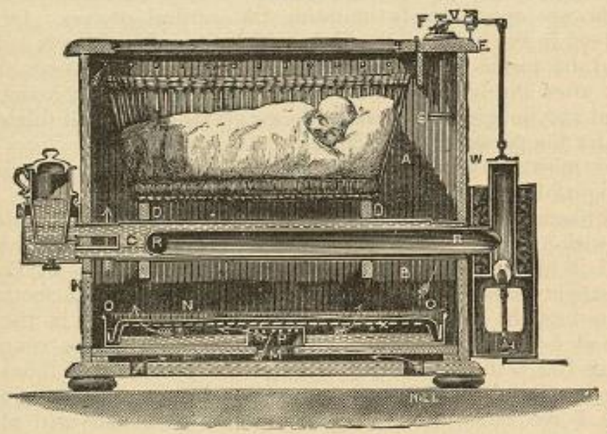
It is a matter of great importance to maintain the animal heat of premature children. For this purpose they are generally wrapped in cotton-wool and kept near the fire, but this is dirty and unsatisfactory. A far better and more hopeful procedure is to place the infant in an incubator or couveuse,[1] maintained at a uniform heat by means of a lamp, such as was first introduced by Tarnier. I used a modification of this apparatus, such as is here figured (Fig. 159), in a case in which the fœtus could, at the most, have been at the sixth month, keeping it for three months in the heated chamber, at a temperature varying

FIG. 159.



Hearson's thermostatic nurse. C. Tank of warm water interposed between upper and lower compartments (A and B). D D. Slips of wood supporting cradle. S. Capsule containing a liquid which boils at the temperature at which it is desired to keep the chamber, A. From the centre of the capsule, S, a stiff wire passes out through the top of the apparatus, where it comes into contact with a light lever, V, which is hinged at F. From the free end of this lever hangs a damper (W), which rests on the top of the chimney under which the flame burns. If the temperature in the compartment A rises too high, the fluid in the capsule (S) boils and expands the capsule, thus raising the wire rod, which, acting on the lever V, at once lifts the damper (W) off the chimney, allowing the heat from the flame to escape by that outlet and preventing the further heating of the water. M. Aperture for entrance of air. O. Tray containing water. The centre of this tray is raised in the form of a cap (P), which fits over the aperture M, through which the air enters. It is perforated all around its sides, so that the air passes through it horizontally, as shown by the arrows, instead of rising vertically. Another tray (X) of very coarsely perforated zinc, somewhat smaller than the first, is turned upside down within it, and over this is fitted the coarse canvas (N), the edges of which are tucked into the water all around. Thus the air entering is constantly moistened as well as heated. B B. Flue shaped like the letter U, through which the heated air from the flame passes, so as to twice traverse the length of the water-tank, and thus keep the water heated. In the top of the apparatus is a glass window through which the infant is kept in view. If a higher temperature than the boiling-point of the liquid within the capsule be desired, this can be obtained by moving the weight, T, along the lever toward the end to which the damper is attached.

from 80° to 90° F., with a most satisfactory result. The apparatus is, however, costly, and requires a great deal of attention and supervision, so that it is clearly only suitable for use in maternity hospitals or in the houses of such patients as are able to incur the necessary expense.

[1] Auvard: "De la Couveuse pour Enfants," Arch. de Tocologie, Oct. 1883, p. 577.

CHAPTER II.

TURNING.

History of the Operation.—Turning, by which we mean the alteration of the position of the fœtus, and the substitution of some other portion of the body for that originally presenting, is one of the most important of obstetric operations, and merits careful study. It is also one of the most ancient, and was evidently known to the Greek and Roman physicians. Up to the fifteenth century, cephalic version—that in which the head of the fœtus is brought over the os uteri—was almost exclusively practised, when Paré and his pupil Guillemeau taught the propriety of bringing the feet down first. It was by the latter physician especially that the steps of the operation were clearly defined; and the French have undoubtedly the merit both of perfecting its performance and of establishing the indications which should lead to its use. Indeed, it was then much more frequently performed than in later times, since no other means of effecting artificial delivery were known which did not involve the death of the child; and practitioners, doubtless, acquired great skill in its performance, and were inclined to overrate its importance and extend its use to unsuitable cases. An opposite error was fallen into after the invention of the forceps, which for a time led to the abandonment of turning in certain conditions for which it was well adapted, and in which it has only of late years been again practised.

Cephalic version has, since Paré wrote, been recommended and practised from time to time, but the difficulty of performing it satisfactorily was so great that it never became an established operation. Dr. Braxton Hicks has perfected a method by which it can be accomplished with greater ease and certainty, and which renders it a legitimate and satisfactory resort in suitable cases. To him we are also indebted for introducing a method of turning without passing the entire hand into the cavity of the uterus, which, under favorable circumstances, is not only easy of performance, but deprives the operation of one of its greatest dangers.

The possibility of effecting version by external manipulation has been long known, and was distinctly referred to and recommended by Dr. John Pechey[1] so far back as the year 1698. Since that time it has been strongly advocated by Wigand and his followers; and various authors in England, notably Sir James Simpson, have referred to the advantage to be derived from external manipulation assisting the hand in the interior of the uterus. In 1854 Dr. Wright, of

[1] The Complete Midwife's Practice, p. 142.

Cincinnati, advocated the application of the bimanual method in arm and shoulder presentations, chiefly with the view of effecting cephalic version. To Dr. Hicks, however, incontestably belongs the merit of having been the first distinctly to show the possibility of effecting complete version in all cases in which the operation is indicated by combined external and internal manipulation, of laying down definite rules for its practice, and of thus popularizing one of the greatest improvements in modern midwifery.

The operation is entirely dependent for success on the fact that the child *in utero* is freely movable, and that its position may be artificially altered with facility. As long as the membranes are unruptured and the fœtus is floating in the surrounding fluid medium, it is liable to constant changes in position, as may be readily demonstrated in the latter months of pregnancy; and the operation, under these circumstances, may be performed with the greatest facility. Shortly after the liquor amnii has escaped there is still, as a rule, no great difficulty in effecting version; but, as the body is no longer floating in the surrounding liquid, its rotation must necessarily be attended with some increased risk of injury to the uterus. If the liquor amnii has been long evacuated and the muscular structure of the uterus is strongly contracted, the fœtus may be so firmly fixed that any attempt to move it is surrounded with the greatest difficulties, and may even fail entirely or be attended with such risks to the maternal structures as to be quite unjustifiable.

Version may be required either on account of the mother or child alone; or it may be indicated by some condition imperilling both, and rendering immediate delivery necessary. The chief cases in which it is resorted to, are those of transverse presentation, where it is absolutely essential; accidental or unavoidable hemorrhage; certain cases of contracted pelvis; and some complications, especially prolapse of the funis. The special indications for the operation have been separately discussed under these subjects.

Statistics and Dangers of the Operation.—The ordinary statistical tables cannot be depended on as giving any reliable results as to the risks of the operation. Taking all cases together, Dr. Churchill estimated the maternal mortality at one in sixteen, and the infantile as one in three. Like all similar statistics, they are open to the objection of not distinguishing between the results of the operation itself and of the cause which necessitated interference. Still, they are sufficient to show that the operation is not free from grave hazards, and that it must not be undertaken without due reflection. The principal dangers will be discussed as we proceed. It may suffice to mention here that those to the mother must vary with the period at which the operation is undertaken. If version be performed early, before the rupture of the membranes, or, in favorable cases, without the introduction of the hand into the interior of the uterus, the risk must of course be infinitely less than in those more formidable cases in which the waters have long escaped, and the hand and arm have to be passed into an irritable and contracted uterus. But even in the most unfavorable cases accidents may be avoided if the operator bears constantly in mind

that the principal danger consists in laceration of the uterus or vagina from undue force being employed, or from the hand and arm not being introduced in the axis of the passages. There is no operation in which gentleness, absence of all hurry, and complete presence of mind are so essential. A certain number of cases end fatally from shock or exhaustion, or from subsequent complications. As regards the child the mortality is little, if at all, greater than in original breech and footling presentations. Nor is there any good reason why it should be so, seeing that cases of turning, after the feet are brought through the os, are virtually reduced to those of feet presentation, and that the mere version, if effected sufficiently soon, is not likely to add materially to the risk to which the child is exposed.

The possibility of effecting *version by external manipulation* has been recognized by various authors, and was made the subject of an excellent thesis by Wigand, who clearly described the manner of performing the operation. In spite of the manifest advantages of the procedure, and the extreme facility with which it can be accomplished in suitable cases, it has by no means become the established custom to trust to it, and probably most practitioners have never attempted it, even under the most favorable conditions. The possibility of the operation is based on the extreme mobility of the fœtus, before the membranes are ruptured. After the waters have escaped, the uterine walls embrace the fœtus more or less closely, and version can no longer be readily performed in this manner.

It may, therefore, be laid down as a rule that it should only be attempted when the abnormal position of the fœtus is detected before labor has commenced, or in the early stage of labor, when the membranes are unruptured. It is also unsuitable for any but transverse presentations, for it is not meant to effect complete evolution of the fœtus, but only to substitute the head for the upper extremity. It is useless whenever rapid delivery is indicated, for, after the head is brought over the brim, the conclusion of the case must be left to the natural powers.

The manner of detecting the presentation by palpation has been already described (p. 129), and the success of the operation depends on our being able to ascertain the positions of the head and breech through the uterine walls. Should labor have commenced, and the os be dilated, the transverse presentation may be also made out by vaginal examination. Should the abnormal presentation be detected before labor has actually begun, it is, in most cases, easy enough to alter it, and to bring the fœtus into the longitudinal axis of the uterine cavity. Pinard[1] recommends that after this has been done the fœtus should be maintained in position by a well-fitting elastic abdominal belt. It is seldom, however, discovered until labor has commenced, and even if it be altered the child is extremely apt to resume, in a short time, the faulty position in which it was formerly lying. Still there can be no harm in making the attempt, since the operation itself is in no way painful, and is absolutely without risk either to the mother or child. When

[1] De la Version par Manœuvres externes. Paris, 1878.

the transverse presentation is detected early in labor, I believe it is good practice to endeavor to remedy it by external manipulation, and, if it fails, we may at once proceed to other and more certain methods of operating. The procedure itself is abundantly simple. The patient is placed on her back, and the position of the fœtus ascertained by palpation as accurately as possible, in the manner already described. The palms of the hands being then placed over the opposite poles of the fœtus, by a series of gentle gliding movements the head is pushed toward the pelvic brim, while the breech is moved in the opposite direction. The facility with which the fœtus may sometimes be moved in this way can hardly be appreciated by those who have never attempted the operation. As soon as the change is effected, the long diameters of the fœtus and the uterus will correspond, and vaginal examination will show that the shoulder is no longer presenting and that the head is over the pelvic brim. If the os be sufficiently dilated, and labor in progress, the membranes should now be punctured, and the position of the fœtus maintained for a short time by external pressure until we are certain that the cephalic presentation is permanently established. If labor be not in progress, an attempt may at least be made to effect the same object by pads and a binder; one pad being placed on the side of the uterus in the situation of the breech, and another on the opposite side in the situation of the head.

On account of the difficulty of performing *cephalic version* in the manner usually recommended, it has practically scarcely been attempted, and, with the exception of some more recent authors, it is generally condemned by writers on systematic midwifery. Still, the operation offers unquestionable advantages in those transverse presentations in which rapid delivery is not necessary, and in which the only object of interference is the rectification of malposition; for, if successful, the child is spared the risk of being drawn footling through the pelvis. The objections to cephalic version are based entirely on the difficulty of performance; and, undoubtedly, to introduce the hand within the uterus, search for, seize, and afterward place the slippery head in the brim of the pelvis, could not be an easy process, even under the most favorable circumstances, and must always be attended with considerable risk to the mother. Velpeau, who strongly advocated the operation, was of opinion that it might be more easily accomplished by pushing up the presenting part, than by seizing and bringing down the head. Wigand more distinctly pointed out that the head could be brought to a proper position by external manipulation, aided by the fingers of one hand within the vagina. Braxton Hicks has laid down clear rules for its performance, which render cephalic version easy to accomplish under favorable conditions, and will doubtless cause it to become a recognized mode of treating malpositions. The number of cases, however, in which it can be performed must always be limited, since, as in turning by external manipulation alone, it is necessary that the liquor amnii should be still retained, or at least have only recently escaped; that the presentation be freely movable about the pelvic brim; and that there be no necessity for rapid delivery. Dr. Hicks does not believe protrusion of the arm to be a contra-indication, and advises

that it should be carefully replaced within the uterus. When, however, protrusion of the arm has occurred, the thorax is so constantly pushed down into the pelvis that replacement can neither be safe nor practicable, except under unusually favorable conditions, and podalic version will be necessary.

Method of Performance.—It is impossible to describe the method of performing cephalic version more concisely and clearly than in Dr. Hicks's own words. "Introduce," he says, "the left hand into the vagina, as in podalic version; place the right hand on the outside of the abdomen, in order to make out the position of the fœtus and the direction of its head and feet. Should the shoulder, for instance, present, then push it with one or two fingers in the direction of the feet. At the same time pressure with the other hand should be exerted on the cephalic end of the child. This will bring the head down to the os; then let the head be received on the tips of the two inside fingers. The head will play like a ball between the two hands; it will be under their command, and can be placed in almost any part at will. Let the head then be placed over the os, taking care to rectify any tendency to face-presentation. It is as well, if the breech will not rise to the fundus readily, after the head is fairly in the os, to withdraw the hand from the vagina, and with it press up the breech from the exterior. The hand which is retaining gently the head from the outside should continue there for some little time, till the pains have insured the retention of the child in its new position and the adaptation of the uterine walls to its new form. Should the membranes be perfect, it is advisable to rupture them as soon as the head is at the os uteri; during their flow and after, the head will move easily into its proper position."

The procedure thus described is so simple, and would occupy so short a time, that there can be no objection to trying it. Should we fail in our endeavors, we shall not be in a worse position for effecting delivery by podalic version, which can be proceeded with without removing the hand from the vagina, or in any way altering the position of the patient.

The method of performing podalic [or bi-polar] version varies with the nature of each particular case. In describing the operation it has been usual to divide the cases into those in which the circumstances are favorable and the necessary manœuvres easily accomplished, and those in which there are likely to be considerable difficulties and increased risk to the mother. This division is eminently practicable, since nothing can be more variable than the circumstances under which version may be required. Before describing the steps of the operation, it may be well to consider some general conditions applicable to all cases alike.

In England the ordinary position on the left side is usually employed. On the Continent and in America the patient is placed on her back, with the legs supported by assistants, as in lithotomy. The former position is preferable, not only as a matter of custom, and as involving much less fuss and exposure of the person, but because it admits of both the operator's hands being more easily used in concert. In certain difficult cases, when the liquor amnii has escaped and the

back of the child is turned toward the spine of the mother, the dorsal decubitus presents some advantages in enabling the hand to pass more readily over the body of the child; but such cases are comparatively rare. The patient should be brought to the side of the bed, across which she should be laid, with the hips projecting over and parallel to the edge, the knees being flexed toward the abdomen, and separated from each other by a pillow or by an assistant. Means should be taken to restrain the patient if necessary, and prevent her involuntarily starting from the operator, as this might not only embarrass his movements, but be the cause of serious injury.

The exhibition of anæsthetics is peculiarly advantageous. There is nothing which tends to facilitate the steps of the process so much as stillness on the part of the patient, and the absence of strong uterine contraction. When the vagina is very irritable and the uterus firmly contracted around the body of the child, complete anæsthesia may enable us to effect version when without it we should certainly fail.

It should be remembered that, since in all forms of version much manipulation is necessary, antiseptic precautions should be very rigidly enforced.

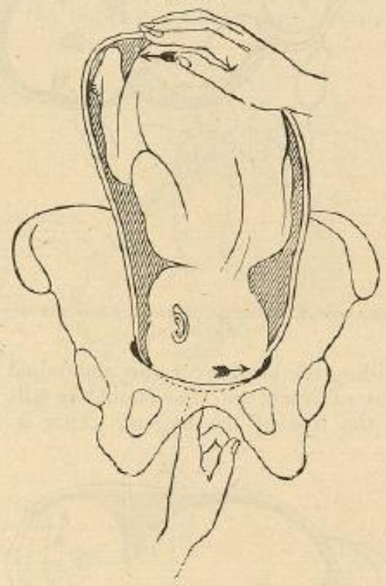
The most favorable time for operating is when the os is fully dilated, before, or immediately after, the rupture of the membranes and the discharge of the liquor amnii. The advantage gained by operating before the waters have escaped cannot be overstated, since we can then make the child rotate with great facility in the fluid medium in which it floats. In the ordinary operation, in which the hand is passed into the uterus, it is essential to wait until the os is of sufficient size to admit of its being introduced with safety. This may generally be done when the os is the size of a crown-piece, especially if it be soft and yielding.

The practice followed with regard to the hand to be used in turning varies considerably. Some accoucheurs always employ the right hand, others the left, and some one or other according to the position of the child. In favor of the right hand, it is said that most practitioners have more power with it, and are able to use it with greater gentleness and delicacy. In transverse presentations, if the abdomen of the child be placed anteriorly, the right hand is said to be the proper one to use, on account of the greater facility with which it can be passed over the front of the child; and in difficult cases of this kind when we are operating with the patient on her back, it certainly can be employed with more precision than the left. In all ordinary cases, however, the left hand can be introduced much more easily in the axis of the passages, the back of the hand adapts itself readily to the curve of the sacrum, and, even when the child's abdomen lies anteriorly, it can be passed forward without difficulty so as to seize the feet. These advantages are sufficient to recommend its use, and very little practice is required to enable the practitioner to manipulate with it as freely as with the right. If, in addition, we remember that the right hand is required to operate on the fœtus through the abdominal walls—and this is a point which should never be forgotten—we shall have abundant reasons for laying it down as a rule that the left hand should

generally be employed. Before passing the hand and arm they should be freely lubricated, with the exception of the palm, which is left untouched to admit a firm grasp being taken of the fœtal limbs. It is also advisable to remove the coat, and bare the arm as high as the elbow.

As it should be a cardinal rule to resort to the simplest procedure when practicable, it will be well to consider first the method by combined external and internal manipulation, without passing the hand into the uterus, and subsequently that which involves the introduction of the hand.

FIG. 160.



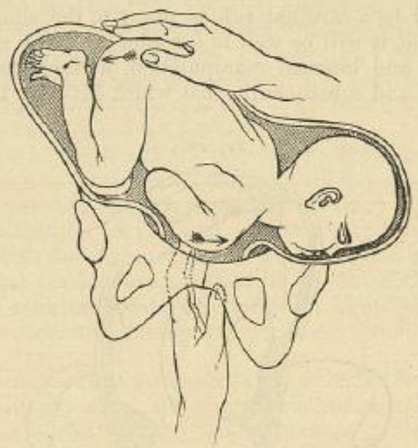
First stage of bi-polar version. Elevation of the head and depression of the breech. (After BARNES.)

Turning by Combined External and Internal Manipulation.—To effect podalic version by the combined method, it is an essential preliminary to ascertain the situation of the fœtus as accurately as possible. It will generally be easy, in transverse presentations, to make out the breech and head by palpation; while, in head presentations, the fontanelles will show to which side of the pelvis the face is turned. The left hand is then to be passed carefully into the vagina, in the axis of the canal, to a sufficient extent to admit of the fingers passing freely into the cervix. To effect this, it is not always necessary to insert the whole hand, three or four fingers being generally sufficient.

If the head lie in the first (O.L.A.) or fourth (O.L.P.) position, push it upward and to the left; while the other hand, placed externally on

the abdomen, depresses the breech toward the right (Fig. 160). By this means we act simultaneously on both extremities of the child's body, and easily alter its position. The breech is pushed down gently

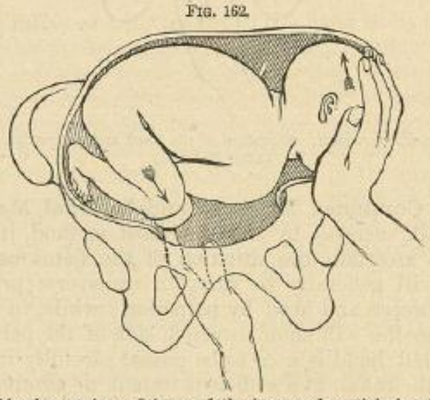
FIG. 161.



Second stage of bi-polar version. Elevation of the shoulders and depression of the breech. (After BARNES.)

but firmly, by gliding the hand over the abdominal wall. The head will now pass out of reach, and the shoulders will arrive at the os and will lie on the tips of the fingers. This is similarly pushed

FIG. 162.

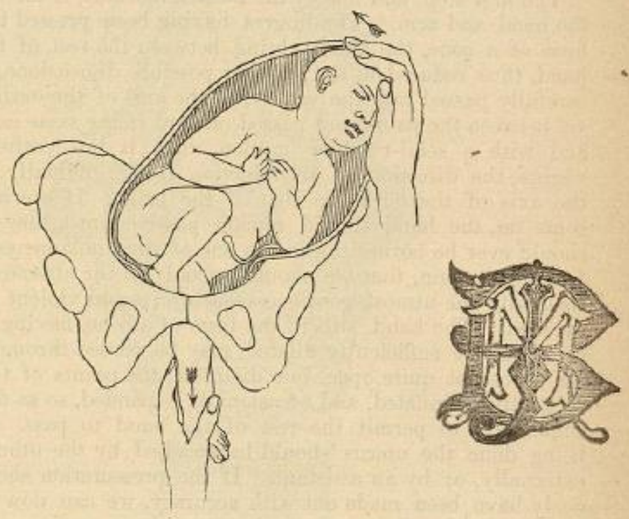


Third stage of bi-polar version. Seizure of the knee and partial elevation of the head. (After BARNES.)

upward in the same direction as the head (Fig. 161), the breech at the same time being still further depressed, until the knee comes within reach of the fingers, when (the membranes being now ruptured, if still

unbroken) it is seized and pulled down through the os (Fig. 162). Occasionally the foot comes immediately over the os, when it can be seized instead of the knee. Version may be facilitated by changing the position of the external hand, and pushing the head upward from the iliac fossa, instead of continuing the attempt to depress the breech (Figs. 162 and 163). These manipulations should always be carried on in the intervals, and desisted from when the pains come on; and when the pains recur with great force and frequency, the advantage of chloroform will be particularly apparent. In the second (O.D.A.) and third (O.D.P.) positions, the steps of the operation should be reversed; the head is pushed upward and to the right, the breech downward and to the left. When the position cannot be made out with certainty, it

FIG. 163.



Fourth stage of bi-polar version. Drawing down of the legs and completion of version. (After BARNES.)

is well to assume that it is the first (O.L.A.), since that is the one most frequently met with; and even if it be not, no great inconvenience is likely to occur. If the os be not sufficiently open to admit of delivery being concluded, the lower extremity can be retained in its new position with one finger until dilatation is sufficiently advanced or until the uterus has permanently adapted itself to the altered position of the child, either of which results will generally be effected in a short space of time.

In transverse presentations the same means are to be adopted, the shoulder being pushed upward in the direction of the head, while the breech is depressed from without. This is frequently sufficient to bring the knees within reach especially if the membranes are

entire, but version is much facilitated by pressing the head upward from without, alternately with depression of the breech. If the liquor amnii has escaped and the uterus is firmly contracted round the body of the child, it will be found impossible to effect an alteration in its position without the introduction of the hand, and the ordinary method of turning must be employed. The peculiar advantage of the combined process is, that it in no way interferes with the latter, for, should it not succeed, the hand can be passed on into the uterus without withdrawal from the vagina (provided the os be sufficiently dilated), and the feet or knees seized and brought down.

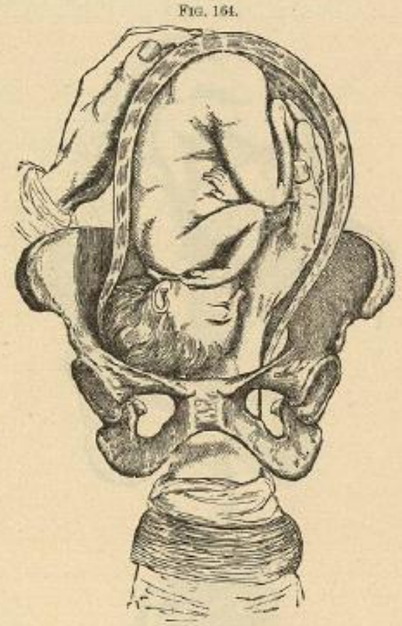
Turning with the hand introduced into the uterus, provided the waters have not or have only recently escaped and the os be sufficiently dilated, is an operation generally performed with ease.

The first step, and one of the most important, is the introduction of the hand and arm. The fingers having been pressed together in the form of a cone, the thumb lying between the rest of the fingers, the hand, thus reduced to the smallest possible dimensions, is slowly and carefully passed into the vagina, in the axis of the outlet, in an interval between the pains, and passed onward in the same cautious manner and with a semi-rotatory motion until it lies entirely within the vagina, the direction of introduction being gradually changed from the axis of the outlet to that of the brim. If uterine contractions come on, the hand should remain passive until they are over. It should ever be borne in mind as one of the fundamental rules in performing version, that we should act only in the absence of pains, and then with the utmost gentleness—all force and violent pushing being avoided. The hand, still in the form of a cone, having arrived at the os, if this be sufficiently dilated, may be passed through at once. If the os be not quite open, but dilatable, the points of the fingers may be gently insinuated, and occasionally expanded, so as to press it open sufficiently to permit the rest of the hand to pass. While this is being done the uterus should be steadied by the other hand placed externally, or by an assistant. If the presentation should not previously have been made out with accuracy, we can now ascertain how to pass the hand onward, so that its palmar surface may correspond with the abdomen of the child.

Rupture of the Membranes.—The membranes should now be ruptured—if possible during the absence of pain, so as to prevent the waters being forced out. The hand and arm form a most efficient plug, and the liquor amnii cannot escape in any quantity. Some practitioners recommend that, before rupturing the membranes, the hand should be passed onward between them and the uterine walls, until we reach the feet. By so doing we run the risk of separating the placenta; besides, we have to introduce the hand much farther than may be necessary, since the knees are often found lying quite close to the os. As soon as the membranes are perforated, the hand can be passed on in search of the feet (Fig. 164). At this stage of the operation increased care is necessary to avoid anything like force; and should a pain come on, the hand must be kept perfectly flat and still, and rather pressed on the body of the child than on the uterus.

If the pains be strong, much inconvenience may be felt from the compression; and were the onward movement continued, or the hand even kept bent in the conical form in which it was introduced, rupture of the uterine walls might easily be caused. This is not likely to occur in the class of cases now under consideration, for it is chiefly when the waters have long escaped that the progress of the hand is a matter of difficulty. Valuable assistance may now be given by pressing the breech downward from without, so as to bring the knees or feet more easily within the reach of the internal hand. Having arrived at the knees or feet, they may be seized between the fingers and drawn

FIG. 164.

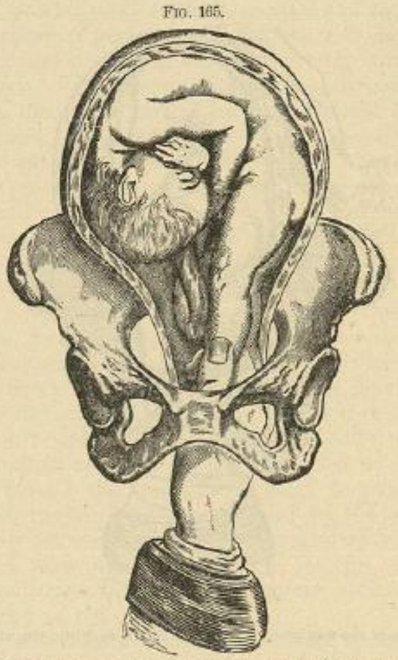


Seizure of the feet when the hand is introduced into the uterus.

downward in the absence of a pain (Fig. 165). This will cause the fœtus to revolve on its axis, the breech will descend, and at the same time the ascent of the head may be assisted by the right hand from without. It is a question with many accoucheurs which part of the inferior extremities should be seized and brought down. Some recommend us to seize both feet, others prefer one only, while some advise the seizure of one or both knees. In a simple case of turning, before the escape of the waters, it does not matter much which of these plans is followed, since version is accomplished with the greatest ease by any one of them. The seizure of the knee, however, instead of the feet, offers certain advantages which should not be overlooked. It is generally more accessible, affords a better hold (the fingers being inserted in

the flexure of the ham), and, being nearer the spine, traction acts more directly on the body of the child. Any danger of mistaking the knee for the elbow may be obviated by remembering the simple rule that the salient angle of the former, when the thigh is flexed, looks toward the head of the child, of the latter toward its feet. Certain advantages may also be gained by bringing down one foot or knee only, instead of both. When one inferior extremity remains flexed on the body of the child, the part which has to pass through the os is larger than when both legs are drawn down, and consequently the os is more perfectly dilated, and less difficulty is likely to be experienced in the delivery

FIG. 165.



Drawing down of the feet and completion of version.

of the rest of the body, so that the risk to the child is materially diminished.

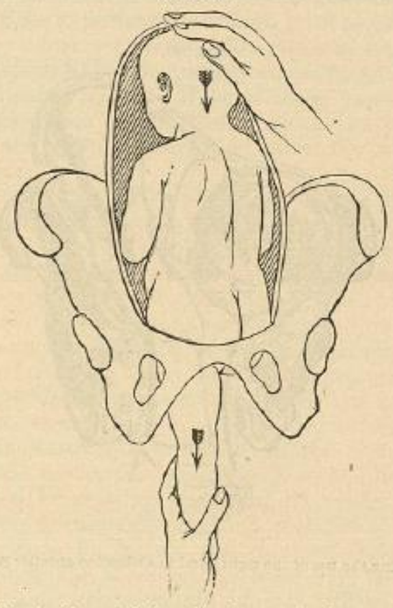
Simpson, whose views have been adopted by Barnes and other writers, recommends the seizing, if possible, in arm presentations, of the knee farthest from and opposite to the presenting arm, as by this means the body is turned round on its longitudinal axis, and the presenting arm and shoulder more easily withdrawn from the os. Dr. Galabin has carefully investigated this point in a recent paper,[1] and contends that there is a greater mechanical advantage in seizing the leg which

[1] Obst. Trans. for 1877, vol. xix. p. 239.

is nearest to, and on the same side as, the presenting arm, and this, moreover, is generally more readily done.

As soon as the head has reached the fundus, and the lower extremity is brought through the os, the case is converted into a foot or knee presentation, and it comes to be a question whether delivery should now be left to Nature or terminated by art. This must depend to a certain extent on the case itself, and on the cause which necessitated version, but, generally, it will be advisable to finish delivery without unnecessary delay. To accomplish this, downward traction is made during the pains, and desisted from in the intervals (Fig. 166). As

FIG. 166.



Showing the completion of version. (After BARNES.)

the umbilical cord appears, a loop should be drawn down; and if the hands be above the head, they must be disengaged and brought over the face, in the same manner as in an ordinary footling presentation. The management of the head, after it descends into the cavity of the pelvis, must also be conducted as in labors of that description.

Turning in Placenta Prævia.—In cases of placenta prævia the os will, as a rule, be more easily dilatable than in transverse presentations. Hicks's method offers the great advantage of enabling us to perform version much sooner than was formerly possible, since it only requires the introduction of one or two fingers into the os uteri. Should we not succeed by it, and the state of the patient indicates that delivery is necessary, we have at our command, in the fluid dilators, a

means of artificially dilating the os uteri which can be employed with ease and safety. If we have to do with a case of entire placental presentation, the hand should be passed at that point where the placenta seems to be least attached. This will always be better than attempting to perforate its substance, a measure sometimes recommended, but more easily performed in theory than in practice. If the placenta only partially presents, the hand should, of course, be inserted at its free border. It will frequently be advisable not to hasten delivery after the feet have been brought through the os, for they form of themselves a very efficient plug, and effectually prevent further loss of blood; while, if the patient be much exhausted, she may have her strength recruited by stimulants, etc., before the completion of delivery.

Fig. 167.

Showing the use of the right hand in abdomino-anterior position.

Turning in Abdomino-anterior Positions.—In abdomino-anterior positions, in which the waters have escaped, and in which, therefore, some difficulty may be reasonably anticipated, the operation is generally more easily performed with the patient on her back; the right hand is then introduced into the uterus, and the left employed externally (Fig. 167). In this way the internal hand has to be passed a shorter distance and in a less constrained position. The operator then sits in front of the patient, who is supported at the edge of the bed in the lithotomy position with the thighs separated, and the right hand is passed up behind the pubes and over the abdomen of the child.

Difficult Cases of Arm Presentation.—The difficulties of turning culminate in those unfavorable cases of arm presentation in which the membranes have been long ruptured, the shoulder and arm pressed

down into the pelvis, and the uterus contracted around the body of the child. The uterus being firmly and spasmodically contracted, the attempt to introduce the hand often only makes matters worse, by inducing more frequent and stronger pains. Even if the hand and arm be successfully passed, much difficulty is often experienced in causing the body of the child to rotate; for we have no longer the fluid medium present in which it floated and moved with ease, and the arm of the operator may be so cramped and pained by the pressure of the uterine walls as to be rendered almost powerless. The risk of laceration is also greatly increased, and the care necessary to avoid so serious an accident adds much to the difficulty of the operation.

Value of Anæsthesia in Relaxing the Uterus.—In these perplexing cases various expedients have been tried to cause relaxation of the spasmodically contracted uterine fibres, such as copious venesection in the erect attitude until fainting is induced, warm baths, tartar emetic, and similar depressing agents. None of these, however, is so useful as the free administration of chloroform, which has practically superseded them all, and often answers most effectually when given to its full surgical extent.

The hand must be introduced with the precautions already described. If the arm be completely protruded into the vagina, we should pass the hand along it as a guide, and its palmar surface will at once indicate the position of the child's abdomen. No advantage is gained by amputation, as is sometimes recommended. When the os is reached, the real difficulties of the operation commence, and, if the shoulder be firmly pressed down into the brim of the pelvis, it may not be easy to insinuate the hand past it. It is allowable to repress the presenting part a little, but with extreme caution, for fear of injuring the contracted uterine parietes. Herman[1] has pointed out that in some cases the difficulty is increased by the shoulder of the prolapsed arm being caught beneath the contraction ring (Bandl's), and he advises that it should be released by pressing it toward the centre of the cervical canal. It is better to insinuate the hand past the obstruction, which can generally be done by patient and cautious endeavors. Having succeeded in passing the shoulder, the hand is to be pressed forward in the intervals, being kept perfectly flat and still on the body of the fœtus when the pains come on. It is much safer to press on it than on the uterine walls, which might readily be lacerated by the projecting knuckles. When the hand has advanced sufficiently far, it will be better, for the reasons already mentioned, to seize and bring down one knee only.

When the Foot is Brought Down but the Fœtus will not Revolve.—Even when the foot has been seized and brought through the os, it is by no means always easy to make the child revolve on its axis, as the shoulder is often so firmly fixed in the pelvic brim as not to rise toward the fundus. Some assistance may be derived from pushing the head upward from without, which, of course, would raise the shoulder along with it. If this should fail, we may effect our

[1] "Note on One of the Causes of Difficulty in Turning," Obst. Trans. for 1886, vol. xxviii. p. 150.

object by passing a noose of tape or wire ribbon around the limb, by which traction is made downward and backward; at the same time the other hand is passed into the vagina to displace the shoulder and push it out of the brim. It is evident that this cannot be done as long as the limb is held by the left hand, as there is no room for both hands to pass into the vagina at the same time. By this manœuvre version may be often completed when the fœtus cannot be turned in the ordinary way. Various instruments have been invented both for passing a fillet around the child's limb and for repressing the shoulder, but none of them can compete, either in facility of use or safety, with the hand of the accoucheur.

Mutilation of the Fœtus.—Should all attempts at version fail, no resource is left but the mutilation of the child, either by evisceration or decapitation. This extreme measure is, fortunately, seldom necessary, as with due care version may generally be effected, even under the most unfavorable circumstances.[1]

CHAPTER III.

THE FORCEPS.

Use of the Forceps in Modern Practice.—Of all obstetric operations the most important, because the most truly conservative both to the mother and child, is the application of the forceps. In modern midwifery the use of the instrument is much extended, and it is now applied by some of our most experienced accoucheurs with a frequency which elder practitioners would have strongly reprobated. That the injudicious and unskilful use of the forceps is capable of doing much harm, no one will for a moment deny. This, however, is not a reason for rejecting the recommendation of those who advise a more frequent resort to the operation, but rather for urging on the practitioner the necessity of carefully studying the manner of performing it, and of making himself familiar with the cases in which it is easy or the reverse. Nothing but practice—at first on the dummy, and afterward in actual cases—can impart the operative dexterity which it should be the aim of every obstetrician to acquire, and without which there can be no assurance of his doing his duty to his patient efficiently.

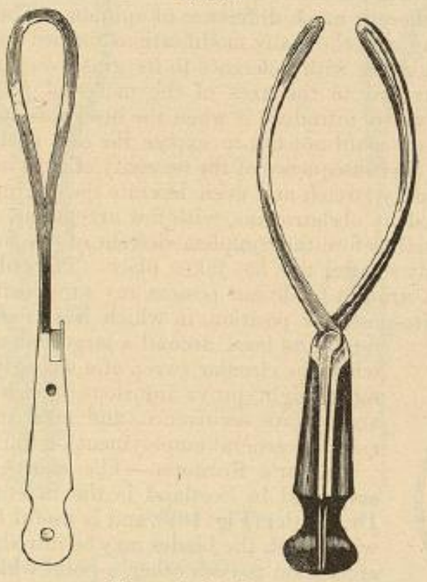
Description.—The forceps may best be described as a pair of artificial hands by which the fœtal head may be grasped and drawn through the maternal passages by *vis à fronte*, when the *vis à tergo* is deficient. This description will impress on the mind the important action of the instrument as a tractor, to which all its other powers are subservient.

[1] See note, p. 536.

The forceps consists of two separate blades of a curved form, adapted to fit the child's head; a lock by which the blades are united after introduction; and handles which are grasped by the operator, and by means of which traction is made. It would be a wearisome and unsatisfactory task to dwell on all the modifications of the instrument which have been made, which are so numerous as to make it almost appear as if no one could practise midwifery with the least pretension to eminence, unless he has attached his name to a new variety of forceps.

The Short Forceps.—The original instrument, invented by the Chamberlens, may be looked upon as the type of the short straight forceps, which has been more employed than any others and which, perhaps, finds its best representative in the short forceps of Denman (Fig. 168). Indeed, the only essential difference between the two is

FIG. 168.



Denman's short forceps.

the lock of the latter, originally invented by Smellie, which is so excellent that it has been adopted in all British forceps; and which, for facility of juncture, is much superior to either the French pivot or the German lock, while for firmness it is, for all practical purposes, as good as either. In this instrument the blades are seven and the handle four and three-eighths inches in length; the extremities of the blades are exactly one inch apart, and the space between them at their widest part is two and seven-eighths inches. The blades measure one and three-fourths inches at their greatest breadth and spring with a regular