by bark, or preparation of iron, with the cold bath.

Either of these discharges are very apt to produce painful head-achs, vertigo, and often slight paralytick symptoms, which, however soon go off. Any considerable increase of the hæmorrhage gives relief to the head-ach, but it returns afterwards with greater violence.

It is frequently relieved by the use of small doses of the saline laxatives. In protracted cases, especially when the head-ach puts on an intermittent form, observing pretty regular periods, the bark combined with valerian will be of service.

Sometimes the mind is affected after abortion, although we may have had little discharge ; and the person becomes either melancholy, or, which is much oftener the case, mad, with great volubility of tongue. This mania is, in general, sudden in its attack, and is often preceded by a violent fit of palpitation, or some other nervous affection.

It occasionally alternates with external pain or swelling of some of the joints ; and, though frequently a tedious complaint, is oftener got the better of than any other species of mania. The head, upon a general principle, ought to be shaved and blistered, and a free discharge kept up from it. The bowels are to be carefully attended to, and no indurated fœces should be allowed to remain in them. The camphorated emulsion may be given through the day in its usual quantity ; and a full dose of extract of hyosciamus exhibited at night. The patient is to be

kept, in every respect, as quiet and easy as possible.

When there is a permanent confusion of the head, or deep pulsating pain, or feeling of contraction ; when the patient becomes restless, the eye sparkles, the pulse frequent, and delirium supervenes, the case is much worse, for the brain is inflamed, and nothing but the most prompt and liberal evacuation can save the patient. This disease rarely succeeds abortion, but sometimes follows premature labour.

Another distressing consequence of abortion, as well as of labour at the full time, is hysteria appearing in various forms, but more especially under that of palpitation of the heart. This attacks suddenly, often in consequence of a fright.

The patient has a violent beating in the breast, and sometimes a sense of suffocation. She feels also a knocking with-

in the head, attended with a sense of heat, and often a redness in the face. The pulse becomes extremely rapid and irregular, and continues so until the fit goes off, which sometimes is not for a considerable time.

During the paroxysm, the patient is much terrified, and impressed with a belief that she is going to die. After it is over, the mind is left timid, and the body in a state of langour. Sometimes the fit is succeeded by a profuse perspiration, whilst betwixt the attacks the temperature is very versatile.

This, like all other complaints of the same class, is very obstinate ; but it is not in general dangerous,* unless when it proceeds from uterine disease, marked by pain in the hypogastrick region and tension of the belly. In this case, the

* When the patient is predisposed to pulmonick disease, violent palpitation, especially if accompanied or succeeded by the febrile state, to be afterwards noticed, may excite consumption, which in this case sometimes proves rapidly fatal.

danger is great, and is only to be averted by the early use of purgatives, followed by antispasmodicks, whilst fomentations are applied to the belly.

The other case, which is purely hysterical, is to be relieved by giving, during the paroxysm, a liberal dose of tincture of opium and ether. Small doses have no effect. During the intervals we may give a table-spoonful of the following mixture five or six times a day.

R Tinc. digitalis ʒiiss.

Extr. Hyoscyami ʒi.

Emuls. Camphorat. ʒiv. misce.

It is also an essential point, that the bowels be kept open, and the patient put upon a light diet. As the attacks are very apt to come on at night, when the person is about to fall asleep, we sometimes find it useful to give a dose of tincture of hyosyamus and ether at bed-time, and must take great care that the patient be not afterwards disturbed or put off her rest.

When she is much troubled with flatulence, during the intervals the tinctura valeriana ammoniata is of considerable service. Tonics and the cold bath are also proper. Hysteria either consists in or depends upon a preternatural aptitude in the different organs, to have their actions morbidly increased, or rendered irregular; and hence it may affect secreting as well as muscular parts; and many of the discharges of lying-in women will be found to be, in this sense, hysterical, and to alternate with other symptoms, such as globus, palpitation, head-ach, &c. and even the most troublesome of all the discharges, that proceeding from the uterus not recovering or contracting properly, is, I believe, properly speaking, an hysterical affection, connected with several others, and alternating with them.

The next disease which I shall mention, is also, I believe, altogether hysterical. I mean that resemblance of fever which

is, often met with after abortion or delivery, at the full time, and which is, like the rest of its tribe abundantly obstinate.

This is not to be confounded with milk-fever, or other general diseases arising from local injury. It is sometimes preceded by palpitation, frightful dreams, and other nervous affection.* At other times it attacks directly with a shivering fit, which is soon alternated with heat; then the heat becomes steady and distressing, and continues until a profuse perspiration carries it off.

The head is generally pained in the two first stages, and the pulse is frequent in them all. The thirst is considerable the stomach filled with flatus, and the belly bound. Often we have irregular action of the heart occurring in all the

* Hiccup sometimes accompanies this complaint: at other times it attacks the patient as a disease by itself, or alternates with palpitation. It is best treated by giving large doses of ether. It is also necessary to clear the bowels; afterwards the compound tincture of bark is useful.

stages, whilst the mind is weakened, and the patient is much afraid of dying. The paroxysm continues for several hours, and, like ague, is apt to return regularly for a length of time.

In the cold stage, we give small quantities of warm fluid. In the hot stage, we lessen the number of bed-clothes; but must not do this suddenly, as the shivering is very apt, in either this or the sweating stage, to return, upon slight exposure to cold. We also give small quantities of tepid fluid, in order to hasten the accession of the concluding stage.

In the last stage we are careful not to encourage the perspiration too much, by refraining from warm drink, for much sweating only tends to render the disease more obstinate. A repetition is to be prevented, by keeping the bowels open, by the use of the bark, conjoined with antispasmodicks, and carrying the patient, as soon as possible, to the country.

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