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FIRST LINES

OF THE

PRACTICE OF MIDWIFERY:

TO WHICH ARE ADDED

Remarks on the Forensic Evidence requisite

IN CASES OF

FŒTICIDE AND INFANTICIDE.

BY

CHARLES SEVERN, Surgeon.

Ideoque increpandæ sunt obstetrices, temerariæ et πολυπράγμονες, —quæ moræ debitæ impatientes,—dum accelerare partum cupiunt, eundem potius retardant. Harveii *Exercit.*

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PREFACE.

In the tract which I venture to lay before the public, I have endeavoured to include what is practically useful,—and have therefore purposely avoided deviating into physiological speculations.

The description of the less frequent and less important diseases is omitted, which would have materially increased the size and price of the volume, both matters of consideration to a student, who has necessarily to procure many works on other, but not less important branches of his profession.

The omission of authorities in support of the opinions and practices advocated will not, I trust, be considered disrespectful to those who have contributed so much to the alleviation of human suffering; and if I have expressed opinions at variance with theirs, it is with deference to their judgment and esteem for their abilities.

In the description of the difficulties met with during parturition, I have endeavoured to be concise and explanatory, and equally so, in advising the

means best adapted to remove them, and these are so arranged, as to be of easy reference.

It is my intention, at some future period to republish the following pages in a larger form; in the mean time I trust they will be found condensed and useful to students and practitioners of midwifery, and shall feel amply compensated by knowing, that through their means, I have been instrumental in any one instance, in mitigating the sufferings which fall on the weakest and most interesting part of creation.

Jewin Street,
Aldersgate Street.

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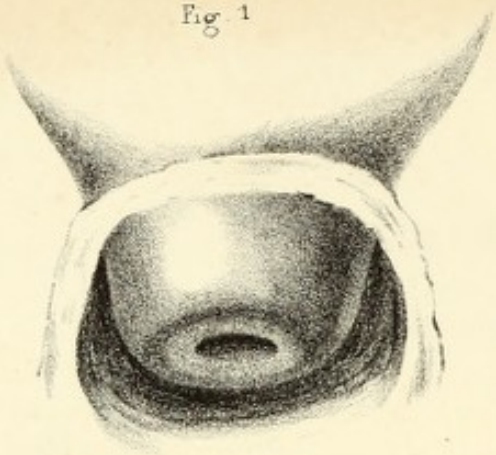

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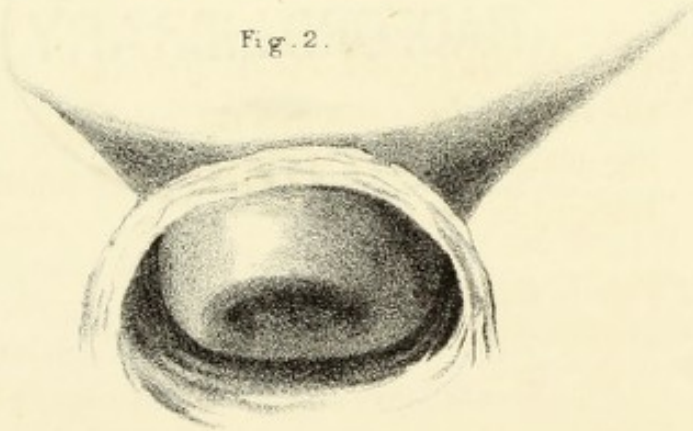
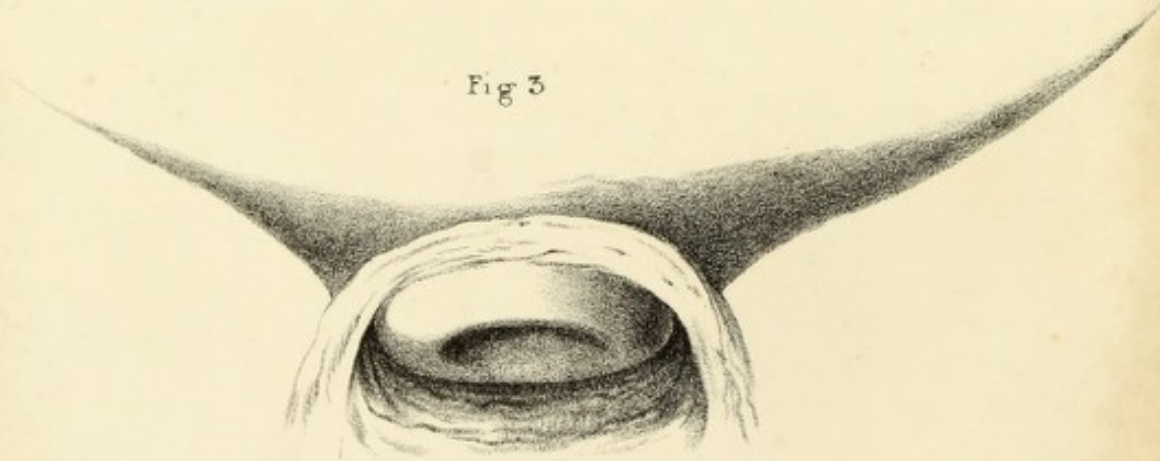


Fig 3



Josiah Neale lith. 352 Strand

EXPLANATION OF THE PLATES.

PLATE I. facing the title, represents the direction in which the vertex passes through the pelvis, after having made the turn by which the occiput is brought in front.

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FIRST LINES

OF THE

PRACTICE OF MIDWIFERY.

SECTION I.

CHAP. I.

BONES OF THE PELVIS.

THE pelvis is a cavity of irregular shape, of unequal depth, and in the adult composed of four bones, the ossa innominata, the sacrum, and the os coccygis.

The OSSA INNOMINATA form the anterior, lateral, and by far the largest portion of the pelvis; they are broad and expanded, and during childhood, each of them is separated by cartilage into three portions, the names of which are retained in after life:—they are

1. *The ilium* (the haunch bone), which forms the superior and largest portion of the os innominatum; it gives attachment to powerful muscles connected with the lower extremity, and forms the upper portion of the acetabulum for receiving the head of the os femoris.

2. *The ischium* (the sitting bone), situated below the ilium, forming, with the os pubis, the foramen thyroideum, and with the ilium, the inferior and larger portion of the acetabulum.

3. *The os pubis* (the share bone), which forms the su-

perior and anterior division of the os innominatum, is united with its fellow anteriorly, and the space beneath the articulation and the rami is called the arch of the pubis.

The SACRUM (the rump bone) forms the superior and posterior boundary of the pelvis; it is concave internally, convex externally, and its figure triangular; on the base of the triangle rests the last lumbar vertebra, and the os coccygis is articulated with its apex. There is, at the superior and anterior part of the bone, a projection termed the promontory of the sacrum.

The OS COCCYGIS (the knuckle bone) is divided generally into two or three portions, and forms the extremity of the spine; it is curved forwards, and articulated with the sacrum by an intermediate fibro-cartilaginous structure, admitting of some degree of motion, by which the long axis of the outlet, which is in the transverse diameter, is considerably increased.

CHAP. II.

LIGAMENTS AND JOINTS OF THE PELVIS.

THERE are many ligaments uniting the bones of the pelvis together, some of which, being unconnected with the practice of midwifery, do not properly come under our consideration. Of these, Poupart's and Gimbernat's, attached to the ilium and os pubis, are in reality nothing more than the tendinous insertions of the abdominal muscles.

The obturator ligament, filling up the obturator foramen, is perforated by the artery, vein, and nerve, and when the latter is pressed on during labour, cramp of the muscles which it supplies is produced.

The sacro-sciatic ligaments are situated at the sides and

back part of the outlet, and give it somewhat of a quadrangular figure.

The external sacro-sciatic ligament arises from the tuberosity of the ischium, proceeds upwards, outwards, and backwards, and is firmly attached to the inferior part of the sacrum and the superior portion of the os coccygis.

The internal sacro-sciatic ligament arises from the spine of the ischium, proceeding from thence upwards, backwards, and outwards, and is also attached to the sacrum and os coccygis.

JOINTS OF THE PELVIS.

These are the hip joint, the sacro-lumbar articulation, the sacro-iliac symphisis, the symphisis pubis, and the sacro-coccygeal joint; of these the three latter are of most importance to the practice of midwifery.

The sacro-iliac synchondrosis is the articulation of the sacrum with the ilium; the surfaces of the bones are irregular, and are so adapted to each other that they do not admit of the smallest degree of motion.

The symphisis pubis is the articulation of one os pubis with the other in front; interposed between them is a dense cartilaginous structure, enveloped in a capsular ligament, preventing any considerable degree of relaxation.

The sacro-coccygeal joint is placed between the apex of the sacrum and the os coccygis; these bones are united together by a dense cartilago-ligamentous structure, and their union is further strengthened and the bones held together by the sacro-sciatic ligaments.

The sacro-coccygeal joint occasionally becomes rigid and anchylosed, producing serious obstruction to the passage of the head; and this is especially apt to occur in women of sedentary habits, who bear their first children late in life. It is sometimes the seat of inflammation; the part becomes

tender, throbbing, and painful, and the patient cannot sit down. If the constitutional symptoms indicate a high degree of inflammation, general bleeding should be had recourse to, and leeches should be applied in every case. Fomentations and poultices to the part, the antiphlogistic diet and medicines, and rest in the recumbent position are necessary.

The symphisis pubis is more frequently the seat of inflammation than the sacro-coccygeal joint, and it may arise spontaneously or from local injury. It begins with pain, heat, and tenderness of the part, alternate chills and flushes, and occasionally the suffering is so acute and so much increased by the movements of the body as to be almost intolerable. On examination the part will be found swollen, and excessively tender to the touch; by these circumstances and the increased suffering when the joint is moved or pressed on, the nature of the disease will be easily recognized.

Active means of local depletion are required; bleeding from the arm may be necessary, and leeches should be applied in sufficient number over the joint. Evaporating lotions, the saline diaphoretics and aperients and absolute rest are among the most effectual means of removing the inflammation and preventing the formation of matter. To these remedies repeatedly blistering the part, or a blister kept open with savine cerate, may form a valuable adjuvant. If suppuration should take place the matter ought very early to be discharged: if confined in the cartilago-ligamentous structure, which is interposed between the two ossa pubis, the most serious and even fatal consequences may ensue. These cases occur chiefly in women of scrofulous diathesis, and it is necessary in treating them to watch carefully the effects of depleting measures on the general system; and when the inflammation is subdued, tonic remedies,—the various preparations of steel, the vege-

table bitters, or quinine,—should be given, and generous diet to support the strength under the exhausting effects of long continued and disorganizing suppuration of this joint. Sea air and passive exercise, where they can be had recourse to, are likely to be productive of much benefit.

The symphisis pubis is occasionally during pregnancy the subject of another disorder, which though not dangerous, is productive of much suffering; it consists of a relaxed state of the joint, and there is a disposition in the bones to separate and recede from each other. This is unconnected with inflammation, and is produced by weakness and relaxation of the uniting ligaments, and generally found to occur in those women in whom there is general tenuity of the various structures throughout the body. The cartilage and investing membrane seem incapable of resisting the gradually and constantly increasing pressure of the uterus; the patient walks with great difficulty, the bones are more or less moveable on each other, and after its continuance for any length of time, she becomes incapable of stepping at all. Rest should be enjoined, and a bandage encircling the hips, made of any inelastic material, should be laced in front, while the general means of strengthening the system must not be neglected. The cold bath, or sponging with cold water is a rational and easy means of strengthening the joint, but it is often not till after parturition that a complete recovery takes place.

CHAP. III.

DIMENSIONS OF THE PELVIS.

THE pelvis we have seen to be composed of a number of bones articulated together, and their articulations further strengthened by ligaments. The female pelvis differs very much from that of the male; the lumbar vertebræ form a more obtuse angle with the sacrum, the ilia are wider, the concavity of the sacrum and os coccygis greater, the os coccygis moves more readily on the sacrum, the tuberosities of the ischia are further apart from each other, and in every measurement the female pelvis is wider than that of the male. Though there are scarcely two female pelves precisely the same in every particular, yet there is one form of pelvis which in its size, shape, and dimensions is more frequently met with than any other, and therefore this is termed the standard pelvis; it accords with the general form, and admits with ease the passage of the fœtal head.

The pelvis is usually divided into three parts for the purpose of description:—the brim, or superior aperture; the outlet, or inferior opening; and the intermediate space between the two, which is called the cavity of the pelvis. The brim has an obtuse edge laterally, becoming as it approaches the pubes more or less acute; and when very sharp, as it is in some instances, it occasions severe cutting pain in the latter months of pregnancy, the cause of which is at once discovered by the relief afforded from raising the abdomen, for which purpose a bandage should be applied with straps over the shoulders.

The shape of the pelvis at its brim is an irregular oval;

having therefore a short and a long axis, the superior aperture has been compared to a heart as painted on playing cards.

The long axis of the brim, by which we understand a line drawn from side to side, in a standard pelvis measures five inches and about a quarter; the short axis, or transverse diameter, four inches and a half: these measurements are adapted to the short and long axis of the fœtal head, and if they do not correspond, the child cannot pass without difficulty and danger. In cases where turning is necessary, or in breech presentations, this should be carefully borne in mind, or the head may remain impacted, and cannot be brought through a pelvis of standard dimensions, unless the long axis of the head be made to correspond with the long axis of the brim and of the outlet. The proportions are reversed at the outlet:—here there is also a long and a short axis; but the short axis is from side to side, and the long axis from pubes to os coccygis, or from before to behind; a line drawn from the tuberosity of one ischium to that of the other will measure four inches and a quarter, but a line drawn from the arch of the pubes to the extremity of the os coccygis, when pushed back as it is during labour, will measure about five inches or five inches and a quarter. The depth of the pelvis varies at different parts; from the point of the os coccygis to the top of the sacrum it measures six inches, at the sides it measures four inches, and at the os pubis two inches. It will be evident that the fœtal head cannot pass out of the pelvis in the same direction in which it first descends; it makes a quarter turn, by which its long axis becomes adapted to the long axis of the outlet, the occiput comes forwards under the arch of the pubes, and the face is consequently in most cases at the time of birth in the hollow of the sacrum.

CHAP. IV.

THE FŒTAL HEAD CONSIDERED IN RELATION TO THE PELVIS.

HAVING described the form and dimensions of the pelvis, it is necessary to consider the shape of the fœtal head and the parts of which it is composed. The general form is oval, and it consists of a number of bones, which defend the brain from suffering destructive pressure. Those at the base are firmly attached to each other, but the frontal, the temporal, the parietal, and the occipital bones admit of considerable compression without injury to the brain within, being in the fœtus connected together by cartilaginous or membranous attachments, lined internally by the dura mater, and externally by the pericranium. Those parts of the cranium where the bones are separated are called sutures; there are also spaces where ossification is incomplete, and these are termed the fontanelles; the anterior, or larger fontanelle is quadrangular or rhomboidal, and is the part where the sagittal, frontal, and two sides of the coronal sutures meet. The lesser fontanelle is rather triangular in its shape; it is situated at the termination of the sagittal in the lambdoidal suture. These sutures and fontanelles are highly important, as they admit of considerable alteration in the shape of the head from compression, and when prematurely ossified, even although the pelvis be well formed, the labour is much more protracted. The oval form of the fœtal head is adapted to the oval cavity through which it has to pass. The measurement of the head at birth is as follows:

The shortest axis from temple to temple, three inches.

The short axis, from the protuberance of the parietal bone to that of the other, three inches and a half.

The long axis, from the os frontis to the occiput, from four inches to four inches and a half.

The vertex, which is usually the presenting part, is of all presentations the best adapted to pass through the pelvis; when at the superior aperture, the face is usually directed towards the sacro-iliac symphisis, and the occiput towards the opposite acetabulum, the chin is on the chest, the sagittal suture crossing over the middle of the pelvis, this is the most favourable position, as the long axis of the head and that of the brim correspond with each other; but at the outlet the long axis is from before to behind, from pubes to os coccygis. The head makes here a quarter turn, the occiput rises under the arch of the pubes, and the face is thrown into the hollow of the sacrum, and is thus easily and quickly expelled. It sometimes happens, that instead of making the turn, so as to bring the occiput forwards, it is reversed, the face becomes situated beneath the arch of the pubis, and the occiput is thrown backwards; this is attended with greater difficulty than when the occiput is above and the chin below; although the long axes correspond, the pressure on the perineum and its distension are such as sometimes to occasion laceration, especially if the pains become violent, forcing, and almost incessant, as is often the case just before the expulsion of the head, the sudden protrusion of which should be prevented by firmly and steadily supporting the perineum.

CHAP. V.

VARIETIES, DISTORTIONS, AND NARROWING OF THE PELVIS.

THE varieties met with in pelves are very numerous. Of these the following are the principal.

1. There may be perfect symmetry in the pelvis, and in the various bones of which it consists; but although this symmetry is preserved throughout, there may be a general want of room.

2. There may be a narrowing of the brim, while the shape of the cavity and size of the outlet correspond with pelves of standard dimensions.

3. There may be, from malformation of the pubes, or approximation of the ischia, a deficiency of room at the outlet.

4. Supposing the pelvis itself to be of standard dimensions, the vertebræ of the loins may overlap the sacrum so as to diminish the superior aperture; and this may be such a serious cause of difficulty, as to occasion the necessity for embryotomy.

5. The sacrum itself may project unnaturally into the cavity at the superior aperture, that bone may from various causes become straight instead of curved, and its promontory may be pressed forwards, so as to encroach on the brim.

6. One side of the pelvis may be well formed, and the other distorted or affected with exostosis.

These are the principal varieties of deformity met with, and when either of them exists so as very much to diminish the cavity of the pelvis or the dimensions of its brim or

outlet, they render the birth of a living child at the full period of gestation, by the natural passages, altogether impossible. The causes which give rise to distorted pelves are those which tend to alter the natural shape of other bones, especially rickets, mollities ossium, and fractures, and they may commonly be known previous to delivery by careful examination; the make and figure of the patient may lead us to expect a distorted pelvis; there is often a distortion of the spine, an awkward rolling in the gait, a deformity of the lower extremities, and especially if the ossa femorum are distorted, the pelvic bones will usually participate in the deformity. To this however there are some exceptions; for we sometimes meet with cases of distorted pelvis in women who are in other respects well formed. A variety of instruments have been invented by ingenious men to measure the pelvis and ascertain its dimensions, which will enable us accurately to describe the distortions after the soft parts are removed, but are inapplicable in practice. There is however one means of measurement easily had recourse to in every instance, and it may be tried during labour with certain and satisfactory results. Pass the finger from the under surface of the symphisis pubis to the promontory of the sacrum, it will in a well formed pelvis give a measurement of four inches and a half or three quarters; we may therefore be assured that in the short axis there is no serious contraction; to ascertain its width from side to side, put three fingers parallel with each other inside the symphisis of the pubes, and if they all touch bone, we may justly conclude that in the long diameter there is no deficiency of room. In a standard pelvis there will also be room for one or two fingers between the head of the child, and the parts of the pelvis through which it is transmitted.

But there are other varieties in the size of the pelvis, in

which there may be too much room instead of too little, a circumstance of which it is necessary to be aware, as it sometimes occasions the most disastrous consequences. Such patients are peculiarly liable to retroversio and prolapsus uteri; and should they escape these accidents, the fœtus might be expelled by one or two pains, before the uterus is sufficiently contracted to close its vessels, and thus a fatal hemorrhage might ensue, or the womb become inverted. It is a variety which is no less dangerous to the child: the patient thinks, as is generally the case during labour, that the bowels require to be relieved; she goes for that purpose, and with a pain or two the os uteri becomes expanded, the child is suddenly expelled, and inevitably lost; this, if discovered to have happened to an unmarried woman, might cause her to be suspected of or perhaps condemned to suffer for a crime of which she never contemplated the commission.

CHAP. VI.

THE FEMALE ORGANS OF GENERATION.

THE female organs of generation are attached to the pelvis, or contained within its cavity; they are therefore divided into the external and the internal.

The external organs are the mons veneris, labia externa, the clitoris, and the nymphæ.

The internal are the hymen, the vagina, the uterus, and its appendages.

The other parts contained within the pelvis, connected with the sexual organs, are the meatus urinarius, urethra, bladder, the sphincter ani, and the rectum.

1. The labia externa are prolongations of cellular and adipose substance invested with a strong fascia, continuous with the fascia superficialis of the abdomen and thigh; they descend from the mons veneris to the perineum, meeting above and below, forming two commissures, the superior and inferior; the space between the inferior commissure and the rectum is the perineum: it is formed of the sphincter ani and sphincter vaginæ, covered with cellular substance and integument. The internal surface of the labia is mucous.

2. The clitoris, situated within the superior commissure, is an oblong body composed of two crura, which arise from the point of union between the ischium and os pubis; they unite and form the body, the extremity of which, the glans, is covered by a doubling of skin, called the preputium clitoridis.

3. The nymphæ are two thin loose folds of membrane

which begin at the preputium, and are continued from it downwards towards the inferior commissure; they are highly vascular, and are prolongations of the mucous membrane.

4. Beneath the arch of the pubes, in the centre, is situated the meatus urinarius, which may be readily found by first distinguishing the clitoris, and passing the finger down one inch in a straight line; the meatus, a small circular aperture, sometimes surrounded by a projecting, nipple-like process, will be easily discovered.

5. The urethra is much shorter in the female than in the male; it extends from the meatus, under the arch of the pubes, to the bladder, and is not more than two inches in length, and about a quarter of an inch in diameter.

6. The hymen is generally a circular or oval-shaped doubling of the mucous membrane, lining the vagina; in those who have had sexual intercourse, or who have borne children, instead of this there are found slight prolongations of the membrane, varying in number and shape, which are termed the carunculæ myrtiformes.

7. The vagina is a circular or oval-shaped tube, interposed between the bladder and rectum, from four to five inches in length, and about one inch in its diameter, terminating in a cul de sac around the os uteri, it is composed of a thick strong external tunic, and lined internally by a highly vascular mucous membrane, which contains a number of transverse semicircular rugæ.

8. The uterus in which the vagina terminates has been compared to a small powderflask, being pyriform, and flattened anteriorly and posteriorly; it is divided into its fundus, body, and neck. In the unimpregnated state it is about three inches in length, one inch and a half belonging to the body, and the other to the neck. It consists of a fibrous and muscular structure, invested by peritoneum,

and it is lined internally by mucous membrane, continuous with that which covers the internal rugous surface of the vagina. Its arteries are the spermatic, arising from the aorta, supplying the ovaries, fundus, and body of the uterus, and the uterine, arising from the internal iliac, and passing to the lower part of the uterus, anastomosing freely with the spermatic.

9. *The appendages of the uterus* are the ligamenta lata, the ligamenta rotunda, the fallopian tubes, and the ovaries; *the ligamenta lata* are duplicatures of the peritoneum, which pass across the pelvis, and contain the fallopian tubes in their anterior, and the ovaries in their posterior folds.

The ligamenta rotunda pass from the fundus of the uterus, and are continued down the inguinal canal; they are blended with the adipose substance forming the mons veneris and labia, and occupy the same relative situation as the spermatic cord in the male.

The fallopian tubes extend from the fundus uteri towards the ovaria, their course is very tortuous, their diameter is small at the uterus, scarcely admitting a bristle, while at their fimbriated extremity, they are four or five lines in circumference. The fringed extremity, formed of peritoneum, is termed the corpus fimbriatum.

The ovaries, contained in the posterior duplicatures of the broad ligaments, are oval shaped bodies, the surface of which is marked by the projection of vesicles within their substance. Beside their peritoneal investment, they have a fibrous white tunic, and their anterior is composed of vesicles containing a clear transparent fluid.

CHAP. VII.

DISEASES OF THE FEMALE SEXUAL ORGANS.

The external organs are subject to diseases similar to those of other parts of the body, and to some of a peculiar description.

1. *Irritation* of these parts may arise from affections of the bladder or rectum; if from inflammation of the bladder, there will be frequent desire to pass the urine, which will often be mixed with mucus or blood. An examination should be made to ascertain whether this arise from calculus; if there be no calculus, the usual means of removing inflammation should be employed; or, if from irritation of the bladder, emollient injections, composed of extract of opium, rubbed down with barley-water, may be used with advantage; this should be employed after the bladder is emptied of urine. The irritation is, sometimes, excited by ascarides in the rectum, and this is, perhaps, the more frequent cause of the complaint. Purgative and aloetic enemas should be thrown up daily; calomel, in doses of two or three grains, with aloes or the extractum colocynthidis compositum, administered occasionally, or from half an ounce to an ounce of spiritus terebinthinæ, which is often productive of immediate relief. By these means, if arising from vesical or intestinal irritation, we shall generally succeed in removing this troublesome complaint. It is occasionally the effect of pregnancy, and then admits only of palliation until delivery takes place.

The most troublesome and distressing irritation of these organs, is that which occurs at the period when menstrua-

tion ceases, and sometimes at a much more advanced age; it is probably dependent on some morbid change in the uterus itself, and frequently baffles every effort we make to relieve our patients. If the habit be full, bleeding should be had recourse to, the bowels should be kept open by neutral salts, and cold applications employed. Blistering the pubes and loins has been found to afford relief, but when the blisters heal, the disease will frequently return. A lotion of infusum tabaci has been useful; the unguentum ceræ, with camphor in the proportion of a drachm to an ounce, as a local application, may deserve a trial. An entire abstinence from wine, spirits, spices, and every kind of stimulant should be enjoined.

2. *The labia* are sometimes attacked by common inflammation, which may arise spontaneously, or be produced by local injury; suppuration should be prevented if possible, by enjoining rest, by the application of leeches, by evaporating lotions, and the usual antiphlogistic medicines and regimen. If suppuration have taken place, poultices and fomentations are necessary, and if the constitution be healthy, the abscess will readily heal.

3. *Enormous swellings*, from accident or parturition, are occasionally formed in the labia, even when the labour has not been severe or protracted, and these are sometimes so considerable as to close the vagina, and obstruct the passage of the urine. If the tumour be small, astringent washes should be employed, or poultices composed of red wine lees and oatmeal, the lotio ammoniæ muriatis, or a solution of alum in decoctum quercus, with which lint may be wetted and applied, and the extravasation will either gradually be removed by the absorbent vessels, or, if considerable, an abscess will form, by which it will be discharged; but as this is a slow, circuitous, and tedious process, if called early, a puncture should be made in the

labium with a lancet, and the greater part will probably escape in a fluid state; warm fomentations and poultices should be afterwards applied, which will generally in a few days remove the whole of the extravasated blood.

4. The *labia* are very subject to ulceration, especially in young children; the surface of the sore is whitish, the edges elevated and irregular, and often very nearly resembling chancre: the ulceration sometimes spreads over the whole internal surface of one or both labia, and gives rise to the most unfounded suspicions; it is not usually productive of much pain, except when the child makes water. It generally occurs in children of scrofulous diathesis, and fresh animal food with a little wine or porter should be taken daily. The tinctura cinchonæ, with hydrargyri oxymurias, in the proportion of one grain to an ounce, of which a teaspoonful may be given twice a day, and the various preparations of iron, are the remedies best adapted to improve the constitution, and promote the healing of these sores. The black wash, applied on lint, and renewed several times a day, is the most effectual and certain local remedy. In some cases, where the surface has a dirty white appearance, and there are no attempts made to fill up the ulcerated cavity, the employment of a solution of nitrate of silver, in the proportion of one or two grains to an ounce of water, or the nitric acid wash, with the general constitutional means before recommended, will often excite the growth of healthy granulations.

5. The *hymen* is sometimes imperforate, and this malformation is not discovered until after the age of puberty. At that time symptoms of menstruation will come on, but there will be no discharge; pain increasing from month to month will be felt in the loins, owing to the secretion going on and its accumulation in the vagina, sometimes to the amount of several quarts. The fluid pushes down the

hymen, which will have the appearance of the bag of waters, and in consequence of the abdominal enlargement, pains, and bearing down, may be mistaken for it. The length of time which this accumulation may continue without producing serious and alarming symptoms will very much depend on the patient's constitution; in those who are chlorotic, years may elapse before it collects in any great quantity; but in women of full habit, and where there is more copious menstruation, it soon occasions serious inconvenience and such distension of the abdomen, as to lead to a discovery of the cause from which the symptoms originate. Its removal is easy, by making a crucial incision in the membrane, and in order to prevent its reuniting, a piece of sponge should be introduced, and worn till the incisions are healed.

CHAP. VIII.

DISEASES OF THE OVARIES.

THE most frequent diseases to which the ovaries are subject are inflammation, scirrhus, and dropsy; the two latter are more or less connected with the practice of midwifery, from the obstruction which an enlarged ovary may form to the passage of the head, and the possibility of its being mistaken for pregnancy.

1. If *inflamed*, the same treatment is requisite as for inflammation of any other viscus.

2. *Scirrhous ovary* may form an impediment to delivery; by falling down between the uterus and rectum it may occasion tenesmus; but when larger than the fist, it usually rises above the brim of the pelvis, and from not being within

its cavity, does not produce so much inconvenience as when of smaller size. The enlarged and scirrhous ovary may be distinguished from pregnancy by the continuance of the menstrual discharge, by the absence of those signs by which impregnation is indicated, and by the tumour being situated on one side. It may continue for years, and requires attention to the general health. Chalybeates and the vegetable bitters, or a combination of the latter with pilula hydrargyri, with leeches applied occasionally, will sometimes retard, if not wholly prevent the further growth of the tumour.

3. *Dropsy* is a very frequent disease of the ovary; it is often met with in examining patients who, during life, had no symptom by which its presence could be indicated. The fluid may be contained in cysts separate from each other, or in one general cavity; the quantity also varies: sometimes there are a few drops only, at others several gallons. It may be present many years without seriously impairing the health, and being free from pain, it occasions little inconvenience except from its bulk, unless combined with scirrhus, which may be situated on its anterior or posterior surface. If in front, it may render the operation of tapping useless with a trocar of the ordinary length. Mercurials with diuretics have been tried, but are found to have little power of controlling the disease. The operation of tapping is only a palliative means of relief, as the ovary soon becomes again distended:—the fluid discharged varies in colour and consistence; sometimes it is nearly limpid, at others yellowish, or so viscid that it is with difficulty made to flow through the canula.

As it is a part not essential to life, and is daily removed from animals with impunity, Mr. Lizars has proposed to remove it in cases of ovarian dropsy, a suggestion which merits consideration, as it is subject to diseases little controlled by medical treatment. It has sometimes been cured

by accident: a lady, who had for years been afflicted with encysted dropsy, was thrown from a chaise, and immediately afterwards had an enormous discharge of water from the uterus, which probably escaped through a lacerated opening in the ovary through the fallopian tube, to which it might have formed adhesions; in this singular way the disease was permanently removed, and the patient recovered.

CHAP. IX.

DISEASES OF THE UTERUS.

THE uterus in the unimpregnated state is subject to a variety of diseases, of which it is only intended to describe the most frequent.

1. *Chronic enlargement.* In this disease the structure and organization of the viscus is altered, and it is more or less increased in bulk. The enlargement may be confined to one part, or it may be general throughout the whole of the viscus. From its increase in size, it often occasions symptoms nearly similar to those of pregnancy. The uterus can sometimes be felt above the pubes, and on examination of the cul de sac, where the vagina is united to the neck, if we attempt to throw it from side to side, it will be found to move with difficulty; but in many cases the disease does not affect the whole of the uterus at once, but attacks one side of the viscus. It may be distinguished from pregnancy by the length of time it has lasted, and by the continuance of menstruation, while its situation in the centre, instead of at the side of the pelvis, will sufficiently enable us to distinguish it from ovarian diseases. It seldom is

much controlled by remedies, and is scarcely ever dangerous; yet from its increasing bulk it may occasion serious and permanent disorders of the other viscera contained within the pelvis. A mild mercurial course should be tried, to promote the absorption of the enlargement if possible; the decoctum sarsæ compositum, with the sixteenth of a grain of oxymurias hydrargyri, has seemed in some cases to be productive of advantage. The unguentum hydrargyri, or linimentum hydrargyri compositum, may be rubbed in, and the blue pill, with extract of conium, administered. Should inflammatory symptoms arise, bleeding with leeches or by cupping, and the application of blisters above the pubes and to the loins should be tried. The bowels must be kept open, and the general health attended to.

2. *Scirrhus and cancer uteri.* This is a disease which may be confounded with chronic enlargement, but which may generally be very early distinguished from it. Scirrhus very seldom produces any increase in the size of the viscus; it usually first begins in the os uteri, where a hardness can be felt, and the upper part of the vagina may participate in the disease. The symptoms are more severe than those resulting from chronic enlargement; pain is felt, which is described as being acute and lancinating, and the constitutional strength is more impaired. After it has lasted a longer or shorter time, ulceration takes place,—the pain is increased in severity, it becomes burning and intolerable, and shoots through the loins down the vagina to the thighs; there are discharges of blood or of purulent matter, sometimes copious, the rectum is affected by tenesmus, there is frequent desire to void the urine, increasing emaciation and debility, with more or less of hectic fever. On examining the os uteri in this stage, an ulcerated excavation will often be discovered, and the finger will be soiled with blood or purulent matter. After it has continued longer, the adja-

cent parts become similarly affected, and ulcerated openings form into the bladder or rectum. Remedies do little or nothing in staying the progress of this fatal disease, which goes on generally unarrested, and destroys the patient. The discharges which take place in cancer uteri are often at first considered by patients as being menstrual, especially as it frequently commences at the time when menstruation is about to cease. It is always fatal, and the time it may last will vary according to the strength of the patient, and the slow or rapid progress of the disease.

In every stage of cancer anodynes are necessary, and the patient should avoid whatever may tend to excite increased action; leeches should be applied occasionally, but it too often happens that it goes on to ulceration without our being able to arrest its progress. When this has taken place, relief may sometimes be obtained by injecting anodynes, the decoctum papaveris or infusum digitalis may be tried: the nitric acid wash made of such a degree of strength as not to increase the irritation already present, and this and the liquor plumbi acetatis dilutus have been found to relieve when the discharges have been copious and offensive; but these injections must be used with caution, if there is reason to suspect that from ulceration there are openings formed into the bladder or rectum. The various preparations of opium are required to alleviate the patient's sufferings, and a combination of extractum conii, extractum hyosciami, and extractum opii, has been found to have a more soothing effect than either of them taken separately; but while administering narcotics, it is necessary to keep the bowels open by enemas, and by purgatives given at proper intervals. Should inflammatory symptoms arise, much relief may be obtained by leeches, by cupping the loins, and by blisters. The uterus has been extirpated several times, but very seldom with success; the operation

was performed by Dr. Blundell some years ago, to remove a disease for which a less bold and less able practitioner could only offer uncertain and palliative measures.

3. *Polypus uteri* is not unfrequent. It is a soft vascular tumour adhering to the mouth, neck, sides, or fundus of that viscus; it is insensible, and attached to the part by a pedicle, and the neck is the most frequent situation from which it grows. Polypi occasionally form in the vagina, or they may grow from the inside of the labium. When arising from the fundus uteri, the tumour may remain some time within its cavity undiscovered; but as its size increases, it presses on, dilates the os uteri, and passes through it downwards into the vagina. It may be distinguished from prolapsus or procidentia uteri by its want of sensibility, and generally by its attachment to the mouth of the viscus, while the health not being materially impaired, nor much pain experienced, it is very different from the early stages of cancer. If the pedicle of attachment be small, the polypus forms a smooth, round, and very moveable tumour, there is frequent discharge of mucus, and if the growth of the polypus be quick, discharges of blood take place, accompanied by a dragging sensation, and more or less derangement of the functions of the bladder and rectum. In procidentia uteri the surface of the tumour is not smooth, but rugous, and the os uteri will be situated at the bottom of the tumour; if the uterus is replaced the swelling disappears, but if the polypus is pushed back it may still be felt within the cavity of the uterus. A polypus which is attached to the fundus may by its weight invert the uterus, and coming externally may then be easily and accurately surrounded with a ligature, and the uterus immediately replaced.

Polypi are generally removed by applying a ligature round the pedicle by which they are attached as close as

possible to their union, so that their circulation is stopped, and they slough away; and when this can be accomplished by the fingers it is preferable to do so rather than have recourse to any instrument, but when a ligature cannot be applied by the fingers alone sufficiently high, the canula is necessary, and in operating, the utmost caution is requisite, to avoid including any portion of the uterus in the ligature, from which the most serious consequences might ensue. The ligature tied round the polypus should give no pain, nor does it commonly excite inflammation, which will result from having passed it round any of the parts from which it grows. After the ligature is tightened, the patient should remain for a time recumbent, and the polypus soon shrivels, becomes diminished in size from the passage of blood into it being stopped, and usually in a few days it is completely separated. It is however, like polypus of the nose, very liable to return again if the ligature have not been applied sufficiently high to remove the whole of the tumour.

4. *Leucorrhœa* is the discharge of puriform matter from the vagina and uterus, and may arise from various causes. It may be the result of change of organization or from increased secretion from the mouth and neck of the uterus. The discharge varies in its appearance, sometimes being white, at others greenish or brown, and it may be inodorous or offensive. There is usually some disturbance of the general health; patients with these discharges are pale, nervous, and dyspeptic. If on examination, no change be found in the uterus, it is to be considered as resulting from altered action, and not from malignant uterine disease; and where there exists any doubt, examination should always be made in the most careful and deliberate manner. The history of its origin, symptoms, and progress will sufficiently enable us to distinguish it from gonorrhœa. It may

be produced by relaxation or irritation of the uterus and vagina, occasioned by frequent miscarriages, large floodings, or the irritation of a pessary. Leucorrhœa is usually not infectious, but the discharge may occasion excoriation. It is frequently attended by some degree of inflammation of the uterus and vagina, and there may be in such cases, as in gonorrhœa, ardor urinæ, but it is usually inconsiderable. When attended by inflammation, cupping the loins, and leeches applied above the pubes are likely to relieve; a blister may also be applied across the sacrum, and the bowels kept open by saline purgatives.

If the disease arise from relaxation, astringent injections, and the use of mineral tonics are best calculated to remove it, by strengthening the system. The decoctum quercus with sulphate of alum, a weak solution of sulphate of copper, or the liquor plumbi acetatis dilutus, may be used with advantage. The injecting syringe should be longer than those in general use, with a small curved tube, perforated at the end with a number of apertures. Attention must be paid to the general health, the bowels should be kept open, the blue pill with rhubarb, the various preparations of steel, and the vegetable bitters will be found the most efficacious tonics. Balsam of copaiba has sometimes effected a cure, and is a valuable remedy: the diet must be nutritious, and daily exercise out of doors enjoined; sea air and sea bathing should be obtained if practicable.

CHAP. X.

MENSTRUATION.

The arteries, which supply the uterus with blood, are branches from the aorta and the internal iliacs. These vessels have two terminations,—in veins and in open orifices on the inner surface of the uterus. The discharge which takes place periodically from the latter is called menstruation. It begins at the time of puberty, and continues every month, but at first, not with perfect regularity. In temperate climates, and in our own it usually commences at the age of fourteen or fifteen, and its appearance may be sooner or later according to the constitution and manner of living. In warm climates, in the East and West Indies, menstruation begins at eleven or twelve. It continues till women are between forty and fifty years of age, occurring monthly, and varies much in quantity: from four to five ounces is usually the average; the fluid differs from common blood, in not containing any coagulable lymph, but consisting chiefly, if not entirely, of red particles and serum, and when confined, in cases of imperforate hymen, for months or even years, no coagulation takes place. That it is formed from the arteries of the uterus, and not from the veins, appears from several circumstances: it first occurs at a period when there is more disposition to arterial than to venous plethora; but in the evening of life, at which there is most probability of venous plethora, it has ceased altogether. Another circumstance shewing the arterial origin of menstruation is, that fine injections thrown into the uterine arteries will appear on the internal surface of the uterus. A variety of

theories have been invented to explain the cause of menstruation, which is probably a state of congestion in the uterus itself, requiring periodically to be diminished;—it does not proceed from general plethora, for stout and florid women do not always menstruate the most, and thin and delicate women often have a very copious discharge; when the constitution is impaired by disease, or by want of nutritious food, the quantity is very small.

CHAP. XI.

DISEASES OF MENSTRUATION.

1. AMENORRHŒA may arise from cold, or from certain affections of the mind interrupting, or altogether preventing for a time, the regular occurrence of the catamenia. There will then be giddiness, pain in the loins, headach, and flushing of the face. In order to promote the discharge, the warm hip bath should be used, an aloetic purgative given, and bleeding from the arm may advantageously be had recourse to. A very frequent cause of amenorrhœa is that peculiar state of the constitution known by the term chlorosis. It consists in great loss of energy; the patient is disinclined to exertion of every kind, her aspect becomes pale or of yellowish hue, she has dyspnœa, much increased by exercise, pains are felt in the temples, forehead, and at the scrobiculus cordis, and the catamenia are suppressed. It is sometimes believed that chlorosis arises from indolence, and all the symptoms are attributed to want of menstruation, which in reality is the consequence and not the cause of chlorosis. It appears to result from debility, there

is deficiency of the red particles of the blood, nor can the symptoms be relieved, much less removed, without improving the general health, and strengthening the constitution. It is of great importance to distinguish between this disease and incipient phthisis; in the latter there will be cough, some pain in the side, with a pulse more or less accelerated. In chlorosis the best remedies are the vegetable bitters, chalybeates, the carbonas ferri with myrrh; or a confection composed of a drachm of carbonas ferri with an ounce of confectio aurantii, of which a teaspoonful may be given twice a day, which will be found a very useful tonic, or the mistura ferri cum myrrha, with attention in every case to the state of the bowels. Exercise on horseback, if there are signs of amendment, is to be recommended, and as the constitution improves and the general health is restored, the hip bath and aloetic purgatives should be had recourse to.

2. *Menorrhagia.* The usual time the menses continue is from three to four or five days; when they continue longer we are not to consider it as menorrhagia, unless the discharge becomes excessive and weakens the constitution. If there is headach, febrile symptoms, heat, thirst, and oppressed breathing, blood should be taken in a quantity proportioned to the strength of the patient and the severity of the symptoms. Heat and stimulants of every kind are improper, especially red wine, which is a popular remedy; the patient should be kept lying outside the bed, very lightly covered, and the room wherein she is should be without fire. When the pulse is quick and the circulation active after bleeding, the potassæ nitras, in doses of from ten to twenty grains, should be given three or four times a day, or the infusum rosæ with magnesiæ sulphas, to each dose of which a few drops of tinctura digitalis may be added with advantage. The active stage of menorrhagia

will generally be removed by the judicious use of the means before described, after which the pulse sometimes becomes small, and the extremities and face pale and exsanguious; as a very considerable diminution of the strength is occasioned when it occurs to any extent, it is necessary in the intervals to have recourse to a strengthening diet, the moderate use of wine, gentle but not fatiguing exercise, and the chalybeate and vegetable tonics.

SECTION II.

CHAP. I.

CONCEPTION.

The nature of conception has engaged the attention of some of the most able physiologists in ancient and modern times, and the different, and even opposite conclusions to which they have arrived, prove the difficulty of deciding on the subject, which providence has wisely, in a great measure concealed from human research. Some have supposed that the fœtus preexisted in the ovarium, and was merely called into action by the stimulus conveyed to it through the fallopian tube, which did no more than excite as a separate being, that which was already in existence; others have asserted that the rudimental matter of the fœtus was supplied entirely by the male, and that the female merely afforded a proper nidus for its reception, and supported it during its growth; while others, taking a middle course, contend that the ovum is not originally formed, or wholly dependent on either parent, and this is probably the most correct view of the subject; in children a likeness is usually seen to both father and mother, in configuration, features, and the colour of the hair and eyes. The concurrence of a male and female of the same species is generally requisite for the accomplishment of impregnation; but to this rule there are certain exceptions, as some of the inferior animals are capable of increasing independent of sexual intercourse. The polype, when arrived at maturity, throws out from its body a number of protube-

rances, which remain attached to it, until grown to a certain size, when they fall off, and each becomes a separate polype. Animals of different species will occasionally propagate, but the hybrid animal thus produced, which may be either male or female, is incapable of impregnating or of becoming impregnated; by this law, providence has secured the different species and genera of animals from becoming blended together and lost, in the endless varieties which would be produced. In most animals, it is necessary that the semen should be transmitted to the female sexual organs, and this is accomplished in various ways. In the domestic fowl, the opening through which the semen is emitted and received is the cloaca, an opening common to the rectum and oviduct in the hen, and the rectum and vas deferens in the male. During coitus, the two cloacæ meet, and the semen passes from the male into the female cloaca. In the mammalia, the male is received into the female parts, and in order that impregnation may be accomplished, these should be in a healthy state; for it happens very rarely, in cases of menorrhagia, amenorrhœa, or scirrhus, that the female becomes impregnated. An aptitude for impregnation in animals is remarkable at some periods of the year, usually in the spring; it is denoted by turgescence of the external parts, or by frequent discharges; but the human female is capable of conceiving at any period, though it is said more readily in the spring than at any other time.

CHAP. II.

GROWTH OF THE FŒTUS.

IMPREGNATION having taken place, and the ovum conveyed to the interior of the uterus, its presence may be demonstrated as early as the eighth day, when a mucilaginous semitransparent drop will be found adherent to the interior of the uterus, generally towards its fundus.

At the twelfth, or thirteenth day, it is increased in size, and forms a vesicle filled with a turbid flocculent fluid, in the centre of which, will be seen a dark spot, the punctum saliens, or heart of the fœtus.

At the twenty-first day, the embryo is increased to the size of a large ant.

At the thirtieth day, it resembles in size and figure a maggot, curled up. At this time, the budding projections of the limbs are visible, but their shape is not defined.

At six weeks, the size of the fœtus is about that of a bee; the clavicles, scapulæ, and other bones are traceable, the limbs are not yet formed, but are still rounded prominences, not having acquired their relative length, or definite shape. The nose, the eyes, and the mouth are distinctly visible, and the head is larger than the rest of the body.

At two months, the various parts are so much developed, that we can sometimes decide on the sex; the features are enlarged, the heart and the course of the larger vessels can be traced.

At three months, the fœtus is still further developed; its length is three inches, and the genital organs are sufficiently formed, to enable us to distinguish its sex. The

liver is large in proportion to the other abdominal viscera, the lungs small, the bones of the extremities are forming, as well as those of the head and spine.

At four months, the parts are all progressively increased, and the length of the fœtus is rather more than five inches, a small quantity of meconium is found within the intestines, and the movements of the fœtus are felt by the mother, although very feebly and indistinctly.

At five months, its length is from six to seven inches, the nails are beginning to be formed, the muscles are traceable, and the mother perceives that its movements are growing gradually stronger.

At six months, it is from eight to nine inches in length, meconium is found throughout the whole of the intestinal canal, and if an abortion take place, the child is sometimes born alive, but seldom breathes more than a few minutes.

At seven months, it is between eleven and twelve inches long, and if now expelled, it is called a premature birth, and the child is capable of being reared.

At eight months, it measures from fourteen to fifteen inches.

At nine months, it is from eighteen to twenty-two or twenty-three inches in length.

CHAP. III.

THE PLACENTA, MEMBRANES, ETC.

THE ovum consists of the fœtus, the membranes, in which it is enveloped, the placenta or medium of circulation between it and the uterus, the funis umbilicalis, composed of vessels by which that circulation is carried on, and the liquor amnii, in which it floats, and by which it is preserved from the injurious effects of external pressure.

1. The *placenta* is a cellular, vascular, spongy mass, which differs somewhat in size and shape, but is always nearly circular. It is connected by its outer surface to the interior of the uterus, and to the funis by the branches of the umbilical arteries and vein, the membranes pass off at its edge, and encircle the fœtus, forming the bag in which the child and liquor amnii are contained. The most usual place of its attachment is to the posterior, and upper part of the uterus; but it may be adherent to the sides, to the edges of the os uteri, or immediately over it. The external convex surface of the placenta is divided into lobules, by fissures, which penetrate a little way into its substance. The internal surface is covered by the amnion and chorion, and on it, are arranged in a radiated direction, the branches of the umbilical vessels, which pass to form the funis. There is usually a separate placenta to each child, but this is not invariable: in some cases of twins, the funes umbilicales are found to be attached to a single placenta.

2. The *funis umbilicalis* is composed of the convolutions of the umbilical arteries and vein, contained in an investment, which is derived from the membranes; its length

and size are various, and there are sometimes knots formed in it, especially if it is of more than the ordinary length. It is smaller, and weaker, at the point of union with the placenta, than at the umbilicus of the fœtus;—great caution is therefore requisite in extracting the placenta: if this be attempted violently, hastily, or suddenly, the funis will be torn off, and the placenta left remaining in utero. The umbilical cord is mostly attached to the centre of the placenta, but this is subject to some variety, it being occasionally joined to its side, or near its edge.

3. The *membranes* consist of two layers of the decidua, the chorion, and the amnion.

The *decidua externa* is in immediate contact with the uterus.

The *decidua reflexa* adheres to the decidua.

The *chorion* is a strong membrane, in which the fœtus is enveloped; it gives a covering to the funis, and is nearly transparent.

The *amnion* is the thinner of the two, it is transparent, and very strong in texture.

4. The *liquor amnii* varies in quantity, it is, as its name denotes, contained within the amnion. In the early months, it is limpid but gradually becomes thicker, and towards the end of pregnancy, is various in its colour and appearance. It preserves the fœtus from pressure, while remaining in utero, and at the time of parturition, it renders the dilatation of the os uteri more gradual and easy, by forming a soft and compressible wedge, by which the passages are gradually expanded, and prepared for the expulsion of the child.

CHAP. IV.

CIRCULATION OF BLOOD IN THE FŒTUS.

The blood is conveyed from the placenta by the umbilical vein, which has its commencement from branches opening on its external lobulated surface, where it is attached to the interior of the uterus, from whence it receives the blood. The umbilical vein passes along the cord to the abdomen, under the transverse fissure of the liver; it there divides into two branches, through one of which, the ductus venosus, one portion of the blood flows into the inferior vena cava; the other branch carries the remainder through the liver, which is much larger in the fœtus, than in the adult, in proportion to the size of the other viscera. From the venæ cavæ, the blood passes into the right auricle of the heart, and a portion of it, is transmitted immediately through the foramen ovale, into the left auricle: of the blood received into the right ventricle, a small part only passes through the pulmonary artery to the lungs, the larger portion goes immediately into the aorta, through the canalis arteriosus, and from the aorta, it is conveyed by the internal iliac arteries to the umbilical arteries, which pass up on each side of the bladder, and out of the abdomen, at the umbilicus, forming part of the funis, and terminating in the placenta. When respiration is established, those parts of the fœtal circulatory apparatus which are essential to intrauterine life, are no longer necessary; the foramen ovale is closed, the ductus venosus, and canalis arteriosus collapsing, soon become impervious and obliterated.

CHAP. V.

SIGNS OF UTERO GESTATION.

THE signs of pregnancy are those effects which it produces on the generative system, or the constitution, and vary much in different individuals, and in the same individual, at different times. They are frequently attributed to some inexplicable sympathy; and there can be no question that sympathy produces those changes which take place in the breasts, and areolæ, but when it is recollected, that the viscera of the pelvis, those of the abdomen, and in the latter months, of the thorax also, are all more or less, sustaining a constantly and slowly increasing pressure, it will be a sufficient reason why the functions of these parts are disturbed, by the advancing growth of the uterus.

1. *Dyspepsia, with morning sickness,* is one of the earliest signs by which pregnancy is indicated: it may, however, arise from other causes, and unless corroborated by the presence of the symptoms hereafter detailed, is not of itself a proof to be relied on. It may be occasioned by a foul state of the stomach, or many forms of visceral disease.

2. *Enlargement and pains* of the breast, with a deepened colour of the areolæ, which become darker in each successive pregnancy; the change which they undergo, is more remarkable in a first pregnancy, than in the subsequent ones, they increase in circumference, and assume a dark brown, or copper hue. Milk is secreted, sometimes early in pregnancy, and towards the end of gestation, it often escapes from the nipple.

3. *Suppression of the menses,* with the symptoms before

detailed, is one of the most positive proofs, that impregnation has taken place, if it continue for two or three months, and is unaccompanied by those general symptoms, which indicate a diseased state of the system. The vessels which furnish the menstrual discharge shoot into the ovum, and their apertures are consequently closed. Women are occasionally subject to discharges during pregnancy, which usually consist either of mucus, or blood; if of the latter, the discharge is often much more sudden and copious than the true catamenia. It has been asserted that menstruation may continue during the early months, and even during the whole time of gestation, but we must be allowed to express a doubt of its occurring so frequently as has been stated, although it may occasionally take place. Sudden exertion by causing a slight separation of part of the ovum, may give rise to what the patient herself may imagine to be the menstrual discharge, but which is, in reality, hemorrhage from lacerated vessels.

4. *Cramps and numbness* of the lower extremities are the effects of the mechanical pressure to which the nerves, passing out of the pelvis, are subjected, and are corroborating proofs of pregnancy.

5. *Tenesmus, diarrhœa, hemorrhoids,* frequent micturition, or suppression of urine, indicate, that the uterus, from its increasing size, disturbs the functions of the viscera with which it is connected. These are some of the principal symptoms, which lead us to believe, that the individual, in whom they occur together, is in the pregnant state: though one, or more, if the rest are absent, is by no means sufficient to warrant our giving a decided opinion, and many of them may arise from increase in the size of the uterus from disease.

There are other signs, when pregnancy is more advanced, which render its presence more certain and decided.

6. *Quickening,* or the first perception of movement felt in the uterus, is justly regarded by women as an almost infallible proof. This sensation has been generally attributed to the first movement of the child, which according to the English law, is not deemed *quick,* until its movements become perceptible; but it seems very problematical, whether quickening depend on the motions of the child, which is not more truly quick, (or alive,) the day after it was felt, than it was the day previously. Quickening is a sensation, sudden in its occurrence, and often followed by hysteria, fainting, or nausea, and as the proportion which the fœtus bears to the whole of the ovum is small, its length does not exceed five inches, and is often even much less, as the quantity of liquor amnii in which it floats is much greater, in proportion to its size than at subsequent periods of gestation, the sensation termed quickening is more likely to be produced, by the uterus rising, sometimes suddenly, above the brim of the pelvis, about the fourth month of pregnancy, and the faintness, nausea, and feelings peculiar to this period, may thus be more satisfactorily accounted for, than by attributing them to the movements of the fœtus, whose muscles, at the fourth month, surrounded by a large quantity of liquor amnii, can scarcely be supposed capable of such a degree of action, as to cause hysteria, faintness, and deliquium in the mother.

CHAP. VI.

DISEASES OCCURRING IN THE EARLY MONTHS.

THE most usual complaints to which pregnant women are liable, in the first three or four months, are sickness and vomiting, cardialgia, disordered bowels, pains of the breasts, giddiness, and retroversio uteri; and there are certain other diseases, which may occur during utero gestation, and which then require a somewhat modified mode of treatment.

1. *Sickness* is almost invariably present; and hence its occurrence, especially in the morning, is one of the circumstances, by which we judge that impregnation has taken place. It is often severe and harassing, and baffles every remedy which is devised for its relief: sometimes there is only a feeling of nausea, at others it produces the rejection of most of the food received into the stomach. Where there are accompanying symptoms of general plethora, flushed face, or vertigo, it is right to take blood from the arm, the bowels should be kept moderately open, and the saline draught prepared with fresh lemon juice, and carbonate of potash, taken in the act of effervescence, will often be productive of benefit. Should the tongue be foul a mild emetic of a few grains of ipecacuan should be given, and after this has emptied the stomach, it may be right to administer a grain of the extract of opium, from which relief sometimes has been derived, after other remedies have been tried in vain. The diet should be light, nourishing, and not taken in such quantity at any one time, as to distend the stomach, and the bowels should be kept relaxed.

2. *Drowsiness and vertigo* usually being dependent on a

plethoric state of the system, should be treated by bleeding at the arm, by leeches, and cupping;—the employment of purgatives, and a total abstinence from stimulants, from fermented liquors of every kind, and the sparing use of animal food.

3. *Cardialgia and heartburn* are very frequent and troublesome concomitants of pregnancy. Much relief may be obtained by alkaline remedies, especially magnesia, which scarcely ever fails to produce the immediate palliation of the complaint.

4. *Constipation* is frequent in the pregnant state. It is best obviated by enemas, and mild saline purgatives, with daily exercise, and attention to diet.

5. *Hemorrhoids* are produced by pressure on the returning veins of the rectum, and may be relieved, by administering sulphur, or neutral salts, by warm fomentations, enemas, and by the patient sitting over the steam of hot water.

6. *Lues venerea* may occasionally occur during pregnancy, and then requires a somewhat modified, and less active mode of treatment. If the disease be gonorrhœa only, mucilaginous drinks, and the balsam of copaiba are usually all the remedies that are necessary, but if chancres appear on the labium, and venereal matter is absorbed, buboes, eruptions, ulceration of the throat, of the velum palati, and enlargement of the bones will be produced. Mercury is necessary, but if administered in large quantities, it has a tendency to excite abortion. If there be chancre only, it may generally be cured by the blue pill, and the application of calomel with liquor calcis to the sore. Should there be ulceration of the throat, gargles of nitric acid and water, or a solution of the oxymurias hydrargyri, will be useful, or an eighth of a grain of the oxymurias, with compound decoction of sarsaparilla, taken

night and morning may be given. If, by these remedies, we do not succeed in eradicating the disease, we shall stop its ravages, and after parturition, if not cured before, we can resume the mercurial course, and cure it radically. The child will often in these cases be still born, or manifest signs of venereal taint, a slight mercurial course is requisite; the hydrargyrus cum creta in two grain doses may be given to it, twice a day, or half a grain of calomel with a little syrupus papaveris albi, to prevent its passing off by the bowels:—sometimes putting the mother under a course of mercury will remove the complaint in the child.

7. *Herniæ* are sometimes rendered much worse in consequence of utero gestation; and at others, they disappear at the time of pregnancy, if reducible, and free from adhesions, and the cause of this, is very readily explained. Whether the hernia be femoral, inguinal, umbilical, or ventral, as the uterus ascends in the abdomen, it carries up the intestines with it, (if the hernia have no adhesions,) and thus it may empty the hernial sac: but if adhesions are formed, the constantly increasing ascent drags the intestines upwards, and they may thus become strangulated;—if obstructed, or strangulated, it requires the same operation for its relief, as an ordinary case; and if this be not too long delayed, the patient will probably recover as well as if she were not pregnant.

8. *Biliary calculi* occasionally form during pregnancy, and in their passage through the ducts, may occasion very distressing symptoms: the pains, which are violent, beginning from the scrobiculus cordis, and shooting towards the back, added to which there is usually constipation, yellowness of the skin, and conjunctiva, and vomiting. It is not commonly at first attended by fever, white tongue, nor increased by pressure, and may thus be distinguished from hepatitis. If inflammation be present, bleeding is required,

and a grain or two of extractum opii, if the pain is severe, may be given, with two or three grains of calomel. Should there be no disposition to miscarriage, the warm bath should be employed. Calomel combined with smaller doses of opium, the liquor potassæ subcarbonatis in doses of twenty or thirty drops; or pills composed of pulvis rhei, castile soap, and aloes, may be administered, if aperients are required.

9. *Calculi of the bladder* occasion the same symptoms as in patients not pregnant, but with greater severity; the pain in the loins is increased by exercise; there may be deposit of sand in the urine or streaks of blood may be seen in it. If the calculus is situated in the ureter, it produces sudden and violent attacks, and the pains may be mistaken for those of parturition, as they remit and recur at intervals, and affect the loins and back. If inflammatory action is produced, it is necessary to bleed, and as in cases of biliary calculus, the warm bath is proper, if there exist no tendency to miscarriage. When the stone is in the bladder, it is known by the increased irritability of that viscus, by the pain felt after voiding the urine, the discharge of sabulous matter, by examination with the finger per vaginam, and by sounding. It is of consequence that the stone, if large, should be extracted before the commencement of labour, as its becoming pressed between the front of the pelvis and the child's head may occasion sloughing of the soft parts. This can generally be accomplished without the operation of lithotomy, as the female urethra is short and dilatable; an instrument has been invented by Mr. Weiss, by which its dilatation can be accomplished, so as to allow a stone of considerable size to pass through it. If not known before parturition, the stone should be raised above the brim of the pelvis, by a sound passed into the bladder, and kept there, until the head has

descended into the cavity; but after the head has passed the brim, this cannot be accomplished, and if of large size, it is sometimes necessary to use the perforator.

10. *Retroversion of the uterus.* This is one of the most serious and alarming displacements to which the uterus is liable. It occurs usually in women who have wide and capacious pelves, and may be occasioned by inattention to the regular evacuation of the bladder. The uterus falls backwards, the fundus is placed posteriorly, and the os uteri is pushed forwards against the symphisis of the pubes; the viscus thus lies across the pelvis transversely, producing tenesmus, constant weight, and bearing down, and difficulty in voiding, or total suppression of the urine. It is readily discoverable on examination. A large tumour will be felt, pressing on the rectum, and the finger cannot generally be passed far into the vagina, being intercepted by the neck of the uterus. When this displacement has occurred, the bladder must be kept empty, the bowels evacuated by enemas, the warm bath should be employed, and the patient being placed on her hands and knees, properly supported, two fingers or a piece of cane, or whalebone, with a sponge firmly attached to its extremity, should be introduced into the rectum, and used to raise the uterus, by a gradual and firm, but gentle pressure on its fundus; we shall generally thus succeed in elevating it above the promontory of the sacrum, and the brim of the pelvis, where it will remain, as its increasing size will soon render its descent, and consequent retroversion, impossible.

CHAP. VII.

DISEASES OCCURRING IN THE LATTER MONTHS OF UTERO GESTATION.

The diseases in the latter period of gestation are much more formidable, than those in the earlier months, and frequently baffle every plan of treatment. They are attended by much suffering, and some of them if neglected, misunderstood, or improperly managed, may prove destructive to the patient.

The principal complaints, which occur particularly in the latter months, are irritation of the bladder, obstinate constipation, hemorrhoids, varicose swellings, or œdema of the lower extremities, cramps, difficulty of breathing, convulsions, and hemorrhage.

1. *Irritation of the bladder* is produced by pressure of the uterus on that viscus; it becomes necessary to discharge the urine very frequently, often there is some degree of inflammation, which renders the bladder peculiarly irritable, and unable to retain the urine in any quantity; at other times from pressure on the neck of the bladder, there is a difficulty of passing it; or the patient may be unable from pressure on its fundus, to retain that fluid; so that there may be incontinence of urine. In the former case, it is important to keep the bladder empty, lest by the urine accumulating within it, retroversion of the uterus should be produced, and in cases of incontinence, a thick linen compress, or sponge should be worn, to prevent the excoriation resulting from the parts being kept constantly damp.

2. *Œdematous and varicose swellings* of the lower extre-

mities are caused by pressure of the uterus on the returning vessels, and cannot be entirely removed by any remedies internal, or external: but may be diminished by small bleedings, by occasional aperients, and by bandages applied to make a moderate pressure.

3. *Convulsions* are perhaps the most alarming and dangerous diseases, to which pregnant women are liable, and whether they occur prior to labour, or during parturition, many cases terminate fatally. They are usually preceded by drowsiness, vertigo, or by severe shooting pains in the head; the face is flushed, flashes of light are seen before the eyes, the patient suddenly falls, and writhes in convulsions, the eyes are open, and either fixed with a sightless stare, or rolling in their sockets, the muscles moving the lower jaw participate in the general agitation, and the tongue, without great care on the part of the byestanders, will be lacerated and bleeding.

This disease is occasioned by irritation communicated from the uterus to the brain, by the passions of the mind, or by mechanical injury. In women of full habit, it is necessary to bleed freely from the arm, or temporal artery; purgatives should be given, to diminish the determination of blood to the head; and should the patient be unable to swallow, enemas containing aloes should be thrown into the rectum. The head must be kept wet with cold water, and the hair removed; cloths wetted with the lotio ammoniæ muriatis applied to the head, and renewed as often as they become warm, and air freely admitted into the apartment. Blisters to the nape of the neck, and mustard poultices to the feet are likely to be of service, and when the convulsions are preceded by symptoms of approaching labour, they often continue until the uterus is emptied of its contents.

4. *Flooding* may occur at any period of utero gestation,

from the earliest to the latest; but in the earlier months, it is scarcely ever to such an extent as to endanger life, the uterine vessels and the uterus itself being small the hemorrhage is usually slow and inconsiderable; in the latter months, the vessels have acquired a much greater calibre, hence the blood escapes more rapidly and the patient is often lost. Flooding during pregnancy arises from a separation of the ovum from the uterus, to a greater or less extent, and if the detachment be considerable, abortion must necessarily take place. At the earlier periods of utero gestation, it is generally the result of over exertion, of injury, or of fulness of the uterine vessels, and bleeding is therefore highly necessary when there are marks of plethora. The horizontal position of the body, and the antiphlogistic regimen should be enjoined; the room kept cool, and mild saline purgatives administered, such as the infusum rosæ with magnesiæ sulphas, or if infusum rosæ be not given, the potassæ nitras may be administered, in doses of from ten grains to a scruple twice or three times a day, and small doses of tinctura digitalis or the spiritus terebinthinæ in doses of from one to two drachms. While the discharge is profuse, it will be right to combine local with general remedies. Cloths wet with cold vinegar and water should be applied to the loins, the pubes, and the external parts; —a small piece of ice wrapped in lint or tow introduced for a short time into the vagina, or cold affusion to the abdomen may be of service by diminishing the activity of the circulation, and promoting the formation of coagula. If the hemorrhage have been excessive, and occasioned much debility, after it has entirely ceased, a nourishing, but not stimulating diet should be allowed. The patient may with proper attention escape abortion, but when flooding takes place to any considerable extent, it more generally happens, that the connexion between the placenta and the uterus is

so far destroyed, that abortion will be inevitable, especially, if the blood, after the first gush, is discharged in clots, and expelled by uterine contractions.

5. *Abortion* is of very frequent occurrence, and generally preceded by the symptoms last detailed. Some women miscarry, year after year, at one particular time of pregnancy: when the uterus has reached a certain degree of distension, its action is excited, and it expels its contents. The circumstances which predispose to abortion may be either general plethora, irritability of the system, weakness, or an irritable condition of the uterus itself. It may be produced by whatever violently agitates either body, or mind; by a fall, fright, or excessive corporeal exertion. Abortion usually produces more debility than parturition at the full time, whether there have been much, or little hæmorrhage accompanying it. It is to be treated by the same general rules, as cases of ordinary labour, and in any future pregnancy, the causes which have produced miscarriage on former occasions are to be carefully avoided.

CHAP. VIII.

MANAGEMENT DURING PREGNANCY.

PREGNANT women are peculiarly liable to various disorders, the occurrence of which may be prevented, if proper care be taken to avoid the causes from which, by experience and observation they are known to arise. The dress during the time of gestation should be such as will not impede the enlargement and ascent of the uterus, and when the brim of the pelvis is acute, or the uterus has a tendency to ascend obliquely, the patient should wear a

bandage to support the abdomen, fastened by straps passing over the shoulders. Exercise should be taken daily, but such as is neither violent nor fatiguing, especially by those unaccustomed to muscular exertion, or it may occasion the separation of the ovum from the uterus, the vessels will be lacerated, blood effused, a still greater separation will take place, and thus miscarriage will often be produced. Should there be hæmorrhage, or a disposition to it, the patient must refrain as much as possible from moving, and remain in the recumbent position, until it has entirely ceased. Miscarriages are not of equally frequent occurrence at every period of uterogestation, but are most usual at the sixth week, the third and the seventh months; at these periods, therefore, it is more particularly necessary to avoid fatigue. At other times, the more exercise a pregnant female can take, the better, within certain limits. That it usually exerts no unfavourable influence during pregnancy is sufficiently proved, by the comparatively easy and safe parturition, almost peculiar to women employed to the last hour in laborious occupations, whose confinement is generally safe and expeditious; thus the Egyptian midwives were prevented from obeying the murderous mandate of an ungrateful and cruel tyrant. Dancing, riding on horseback, or in a carriage over a rough road should be avoided, or any sudden and violent exertion, either of which in women of relaxed fibre, unaccustomed to muscular exertion, may excite premature uterine contractions. The feelings of the mind exercise a certain, and very powerful influence on the uterus;—the pains of parturition, active and regular before, are often suspended for some time, by the arrival of the accoucheur, although well known, and anxiously expected. Women are particularly nervous during pregnancy, and often become melancholy from an apprehension of their approaching sufferings;—

they should receive from their friends, those impressions of hope and confidence, calculated to soothe their minds, and the relation of unfavourable and fatal cases, so much the subject of detail in the lying-in room, should be carefully avoided, which pregnant and parturient women seldom fail to apply, as prophetic of their own. Emetics are improper, when there exists any tendency to abortion, and should not be administered to those who have formerly miscarried. The bowels should be kept relaxed by aperients, and of these pulvis rhei, oleum ricini, or magnesiæ sulphas, are the most suitable.

If pregnancy first occur, when women are advanced towards the middle period of life, there is reason to expect during labour, rigidity of the soft parts; it is therefore necessary to bleed once or twice, in such cases, in order that the passages may be rendered lax and yielding; and that bleeding does produce this effect, is proved by the dilatable state of the passages, when, from adhesion of the placenta to the os uteri, or from any other cause, there has been hæmorrhage before parturition. The bleeding should be proportioned to the strength and constitution of the patient, and it is a precautionary measure, which in cases of anticipated rigidity, should never be omitted. Eight or ten ounces may be taken six weeks, or two months before parturition, to be repeated in three weeks or a month, and again on the approach of labour, if the parts are then rigid and undilatable. A disposition to convulsions or apoplexy should be carefully watched, and treated on general principles, to avert these formidable and fatal diseases. If there be pain and giddiness in the head, throbbing of the temples, or muscæ volitantes, bleeding, general and local by cupping, or leeches, and aperient medicines are indispensable, and may prevent the impending danger, which it is much easier to avoid than to cure.

CHAP. IX.

LABOUR.

The uterus continues increasing in size and capacity, until the end of the ninth month, or about forty weeks from the time of conception. It not unfrequently happens, that parturition comes on before this period; or uterogestation may, from some inexplicable cause, be protracted beyond it.

Its approach is usually indicated by discharge, pains are felt in the back, produced by incipient uterine contractions, they go off, and recur again from time to time, increasing in force and frequency; the abdominal muscles and those of respiration are called into action, and aid materially the expulsive efforts of the uterus, the cavity of which is becoming gradually diminished, and thus its contents are expelled. The earliest sign indicative of the approach of parturition, is the subsidence of the abdominal tumour, from the scrobiculus cordis, towards the abdomen, and the lower part of the uterus sinks, generally with the fœtal head, towards the cavity of the pelvis. This subsidence may occur a day or two or even more, before labour commences, but it must be considered as the first certain indication of its approach. The pressure of the uterus on the pelvic viscera, produces derangement of their functions; there is from pressure on the rectum, tenesmus and a disposition to void the fæces, the bladder is also affected, and frequent micturition takes place, or there may be difficulty in passing the urine. There is more or less of febrile excitement, flushing and chills alternating with each other, and great restlessness. These are the premonitory signs

of approaching labour, and are succeeded by a discharge of mucus tinged with blood, which is known by the name of show: the pains are at first felt in the dorsal and lumbar regions, they gradually spread round the body to the pubes, and occur at regular, but progressively decreasing intervals. Sickness and vomiting are frequent concomitant symptoms with shivering, which are usually followed by increased uterine action, and therefore, if other circumstances are favourable, are considered indicative of a speedy termination of the labour. The os uteri, vagina, and labia, from the discharges are gradually relaxed, and dilated by the soft wedge, composed of the membranes, filled with the liquor amnii which is pushed before the presenting part. During the pain, these become tense, and distended with fluid, so that in order to discover the presentation, it is necessary to wait until the pain has gone off, to avoid their premature rupture; the cyst is pushed lower and lower, and in natural presentation, preceding the head, it safely dilates the passages, and when ruptured early through accident or ignorance, parturition is considerably retarded, and rendered much more severe. It is probable that the imaginary value of the 'child's caul' if obtained unbroken, originated with some former physiologist, who had witnessed and wished to prevent the ill effects resulting from the premature rupture of the membranes, by appealing to the superstition and self-interest of those, to whose reason he might have addressed himself in vain.

The pains are at their commencement, described to be cutting and grinding, and there is little advance made during the first stage of labour, until the os uteri is fully dilated, when they become expulsive, and are termed bearing pains: the difference of which, an experienced practitioner can at once distinguish, and even without examination, can, from the tone of voice, say with certainty, in many

instances, how far the labour has advanced, and is enabled to foretell its probable speedy, or protracted termination. The os uteri having been fully dilated, the first stage of labour is over, and the vertex descends, with its long axis corresponding with the long axis of the brim:—when arrived near the outlet, the membranes generally burst, and the liquor amnii is discharged, the occiput is turned forwards, beneath the arch of the pubes, and the face into the hollow of the sacrum, the labia become relaxed and dilated, and as the pains increase in force and frequency, the occiput rises from below the arch of the pubes, the chin presses back the os coccygis, and thus the head is soon expelled; after which there is generally an interval of ease, until the pains again recurring, the shoulders make the same turn as the head, and the body and extremities of the child are protruded. We may form some idea of the probable duration of labour, by observing the form, age, and habit of the patient; if young, and there is neither disproportion, distortion, nor other unfavourable circumstance, if the pains come on with increasing force, frequency, and regularity, the os uteri being fully dilated, and the passages are becoming more and more lax, and yielding, a speedy, and safe termination of the labour may be confidently anticipated, if it be a natural presentation: but it is better not to predict to the patient the time, which is liable to be protracted by circumstances which we can often neither foresee, nor control. The pains may intermit, or from rigidity of the external parts, especially in a first labour, parturition may be very considerably and unexpectedly retarded.

CHAP. X.

DIFFERENT STAGES OF LABOUR, AND ATTENTIONS REQUIRED.

HAVING described the ordinary progress of natural labour, wherein the head is the presenting part, and the uterine efforts sufficient to expel the child and afterbirth, it is requisite to state the duties, which devolve on the accoucheur, to prevent whatever might interfere with, or interrupt the natural efforts, during the different stages of parturition.

False pains are sometimes mistaken for those of labour; —they may arise from uterine irritation, they may be inflammatory, or produced by spasm or colic, and should be distinguished from those of approaching labour. To ascertain the nature of the pains, examination is necessary as spurious ones do not produce any change in the os uteri, nor are they attended, usually, by discharge, if intestinal or caused by spasmodic colic, they are relieved by emollient enemas, gentle aperients, and small doses of opium. If the os uteri remain undilated, and its diameter be not gradually increasing, it is a proof, that the pains, however severe, are spurious; but if the os uteri has its disc gradually and progressively dilating, the membranes becoming tense during each pain, and flaccid when the pain is over, we are certain that the first stage of parturition has commenced.

It is requisite during labour to attend to many minor circumstances, which the accoucheur is often expected to direct, but it will be better not to offer professional assist-

ance, until the patient herself requests it, and is convinced of its necessity. The bed should be so covered, as to be defended from the discharges, and arranged so as to allow the sheets to be readily removed. A skin is best adapted for this purpose, with a sheet doubled several times placed on it, upon which the patient is to lie. The position usually adopted in this country is lying on the left side, near the edge of the bed. Having ascertained that labour has begun and the first stage gradually advancing, it is right to render the mind of the patient tranquil, by assurances of the certainty of its favourable termination: the less the accoucheur interferes, the better, if the presentation be natural, and while examining he ought carefully to avoid prematurely rupturing the membranes, which should generally be left entirely to nature. To the patient small quantities of gruel may be given occasionally, or any mild, unstimulating beverage she may prefer. The accoucheur should not remain in the room, but attend from time to time, and observe the progress of the labour.

When the os uteri is fully dilated, it will be easy, by careful examination, to distinguish not only the presentation, but also the situation of the head; the finger should be gently and slowly passed, between the symphisis pubis, and the head of the fœtus, where an ear can be readily felt; if this is done rudely, and hastily, the ear may be doubled on itself, and the examination will be rendered useless and unsatisfactory. That part of the ear which is close to the head, will denote the situation of the face, while the flap of the ear will as certainly indicate that of the occiput. The fontanelles should also be examined, and by tracing them, and the course of the sutures, we may verify our observations on the ear. The smaller fontanelle is known by its triangular shape, and by three sutures meeting there, and will lead us to the situation of the

occiput: the larger fontanelle, where four sutures are united denotes the situation of the face. These investigations should be made during the intermission of pain, and early in the second stage; for if there exist any disproportion, the scalp becomes swollen, and the sutures and fontanelles are thereby rendered, to an inexperienced accoucheur, less distinct.

The bladder should be evacuated from time to time by the natural efforts, or by the introduction of the catheter; for if the urine be allowed to accumulate, the distended bladder forms an obstacle to the progress of the head, and is itself subjected to injurious pressure. It is not requisite that the accoucheur should remain in the room while the head is descending; but the patient should be directed to continue on the bed, and the accoucheur remain within call, as the progress of the labour is sometimes unexpectedly rapid. As the head descends, it is pushed forward against the perineum, and recedes a little after every pain; when it has descended so as to distend this part, it should be supported by the palm of the hand; and the occiput allowed as gradually and slowly as possible to emerge from below the arch of the pubes. At this time, the patient should not be advised to make voluntary efforts; she should not, as she is frequently directed, hold in her breath, and force down; nor is the practitioner justified, in making the slightest extractile effort. After the birth of the head, it is equally unsafe and improper, to attempt the extraction of the shoulders, this should be also entrusted to nature; and there is generally a short intermission of pain, after which it returns, and the shoulders and body of the child are gradually expelled. It happens not unfrequently that the umbilical cord is twisted round the neck of the child, it should be slipped over the occiput, and disengaged, previously to the passage of the body, or it may be so stretched

and tightened as to produce strangulation. The second stage of labour being over, it remains to describe the manner of securing the cord. This should be tied with two ligatures, the first about two inches from the abdomen, and fastened very securely with a double knot, as the funis contains a gelatinous, elastic substance; and if not tied very firmly, fatal hæmorrhage may take place. The second ligature should be tied, about two inches from the first; in the same secure manner, and the cord divided, within sight, between them. As soon as this has been done, it is necessary to ascertain whether there is not a second child, and if not, the uterus will be felt lying above the pubes, a globular body, seldom larger, if so large with the placenta within it, as the child's head, but if there be a second child, the size of the abdominal tumour is not much diminished by the birth of the first, its movements may generally be felt, and a second bag with the liquor amnii found at the os uteri. The same precautions are necessary at the birth of the second child as were suggested before. In cases where labour has been protracted, and sometimes where it has been quick, the child does not breathe for some time after birth, although the cord faintly pulsates; it is better, in such cases, not to tie the funis immediately, as we may be sure the child will breathe, although it does not do so at first. If respiration does not commence, and there is no pulsation, in the cord, it should be separated immediately, immersed in warm water, and with the tracheal tube, we should inflate the lungs, and persist from twenty minutes to half an hour, in keeping up artificial respiration. Other subsidiary means may be employed during the time we are inflating the lungs, to stimulate the system and produce resuscitation if possible;—the principal of these are, the introduction of a stimulant into the stomach, a teaspoonful of brandy with two ounces of

water may be injected; enemas of warm water, with a small quantity of mustard may be used, and frictions of the thorax, along the spine, and over the chest, with the linimentum camphoræ compositum, or any other embrocation of proper strength which may be at hand. By these means, after the lapse of half an hour, the writer succeeded in establishing respiration in a child, which had been laid aside, as dead, by the female practitioner who had attended, by whom he was called in a case of hæmorrhage, after delivery.

The third stage of labour is that which begins after the child is born, and terminates with the expulsion of the placenta, and membrane.

In young women, when the uterine contractions are powerful, and labour has been consequently quick, it sometimes happens, that the placenta is expelled by the natural efforts alone, almost immediately after the birth of the child; but in ordinary cases, and especially if labour have been protracted, as soon as the child is expelled, uterine action ceases for a time, and the patient falls asleep, until wakened by the recurrence of the pains, or the interference of those about her: having ascertained from the hard globular feel of the uterus above the pubes that there is no second child, and that the uterus is sufficiently contracted to close its vessels, no attempt should be made to remove the placenta for a quarter of an hour, or half an hour;—within that time it usually happens, that a slight pain or two comes on, and the placenta is pushed into the vagina, it may then be removed by grasping its substance with the thumb and fingers of one hand, and gently extracting in the direction of the axis of the pelvis by the funis with the other. It occasionally happens in natural labours, that two, three, or more hours elapse before it is expelled, and this without any alarming symptom. Where its expulsion

is thus delayed, it is right to ascertain the cause of its retention, which may be either adhesion, deficiency of power in the uterus, or irregular contraction. If the uterine contractions are tardy, by making pressure firmly on the uterus, by friction, and by giving the patient a small quantity of wine, or brandy and water, if there be no disposition to hæmorrhage, they may generally be excited. The uterus will contract on its contents, and at this time, remembering the direction of the axis of the pelvis, a gentle, moderate, and cautious extraction should be employed, carefully avoiding violent or sudden effort, which would tear the funis from the placenta, or might perhaps invert the uterus: these are the means which reason dictates and experience has confirmed as best for removing the placenta, and in the majority of cases, they are safe, and will be found effectual, unless it is adherent to the internal surface of the uterus. Thus, the labour being concluded, the wet clothes should be changed, and the patient preserving the recumbent posture, should in about an hour be shifted carefully to the upper part of the bed; a moderate dose of tinctura opii administered, the room kept very still, and she will generally have some hours quiet and refreshing repose.

CHAP. XI.

EXAMINATION.

By this term is described the manual operation by which we ascertain the state of the genital system; it is often necessary to discover the presence and nature of disease, the existence of pregnancy, and to distinguish with accuracy during parturition, the presentation and nature of the labour, in order that we may be able to render, with promptitude and effect, whatever assistance may be required. It is divided into external, and internal.

1. *External examination* is made to discover the presence of inflammation, or abdominal disease, the existence and progress of uterogestation, and after delivery, to decide whether there be not a second child remaining in utero. External examination is made most advantageously when the patient is recumbent on the back, she should be in an undress, with the shoulders and lower extremities elevated, to relax the abdominal muscles, and should abstain from voluntary effort; the bladder having previously been emptied of urine. To discover the progress of pregnancy, we sometimes are called on to institute external examination, and can generally decide this with sufficient precision; at the close of the third, or towards the middle of the fourth month, the fundus uteri will have risen a little above the brim of the pelvis; at the close of the fifth month, it will be midway between the brim, and the umbilicus; at the sixth, a little below the umbilicus; at the seventh, it has arisen above the umbilicus; at the eighth month, it is situated half way between the umbilicus and scrobiculus

cordis; and at the ninth month, it is at the scrobiculus cordis.

2. *Internal examination* is made to determine the nature of disease,—to discover whether pregnancy exists, how far it is advanced, whether labour has begun, the nature of the labour, and its probable termination. By it, we ascertain the presentation and situation of the child, the state of the pelvis and soft parts, and from becoming acquainted with these circumstances, are enabled to employ those measures which the exigences of the case require. The greatest decorum should be observed, the room darkened, and the bed curtains drawn; and it is usual for some other female to be present at the time. It is better generally to wait until examination is requested by the patient herself, rather than propose it, unless convinced of its necessity, when it ought always to be made. The patient during labour is placed on the left side, with the hips close to the edge of the bed, and a sheet thrown over the body: the chest is to be drawn forwards towards the knees, and the knees upwards towards the abdomen; the same position is usually requisite, when examining to discover the nature of disease, whether existing in the uterus, vagina, or rectum.

The fingers should be previously lubricated, the nails pared, and one or two fingers of the left hand then passed, deliberately, slowly, and cautiously into the vagina, the knuckles being kept as close as possible to the arch of the pubes, this being the shallowest part of the pelvis we shall thus reach the os uteri, the left hand is preferable to the right, as the curve of the fingers will correspond with the curve of the sacrum and vagina. Having reached the os uteri, and discovered that it is dilatable, or gradually dilating during the pain, it is better to wait, till uterine contraction ceases, which in the earlier stages of labour is short: and when it is over, if the patient be desired to bear

down, the presenting part, and its relative position with respect to the pelvis will be certainly and satisfactorily ascertained. Having fully investigated these circumstances, the fingers must be withdrawn in the same cautious, slow, and gentle manner, and it is right to refrain from examining too frequently, if the vertex presents, and the situation is favourable; but if the labour be preternatural, we shall by early informing ourselves of its nature, be enabled to afford prompt and efficient assistance. Frequent examination is highly injudicious in a natural labour; it tends to excite irritation, and inflammation of the parts, to remove that defence which nature has provided for the purpose of facilitating the passage of the child, and if rudely or carelessly performed, the membranes are often prematurely ruptured, and a case which might have terminated speedily, is rendered lingering by this officious and needless interference.

In examining to discover how far pregnancy is advanced, it should be remembered, that the neck of the unimpregnated uterus measures an inch and a half, and that from pregnancy, the neck is gradually expanded and shortened. This begins to take place at the close of the fifth month, and at the end of the sixth month, it has lost about half an inch of its length, at the end of the seventh month, about half an inch more, and at the close of the ninth month, the remaining half inch:—having passed the fingers to the os uteri, and to the neck, the degree of shortening may be discovered; if the uterus is increased in size from pregnancy, or any other cause, when we attempt to turn it from side to side, it will be found to move with difficulty, and this is another, and most valuable criterion by which we are enabled, in conjunction with other symptoms, to estimate the presence and progress of uterogestation.

CHAP. XII.

RETENTION OF THE PLACENTA.

1. When the birth of the child has taken place, if uterine efforts continue, and the placenta does not advance, and cannot be discovered in tracing the cord towards the os uteri, it is probable that it may be retained, in consequence of having formed adhesions to the interior of the uterus. The surface of the placenta, when adherent, is often indurated, and sometimes of cartilaginous hardness, or containing within its substance, patches of ossification. If rude and injudiciously violent force is employed to extract it by the funis, they will be torn asunder, the uterus itself inverted, or alarming or even fatal hæmorrhage produced. After waiting a sufficient time, and ascertaining by careful examination, that the placenta is not within reach, although uterine contraction has taken place repeatedly, since the birth of the child, it becomes a question how long we should defer its removal. Some have preferred leaving it entirely to nature, in every case, but patients have been carried off by hæmorrhage, inflammation, or puerperal typhus, in consequence of the retention, and absorption of a dead, and quickly putrefying mass within the uterine cavity. It is therefore better to remove it, in a gentle and cautious manner, and we shall thus rescue our patients from a situation of very considerable danger. The hips should be brought as near to the edge of the bed as possible, and the hand, the nails being pared, should be gently and slowly passed, having first been lubricated, especially over the back, and knuckles; for this there will be sufficient room,

without much pain, the passages having just been dilated, by the transmission of the child, if a proper degree of caution, and tenderness be used, carefully avoiding any sudden or hurried effort, and remembering the curved direction of the sacrum,—when the fingers reach the interior of the uterus, by gently insinuating them between it, and the convex surface of the placenta, the adhesions may be separated, that mass will fall into the palm of the hand, and be easily and safely extracted; it is necessary to avoid tearing away one portion of the placenta, and leaving another portion in the uterus, but if possible, and it generally is so, we should bring away the entire mass together. The hand is to be withdrawn, in the same cautious, slow, and gentle manner as it was introduced, bearing in mind the direction of the axis of the pelvis, and the irreparable mischief which haste, violence, or inattention must inevitably produce.

2. *The placenta* may be retained from other causes, besides adhesion; such as want of contraction, or partial contraction of the uterus. It is here equally necessary to remove it, for while it remains in utero, preventing that closure of the vessels on which the safety of the patient depends, destructive hæmorrhage may occur, or should it remain without producing this effect, the retention of a quickly putrifying substance may occasion inflammatory or typhoid disease. If not adherent, and retained only by an inert state of the uterus, contraction may sometimes be brought on, by friction of the abdomen, and firmly pressing on, or grasping the uterus above the pubes, and should a pain then occur, the mass will usually be pushed into the vagina, from which it can be easily removed, by grasping its substance with the left hand, while assisted by the cord held in the right, it is slowly and gently brought away.

3. *Hourglass contraction.* This term is applied to those

cases, where one portion of the uterus is contracted, and diminished in circumference, while the parts of that viscus above and below, remain dilated. It has been denied by some practitioners that this circumstance ever takes place, but though an unusual, it is by no means an impossible occurrence, nor can we doubt the testimony of many able and experienced accoucheurs on the subject. The uterus is divided into two cavities, in the superior of which the placenta is generally contained. The hand should be passed slowly through the os uteri, and if the placenta be in the lower cavity, it should be removed;—if in the superior cavity, the contraction in the circumference of the uterus should be gradually and slowly overcome, by employing the fingers as dilators, introducing one after the other, till the hand is passed, guided by the funis, and the whole mass of placenta withdrawn.

CHAP. XIII.

PROTRACTED LABOUR.

THIS term is applied to such cases as are more than twenty four hours in duration, and where the head is the presenting part. They may be divided into three species, varying according to the degree of danger, the nature of the difficulty, and the treatment required.

In the first species, are included those cases, wherein the efforts of nature are sufficient to accomplish delivery.

In the second those in which delivery cannot be safely entrusted to nature, from the occurrence of urgent symptoms, or from minor degrees of distortion, or disproportion.

In the third are included those labours, in which the

child cannot be brought away, without diminishing its bulk, from an extreme degree of distortion, and narrowing of the pelvis, or from the unusual size of the fœtus.

Protracted labour, in which delivery can be accomplished by the unassisted powers of nature. Uterine efforts may continue for several days, and especially when the first child is borne past the age of forty, it is, however, more usual to find that the pains intermit for many hours in such cases, so that labour cannot be truly said to continue the whole time, as there are sufficiently long intervals of ease to allow repose, by which the strength of the patient is recruited, and more time allowed for the gradual, and slow dilatation of the os uteri, vagina, and external parts; but sometimes, and too often, through the injudicious interference of friends and nurses, these refreshing and salutary intervals of repose are diminished, or entirely prevented: the patient is urged to walk about, to make voluntary efforts, and endeavour to excite, as much as possible, uterine contraction, before the parts are prepared for the transmission of the child, and while they remain rigid and undilatable. Such premature and ignorant attempts to hasten delivery, must inevitably produce the contrary effect, by exhausting the strength of the patient.

Labour may be protracted by a variety of circumstances; some of the causes of delay are easily discovered, and when understood, admit of being removed by judiciously directed measures.

1. *The passions of the mind* are the most frequent causes of protracted labour, especially fear, apprehension, surprise, or grief. We shall commonly find that when the mind is inspired with hope and confidence, a favourable and speedy termination will take place;—hence the necessity of avoiding in the lying-in room, the history of disastrous cases, with which old women of both sexes, are accustomed to

amuse their audience, which, however true, nevertheless exercise a depressing effect on the mind of the patient, diminish the activity of the uterus, and protract the labour.

2. *Deficient action of the uterus* may be occasioned by debility, or an inert state of its muscular fibres. If from general debility a tedious labour be anticipated, the system should be strengthened before parturition takes place, by a generous diet, and daily exercise abroad, and when uterine action has commenced, a little wine, or spirit may be safely and usefully taken.

The ergot of rye is a most valuable remedy when uterine contractions are feeble and flagging; the mode of giving it, is in the form of decoction: one drachm is to be boiled ten minutes with a quarter of a pint of water in a covered vessel, and of this, three table spoonsful taken every ten minutes or quarter of an hour, will often rouse the uterus into powerful and effective action, and produce the early and safe termination of a labour which had before been long and tedious. From having, on many occasions, experienced its efficacy, it is recommended as a perfectly safe and often most effectual means of exciting uterine contractions, in many cases superseding the necessity for the employment of instruments, which without this remedy, would have been indispensable.

3. *Distension of the bladder* is very frequently attendant on laborious labours, and may retard, or obstruct the passage of the head, especially if the patient has drunk large quantities of tea, gruel, or other fluids. In these cases, foreseeing the probable length of time which must elapse previous to delivery, the accoucheur should caution her to drink sparingly, and direct the urine to be evacuated every ten minutes or quarter of an hour; if there be much thirst, the patient should be supplied with oranges, or the fruits that are in season, which will be a better mode of

quenching it, than drinking large quantities of fluid. Should the voluntary efforts not suffice to empty the bladder, the catheter must be passed from time to time. If this be neglected, sloughing may probably ensue, or the laceration of that viscus, when the head descends, and under these circumstances if the patient survive, she will be rendered miserable, by a permanent fistulous communication between the bladder, and vagina.

4. *Rigidity of the os uteri, vagina, on external parts* when patients are advanced towards the middle period of life, and have not had children before, is very common, and though the pains are severe and frequent, the parts continue many hours, often for several days, hot, dry and unyielding, or moistened by a fluid, very different from their ordinary mucous defence. In these cases, bleeding should be had recourse to, before and during the time of labour, emollient and purgative enemas employed, the external parts fomented with hot water, and their relaxation will thus be promoted, and the expulsion of the child facilitated. The application of the extractum belladonnæ to the os uteri, when the rigidity exists in that part, has been suggested, and deserves a trial.

5. *The early and injudicious rupture of the membranes* is the frequent cause of that delay, which it is intended to remove, and it must be in every case avoided. The cyst of water forms a wedge, gradually increasing in size, which, preceding the fœtal head, dilates the passages, and prepares them for its easy transmission. In examining to discover the presentation and situation, the utmost caution is required, to avoid their rupture, especially during the pains, when they become tense and distended. If this has prematurely taken place, a sufficient dose of laudanum should be administered, to suspend for a time the uterine contractions, and spare the patient unnecessary suffering.

6. *Rigidity of the membranes* is usually mentioned as a cause of protracted labour, but rarely if ever does it arise from this circumstance, excepting when they contain so much liquor amnii, as to over distend the uterus, and interrupt its regular and effective expulsive contractions;—when satisfied that the delay arises from no other cause than this, they may be ruptured, if the os uteri is fully dilated, and the passages prepared to allow the descent of the head.

7. *A disproportion in the size of the head* from hydrocephalus, or premature ossification of the sutures and fontanelles, may be distinguished by examination; if not considerable, the natural efforts will usually suffice for its expulsion.

CHAP. XIV.

LABOURS REQUIRING INSTRUMENTAL ASSISTANCE.

After the expulsive efforts have continued many hours the skin becomes hot, and dry, the face flushed, the tongue white, and the pulse very frequent; the parts are generally swollen, but not always, and if rigidity exist, either at the os uteri, vagina, or external parts, instruments are improper until it is removed; but if the soft parts are yielding, and dilatable, the os uteri dilated, and the natural efforts insufficient, it is necessary to have recourse to instrumental assistance. Before this is employed, the practitioner should be fully convinced that the unaided powers of nature are not sufficient to accomplish the safe expulsion of the child: it is advisable to have a second opinion on the propriety of the measure, and this if possible should always be ob-

tained. It is highly improper to employ mechanical means, with a view to save time, at the solicitation of friends, of the patient herself, or indeed from any other motive, except a conviction, that parturition cannot be safely accomplished without them. Having decided on the necessity of having recourse to instrumental assistance, it is requisite to ascertain the state of the bladder, and rectum, the catheter must be passed, and the urine evacuated; the rectum emptied by enemas, and the accoucheur should discover with accuracy, the situation, as well as the presentation; this can be readily done, by tracing the sutures, and fontanelles, and by examining the ears of the child, as has been before described. Besides this, he should acquire a clear and exact idea of the nature of the existing difficulty, before he can employ instruments with advantage; whether it arise from a deficiency of room in the pelvis, a want of expelling power, from malposition, or disproportion in the size of the head. If the patient be in an excited or feverish state, blood should be taken from the arm, and this is more particularly essential, if there be any indisposition in the soft parts to yield.

The instruments employed in laborious and protracted labours, are the forceps, and vectis, by which delivery may be accomplished, without injury to either mother or child, or those used, where the disproportion is more considerable, and it is necessary to diminish the bulk of the head;—these are, the perforator, the crotchet, craniotomy forceps, and blunt hook. There are two species of forceps, in general use in this country, the short and the long;—of these, the former is most frequently employed and most easily applied. The forceps should be so contrived, as to add little to the bulk of the head, and therefore, Dr. Smellie's, as improved by the late able and ingenious Dr. Haighton will be found the most useful, the fenestræ

of which are widened, and adapted to receive the protuberances of the parietal bones. They are formed of iron, having concave blades with a concavity adapted to the convexity of the head, and wooden handles;—at the part, where the blade and handle unite, they are provided with a mortice lock, in order to fix them together after their introduction. These forceps are applicable in vertex presentation, when the head has descended to the outlet, the occiput being situated towards the pubes, and the face towards the sacrum; but when from cessation of uterine action, convulsions, impaction, or other causes it is necessary to hasten the birth of the child.

The short forceps are also used when the vertex presents, but from the face being situated under the arch of the pubes, and the occiput bearing on the perineum, there is danger of disorganization and sloughing of the soft parts; this will especially be liable to occur, if there be any deficiency of room at the outlet, from approximation of the ischia, or anchylosis of the sacro-coccygeal joint. These cases, which are generally long protracted, can be sometimes safely terminated by the forceps, should the contraction not be very considerable.

It sometimes though rarely happens, that the head of the child arrives at the outlet, without having made the turn by which the occiput is brought beneath the arch of the pubes, and the face is then situated to one side, and the occiput to the other. Here the short forceps are sometimes used, the turn may be made by which the occiput and face are brought into the transverse diameter of the outlet.

CHAP. XV.

USE OF THE SHORT FORCEPS.

When from an attentive consideration of all the circumstances of the case, we have decided on the necessity of having recourse to instrumental assistance, and that the short forceps is best adapted to afford it, the bladder should be evacuated, and the rectum emptied of its contents by an enema. The lower blade of the forceps, having been previously warmed, by holding it in water at a proper degree of temperature, should be slowly and cautiously insinuated, in a curved line, between the fingers of the accoucheur, previously introduced, and the head of the child, over its ear; when the first blade has been applied, so as to receive in its fenestra the protuberance of that parietal bone which is situated towards the left side, it must be retained in its position: and the two fingers of the accoucheur are to be placed on the opposite side of the head, or to the right, and over the ear of the child; then the second blade is to be passed slowly, between the fingers, and the opposite parietal bone; taking care, that the direction of the blades is such, as to make them properly and exactly antagonize, and lock into each other; if this be not readily accomplished, the second blade may be withdrawn a little, and slowly introduced again in a more favourable direction. In accomplishing this, extreme caution is required, to avoid the entanglement of any of the maternal parts, which would produce severe cutting pain. Having locked the blades together, it is usually recom-

mended to tie them; if this be done, the ligature should be slack, to avoid unnecessary pressure on the fœtal head. After having secured the forceps, we should recollect, that they are required *to assist* in the expulsion of the fœtus, and to aid rather than supersede, the expulsive contractions of the uterus. It is therefore proper, in ordinary cases, to wait till these efforts come on, and during a pain, exerting only a very moderate degree of extractile force, to move the handles of the instrument, slowly, and cautiously, from side to side, with one hand, while the other is employed at the same time, in supporting the perineum, and preventing the danger of its laceration, especially when the head is passing through the outlet. The caution suggested in tying the blades is equally necessary to be observed while extracting with the handles of the forceps; pressure on the fœtal head is unncessary, attended with danger, and must be avoided. Sudden extraction is always highly improper, and perseverance in cooperating with the expulsive powers, will generally accomplish the object, without injury to either mother, or child, while both may be sacrificed by operating in a violent, and hasty manner. As the head descends, and approaches the outlet, a change in the direction of the handles of the forceps is necessary, which should be raised gradually, towards the abdomen of the mother, to bring the occiput forwards and upwards, in order that its passage may take place in the curved line of the pelvis, in the direction described in the plate prefixed to this volume. Another difficulty which may require the employment of the forceps, is when the face is turned forwards, under the pubes, and the occiput is consequently situated in the hollow of the sacrum. This is always productive of a tedious labour, when the pelvis and fœtal head are of the standard size; but when the latter is unusually small, if the labour occur before the full term of gestation is complete, or the

pelvis be larger than ordinary, the child may sometimes be expelled without much difficulty. When discovered early, before the head has descended into the pelvis, the position may sometimes be rectified with the lever; but when it has descended into the cavity of the pelvis, and the case is lingering and attended with danger by applying the blades of the forceps, over the sides of the head as in a natural situation and presentation, and extracting in the same lateral direction, cooperating with the pains, we may facilitate delivery, if this be done while the head is in the cavity of the pelvis, and prior to its arrival at the arch of the pubis, the face when obliquely situated, may sometimes be turned towards the hollow of the sacrum, and the situation thus rendered natural. If, however, the symptoms do not lead us to use the forceps until the head has arrived at the outlet, this change cannot be accomplished, and should not be attempted; the utmost caution is required to prevent laceration, as the pressure on the perineum is considerable;—extraction should be very gradually, and slowly made, guarding the perineum from danger, by a steady and firm support with the hand; and directing the head upwards, forwards, and outwards, when it begins to bear on the external parts, by elevating the handles of the forceps gradually more and more towards the abdomen of the mother.

CHAP. XVI.

THE LONG FORCEPS.

The long forceps are more difficult to use than those of ordinary dimensions, and are applicable in cases, where there is such a degree of contraction at the brim, as prevents the descent of the head after the os uteri has been long dilated. They are curved in a direction corresponding with the curve of the sacrum, and may sometimes supersede the necessity of performing the operation of embryotomy. In the cases referred to, although the upper opening of the pelvis may be deficient in room, the cavity and outlet may equal, or exceed the standard dimensions, a difficulty which may, by the long forceps, be often readily overcome without injury to either mother or infant; they are therefore most valuable instruments. It is necessary before employing them, to acquire a distinct and accurate idea of the presentation and situation of the child, and the cause of the existing difficulty. It has happened, that after having submitted to the operation of embryotomy, under the care of one practitioner, the woman has been in a future parturition, delivered by another of a living child, with the long forceps. To use them successfully the same general rules must be observed, which were given in the last chapter, the same cautions attended to, and the rectum and bladder evacuated.

In passing the blades, the curve of each should correspond with the curve of the sacrum, and they are to be passed over the forehead and occiput of the child, instead of over the parietal bones; the lower blade being intro-

duced first. Having accomplished the locking, a slow and gentle movement of extraction should be made, cooperating with the pains, directing the handles from side to side, without violence, or any sudden exertion of force, or bearing the instrument against the parts of the mother. When the head has passed the brim, and advanced within the cavity of the pelvis, if there exist no want of room in it, or at the outlet, and if the uterine contractions be strong and effective, the birth will be quickly accomplished without further instrumental assistance; the long forceps may therefore be withdrawn, but if from exhaustion, there is a deficiency of pain, should there be hæmorrhage, or other alarming symptoms, an unusually large head, or a narrowing and distortion of the pelvis below, as well as above, the forceps may be reapplied over the parietal bones, and the delivery accomplished as before described.

CHAP. XVII.

THE VECTIS.

Having detailed the method of applying the forceps, we now have to consider the mode of employing the vectis, which may be, in judicious hands, a highly useful instrument. It ought, however, rather to be called 'the tractor,' in compliance with the suggestion of one of our most enlightened and scientific accoucheurs. It possesses some advantages over the forceps, as it does not occupy more room in the pelvis than a single blade; and practitioners who find a difficulty in using forceps, may with the lever succeed in rectifying malposition at the brim; but it is an

instrument, safe or not, according to the manner in which it is used, and the ideas whether clear or otherwise, of the individual who employs it. The change of certain malposition of the head, previous to its descent, and the conversion of an unfavourable into a vertex presentation, are advantages which can sometimes be obtained with the vectis. Before using it, the external parts as well as the os uteri should be dilated, and the bladder and rectum evacuated. Two fingers of one hand should be placed on that part of the head, to which it is intended to apply the vectis, and the blade is to be gradually, slowly, and cautiously glided under them and over the head; and if this be the occiput, it will afford sufficient hold to exert a moderate degree of extraction; neither the handle, nor any other part of the instrument should bear at all on the soft parts, and in bringing down the head, it should be borne from side to side, and turned slowly and progressively, so as to keep its long axis in apposition with the long axis whether of the brim, or outlet, observing the curved line of the pelvis, by drawing down in a direction downwards, forwards, upwards, and outwards.

CHAP. XVIII.

EMBRYOTOMY, AND THE SYMPTOMS WHICH INDICATE THE DEATH OF THE FŒTUS.

The death of the child may occur either at the period of labour, or may have taken place some time before; in the latter case, it will be in a state of decomposition, more or less advanced, according to the cause of its death, and the time which has elapsed since. If life have been long extinct, its size is altered, the bones of the head are loose; but if death has taken place during labour, or a short time before, there will be no change in the size of the head, which requires as much room for its transmission, as if it were living. The causes which may destroy the child, are various: those occurring during labour, are its long continued exposure to the violent expulsive efforts of the uterus, pressing its head against the bony pelvis, and pressure on the funis, interrupting its circulation.

Accidents of any kind, falls or blows on the abdomen may destroy the life of the child, without occasioning its immediate expulsion; or diseases in the parents, of which the venereal is one of the most frequent. We may ascertain, from several circumstances, that the child is dead: the most usual previous indications are when the mother, who before could readily feel its movements, has found them growing gradually weaker and weaker, and after a short time, they cease altogether; the abdomen sinks, and although smaller, it becomes more cumbersome, there is a feeling of coldness and weight, falling to which side soever the patient turns herself; the breasts shrink, and are

flattened; the eyes are surrounded by a dark or bluish circle; the nose becomes slender, the lips pale, the tongue is white, or brownish, the appetite is either impaired or lost, and the sleep is unrefreshing and disturbed by dreams. These symptoms may continue some days, without the patient being aware of the cause from whence they originate, until the membranes giving way, from incipient decomposition, there is, with or without pain, a gush of the liquor amnii, and the cord in a softened state, or one of the limbs of the child is pushed through the os uteri, and the skin may be emphysematous, or the epidermis separating. If the head be the presenting part, the bones on examination will be felt moveable, or projecting over each other:—the discharges have a peculiarly fœtid, putrid smell, and from these circumstances we can decide with certainty, that the child is dead. In a doubtful case, as to the propriety of embryotomy, it is always advisable to have a second opinion; for it has happened, that by the gradually increasing force of the expelling powers, a living child has been born, which a hasty and negligent accoucheur has considered as a dead one. It has also happened, that soon after the perforator has been employed, and when little if any of the contents of the head has been evacuated, violent and forcing pains have come on, and pushed away a living child, which has continued to breathe for several hours,—of this horrible occurrence, we could detail examples; but when the signs of death are decisive, and there is either a contracted pelvis, or threatening symptoms, there can be no reason for keeping the patient in a state of suffering and danger, and embryotomy should not be delayed. When the head presents and the long forceps have been tried in vain with certain signs of a dead child, its detention may arise from narrowness of the pelvis, or in consequence of the head having become enlarged from disease, it is then

necessary to open it, and by removing the greater part of the brain, to reduce its size so as to allow it to be extracted. The patient lying near the edge of the bed, the fore and middle fingers of the left hand are to be introduced, until they reach one of the fontanelles; then taking the perforator in the right hand, it is to be passed along the hollow between the fingers, already introduced, and applied to either of the fontanelles, or to the sagittal suture, keeping the instrument fixed in that position, by the fingers of the left,—a semi-rotatory motion is given with the right to the handle of the perforator, and the summit of the instrument once within the skull is to be passed downwards immediately towards the base, the handles are then to be separated from each other, in the long diameter of the pelvis, and turned within the skull in every direction to break down and discharge the cerebral mass, and thus diminish the size of the head. The left hand should be kept in contact with the perforator, both while this is done and at the time the instrument is withdrawn, and a scoop may be used, or a common spoon to remove the brain, which will be much facilitated, if the opening in the direction of the long diameter be made sufficiently large, to allow the brain freely to escape. If the long forceps have been tried before employing the perforator, they will be of great service after the size of the head is reduced, which may be held by them steadily fixed, and thus the instruments employed in embryotomy can be most advantageously applied. If the handles are kept close together, as the head collapses, it can be extracted with much greater facility and safety by the forceps than the crotchet, which often breaks off a portion of bone, and thus the vagina or uterus may be excoriated, or lacerated without great caution. It is therefore best always to use forceps for the purpose of extraction; Dr. Blundell recommends those of Mr. Holmes, which have several tooth-like

processes in one blade, with corresponding concavities in the other, and they are well adapted to remove the head when in a state of collapse, after the brain has been evacuated. They should be passed, remembering the curve of the pelvis, and the fœtus extracted downwards, forwards, upwards, and outwards, covering the projecting and rough pieces of bone, if there be any, with the fingers to prevent excoriation, and thus the patient will be saved from unnecessary suffering. The operation of embryotomy may occasionally be required in cases of congenital hydrocephalus, but although not an unfrequent disease at birth, it seldom obliges us to have recourse to this operation.

Another case requiring instrumental assistance is the separation of the child's head, and its being left within the vagina, or uterine cavity, in consequence of the accoucheur having dragged at the feet, and not having observed the curved line of the pelvis, it is separated from the trunk, and left in utero; this will be very likely to take place, if in a state of advanced decomposition. Sometimes the action of the uterus throws it into a favourable situation to be discharged, so that it escapes without assistance, but this is a circumstance extremely rare. In consequence of the separation having taken place at the cervical vertebræ, it lies in utero in the most favourable situation for the use of instruments, the crotchet may sometimes, directed by the finger, be made to fix upon the base of the cranium, through the foramen magnum, by which the head may be brought through the cavity of the pelvis, and if this fail, the forceps before described will often without much difficulty accomplish the purpose. The French accoucheurs are in the habit of employing in these cases, an instrument called a tire tete, which consists of a shank of sufficient length to be passed into the uterus, it is formed of iron, and to its summit, a small piece of iron is fixed, with a hinge, to the extremities

of which a ligature is attached. It is to be passed into the interior of the skull, through the foramen magnum, with the cross bar parallel with the shank of the instrument, and when within the cranium, by drawing the ligature, the cross bar becomes transversely situated, and lying across the interior of the occipital bone over the foramen magnum, the head can be removed with facility.

CHAP. XIX.

PREMATURE LABOUR A SUBSTITUTE FOR EMBRYOTOMY.

When there exists such a degree of deformity or contraction, as to render it impossible for parturition to take place at the full time, without having recourse to the perforator, by adopting the measures hereafter described, there may be a probability in any future pregnancy of rescuing the infant from inevitable destruction, and ourselves from the necessity of performing an operation which, supposing the child is living, nothing but the inevitable injury or death of the mother, if it were omitted, we conceive can possibly justify. The smaller size of the fœtal head, at seven or eight months, the less complete ossification then, than at the full period of gestation, the greater separation of the sutures and fontanelles, and therefore its easier compressibility, will in some instances, allow it to pass; and the parent may thus have a living child, which must be sacrificed if it continue the full time in utero. Children born at seven months, are usually weaker at first, than if retained to the termination of the ninth, but there are not wanting many instances of seven months' children being reared, and

from this to the eight month, the chances of their living are gradually increased. We are in such instances to bring on premature labour, and the evacuation of the liquor amnii is the most safe and certain means of doing this. At the conclusion of the seventh or between that and the eighth month, the patient who has such a degree of distortion, as would prevent delivery when the time of gestation is complete, should inform her accoucheur,—(and it is recommended, that operations in midwifery should seldom or never be attempted without a second opinion); and labour may be safely brought on in the following manner. The patient lying on her left side, the two first fingers of the left hand being passed so as to touch the os uteri, one of them should be slowly and cautiously insinuated, without violence, or hurry, until the membranes distended with liquor amnii can be felt: keeping the finger in contact with the membranes, the stilette of a catheter should be held in the right hand, and passed upon the fingers of the left, and when its point (which should rather be obtuse than sharp) reaches the ovum, a puncture should be made, giving the stilette a rotatory motion, by rubbing it between the finger and thumb of the right hand, while this is done, its point must be kept steadily in the same place, and must only touch the membranes. When the opening is made, the discharge of water will show that the object is attained, and the stilette should be carefully withdrawn: uterine contraction may come on shortly, or a day or two may elapse before its occurrence, and during the interval, the patient should avoid exertion, and continue, as much as possible, in the recumbent position.

CHAP. XX.

PRESENTATION AND SITUATION.

By the term presentation, we describe that part of the child which is placed over the os uteri, and which would therefore pass first into the pelvis. The cause of the varieties which occur, it is not easy to explain; they may perhaps be in some degree influenced by the movements of the child itself, by the quantity of liquor amnii, or the size and shape of the pelvis.

1. That species of presentation which is attended with least danger to both mother and child, is the most frequent, and is vertex presentation. When this is the case, it is called by some, though not accurately, natural presentation, in contradistinction to that of other parts of the body, which they term preternatural.

2. The next in the order of frequency is presentation of the lower extremities, it is usually longer before delivery takes place, and there is more danger to the child.

3. Presentation of the body is attended by much more danger to both mother and child than either of the former, it is not so frequent, and the operation of turning is generally indispensable.

4. Presentation of the face is not of usual occurrence, it should be rectified by the accoucheur if possible, and if this cannot be done, it is often necessary to turn.

The different parts presenting may commonly be discovered before the rupture of the membranes, and in examining, care must be taken to avoid pressing on them

during a pain. After the membranes are ruptured, it is perfectly easy to distinguish with precision, the presentation and situation of the child. In presentations of the vertex or face, the bag assumes a rounded shape, it is broad, and expanded, and in vertex presentation, the sutures, fontanelles, the globular shape of the head, and its hard unyielding surface can generally be felt.

In presentation of the limbs, the membranes protrude in a lengthened or conical form, and the smaller size of the part to be felt within them will sufficiently distinguish this presentation from that of the face or vertex.

In breech presentation, soon after the membranes are ruptured, meconium is often discharged, but this occasionally takes place in vertex presentation.

In presentation of the arm, and in certain others the unassisted powers of nature will sometimes produce what is termed spontaneous evolution, by which the presenting part recedes from the os uteri, and one more favourable becomes placed over it; it is however better in most cases to turn, rather than wait for this change, the occurrence of which is very uncertain;—if this be done early, before the liquor amnii has been long discharged, it may be usually accomplished without difficulty, the child will have a better chance of safety, and the danger and suffering of the mother will be materially diminished. To draw down by the arm, when this is the presenting part, would only increase the difficulty: if the child be at the full time, and the pelvis of standard dimensions or at all contracted, the arm and head cannot pass together;—the feet should therefore be brought down if the passages are not in a rigid and unyielding state.

By situation is meant the relative position of the child, with respect to the pelvis and the bones of which it is composed; thus the vertex presenting, the head may be

situated at the brim, the cavity, or at the outlet, the face may be situated towards the right, or left acetabulum; it may be directed towards the symphisis pubis, or, as is more usual in its descent, it may be resting in the hollow of the sacrum.

CHAP. XXI.

CLASSIFICATION OF LABOUR.

Several modes of arrangement have been adopted, varying according to the views of those who have written on the subject, but which not being founded on circumstances of constant occurrence are of little utility.

If the ovum be discharged between the time of conception, and the seventh month, it is termed miscarriage or abortion; if this occur between the seventh and ninth month, it is called premature labour; and when nine months are complete, it is usually and correctly denominated parturition or labour. The causes of labour at the full time are the complete developement of the fœtus, and the uterine cavity admitting no further dilatation; but premature labour or abortion may be brought on by accidental circumstances, such as blows, falls, or fatigue, which by separating the placenta from its attachment, may occasion its expulsion at any period of gestation. Labours have been divided into three kinds;—those wherein the efforts of nature are sufficient to accomplish delivery;—those cases which require instrumental or manual assistance, in consequence of malposition, want of room, or the occurrence of certain disorders which render it necessary to hasten

the birth of the child, by turning, or by the use of the forceps or vectis;—and those wherein it is necessary to diminish the bulk of the fœtus, before it can be brought away: these varieties, together with the means to be employed where instrumental aid is requisite, have been previously described.

CHAP. XXII.

VERTEX PRESENTATION.

VERTEX PRESENTATION is the most usual, and the head may be placed at the brim in four different situations.

1. The occiput may be placed to the left side, and inclining forwards, it is situated over the inner side of the left acetabulum, and the face turned towards the right sacro-iliac symphisis. The sagittal suture is placed in the oblique diameter of the pelvis, in a line drawn from the left acetabulum to the right sacro-iliac joint, and when the head is pushed down, the smaller fontanelle which is in the fore part of the pelvis, will pass from above to below, and from left forwards, and the larger fontanelle will pass in the opposite direction. These alterations of situation having taken place, the occiput sinks below the arch of the pubis, the chin comes into apposition with the sacrum, the head is pushed towards the external parts, and if no rigidity exist, the delivery is soon accomplished. When the perineum is pressed on by the head, it becomes thin and stretched, and forms a tense elastic swelling; the utmost care is requisite to preserve it from laceration, and the hand should be held firmly against it during the pains which are towards the conclusion of labour violent and

forcing. This pressure of the hand will besides guarding the perineum, have the effect of directing the occiput upwards and outwards, and facilitate its passage from beneath the arch of the pubes. When the head is born, it makes a quarter turn, to allow the exit of the shoulders, in the long diameter of the outlet, which are speedily followed by the body and lower extremities.

2. In the second variety the sagittal suture is situated obliquely, and passing in a line drawn from the right acetabulum to the left sacro-iliac symphisis, the smaller fontanelle anteriorly situated, and the larger posteriorly. The changes which take place are nearly similar to those in the case last described, except that the occiput turns to the right, instead of to the left in its descent.

3. In the third and fourth variety of vertex presentation, the head presents, but its situation is just the reverse of the two former, in both of which the occiput is placed in front of the brim of the pelvis, but in the third and fourth, it is situated posteriorly. The occiput may be placed to the left, and the face to the right side; when the head descends within the pelvis, the occiput, known by the position of the ear, and the smaller fontanelle, sinks into the hollow of the sacrum, while the forehead, and larger fontanelle as they approach nearer the arch of the pubes, are raised more and more towards the symphisis. As labour advances, the occiput being pushed downwards towards the perineum, that part is violently stretched, and in danger of laceration, and the chin slowly emerges from beneath the arch of the pubes; the head being expelled, it makes a quarter turn, and the shoulders follow in their long diameter in the same manner precisely as happens when the child comes into the world with the face below.

4. In the fourth variety of vertex presentation the smaller fontanelle and occiput are towards the right side and backward, and the larger is inclined forward and to the left;

the changes which take place in the situation of the head, are precisely analogous to those which occur in the case last described. The occiput passes into the hollow of the sacrum, and the forehead is more and more pressed against the symphisis pubis, the head is thus pushed into the cavity, and gradually expelled, the face lying under the arch of the pubis, and the occiput towards the perineum, as in the third variety of vertex presentation.

CHAP. XXIII.

TURNING.

THERE are several circumstances which may occasion a necessity for turning, and as whatever may have been the presentation it is converted by this operation into a footling case, it may not be improper here to describe the mode of its accomplishment. This operation should not be undertaken, unless called for by urgent necessity, nor ever hastily performed, but when this necessity exists, the sooner it is done after the os uteri has become dilated, the more chance there will be of the patient's safety, and the preservation of the life of the child. The most frequent circumstances for which turning is required, are transverse presentations, in which there is extreme danger of laceration of the uterus, the attachment of the placenta to the mouth of the uterus or to its edges, and the prolapse of the umbilical cord. Previous to performing this operation the rectum and bladder should be evacuated, the left hand and arm, especially over the knuckles, should be lubricated, and the nails pared, the arm bare, and keeping the hand in the *intermediate position between pronation and supi-*

nation, the passages being sufficiently dilated, the two first fingers are to be slowly and gently passed into the vagina, if the external parts are lax and dilatable; these may be followed by the remaining fingers, slowly and successively introduced, with the utmost gentleness and caution, avoiding sudden effort, or the exertion of violence, the hand will be received without difficulty into the vagina, following the curve of the pelvis. When arrived at the os uteri, it is proper *slowly to change the position to supination*, directing the forefinger towards the os uteri, and here as well as at the external parts, it will be right to wait for a time, if from any existing rigidity, there is difficulty in passing the hand; but should the necessity of turning immediately be evident, the fingers may be slowly introduced one after the other in the absence of the pains, and by separating them, employed as dilators;—no violence should be used, which would in all probability occasion laceration of the uterus, and the destruction perhaps of both mother and child. If at the time of passing the hand, uterine contraction comes on, it should be held quiescent, until the pain is over, and it is only during the cessation of pain that turning can be safely accomplished. It is essential to be slow, deliberate, and cautious, to avoid the possibility of mistaking one part for another, and thus rendering the case more perilous than before. A careless or hasty operator might mistake a shoulder for one of the hips, an elbow for a knee, or breech presentation for that of the side, which deliberate and careful examination will enable us to distinguish readily from each other. Having clearly distinguished the presentation, and introduced the hand through the os uteri, it should cautiously be passed through the membranes into the cavity of the ovum, while uterine contraction is off. If this is done, within a short time after the discharge of the liquor amnii, the operation is rendered much easier, than if deferred till the uterine cavity is diminished. The presen-

tation should be made out early, in order to accomplish this operation, in the best and safest manner; but it unfortunately happens, that we have not always an opportunity of turning, until some time after the waters have been discharged, and the womb contracted, we may perhaps then find the os uteri rigid and undilatable, and the pains urgent and almost unceasing. Under either of these circumstances, it is necessary to defer turning for a time, to bleed to the amount of from eighteen, to twenty-four ounces, and to administer a large dose of tinctura opii, after which, such a degree of relaxation is often produced, that the hand can be passed, and turning accomplished without difficulty. In addition to the means before recommended, emollient enemas may be employed,—the belladonna plaster to the abdomen, or the application of the extract to the os uteri may be tried, where that part is rigid and undilatable. Having overcome the difficulty, and passed the hand within the uterus, it should be cautiously and slowly insinuated, during the intermission of the pains, over the anterior surface of the infant to the feet; and if, while doing this, a pain comes on, it must be introduced no further until the contraction of the uterus has ceased. It is best in every case, to bring down both feet together, but if this cannot be readily accomplished, if we draw one into the centre of the pelvis, and fix it there, by a fillet, the other will soon follow in the same direction. Accidents in turning, laceration of the uterus and vagina, fractures and separations of the epiphyses of the bones, may be occasioned by unwarrantable and ignorant haste and violence, or by the accoucheur attempting to turn in a direction, contrary to the natural flexion of the joints. Having brought down the feet, the labour becomes precisely the same as if it were originally a presentation of the lower extremities, the method of treating which is hereafter explained.

CHAP. XXIV.

PRESENTATION OF THE LOWER EXTREMITIES.

By this term we describe the presentation of the breech, the knees, and the feet; the two former of these are not unfrequent. The foot has been in many instances mistaken for the hand, and the hand for the foot, which, by a little attention, might easily have been distinguished from each other. The situation and projection of the heel, the difference in length of the toes and fingers, will readily enable us to decide on the presentation, where either extremity is situated over the os uteri. The presentation of the lower extremities is next in frequency to that of the head, and we have seen that all other presentations are rendered, by the operation of turning, presentations of the feet. If, after the lower extremities are expelled, the passage of the body be long delayed, and pressure consequently made for any length of time on the funis, the child is considerably endangered, and frequently destroyed. At the outlet, the head is often impacted, if the proper direction be not observed during its extraction, and should considerable force be employed in a wrong direction, it may be separated from the trunk, and left in the vagina or uterus, especially if the child have been some time dead, and consequently, in a state of advanced decomposition.

I. The feet may present at the brim of the pelvis, in four directions.

1. The heels may be placed towards the inner side of the left acetabulum, and the toes point towards the right sacro-iliac symphisis. If it be necessary, from the ex-

hausted state of the patient, from convulsions, or any other unfavourable occurrence, to hasten delivery, *the left hand* should be employed, and introduced, observing the directions given in the description of turning; the thumb should be placed round the left leg of the fœtus, and the fingers round the right, just above the ancles, then, by a slow and cautious movement, they may usually be brought without difficulty, towards the external parts, taking care that the umbilical cord, or placenta be not entangled and brought down at the same time. By the continuance of the pains, the body is soon expelled, and when so far advanced, that the axillæ are on a level with the external parts, the body of the child being properly supported, must be held towards the side, by one hand; the accoucheur should then pass one or two fingers of the other over the shoulder, and slide an arm down by the side of the face; having done this, the other arm is to be extricated by the same means, holding the body towards the opposite side, and out of the way at the time; the head will then be the only part remaining, and it may be readily brought away in the following manner. Two fingers of the left hand being passed into the vagina, should press on the upper jaw below the nose, or be insinuated into the mouth of the child, avoiding much pressure on the lower jaw, which will be situated in the hollow of the sacrum and below, while the two first fingers of the right hand are to be placed, one on each side the occiput, which is situated towards the symphisis pubis, and above: then, by a combined movement of both hands, the chin is to be lowered on the chest, the occiput brought under the arch of the pubes, and the head can thus be extracted without difficulty, in a direction downwards, forwards, upwards, and outwards.

2. In the second variety of feet presentation, the heels are towards the right, and the toes towards the left side.

If assistance be necessary in bringing down the feet, it is to be rendered with *the right hand*, instead of the *left*, as in the case last described, and the same general rules for accomplishing the extraction of the arms, body, and head, are applicable in both cases.

3. In the third position, the heels are situated at the right sacro-iliac symphisis, and the toes point towards the left acetabulum. Here *the right hand* should be employed, and it is necessary to turn, in order that the abdomen of the child may be brought underneath.

4. In the fourth variety, the heels are in apposition with the left sacro-iliac symphisis, and the toes are directed towards the right acetabulum; *the left hand* should be used, but in extracting, it is necessary to turn, and bring the abdomen underneath, as in the last case.

II. THE KNEES are liable, by a careless examiner, to be mistaken for the elbows, or the shoulders, but their distinctive characters are easily recognized; the patellæ, the legs and thighs cannot fail clearly to demonstrate the part which presents. The feet are usually first expelled, and if manual assistance is requisite, the rules given for the management of foot presentation are applicable, and sufficient to terminate the case successfully.

III. THE NATES are known by their roundness and elasticity, by the parts of generation, the anus, and usually, an early discharge of meconium will enable us to distinguish this presentation: the labour is always protracted, and the child longer in passing, than when the feet present; but as soon as the breech is expelled, the case becomes the same as if it were originally a foot presentation, and similar directions are applicable in both cases.

CHAP. XXV.

PRESENTATION OF THE BODY.

In this division are included those labours, in which either the abdomen, the back, the loins, the chest, or the shoulders present. They are not so frequently met with as vertex or breech presentation, and are usually productive of much more difficulty.

I. The back is readily known by its size and elasticity, by the spinous processes of the vertebræ, the ribs on one side, and the scapulæ on the other; the exact situation of the child is thus easily ascertained.

The head may be placed either to the right, or the left side.

1. The back presenting, the body must lie across; the head may be resting over the left iliac fossa, and the feet over the right. The *right hand* must be passed in *the supine position*, and having reached the feet, the turning is accomplished, by bringing them towards the right acetabulum.

2. The back presenting, and the body lying across, the head may rest over the right iliac fossa, and the feet over the left; here *the left hand* should be used in turning *in the supine position.*

II. Abdomen presentation. This is a situation of the utmost danger to the child. It is readily distinguished by feeling the umbilical cord, the edges of the ribs in one direction, and the pubes and parts of generation in the

opposite: the situation is easily discoverable, here the child lies across the brim of the pelvis, bent in an unnatural curve, the feet over one iliac fossa, and the head over the opposite.

1. If the head be placed over the right iliac fossa, and the feet over the left, the abdomen presenting, *the left hand* should be used in turning.

2. When the head is situated over the left, and the feet over the right iliac fossa, it is best to employ *the right hand* to turn and bring down the feet.

III. Thorax presentation. When the thorax presents, the child is bent in an unnatural curve, and the utmost caution is requisite, as in all transverse presentations, to avoid laceration of the uterus. In such cases, it is always advisable to turn, soon after the liquor amnii is discharged, for if the operation be long delayed, the difficulty of turning, and the danger to both child and mother, are very materially increased.

1. The thorax presenting, the head may be towards the left, and the feet to the right:—here *the right hand* should be employed.

2. The thorax presenting, if the head is situated to the right, and the feet towards the left side, *the left hand* is the most suitable to be employed in turning.

IV. Hip presentation. The rounded surface, soft and compressible, will enable us to judge respecting presentation of the hip; the extremity of the spinal column, the anus, and organs of generation will sufficiently characterize the situation of the child.

1. The right hip presenting, the head may be placed to the left, and the feet to the right side, the back being towards the symphisis pubis, and the abdomen towards the

promontory of the sacrum. In turning, when the child is thus situated, *the right hand* should be used, and passed into the uterus, *in the supine position*, to bring down the feet.

2. The right hip presenting, the head may be situated to the right side, and the feet to the left, the abdomen towards the pubes, and the back towards the sacrum; —*the left hand* can in this case be used with most facility in turning, it should be carefully insinuated over the anterior surface of the infant, *in the prone position.*

3. The left hip presenting, the head may lie over the left iliac fossa, and the feet over the right, the abdomen is situated towards the pubes, and the back towards the sacrum:—here in turning, *the right hand* should be employed.

4. The left hip presenting, the head may be placed to the right, and the feet to the left, *the left hand* should be used to turn, and in every case wherein turning is required, the success and safety of it depends on its being accomplished in a slow, and gentle manner, as violence, and haste are often productive of the most fatal results, especially in transverse presentations, in which the lateral parietes of the uterus are stretched so much, by the unnatural position of the child, that there is utmost danger of laceration.

V. PRESENTATION OF THE SHOULDER OR ARM. These are some of the most difficult cases which can occur, but if early aware of the presenting part, the accoucheur may sometimes return it, by passing the hand, and cautiously placing the arm which has descended, over the opposite iliac fossa: this can only be done safely, during the intervals of the pains, and no force whatever should be used, as fractures of the limb, laceration of the vagina, or uterus may be produced; if this can be accomplished, the head will probably be pushed towards the brim, and by gra-

dually sinking into, and filling the cavity of the pelvis, the further descent of the arm will be prevented. When this cannot be accomplished, it is necessary to turn, and if the passages, and os uteri are sufficiently dilated, it may be done with perfect safety, but should there be rigidity in either the one or the other, no attempts should be made, until they are in a state more favourable, and will admit, without difficulty, the introduction of the hand and the passage of the child. A large dose of tinctura opii must be given, if under the circumstances before alluded to, the pains are violent and forcing; blood should be taken from the arm, and before turning, an accurate knowledge of the situation of the child obtained, and the right or left hand employed, according to its relative position.

The presentation of the shoulder is known by its roundness and elasticity, by its connexion with the scapula on one side, and the clavicle on the other. In this position, after the sixth or seventh month, it is very difficult for a child to pass through a pelvis of standard dimensions. We have been advised by high authority to wait until spontaneous evolution takes place, an occurrence which is very uncertain, and should turning be ultimately required, the operation will be found, from the diminished capacity of the uterus, much more difficult and dangerous. In such cases, it is therefore better to turn early, and to employ the right or left hand, according to the situation of the child.

The right shoulder may present in two ways.

1. The head may be placed to the left, and the feet to the right, the back being towards the pubes, and the toes and abdomen in the opposite direction.

The right hand should be passed, *in the supine position*, into the uterus, and the feet brought forwards, so as to bring the heels towards the right acetabulum.

2. The head may be situated in the right iliac fossa, the back towards the sacrum, the abdomen and the toes in front. *The left hand* is to be passed into the uterus, *in the prone position*, to bring down the feet.

The left shoulder may also present in two directions.

1. The situation of the head may be over the left iliac fossa, and the toes directed towards the right iliac fossa.

Here *the right hand in the prone position* should be slowly passed, the feet grasped, and the child turned, by a gradual, cautious, and gentle movement.

2. The head may be situated over the right iliac fossa, and the feet resting over the left. Its back will consequently be above, and forwards, and the abdomen below and backwards. *The right hand* should be used to bring the feet down, and passed into the uterus in the *intermediate position between pronation and supination*:—the hand should thus be glided from right to left to the feet, which should be brought towards the left acetabulum.

Presentation of the arm was formerly considered one of the most formidable and dangerous occurrences which could happen, and it was not unusual to amputate the extremity. Violent, and generally fruitless attempts have been made, on many occasions, to return the arm, by which, the limb has been often injured, and the parts of the mother bruised, inflamed, or lacerated.

Turning is necessary in these cases, and the safety and facility of the operation depends on its not being long delayed, and the cautious and gentle manner in which it is accomplished.

1. If, from examining the arm and hand, the head is found to be situated to the left, and the toes to the right, *the right hand* should be employed.

2. If the head be lying towards the right, and the toes to the left, *the left hand* should be used in turning.

CHAP. XXVI.

FACE PRESENTATION.

The presentation of the face is one which it is almost impossible to mistake; the nose, mouth, borders of the orbits, the chin, and frontal suture, are readily distinguishable and sufficiently characteristic. It is attended with danger, both to mother and child, and may occasionally be changed into a vertex presentation, by passing the lever in the absence of pains over the occiput, and drawing the vertex towards the centre of the pelvis: sometimes this can be done by the fingers of the accoucheur alone;—if it cannot be accomplished, it may be necessary to turn. These cases may be terminated by the efforts of nature, but they are always protracted and harassing, and if the patient's strength be exhausted, or convulsions produced by the violent and long continued expulsive uterine contractions, if we turn after failing with the vectis or hand to rectify the situation and presentation, it is preferable to waiting for the slow expulsion of the child, by the unaided, and sometimes inefficient contractions of the uterus alone.

Of this presentation there are four varieties.

1. The face may present, so that the forehead may be to the left side, and the chin to the right. Should the forehead be pushed downwards and the chin be directed upwards towards the spinous process of the right ilium, the lever may be passed over the occiput, which may be drawn down with the right hand, while the accoucheur elevates the forehead with two fingers of the left hand, and the vertex will thus be brought into the centre of the pelvis.

If this cannot be done, and it is necessary, from alarming symptoms, to hasten delivery, *the left hand* must be introduced, passed along the anterior surface of the child to the feet, and turning slowly accomplished.

2. The face presenting the head may be in the opposite direction to that which is last described; the chin being to the right and the forehead to the left. If the chin be elevated towards the left ilium, the vectis should be applied over the occiput; if not successful, and it is necessary to hasten delivery, *the right hand* must be employed to turn and bring down the feet.

3. When the face presents the forehead may be situated towards the right sacro-iliac synchondrosis, and the chin towards the left acetabulum. Should turning be required, *the right hand* must be used, if it cannot be changed by the vectis or hand into vertex presentation.

4. In the last variety of face presentations, the forehead lies towards the left sacro-iliac synchondrosis, and the chin towards the right acetabulum. Here if unsuccessful with the vectis or hand, *the left hand* is to be passed, in order to turn the child, if that operation be deemed necessary.

The use of instruments, and the operation of turning is not recommended, until a fair trial has been given to the natural efforts. These will very frequently succeed in expelling the head, if the pelvis be of standard dimensions and the pains effective, the occiput will be pushed along the hollow of the sacrum, but there is extreme danger of laceration of the perineum; in some instances face presentation is resolved without artificial assistance into presentation of the vertex.

CHAP. XXVII.

MANAGEMENT AFTER PARTURITION.

After delivery, whether natural or instrumental, it is necessary to attend to certain rules, that we may as much as possible, ensure the recovery of the patient. Parturition is not followed by the same degree of exhaustion in women employed in manual labour as in those moving in a different sphere of life. The wives of labourers in the country, accustomed to hardships and privations, are soon able to resume their duties, but in towns, from the more sedentary habits commonly indulged in, this process is usually longer in its continuance, requires more care and attention, and is often productive of serious and fatal consequences. In the West Indies, the slave women are often seen in the plantations the morning after their confinement, and their labours are usually short and easy; cases of difficulty and danger are to them almost unknown.

After parturition, the wet clothes should be removed from the bed, and dry ones substituted, without elevating the body of the patient to the sitting posture, twenty or thirty drops of tincture of opium administered, the room should be kept still, and of a moderate temperature, the curtains drawn, and she should be left to repose. If it be a first labour, she will not be generally troubled with after pains, which are usually severe in those who have borne many children, increasing in their strength after every subsequent labour. They are produced by contractions of the uterus, sometimes for the expulsion of coagula remaining within its cavity; a moderate dose of laudanum with camphor mixture is usually the most effectual remedy, after the bowels have been gently acted on by aperients.

After pains should be carefully distinguished from the pain produced by inflammation, which requires a different mode of treatment.

The diet for the first day or two, should consist only of gruel, tea, or barley water; after the first three or four days, light pudding, eggs, or a little boiled chicken may be allowed, but even at this time, the caudle which is composed of wine, gruel, and spices is unsuitable, and ought not to be taken. On the second day after delivery, the patient's bowels should be opened, and for this purpose, a dose of oleum ricini, or the magnesiæ sulphas in aqua menthæ with tinctura sennæ will be the most proper; this is generally required in consequence of the laudanum administered during the time of labour or after delivery.

After labour is finished, a discharge takes place from the uterus, which is at first red, but in two or three days, becomes paler, dark coloured, or greenish, and after continuing eight or ten days more, it ceases altogether; if there be cough, it is usually prolonged beyond that period. These alterations need excite no alarm, unless accompanied by symptoms of disease. It may be arrested by the presence of coagula, stopping the os uteri, and preventing its escape;—external pressure will usually excite a sufficient degree of contraction to occasion its discharge. The lochia may be suppressed from inflammation of the uterus, by which its secretions are arrested: this is ushered in by a severe rigor, followed by flushing, another shivering fit comes on, there is pain in the head, white tongue, pain and tenderness of the abdomen, intolerance of pressure, even from the weight of the bedclothes, and generally a very rapid pulse; from this cause the lochiæ may be diminished, or suppressed, and if not early discovered, and removed by prompt and efficient measures, it often speedily proves fatal.

SECTION III.

CHAP. I.

TWINS.

TWINS are of frequent occurrence, and we have accounts of three, four, or even five children at a birth. Dr. Hamilton relates the case of a patient of his, who had four children at a birth, of whom, three were living. Women are impressed usually with an idea of the greater degree of danger and suffering, in case of twins, than when there is only one child; but it is mostly found, that they are smaller, than a single birth, and if the pelvis be narrow, the probability is, that the patient might have an easier and safer labour with twins, than if she bore only one child. We are often asked respecting the signs indicating the presence of twins, which, prior to delivery, are by no means infallible. The best of those which manifest themselves before parturition, but which are very uncertain, are the unusual size of the abdomen, this may arise from an extraordinary quantity of liquor amnii, or from various forms of visceral disease. It is probable, if there are twins, that the sides of the abdominal tumour may be separated from each other, by a sort of groove, and that the movements of the two children may be felt separately and apart from each other. During the time of labour, it is not unusual for the upper extremity of one, and the lower extremity of the other, to present together, and if necessary

in such a case, to perform the operation of turning, it is highly important to be sure that the feet brought down belong to the same fœtus, by tracing them to their union at the perineum. As soon as the child is born, whether twins are suspected from previous symptoms, or not, it is necessary to place the hand on the abdomen, before removing the placenta; the uterus, if there be no second child, will be felt beneath the abdominal parietes, forming a hard, unyielding globe, about the size of the fœtal head; but if there is a second child, it will not be much diminished in size by the birth of the first. The uterus from the distension it has undergone, is sometimes torpid, its contraction ceases, and it does not expel the second fœtus, until some hours after the birth of the first; when this is the case, it is advisable to rupture the membranes, and deliver by the feet, rather than wait so long, as to exhaust the patience and strength, and to excite the fears of the patient. This can be done without difficulty, the passages having just been fully dilated by the birth of the first. The treatment required does not differ from that described as necessary in cases of turning.

CHAP. II.

RUPTURE OF THE UTERUS.

RUPTURE of the uterus is fortunately an accident of rare occurrence, and is generally productive of fatal consequences; though cases of recovery, after it has happened, are on record. It usually happens during labour, and may thus be occasioned by various circumstances: by accidents, transverse presentations, or rude and unscientific attempts to pass the hand, during a pain, in order to turn; the uterus is thus lacerated, and the fœtus may escape into the cavity of the abdomen. It then contracts suddenly and strongly; the patient is conscious of the accident, at the time of its occurrence, she suffers violent pain, and feels a rending sensation within, she vomits, frequently there is discharge of blood from the vagina, extreme and increasing pain, great prostration of strength, coldness of the extremities, and fainting.

In this most alarming situation, little benefit can be afforded by any measures we can adopt, and the death of both mother and child is to be apprehended. The only chance of saving the mother is afforded by the immediate extraction of the child, and this too often is not successful. The hand should be passed through the lacerated opening in the uterus, to find the feet, or the child must speedily be lost, and probably the mother also. In removing the child, which should be accomplished with as little delay, as is consistent with a regard to gentleness and prudent caution, extreme care is requisite, to avoid the entanglement of the viscera with the child's feet, which would destroy the little possible chance of recovery existing.

CHAP. III.

HÆMORRHAGE PREVIOUS TO OR DURING PARTURITION.

Women whose pregnancy is advanced are liable to discharges of blood, which however small in quantity, should be carefully watched, as the flow will sometimes become so copious and sudden, although not threatening at first, that the patients sink. Whenever there is hæmorrhage before parturition, however small it may be, it is a proof that some portion of the placenta is torn from its attachment, and that the mouths of the uterine vessels are open. The patient should refrain from walking and exertion of every kind, and be directed to recline outside the bed, or on a sofa; she should take nothing which has a tendency to hurry the circulation, and perhaps it may cease. Saline aperients are proper, and the temperature of the apartment should be as low as is consistent with her comfort. By an attention to these circumstances, it may perhaps not again return; in such cases, however, it more generally happens, that uterine contractions succeed, and labour soon takes place. Floodings in the last two months of pregnancy, and during parturition, are much more dangerous than in the earlier months, from the increased calibre of the vessels, and consequently the more sudden loss of blood. Should the discharge fortunately have ceased, the patient's strength is often greatly diminished, and tonic remedies are to be had recourse to: of these the decoctum cinchonæ with infusum rosæ is one of the most suitable, and the powers of the system should be supported by nourishing, but not stimulating diet. At the time of the

discharge cloths wetted with cold vinegar and water should be kept on the hypogastric region, to be renewed as soon as they become warm. Should the flooding continue, or return from time to time, but not otherwise, it is necessary to examine the state of the os uteri, which may be found either dilatable, or dilating. If uterine contraction have begun, and hæmorrhage continue, or if the placenta be attached to the os uteri, it can generally be controlled by judicious treatment; in the latter case, it is necessary to pass the fingers through the substance of the placenta, and deliver by the feet, and in the former, the membranes should be ruptured, in order to allow the uterus further to contract, and close its vessels, by the evacuation of the liquor amnii, which distending the uterus, keeps the separated vessels open and bleeding. Fortunately for the patient, these measures can readily be adopted, for the discharge has the effect of rendering the parts lax and yielding. When the uterus contracts, the bleeding is lessened, and after the fœtus has been brought away it often entirely ceases. The most serious cases of hæmorrhage are those caused by the placenta adhering to the os uteri, and this sometimes begins as early as the fifth month of utero-gestation; if the patient is kept quiet in the recumbent position it may cease for a time, but will recur with increased violence:—when this takes place, without any traceable exciting cause, the probability is, that the placenta is adherent to the os uteri, and is becoming stretched, and partially separated, by the shortening of the neck of the womb, which is at that time commencing. No bag of waters can be distinguished at the os uteri, but a firm, fleshy mass will be found there, differing to the touch from coagulum. If the hæmorrhage should be going on to an alarming degree, it is absolutely necessary to remove the placenta and empty the uterus, and although there may

not be room for more than one finger at the os uteri, that should be passed through it and through the placenta, to be followed by a second, and a third, and the os uteri and placenta dilated together; having reached the feet, they must be brought down, and the delivery accomplished as has been before described. Hæmorrhage after parturition is sometimes kept up by a torpid state of the uterus, so that after the cavity is relieved of its contents, it remains flaccid, and does not contract with sufficient energy to close the bleeding orifices, and secure the safety of the patient. The secale cornutum here may deserve a trial, and will often be found to bring on contractions, especially as there may have been recent, though feeble uterine efforts: —this remedy is, in such cases, peculiarly applicable, as it possesses the power of increasing uterine contraction, but not of exciting it, when it is altogether absent. Plugging the vagina has been advised, and may, in some cases, be practised with advantage; during its employment, we should beware, lest internal hæmorrhage continue to a fearful extent, at the time of fancied security. It may tend to promote the formation of coagula, and thus be of service. After large quantities of blood have been lost, the passages not being in a sufficiently dilatable state to allow the removal of the ovum, the bleeding is often continued by uterine contractions, and a gush more or less copious follows each pain. A drachm, or even more of the tinctura opii should be given, to suspend them for a time, which may be repeated if necessary, watching its effect on the general system, and on the hæmorrhage. If flooding occur in women of full habit, either before or subsequent to parturition, not arising from any of the circumstances before described, a moderate bleeding may be practised with advantage, a sparing and unstimulating diet must be enjoined, which should be taken quite cold, and saline purgatives

administered. Digitalis may be given with the saline draught; and the patient should carefully avoid any agitation of mind, or exertion of body. The spiritus terebinthinæ has been recommended, but there are few stomachs which can retain it, and this circumstance from its stimulant properties, is probably not to be regretted; if rejected by vomiting, the agitation and effort necessary to throw it up, may produce the separation of any coagula that might have formed, and consequently the renewal of the hæmorrhage. The room should be without fire, and cool air freely admitted into it.

The superacetate of lead, in doses of one or two grains, with half a grain of extractum opii, every six or eight hours or oftener, may be employed with benefit; but this remedy, from its peculiar effect on the nervous system, cannot long be persisted in. The application of cold has a very powerful influence in cases of uterine hæmorrhage: by diminishing the activity of the circulation, and favouring the coagulation of the blood at the mouths of the vessels, it is often an effectual means of relief, and may be used as before described, by pouring water or sprinkling it on the abdomen, or by the application of a bladder of ice or snow above the pubes.

As a precautionary measure, whether hæmorrhage exist, or not, a patient subsequent to parturition, should never be raised from the recumbent to the sitting posture, which has often produced fatal flooding, in patients, who have been left after labour, in apparent safety:—they should therefore be gently drawn towards the upper part of the bed, without in the slightest degree, elevating the shoulders above the hips. The premature extraction of the placenta, before the uterus has contracted on it, will occasion most alarming hæmorrhage; or it may arise from the placenta, or funis becoming entangled and drawn down with the head, while extracting with the forceps or vectis.

If, notwithstanding all the precautionary and curative measures suggested, the patient is sinking, if she is in a state of deliquium threatening dissolution, if respiration is scarcely perceptible or ceasing, the operation of transfusion affords her the only probable chance of preservation, and should be performed immediately; it is readily practised, and attended with no more pain, and requires little more preparation, than the common operation of bleeding.

CHAP. IV.

TRANSFUSION.

This operation is necessary when the patient has lost such a quantity of blood, that it is evident, she will be destroyed, if we cannot restore part of it to the circulation. The degree of danger may depend more on the rapidity of the hæmorrhage, than the quantity actually lost; two or three ounces of blood transfused may turn the balance, and restore the patient; while in other cases, six, eight, or even more may be requisite. The operation of transfusion is of easy performance, productive of little pain to the patient, and requires only a scalpel, lancet, probe, and a two ounce syringe, with curved silver tube. The syringe and basin, or tumbler, into which the blood is to be received, should previously be heated, by immersion in water at blood heat, and before used, they must be wiped perfectly dry; the operator should first cut with the scalpel, through the skin and cellular membrane covering the median basilic vein of either of the patient's arms, so as to expose that vessel, to the extent of about half an inch; an

aperture is next to be made into the vein with a lancet, sufficiently large to admit the curved silver tube, attached to the syringe. The syringe and tumbler having been perfectly cleaned, and warmed sufficiently, the person who is to supply the blood, should be bled to the amount of two ounces, or one syringeful, into the tumbler, and the opening in his arm closed by the finger of an assistant, till a second syringeful is required. This being drawn into the syringe, the piston is to be pressed slowly down, until blood begins to issue from the extremity of the tube, the point is then to be passed, with as little delay as possible, into the puncture, held open with a probe, made in the patient's arm, which should be firmly and steadily supported on a pillow by an assistant: the tube is to be passed upwards in the vein, so that the blood injected may flow in the direction towards the heart. The operator having passed the tube into the vein, slowly presses down the piston, and propels the blood into it, carefully watching the patient's countenance and pulse, and if the first syringeful be received with advantage, a second, third, or fourth may be drawn again from the one arm, and injected into the other, in the same manner. An apparatus has been invented by Dr. Blundell, by which the blood can be made to flow at once from the arm of the person supplying it, into that of the patient, in a continuous stream, and its passage rendered slower, or stopped at the will of the operator; but the plan indicated above, requiring no preparation, and few instruments, is likely to be more generally adopted. It is necessary to allow the blood to remain in the receiving vessel no longer than is absolutely necessary, a few seconds, at most, after it has been drawn, as it soon loses its vitality, becomes coagulated, and unfit to inject.

CHAP. V.

PROLAPSUS AND INVERSIO UTERI.

The ligaments which retain the uterus in its natural situation are stretched and elongated during pregnancy, and it is therefore at this time, and after parturition, that displacements of the viscus are most frequent. They do however sometimes happen independent of pregnancy; when the uterus is enlarged from disease, it may become prolapsed, or if there be a polypus of large size, and long continuance attached to the fundus, it may be partially or completely inverted. These displacements usually occur in women of lax fibre, but they are more generally the effect of continued, or violent dragging at the placenta by the umbilical cord, when adherent to the uterus, or by attempting to extract before that viscus is sufficiently contrasted.

1. *Procidentia* of the uterus is easily recognized; if it remain displaced, by the pressure made on the bladder and rectum, it occasions difficulty of voiding the urine, or total suppression, tenesmus, nausea, and a sense of dragging in the loins; prior to its reduction, the urine should be drawn off, and the uterus pressed upwards into its natural position by the fingers or by a sponge fastened on the top of a piece of cane, or whalebone; and if occurring shortly after parturition, the disease will probably not return. The patient should be kept for a time in the recumbent position, and astringent injections employed, and if the displacement recur, when she is sufficiently recovered to quit the lying-in room, a pessary must be worn.

2. *Inversio uteri* is one of the most serious displacements to which the uterus is liable, and it may occur in different degrees. If partial, the fundus only is drawn down, forming an indentation, or it may be completely inverted together with the vagina, when imprudent force has been used to extract an adherent placenta, while the uterus was in a state of flaccidity and relaxation. This is immediately known by the want of the firm globular tumour above the pubes, which the uterus forms in a state of contraction, and by finding the viscus within the vagina or pushed externally. When this displacement has occurred, the uterus may sometimes be restored to its natural situation, by a firm but gentle pressure on the fundus uteri, if it be in a relaxed state, but if the contractions have been such as to diminish the capacity of the viscus, to lessen the diameter of its mouth, and to increase the thickness of its parietes after inversion, it will be often impracticable to make the uterus double back on itself, which it must do, to regain its natural situation, and the patient, if she chance to recover, will be subject to constant suffering, and her constitution worn down by exhausting discharges. Before applying the least extractile force, it is requisite to ascertain in every instance that the uterus is contracted firmly, and the placenta should be removed, not by pulling at the cord, but by withdrawing the whole mass, in the gradual, progressive, and gentle manner before recommended, in order to avoid the possibility of this most serious, and often irreparable accident.

CHAP. VI.

DIVISION OF THE SYMPHISIS PUBIS.

This is an operation seldom practised in this country, but not unfrequently performed on the continent. Its accomplishment is attended with little difficulty; remembering, however, that it is necessary, in order to increase the diameter of the pelvis, to pull forcibly the two ossa pubis from each other, after cutting through the symphisis, and that this cannot be done, without lacerating the sacro-iliac synchondrosis, that the bladder may be torn, and the soft parts contained within the pelvis and attached to its sides must be more or less injured, from these circumstances, which must necessarily produce the most serious effects, the section of the symphisis is an operation, which cannot be considered either safe, or justifiable. Continental practitioners direct the patient to be placed on her back, with the legs elevated towards the body, and the hips raised. An assistant supports each knee in the flexed position, and the operator cuts through the skin, in the centre of the symphisis, and in a line directly over it; he then divides the intermediate cartilage, by which the bones are united, and the assistants drawing the knees apart from each other, the ossa pubis are pulled asunder, and the circumference of the pelvis is increased. After delivery is accomplished, the symphisis is drawn together by a circular bandage, the wound covered with light dressing, and the patient is kept in the recumbent position, till perfect union takes place.

CHAP. VII.

THE CÆSAREAN OPERATION.

When the dimensions of the pelvis are so much contracted that it measures less than one inch, or an inch and a half in diameter, the fœtus at the full time, though embryotomized, cannot be brought through it, and it is necessary to perform the cæsarean operation. This is by no means difficult, and its danger has probably been much overrated. It was formerly believed that incisions into the peritoneal cavity were always productive of so high a degree of inflammation, as almost necessarily to destroy the patient, an idea disproved by the ingenious experiments of Dr. Blundell, and by the successful termination of several cases, wherein the cæsarean operation has been performed with perfect safety to both mother and child. In deciding the propriety of performing it, there is usually little cause for hesitation; we have no other resource left, and it affords, in cases of extreme narrowing of the pelvis, the only possible means of preserving the mother and infant from inevitable destruction. The patient should be placed close to the edge of the bed with the shoulders elevated, and the abdomen turned towards the surgeon. An incision through the skin and abdominal muscles is to be made in the direction of the rectus muscle, and at a short distance from its outer edge, beginning opposite to the umbilicus, and continued down on a line with the linea alba; this incision should extend about six inches, and should not be carried so low, as to divide the tendinous portion of the abdominal muscles; the small intestines may protrude, and should be

carefully returned, and preserved from injury during the operation. The uterus will be immediately distinguished by its size and shape, and if any branches of the epigastric artery have been divided, (which will seldom be the case,) the bleeding should be stopped by the finger of an assistant, till the operation is finished, when they must be secured. An incision is then to be made through the parietes of the uterus, carefully avoiding the fœtus contained within its cavity, into which the thumb and two fingers are to be passed, or if necessary the whole hand, and the child carefully raised from it, by the feet, the edges of the incision, through the integuments and the uterus being held asunder by assistants while this is accomplished; the child should be supported near the abdomen of the mother, while the cord is tied, and after its separation, we may proceed to remove the placenta. We are advised by an eminent surgeon to have the temperature of the apartment raised to about ninety degrees of Fahrenheit, while the operation is performed. The child and placenta having been extracted, the propriety of removing a portion of the fallopian tube as suggested by Dr. Blundell, deserves consideration, and where there exists such a degree of distortion as to render it impossible for delivery to take place by the natural passages, and there is a probability of future pregnancy, this should be done, and would neither much protract the operation, nor add materially to its danger. After securing any bleeding vessels in the edges of the external incision, the sides of it should be brought together, and kept in contact by adhesive plaster, covered with light dressings; the antiphlogistic regimen strictly enjoined, and a dose of tinctura opii administered.

CHAP. VIII.

LACERATION AND SLOUGHING OF THE SOFT PARTS.

In young women, the parts through which the child passes, are usually during parturition, in a lax and dilatable state, but in those more advanced in life, especially if past the age of forty, with a first child, there is considerable rigidity, and indisposition to dilate in the os uteri, vagina, and especially in the external parts. From long continued pressure, after the head has been for some time in the pelvis, the bladder becoming distended with urine, its posterior surface may slough, leaving a permanent fistulous opening into the vagina;—and when the head is pushed lower, if it be expelled by a violent, or sudden effort, laceration may take place, through the inferior commissure, through the perineum, or through the sphincter ani into the rectum. The same circumstance has occurred from suddenly, and forcibly extracting the shoulders after the head had been expelled,—where the thorax and abdomen from emphysema were increased in circumference. While the patient is pregnant, in order to promote the facility of parturition, the precautionary measure of bleeding should be never omitted, both before the approach of labour, and during its progress, and the injection of enemas with the use of fomentations externally should not be neglected. The patient, especially after the head has entered the pelvis, should drink little, in order to keep the bladder as empty as possible. If from sloughing or laceration, a fistulous communication be established between the bladder and vagina, the constant dribbling of the urine excoriates the parts, and occasions extreme irritation and distress; it

sometimes when not extensive admits of cure, by the removal of the edges, which are afterwards to be kept in contact by sutures.

Laceration of the perineum, if not extending through the sphincter ani, by attention to cleanliness, and keeping the parts close together, avoiding the motion of one limb on the other, generally unites, but when through the sphincter and into the rectum, it often continues for life, with all its loathsome consequences. Relief can only be expected from an operation, and as it is an accident so distressing to the patient, and so disgusting to her friends, it should always be performed, and in most cases a cure might probably be obtained. The patient should be prepared for it by beginning gradually to diminish the quantity of food taken a fortnight or three weeks previous to the operation, and must have her bowels opened with castor oil the day before it is performed, the indurated edges of the lacerated surface are to be pared off on each side, and brought in contact, as in the operation for harelip, with one or more silver pins, which are found not to excite so much irritation and suppuration as sutures, and do not so readily tear out; she should remain in bed, laying at full length, and immediately after the operation, two or three grains of opium should be given, and a smaller dose administered the next morning, to be repeated as often as may be necessary during the healing of the cut surfaces, in order to prevent the passage of any fæces, which might disturb the adhesive process, and frustrate the success of the operation. The least quantity possible of food either solid or fluid must be taken, which should consist of hard biscuit, bread, or a little rice, and the bowels kept in a constipated state, for at least a week; during which time, the wound should be covered with light dressing, and frequently cleaned by syringing with warm water.

CHAP. IX.

EXTRAUTERINE GESTATION.

Conception having taken place, the rudimental matter of the fœtus passes through the fallopian tube into the uterus, and adheres to its interior, where it remains, until arrived at the full developement of its various parts, when it is expelled by uterine contraction, but occasionally from causes which we cannot explain, it is arrested in its progress, before it reaches the uterus, and may be found in the ovary, in the fallopian tube, or may fall from either, and become adherent to the viscera of the pelvis or abdomen. In these cases, it continues to grow till the second or third month, but rarely, if ever, attains its full dimension. The extrauterine ovum then acts as an extraneous body, exciting inflammation, matter is formed, and the abscess breaks through the integuments, or the fœtus is discharged by the rectum or vagina. It has been proposed in such a case, to make an incision through the abdominal parietes, and remove the ovum, which would undoubtedly be the best method to adopt, if there were infallible proofs of the existence of extrauterine gestation; but these are usually very fallacious, until nature has produced adhesion, and abscess, through which the parts of the fœtus may be discovered and removed. Having opened the abscess and removed those parts of the fœtus within reach of the fingers, the remainder are to be taken away with forceps, if possible, a poultice applied, and the aperture for a time kept open, to allow the escape of whatever portions of the ovum may remain undischarged; the strength should be supported by wine and nutritious food, tonic remedies are proper, and occasionally a perfect recovery takes place.

CHAP. X.

PHLEGMASIA DOLENS.

By this term, we understand the painful enlargement of the lower extremities, which takes place subsequent to parturition. It does not usually commence till some days have elapsed, and sometimes attacks those, whose labours have neither been severe, nor long continued. The disease occasionally affects both the lower extremities, but is more frequently confined to one, which becomes swollen, painful, and excessively tender. The swelling, which is not commonly productive of discolouration, or redness, is at first hard and incompressible, and the skin is often paler than that of the opposite limb. It commences at the situation of the femoral vessels, at the upper and inner part of the thigh, and follows their course down the extremity; the increase of size being at first greater in proportion above, than below; but after the disease has continued some time, the reverse takes place, and the enlargement is more remarkable below, than above. The pain is throbbing, and sometimes excessive, the limb is numb, and the skin over the situation of the femoral sheath is sometimes reddened, and the suffering rendered much greater when the limb is moved, or when any pressure is made upon it.

Phlegmasia dolens arises from inflammation of the veins, and probably of the absorbent vessels, excited by the pressure which they have sustained during parturition: the pulse is quick, and the general symptoms of fever are present. Although patients usually recover, the disease is

often long protracted, and may occasion considerable injury to the constitution.

Rest must be strictly enjoined, a quantity of blood taken, proportioned to the strength of the patient, and from twenty-four, to thirty-six leeches applied to the upper and inner part of the thigh, where the skin above the femoral vessels will be found tender and inflamed; these may be repeated, if necessary in smaller numbers, and are often productive of an immediate alleviation of the symptoms. The bowels should be kept open by aperient medicines, and in a few days, the swelling, pain, and tenderness are diminished, but never entirely removed, until after a much longer period; many weeks, sometimes several months elapse, before the enlargement disappears, during which, the extremity continues weak, and the patient is unable to walk with comfort: a roller, applied round it, and friction with camphorated oil will often be productive of considerable relief.

CHAP. XI.

PUERPERAL FEVER.

There is consequent to labour, a disposition to certain inflammatory and typhoid diseases, and it is necessary to distinguish these from each other. This not having been done with sufficient accuracy is probably the reason, why so much discrepancy exists among practitioners, respecting the nature of puerperal fever, and the best mode of treating it.

There is, strictly speaking, no one symptom sufficiently

pathognomic to guide our diagnosis, and many of the more prominent, are by no means peculiar to the disease in its acute or subacute stages. Rigors, heat, pain in the abdomen, a quick pulse, may be occasioned by inflammation of any of the abdominal viscera. Distension of the abdomen after labour may arise from flatus, from constipation, or distended bladder; but the one will be relieved by the catheter, and the other by the administration of an aperient; —the pain resulting from these causes is trifling, and not increased by pressure, as when arising from inflammation. After pains are distinguished from those of puerperal peritonitis, or metritis, by their intermission, while those produced by inflammation are usually unceasing.

Puerperal fever, or that form of peritonitis and metritis which affects women after labour, may be divided into the acute, and subacute species:—the former, a highly inflammatory disease, requiring in its early stage, active measures of depletion, and often curable, if they are adopted sufficiently early;—the latter, either succeeding the acute form, may be excited by a contagious miasma, or produced by the absorption of the lochial discharges.

1. ACUTE INFLAMMATORY METRITIS and peritonitis usually commences with a violent shivering fit, which is succeeded by abdominal pains, great restlessness, and prostration of strength. The pulse is increased in frequency, but weak and compressible; the tongue is coated with a white fur, which gradually becomes yellowish, or brown, and there is usually from the time of its commencement, suppression of the lochial discharge. The pain, first confined to the hypogastric region, soon extends over the whole of the abdomen, which becomes tense and swollen. There is seldom much delirium, until the disease has lasted some time: and before dissolution, diarrhœa comes on, from relaxation of the sphincter muscles, and in some instances,

is the effect of aperient medicines administered during the course of the disease.

The treatment of acute metritis or peritonitis, to be successful, must be adopted early; and the free abstraction of blood, as soon as possible after its first appearance is the best, and most effectual means of relief:—it should be taken in as large a quantity as the severity of the symptoms require, and the strength of the patient may appear to admit. Acute puerperal fever is sometimes fatal in six and thirty hours, often within three days, and should it continue longer it assumes a typhoid character: it is therefore advisable to place the patient, while bled, in the sitting posture, in order that it may have its full effect without unnecessarily diminishing the powers of the system, and the bleeding, if to the amount of eighteen, or twenty ounces, should not be repeated. After this has been done, there is often a favourable change, and the symptoms are mitigated, if the measure has not been too long deferred. Leeches should be applied to the hypogastric region, and these are preferable to bleeding from the arm, after the disease has existed two or three days. A blister of large size must be applied over the lower part of the abdomen; or to promote a more speedy determination of blood to the surface, a poultice composed of equal parts of mustard and linseed powder, or fomentations with hot spiritus terebinthinæ, to be removed as soon as the skin becomes reddened and inflamed.

The contents of the bowels should be removed by aperients;—with this view, four or five grains of hydrargyri submurias, with one grain of opium, and afterwards, a solution of magnesiæ sulphas, or the oleum ricini, when the stomach will retain it, will be the most appropriate medicines. The liquor ammoniæ acetatis, or the saline draughts with antimonials, and the pulvis ipecacuanhæ compositus

are among the most effectual diaphoretics, and are likely to be productive of much benefit. Emollient enemas, fomentations to the abdomen, and poultices of scalded camomile flowers should be employed; and the warm bath, if possible, should always be had recourse to. The diet should consist only of barley water, tea, or gruel; and the disease may sometimes be removed; but should this unfortunately not be the case, it soon assumes a typhoid character, requiring a modified, and less active mode of treatment.

2. SUBACUTE PUERPERAL FEVER is a form of disease frequently occurring subsequent to that which is last described: or produced by a contagious miasma, the precise nature of which is unknown, but which is only capable of affecting women in the pregnant or parturient state. It is, like the contagion of smallpox, liable to be transferred by the nurse, the practitioner, or immediately from the body of the patient herself. It often spreads in a town, or lying-in hospital, with fearful rapidity, and seldom fails to destroy several, within a short time of each other. As a precautionary measure, the accoucheur, after visiting a patient labouring under this fatal disease, should always change his dress previous to attending any other. Like common typhus fever, it probably arises, at first, from some unknown morbific agent diffused through the atmosphere, which received into the system, has the power of exciting disease, possibly by vitiating the fluids, and rendering them unfit for the purposes of life.

In this form of disease the fallacy of certain modern pathologists is clearly evinced, who would attribute every case of puerperal fever and its fatality, to the violence of the inflammation. During life, the symptoms of inflammation are not so strongly marked, as in the acute and more curable form, and on examination after death, the

effects which might be expected to result from a high degree of increased action are not traceable: the inefficacy of active depletory measures, and the fatal termination of the disease, when these measures are employed to any extent, are additional proofs that the subacute puerperal fever is fatal rather from a morbid change of action, than from a high degree of inflammation, although it may follow as its consequence. The symptoms of subacute puerperal fever are extreme prostration of strength, rapid pulse, which may be from a hundred and twenty, to a hundred and forty, or even more beats in a minute. It commences with slight and repeated chills, rather than a distinct and violent shivering fit; the tongue at first is little altered in its appearance, but becomes afterwards whitish, or of a dirty brown colour; the abdomen is swollen and tympanitic, as in acute puerperal fever, but is not so painful or tender on pressure. The sensorium is very early disturbed, the patient becomes restless, tossing about in bed, or delirious; the stomach is irritable, and food or medicine is rejected often as soon as taken, the lochial discharge is either suppressed, or changed in appearance, and frequently becomes highly offensive, the bowels are relaxed early in the disease, and diarrhœa often harasses the patient through the whole period of its continuance; the teeth are covered with brown sordes, petechiæ are seen on the limbs and abdomen, the delirium is almost unceasing, and the patient frequently destroyed.

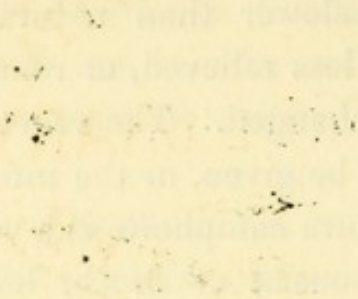
General bleeding is scarcely ever admissible, and should be practised with great caution. Leeches, if there be any abdominal pain, may be applied, but the powers of the system are so speedily exhausted, that active depletion, whether general or local, cannot be adopted with safety. The bowels should be acted on by the administration of a few grains of hydrargyri submurias with opium, and a

saline purgative afterwards administered. The saline diaphoretics with antimonials, and mistura camphoræ should be given, in order to excite the action of the cutaneous vessels.

Spiritus terebinthinæ has been recommended in cases of puerperal fever, which assume the typhoid character; but as there is usually great irritability of the stomach, it can seldom be retained; and the constant nausea and singultus are occasionally among the most urgent and distressing symptoms. The saline draughts, prepared with fresh lemon juice, to which a few drops of spiritus ammoniæ compositus or tinctura opii are added, may be of service; and slightly acidulated drinks, or soda water, will be found most grateful to the patient. Sometimes, though not usually, there is with the diarrhœa, profuse perspiration, which exhausts the strength; the urine is thick, and deposits a mucous, or purulent sediment: the evacuations are often highly offensive, petechiæ, as in the worst form of typhus, appear on the skin, and even during life, the body seems to be hastening to a state of decomposition. After death, it soon becomes putrid; and on examination, the viscera of the pelvis and abdomen, especially the uterus, kidneys, liver, and spleen, are found in a state of ramollissement, or assume a sloughy appearance; their parenchyma is easily lacerable on the slightest pressure of the finger; frequently there are small pouches of matter within their substance, but never such marks of acute inflammation having been present, as would lead us to attribute the death of the patient to this cause alone. Should the symptoms be mitigated, the most usual change for the better, is seen in the improved aspect of the patient, the altered appearance of the tongue, the cessation of delirium, and the return of the lochial discharge or its resuming its usual character. The pulse from having been excessively

frequent, becomes often slower than natural, and the symptoms are all more or less relieved, or removed. The treatment should now be changed. The vegetable bitters or sulphate of quinine may be given, or the infusum or decoctum cinchonæ with mistura camphoræ is a very suitable tonic. The diet should consist of broth, beef tea, the animal jellies, eggs, or light pudding, and a little white wine may be allowed.

At the commencement of this fatal malady, the use of mercury deserves a trial. In the inflammatory and typhoid diseases of warm climates, the unguentum hydrargyri is rubbed in, calomel in large doses administered, and it has been noticed, that as soon as the mouth is affected, the pulse is rendered tranquil, the delirium ceases, and the patient becomes convalescent; we may therefore hope that in the subacute and generally most intractable form of puerperal fever, putting the system as quickly as possible under the influence of mercury may hereafter afford that relief, which at present cannot be expected from any other plan of treatment hitherto devised.



REMARKS

ON THE

FORENSIC EVIDENCE REQUISITE

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PRACTITIONERS of midwifery are sometimes called on in courts of justice, to give their testimony respecting cases of supposed fœticide, and infanticide, and as on that testimony may depend the lives of individuals, it is of the utmost consequence that they should acquire clear and correct views of the grounds on which their statements are founded. By the laws of Scotland, the fœtus was considered, previous to birth, as pars viscerum matris; but if the death of the child took place at the full term of gestation, or even if the woman concealed her pregnancy, and did not call for assistance during parturition, she was considered the murderess, if the child were found dead;—by a recent, and more merciful enactment, a woman under these circumstances, is now, in that country, only liable to be tried for misdemeanour; and if found guilty, her sentence is imprisonment for a term not exceeding two years. The concealment of birth the English law also deems a misdemeanour, punishable only by imprisonment. By an act passed 9. Geo. IV., to administer poison, or use any other means to procure abortion, in a woman *quick* with child, is declared a capital offence; but if the woman be not *quick*,

any person using means to procure abortion, by medicine, or any other thing whatever, is deemed guilty of felony, and the punishment awarded is transportation for a term not exceeding fourteen years;—the difference which the law makes in the nature of and punishment awarded to crimes involving precisely the same degree of moral turpitude, is arbitrary and unfounded;—abortion wilfully produced is equally abhorrent to morality, at whatever period of gestation. The child is not viable before quickening, nor for some months afterwards, and yet it is as truly *quick*, or living, before its movements are perceived by the mother, as at the sixth, or seventh month of gestation. Its wilful destruction bears equally the brand of murder, and will probably hereafter, by an enlightened legislature, be made equally penal. Solitary confinement, and hard labour, might be more dreaded than the punishment of death, by those unhappy individuals who have been tempted to the commission of these enormities, and it is not improbable that sanguinary and vindictive awards, which allow little time for repentance, tend rather to screen offenders from justice, than to impose any salutary restraint on the vicious and depraved, or promote the security of life.

By the term fœticide, is described the wilful destruction of the intrauterine fœtus, before its expulsion, and at any period of utero gestation.

Infanticide is the destruction of the child, after its expulsion, by violence committed, or by the wilful omission of those attentions which are necessary for the preservation of its existence.

Of the two crimes, fœticide has been probably always the more frequent. Among the Romans, it was common, as a means of preserving personal attractions, and of escaping the cares and duties of a family. The means by which this detestable species of murder is perpetrated are external, or internal; and a description of them is pur-

posely omitted for obvious reasons;—they very generally fail to accomplish the infamous design for which they are employed, and when abortion is produced by their agency, the mother most frequently is involved in the ruin, and falls a miserable victim to her own execrable and heartless depravity. Infanticide is a crime in this country rarely committed, and this circumstance we owe to the benign moral influence of that religion, which was designed to give security to those sacred ties which bind society together by directing and regulating the affections: but in those nations who in ancient and modern times have not been favoured with a revelation, infanticide and murder are practised, and sometimes even sanctioned by constituting part of the rites prescribed in their unhallowed worship. In some of the states of ancient Greece, infanticide was commonly practised; in China, even at the present day, thousands of infants are annually destroyed; and in the south sea islands, this revolting species of murder was daily perpetrated, before the introduction of christianity. The same atrocities prevail in Hindostan to a fearful extent, and the efforts made by the learned and enlightened Rammohun Roy to abolish these horrors, bear an honourable testimony to his zeal in the cause of humanity, and to the influence of that pure and primitive form of christianity which he has embraced. It is earnestly hoped, and confidently believed that through the writings of that enlightened individual, and the various missionary exertions, the knowledge of revealed truth will speedily triumph over those cruel and debasing superstitions, which still prevail in so many parts of the eastern world, and which are considered by their inhabitants, as means of propitiating the Molochs of their idolatry.

Cases of supposed infanticide have usually arisen rather from the omission of the means requisite for the preservation of the child, than from the perpetration of actual vio-

lence. It cannot be denied that this neglect is calculated to be as destructive as the commission of violence, but it is seldom a premeditated crime; the mother, perhaps unmarried, has not been able to make the necessary preparations for the reception of her child; from ignorance, shame, or despair, or perhaps from suffering, solitude, faintness, and exhaustion, has been unable to obtain assistance for herself, or her infant.

These circumstances in consequence of which the child may perish, should be recollected by medical men when called on to give evidence in a case of supposed infanticide by omission or commission, and if the proofs are equivocal, as to the cause of death, should incline them to the side of mercy; scarcely deeming it possible that any individual of the female sex, distinguished usually, and deservedly for the strength and ardour of the natural affections, could stifle the loud voice of nature, and imbrue her hands in the blood of the helpless being to which she has just given birth; a crime which when committed can only be accounted for by the temporary frenzy of despair, or a degree of moral turpitude, of which few even of the most degraded of women could think without horror.

If called to an apparently stillborn infant, to whose miserable mother suspicion has been attached, it is always advisable, by adopting the means before recommended, to attempt resuscitation immediately; and highly probable, that its viability may continue longer, if it have never breathed, than when its respiration has been stopped by design or accident.

1. There are several causes independent of actual violence by which the life of an infant may be destroyed, and of these, *suffocation* is one of the most frequent, especially if parturition have taken place when the mother was alone, and unable through weakness to remove the fœtus after its expulsion. This may be discovered, by investigating the

circumstances of its birth, the position in which it was found, and by examining the fauces, larynx, and nares, which will probably be filled, and the access of air to the lungs prevented, by the various discharges which have taken place.

2. *Cold* is another cause by which a child may be destroyed. The sudden change of temperature, ex utero perhaps into a freezing atmosphere, is quite sufficient to account for the death of a new-born infant; and we should in such a case expect to find the face and surface of the body pale, the limbs stiffened, and congestion of blood in the interior of the body.

3. A third cause of death, which has been previously alluded to, is *sudden parturition*, when the pelvis having been of more than the ordinary dimensions, the child smaller than natural, or the labour premature, the mother feeling uneasiness, and a disposition to void the fæces, goes for that purpose, and is unable to rise from violent and increasing pains, by which, in conjunction with the action of the abdominal muscles, the child, with or without the placenta, is expelled. Should she be unmarried and omit to divulge the circumstance, if the child were afterwards found, she might be unjustly suspected of having destroyed it. Its death, when parturition has been thus quick and unexpected, may be occasioned in two ways; most usually, from suffocation, by the nose and pharynx being filled with the contents of the privy; or if it fall on a hard substance, it may die from concussion of the brain, or from fracture and compression; but the latter is rarely produced by a fall, as the bones of the fœtal cranium, being separated by sutures and fontanelles, are not so readily fractured as at the adult period of life, when they are ossified together.

If either of these circumstances have caused its death, we shall be able from examination and dissection to dis-

cover either such an accumulation within the mouth, larynx, and nose, as to intercept the passage of air into the lungs; or marks of bruises affecting the skin, extending more or less deeply through the bones to the interior of the brain; the bones of the head may be fractured and contused, and if the child has fallen on a hard substance, the spine or bones of the limbs may be fractured also.

Infanticide by commission may be effected by wounds, bruises, strangulation, or poisoning.

4. Several cases have occurred within the last few years where *poison* has been employed for the destruction of the child; and unfortunately it is not always easy of detection. A few drops of any powerful narcotic may be sufficient to extinguish the vital principle. When laudanum has been given, it may sometimes be detected by its peculiar smell; and from a careful investigation of the symptoms preceding death, by examination of the fauces and stomach, and from chemical analysis where this is practicable, we are usually enabled to form a correct idea of the cause which has destroyed the child.

The mineral poisons are readily detected by analysis, and a discovery of their presence leads always to unerring results;—whether found in the stomach in large or small quantities, they must have been given to the infant by accident, or design.

5. *Wounds and lacerations* may be distinguished into those which have taken place during life, and those inflicted subsequent to death: the former will generally be found red, ecchymosed, and bloody, with their edges swollen, or retracted, and although no large vessel may have been divided, so as to occasion copious hæmorrhage, the loss of a small quantity of blood, to the amount of a few ounces, or even a few drachms may be sufficient to destroy a new born infant.

When ecchymosis of the scalp exists, we must recollect that its passage through the pelvis may occasion redness, swelling, and a livid colour of the skin, especially if labour have been protracted, from any disproportion in size, or from contraction in the dimensions of any part of the pelvis.

6. If parturition has taken place in solitude, the child may be destroyed by *accidental strangulation*, the funis being twisted round the neck, the child may breathe after its head is expelled, but in the passage of the body the funis may become stretched and tightened so as to occasion strangulation. A livid mark will be found encircling the neck, and the impressions of the convoluted vessels of the cord can be distinguished on the skin.

7. Another cause of the death of the fœtus is *hæmorrhage from the funis*, which is particularly liable to occur when it has been cut. In animals, the umbilical cord is generally separated without bleeding, in consequence of their biting it asunder, by which the arteries and veins are bruised and rendered more or less impervious. When hæmorrhage has occasioned the child's death, the body will be pale and exsanguious, the large vessels particularly empty, and the viscera paler than natural.

Having from an attentive investigation of the particulars, acquired some idea of the cause of the child's death, it is necessary to ascertain if it had ever breathed, in order to decide with accuracy whether its death has occurred previous or subsequent to delivery, whether caused by inevitable accidents, by the commission of violence, or the wilful omission of those attentions indispensably necessary for its preservation.

The lungs must therefore be carefully examined, as their colour, density, elasticity, and specific gravity are materially altered in consequence of respiration. Previous to

respiration, they are compact and dense in structure, of a deep red, or bluish colour, and are heavier than water; darker posteriorly than anteriorly, but after the child has breathed, they are increased in volume,—they become elastic, of a pale red colour in front,—and towards the spine, of a darker red, they are lighter than water, and will float in it. If respiration have been long established, their elasticity is increased, they are of still less specific gravity, and the air cells can be distinctly traced throughout their interior. The difference in the specific gravity, before and after respiration, has induced medical practitioners to resort to what is termed the hydrostatic test, which though subject to some objections, is nevertheless a valuable criterion, by which, in conjunction with other circumstances, we may be enabled to decide whether the child has breathed or not.

1. The child may have breathed previous to birth, while yet remaining in the uterus, especially if the face presented; —or in its transit through the vagina, air might have been admitted into the lungs, and if afterwards its expulsion be protracted, or the funis subjected to such a degree of pressure as to interrupt its circulation, although the child might be stillborn, yet the lungs would float in water.

2. A second circumstance by which this test may be rendered less satisfactory is the inflation of the lungs after birth, for the purpose of resuscitation, thus rendering them specifically lighter than water, and capable of floating in it.

3. If the fœtus have been some time dead, and putrefaction so far advanced as to occasion the developement of the gases evolved during that process, the specific gravity of the lungs will be diminished, and air will be contained within them; but this circumstance will not impair the validity of the hydrostatic test, unless the whole body be in a state of advanced decomposition, but if the thorax

have been much bruised, as it might probably have been in feet presentation, they would then become sooner putrid, and consequently would float in water.

4. Besides the exceptions to the hydrostatic test, from circumstances which might render the lungs lighter, their specific gravity may be increased, by the formation of tubercles such as are sometimes met with in the children of consumptive and scrofulous parents; and when they exist in considerable numbers, although the child may have breathed, yet the lungs, or portions of them will sink in water.

An attention to the circumstances above stated, the neglect of which might destroy the validity of the hydrostatic test, is sufficient to show, that, if it be corroborated by the appearance of the other viscera, and a careful investigation of all the particulars of the case, it is one from which the most important conclusions may be drawn, previous to giving our testimony in a court of justice. Considered in itself, and apart from other circumstances, it is by no means an infallible criterion of the child's having breathed;—nor is respiration, the only proof of vitality, for an infant may be born alive, indicated by its muscular motion, and the pulsation of the heart, and yet never having received air into the lungs from respiration or any other cause, they would sink in water.

Dr. Arrowsmith of Coventry has given the following summary of the signs, by which we may conclude *that death has taken place previous to parturition, and that the fœtus has never respired.*

1. If the transverse diameter of the chest be from two to three inches, the direct diameter, from two, to two inches and a half, and the arching of the diaphragm extend to the level of the fifth rib.

2. If the colour of the lungs be dark, red, or bluish,

inclining to the bluish colour of the thymus gland, or the brown of the liver.

3. If the lungs be compact like the liver, containing no cells distended with air, if they do not crepitate, when cut, and give out no bubbles of air, when submitted to pressure under water.

If the absolute weight of the lungs compared with the length of the body, correspond with the following table:

Length.	Males.	Females.
From 15 to 18 inches . . .	ʒ viijss	ʒ viij.
18 to 20	ʒ ix	ʒ viijss.
20 to 22	ʒ ixss	ʒ ix.

5. If the lungs in connexion with the heart, or without it, or any part of them, rapidly sink in water, and if they are respectively heavier than water by several grains, or scruples.

6. If the lungs occupy the posterior part of the cavity of the thorax, extending anteriorly, only to the pericardium, if the borders are thin, and the ends of the right middle, and left upper lobes form small pointed ligulate elongations.

7. If the umbilical vessels, and fœtal circulatory apparatus be pervious, if the diameter of the arterial canal be equal to that of the aorta, and nearly three times greater than that of the two pulmonary arteries.

It may be concluded *that the child has lived a short time after birth and respired*, from the following circumstances:

1. When the transverse diameter of the thorax is from three, to four inches, the direct diameter, from two, to three inches and a quarter, and when the level of the arch of the diaphragm is between the fifth and sixth ribs.

2. When the lungs are of a dark red colour, sometimes inclining to brown or blue, exhibiting in some parts, par-

ticularly at the edge, bright or cinnabar red patches, or stripes.

3. When cells distended with air are visible in the surface of the lungs, especially in the upper lobe and edges of the right lung, collected in insulated groups, and immediately connected with compact portions of the substance of the lungs. Hence also crepitating, or not, according to the portion which is cut, and the expanded portions, yielding bubbles from pressure under water.

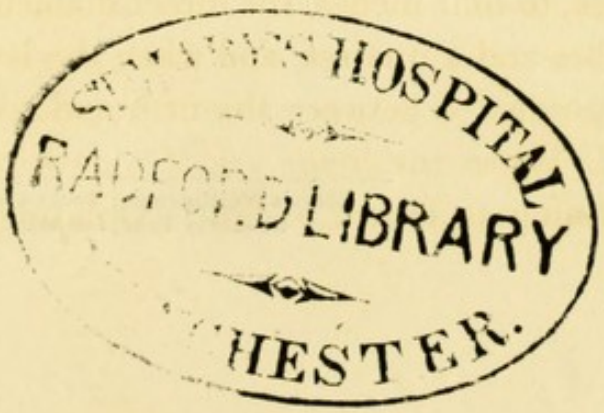
4. When the absolute weight of the lungs is manifestly increased in comparison with the length of the body.

5. When the whole lungs, with or without the heart, sink in water, while at the same time, the one or other lobe, or several, or a few portions, will float.

6. When the lungs occupy the lateral parts of the thoracic cavity, their anterior edges and ligulate elongations of the right middle, and left upper lobes are partially, or every where become obtuse.

7. When the umbilical vessels and fœtal circulatory apparatus remain still pervious, the canalis arteriosus being diminished, being about the size of a goosequill, consequently of less diameter than the trunk, but equal to the now increased diameter of the two branches of the pulmonary artery.

THE END.



ERRATA.

Page 15, line 2 from the bottom, *for* ' anterior' *read* ' interior.'
59, line 13, *for* ' membrane,' *read* ' membranes.'

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Chancery Lane, London.